



SLR-JJ – 1

Seat No.	
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पीएच. डी. कोर्सवर्क परीक्षा, : 2015

मराठी

अभ्यासपत्रिका क्र. १ : संशोधनपद्धती व माहिती-तंत्रज्ञान

**Research Methodology and Information Communication
Technology (ICT)**

Day and Date : Tuesday, 2-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

१. अ) 'संशोधन' म्हणजे काय, ते स्पष्ट करून संशोधनाचे साहित्याच्या क्षेत्रातील महत्त्व विशद करा. १०
- ब) खालील तीन प्रश्नांपैकी कोणत्याही दोन प्रश्नांची थोडक्यात उत्तरे लिहा. १०
- १) संशोधनामागील प्रेरणा स्पष्ट करा.
- २) समीक्षा आणि संशोधन ह्यांच्यामधील फरक सांगा.
- ३) संशोधकांचे गुण विशद करा.
२. अ) संशोधनाच्या क्षेत्रामध्ये संशोधनपद्धतीचे काय स्थान आहे, ते सोदाहरण स्पष्ट करा. १०
- ब) खालील तीन प्रश्नांपैकी कोणत्याही दोन प्रश्नांची थोडक्यात उत्तरे लिहा. १०
- १) तुलनात्मक संशोधनपद्धतीचे स्वरूप स्पष्ट करा.
- २) प्रायोगिक संशोधनपद्धतीचे वेगळेपण सांगा.
- ३) क्षेत्रीय सर्वेक्षणपद्धतीचे महत्त्व विशद करा.
३. अ) वाङ्मयाचे स्वरूपनिष्ठ संशोधन म्हणजे काय, ते सांगून किती प्रकारांमध्ये ते विभागलेले आहे, ते स्पष्ट करा. १०
- ब) खालील तीन प्रश्नांपैकी कोणत्याही दोन प्रश्नांची थोडक्यात उत्तरे लिहा. १०
- १) बोलीअभ्यासाचे स्वरूप स्पष्ट करा.
- २) अनुवादाच्या क्षेत्रामध्ये संशोधनाला कितपत वाव आहे, ते सांगा.
- ३) लोकसाहित्याच्या संशोधनाची आवश्यकता विशद करा.

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४. अ) संशोधनपर लेखनाचे स्वरूप स्पष्ट करून त्यातील टप्पे सांगा. १०
- ब) खालील तीन प्रश्नांपैकी कोणत्याही दोन प्रश्नांची थोडक्यात उत्तरे लिहा. १०
- १) प्रबंधलेखनाच्या रूपरेषेचे महत्त्व स्पष्ट करा.
- २) प्रबंधामध्ये परिशिष्टे का आवश्यक आहेत ?
- ३) प्रबंधाच्या संदर्भात पूर्वाभ्यास गरजेचा कसा असतो ?
५. अ) संशोधनासाठी माहिती-तंत्रज्ञान किती आणि कसे उपयोगी ठरत असते, ते विशद करा. १०
- ब) खालील तीन प्रश्नांपैकी कोणत्याही दोन प्रश्नांची थोडक्यात उत्तरे लिहा. १०
- १) वेबसाईट आणि संशोधन ह्यांच्यामधील परस्परसंबंध सांगा.
- २) ई-बुकची संशोधनातील उपयुक्तता स्पष्ट करा.
- ३) सर्च इंजिनचे संशोधनाच्या क्षेत्रातील कार्य विशद करा.
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SLR-JJ – 100

Seat No.	
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**Ph.D. Course Work Examination, 2015
POLITICAL SCIENCE (Paper – III)
Modern Trends in Politics**

Day and Date : Saturday, 6-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. Answer **any two** of following : **(2×10=20)**
 - A) Discuss on those Political Parties who are doing Bahujan Politics.
 - B) Explain role of Bahujan Politics in Indian Politics.
 - C) Explain an importance of Bahujan politics in Indian politics.

 2. Answer **any two** of following : **(2×10=20)**
 - A) Explain Civil Society and its factors.
 - B) Role of Liberalization and globalization in Indian market.
 - C) Impact of Multinational companies on Indian market.

 3. Answer **any two** of following : **(2×10=20)**
 - A) Discuss on South Asian countries politics.
 - B) Explain North and South State politics in India.
 - C) Discuss Comparatively politics of Maharashtra with Congress NCP and BJP-Shiv Sena Alliances.

 4. Answer **any two** of following : **(2×10=20)**
 - A) Discuss role of China in World politics.
 - B) What is India's role in present world politics ?
 - C) Terrorism : Challenging factor to world peace. Discuss.

 5. Answer **any two** of following : **(2×10=20)**
 - A) Explain BRIC.
 - B) Write short note on SAARC.
 - C) Discuss on ASEAN.
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Ph.D. Course Work Examination, 2015
PHILOSOPHY (Paper – III)
Modern Topics in Philosophy

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m to 2.00 p.m.

1. A) Explain the nature of Pragmatism. 10
- B) Write short answers (**any two**) : 10
- 1) 'Liberty is the basic principle of Democracy' – Discuss.
- 2) What is Inter religious harmony ?
- 3) What is 'Sarvodaya' according to Gandhiji ?
2. A) Is Social Reconstruction possible through justice ? Discuss. 10
- B) Write short answers (**any two**) : 10
- 1) State William James' view on pragmatism.
- 2) Write brief essay on Religious Fundamentalism.
- 3) What is Euthanasia ?
3. A) What is the nature of problem of Terrorism ? 10
- B) Write short answers (**any two**) : 10
- 1) Describe the nature of concept of Equality.
- 2) Explain the nature of Coherence theory of truth.
- 3) What are the ways of preservation of Nature ?

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4. A) Give brief account of Ahimsa in Gandhian thought. **10**
- B) Write short answers (**any two**) : **10**
- 1) Explain the nature of Correspondence theory of truth.
 - 2) What is human beings moral responsibility towards nature ?
 - 3) Write short note on 'Trusteeship'.
5. A) How bio medical ethics plays important role in todays life ? **10**
- B) Write short answers (**any two**) : **10**
- 1) How Fraternity plays important role in social reconstruction ?
 - 2) What are the ecological problems today ?
 - 3) What is difference between meaning and truth ?
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Ph.D. Course Work Examination, 2015
PSYCHOLOGY
Paper – 03 : Modern Topics in Psychology

Day and Date : Saturday, 6-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) What is teacher effectiveness ? Explain the nature of teaching learning process. 10
- B) Write in short (**any two**) : 10
- i) Education of exceptional children.
 - ii) Describe the principles of teaching.
 - iii) Positive emotions and its role in wellbeing.
2. A) Illustrate the meaning of health psychology and describe the bio-psycho-social perspective of the same. 10
- B) Write in short (**any two**) : 10
- i) Maslow's views on mental health.
 - ii) Explain health resources.
 - iii) Roger's contribution to health psychology.
3. A) Describe the meaning and significance of the validity of the psychological measures and discuss the nature of construct validity of a test. 10
- B) Write in short (**any two**) : 10
- i) Precautions in test administration.
 - ii) Strengths and weaknesses of alternate form reliability.
 - iii) Meaning and uses of factor analysis in test construction.

P.T.O.



4. A) What is neuropsychological assessment ? Explain any one technique of Neuropsychological assessment. **10**
- B) Write in short (**any two**) : **10**
- i) Cerebral cortex and its functions.
 - ii) Eyesenk’s biosocial theory of crime
 - iii) Recent perspective of sport psychology.
5. A) Discuss cognitive and social psychological dimensions of individual and team sports. **10**
- B) Write in short (**any two**) : **10**
- i) Role of psychology in crime prevention.
 - ii) Neuro-chemical systems in the brain.
 - iii) Cognitive and behavioral interactions in sports.
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Ph.D. Course Work Examination, 2015
SOCIAL WORK
Paper – III : Modern Topics in Social Work

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Give an account of social change movements during pre-independence period. 10
B) Write short answers on **any two**: 10
 - i) Dilemmas faced by social work practitioners.
 - ii) Philosophy of social work.
 - iii) Ethics of professional social work.
2. A) Explain various models of social work practice. 10
B) Write short answers on **any two**: 10
 - i) Developmental Social Work.
 - ii) Locality development model of community work.
 - iii) Problem solving approach.
3. A) Bring out the interface between social work practice and social development. 10
B) Write short answers on **any two**: 10
 - i) Indicators of social development.
 - ii) NGOs and social development
 - iii) Social legislations and social justice.

P.T.O.



4. A) Comment on developmental aspects of Human Resource Management. **10**
- B) Write short answers on **any two**: **10**
- i) Social responsibility of Corporate Sector.
 - ii) Labour legislations and social security.
 - iii) Impact of changing global scenario on Human Resources.
5. A) Give an account of Govt. efforts for Community Development in India. **10**
- B) Write short answers on **any two**: **10**
- i) Methods of Community Development.
 - ii) Community Development and NGOs.
 - iii) Admn. of Community Development programmes in India.
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Ph.D. Course Work Examination, 2015
EDUCATION
Paper – III : Modern Topics in Education

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) What is meant by Global Education ? Explain impact of Globalization on Education. 10
- B) Attempt in brief **any two** of the following : 10
 - i) Which are the areas of assessments ?
 - ii) Explain the term, "The age of Litigation".
 - iii) Write the different characteristics of learning process.
2. A) Explain the concept of Human Capital and write a vital role of human capital in Indian Education System. 10
- B) Attempt in brief **any two** of the following : 10
 - i) How will be the investment in education returned back ?
 - ii) How will you increase the unit cost of higher education in India ?
 - iii) Explain the term Production and Cost of Education.
3. A) What is the concept of work culture ? How will you improve work culture in higher education ? 10
- B) Attempt in brief **any two** of the following : 10
 - i) Explain the term social value based higher education administration.
 - ii) Administrative system reform : Discuss.
 - iii) Explain the term of quality of work. How can improve quality of work ?

P.T.O.



4. A) What is the role of education for community development ? **10**
- B) Attempt in brief **any two** of the following : **10**
- i) Write a constructive method of teaching.
 - ii) Explain the objectives of teaching.
 - iii) Which are the problems of large class ?
5. A) Explain the need of human rights education in present situation. **10**
- B) Attempt in brief **any two** of the following : **10**
- i) What is meant by HIV and AIDS ?
 - ii) Explain relationship between corruption and human rights.
 - iii) Write the use of encyclopedia and websites in research.
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Ph.D. Course Work Examination, 2015
MASS COMMUNICATION AND JOURNALISM
Paper No. – III : Mass Communication in New Millennium

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Write in detail about the future of Social Media in India. 10
B) Short answer type (**any two**) : 10
 - 1) Role of Media in Human development. 5
 - 2) Effect of globalization on media management. 5
 - 3) International news agencies. 5

2. A) Describe the role of Mass Media in Development Communication. 10
B) Short answer type (**any two**) : 10
 - 1) Explain the concept of citizen Journalism. 5
 - 2) Cultural integration and cultural pollution. 5
 - 3) Explain the concept of sustainable development Communication. 5

3. A) Explain the participatory approach in community Media. 10
B) Short answer type (**any two**) : 10
 - 1) Describe the concept of sky vision. 5
 - 2) Folk Media in Maharashtra. 5
 - 3) Write short note on international communication. 5

P.T.O.



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| 4. A) Write detail note on MacBride commission. | 10 |
| B) Short answer type (any two) : | 10 |
| 1) Indian media and political changes. | 5 |
| 2) Concept of mobile journalism. | 5 |
| 3) Model of development communication. | 5 |
| 5. A) Give the present scenario of mass media in India. | 10 |
| B) Short answer type (any two) : | 10 |
| 1) Write a note on face book. | 5 |
| 2) Write a note on World Environment Summits. | 5 |
| 3) Write on Information Super highway. | 5 |
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Ph.D. Course Work, Examination, 2015
PHYSICAL EDUCATION (Paper – III)
Modern Topics in Physical Education and Sports

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Give in details of opportunities in sports as a research scientist in sports and list the research institutes in sports. 10
B) Short notes (**any two**) : 10
 - 1) Explain types of yogic exercises.
 - 2) Explain types of theraphic meditation.
 - 3) List factors affecting on coaching girls in sports.
 2. A) Give the importance of statistics to evaluate performance of athlete. 10
B) Short notes (**any two**) : 10
 - 1) List the personality characteristics.
 - 2) List the psychological factors which improves performance of athlete.
 - 3) List the descriptive statistics and state the formula of it.
 3. A) List the factors of personality and give in detail its importance in coaching and training. 10
B) Short notes (**any two**) : 10
 - 1) Explain importance of pranayama in sports.
 - 2) List the modern equipment to prevent injuries in sports.
 - 3) Explain T-scale.
 4. A) Explain the theraphic values of meditation in sports performance. 10
B) Short notes (**any two**) : 10
 - 1) Importance of yogic exercises for mental fitness.
 - 2) Benefits of globalization of sports.
 - 3) Methods of test objectivity.
 5. A) Explain Ashtang yoga. 10
B) Short notes (**any two**) : 10
 - 1) Multiple correlation of coefficient.
 - 2) Reability of test.
 - 3) Preventive measures of injuries in sports.
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Ph.D. Course Work Examination, 2015
LAW
Law, Justice and Society (Paper – III)

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : 1) Answer **all five** questions.
2) **All** questions carry **equal** marks.

1. A) Legal justice ignore the role of social, economic and political forces at work in every society – Discuss. 10
- B) Short notes on **any two** of the following : 10
 - i) Disadvantages of Legal Justice.
 - ii) How justice is administered ?
 - iii) How the liberal modern tradition is the basis of Justice ?
2. A) Define Law and explain various functions of law in the modern society. 10
- B) Short notes on **any two** of the following : 10
 - i) Law and voice of Justice.
 - ii) Law and Morals.
 - iii) Judicial accountability.
3. A) Explain the theory of savigny and what is the impact of 'volksgeist' on nations legal system. 10
- B) Short notes on **any two** of the following : 10
 - i) How religion as key instrument of social control ?
 - ii) Impact of law in society.
 - iii) Doctrine of social solidarity.

P.T.O.



4. A) Explain the impact of cyber crimes on the society. What are the probable solutions to prevent cyber crimes in the present times ? **10**
- B) Short notes on **any two** of the following : **10**
- i) Medical Technology.
 - ii) Impact of Technology on Environment.
 - iii) Ideal governance.
5. A) Discuss briefly the role and functions of Judiciary for achieving social justice. **10**
- B) Short notes on **any two** of the following : **10**
- i) Concept of Dharma.
 - ii) Judicial process.
 - iii) Role of media in Democracy.
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**Ph.D. Course Work Examination, 2015
COMMERCE
Paper – III: Modern Topics in Management**

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) What is Globalisation ? How external environment is impacted by Globalisation ? **10**
B) Write short notes on (**any two**): **10**
 - 1) Multinational company
 - 2) Major ingredients of TQM.
 - 3) Six Sigma.
2. A) What is Organisational Behaviour ? Explain the meaning and importance of Organisational Behaviour. **10**
B) Write short notes on (**any two**): **10**
 - i) Disaster Management.
 - ii) Human Values in Management.
 - iii) Talent Management.
3. A) State the distinction between Human Resource Management and Human Resource Development. **10**
B) Write short notes on (**any two**): **10**
 - i) Elements of Emotional Quotient.
 - ii) Relationship between spirituality and performance.
 - iii) Managing change in organisation.

P.T.O.



4. A) What do you mean by organisational development ? State the process of organisation development. **10**
- B) Write short notes on (**any two**): **10**
- i) Stress Management.
 - ii) Retention of Talents.
 - iii) Factors of change.
5. A) What are the dimensions of quality leader in organisation ? **10**
- B) Write short notes on (**any two**): **10**
- i) Ethical dilemma.
 - ii) Quality of work life.
 - iii) Spirituality and performance.
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Ph.D. Course Work Examination, 2015
CIVIL ENGINEERING
Paper – III : Modern Topics in Civil Engineering

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

- Instructions:** 1) Answer **all** the questions.
2) Assume suitable data **wherever** necessary and state **it clearly**.
3) Figures to the **right** indicate **full** marks.

1. a) What are the general processes involved in electromagnetic remote sensing ?
What are the primary absorbers of electromagnetic energy in the atmosphere ? **10**
- b) Answer **any two** of the following :
- i) Explain Vector Data Model and Raster Data model adopted in 'Geographic Information Systems'. **5**
- ii) Describe how GIS can be useful in case of disaster management during Urban floods. **5**
- iii) Enlist the Characteristics of Aerial Photographs. **5**
2. a) What do you mean by Environmental Auditing ? Discuss the pre-audit activities, activities at site and post audit activities. **10**
- b) Answer **any two** of the following :
- i) Discuss the steps taken for predicting and assessing impact of 'Thermal Power Project' on the 'Air Environment'. **5**
- ii) Discuss the environmental issues in raising global trade with reference to 'Sustainable Development'. **5**
- iii) Discuss critically : "World is becoming more global, it does not necessarily mean that it is becoming more uniform." **5**

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3. a) Solve the following L.P. problem by simplex method.

$$\text{Minimize : } Z = x_1 - 3x_2 + 2x_3$$

$$\text{Subject to : } 3x_1 - x_2 + 2x_3 \leq 7$$

$$2x_1 + 4x_2 \geq -12$$

$$-4x_1 + 3x_2 + 8x_3 \leq 10$$

$$x_1, x_2, x_3 \geq 0$$

10

b) Answer **any two** of the following :

i) What do you understand by balanced and unbalanced transportation problem ? How an unbalanced problem is tackled ?

5

ii) What are the conditions for application of the optimality test in case of transportation problem ? Briefly explain as why these conditions should be satisfied.

5

iii) Explain with an example the L.P. problem, which has no feasible solution. Use graphical method to explain.

5

OR

3. a) Write a detailed note on Infrastructure Development in 'Rods and Highways Sector' of India.

10

b) Answer **any two** of the following :

i) What are the aims and objectives of the 'Jawaharlal Nehru National Urban Renewal Mission' of Government of India ?

5

ii) Discuss the challenges faced by Indian construction industry.

5

iii) Write a note on 'Public Private Partnership' in Airport Infrastructure being developed in India.

5

4. a) A group of 9 piles in a row is driven into soft clay extending from ground level to a great depth. The diameter and depth of pile are 30 cm and 10 m respectively. The unconfined compressive strength of clay is 70 kN/m^2 . If the piles are placed 90 cm center to center, compute the allowable load on the pile group, on the basis of shear failure criteria, for a factor of safety of 2.5. Neglect the bearing at the tip of the piles. Take $m = 0.6$ for shear mobilization around each pile.

10



- b) Answer **any two** of the following :
- i) Draw a typical section of a 'Pneumatic Caisson' and explain the procedure of its sinking. 5
 - ii) What do you understand by 'Reinforced Earth' ? Explain the mechanism of its action, in resisting active earth pressure. 5
 - iii) Write a short note on Bearing Capacity and nature of settlement of foundations on sanitary landfills. 5
5. a) What is Fiber Reinforced Concrete ? What are the most common materials used as fibers ? Discuss the factors affecting the properties of fiber reinforced concrete. 10
- b) Answer **any two** of the following :
- i) What do you mean by a 'Ferrocement' ? Describe various casting techniques of ferrocement products. 5
 - ii) Explain the use of Geotextiles in railway works. 5
 - iii) Explain with neat sketches, various functions of geotextiles. 5
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**Ph.D Course Work Examination, 2015
COMPUTER SCIENCE AND ENGINEERING
Modern Topics in Computer Science and Engineering (Paper – III)**

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Note : All questions are compulsory.

1. a) Compare and contrast the web service with grid service. 10
b) Write short note on **any two** of the following : (2×5=10)
 - i) Resource management in a grid computing environment.
 - ii) Rule based classification.
 - iii) Message passing.

2. a) With example explain absolute ordering, consistent ordering and casual ordering of messages. 10
b) Write short note on **any two** of the following : (2×5=10)
 - i) Properties and characteristics of cloud computing.
 - ii) Comparison of Grid and distributed system.
 - iii) Decision Tress.

3. a) Design the environment that facilitates shared memory concept across the machine. Suitable operating system and programming language may be assume. 10
b) Write short note on **any two** of the following : (2×5=10)
 - i) Binding agent mechanism for locating a server in case of RPC.
 - ii) BMC layer.
 - iii) MAC layer.

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4. a) Bring out differences between data in operational systems and data in data warehouse. 10
- b) Write short note on **any two** of the following : (2×5=10)
- i) Concurrency control mechanism based on locks.
 - ii) Standards for grid.
 - iii) Amazon cloud services.
5. a) With example explain APRIORI algorithm. 10
- b) Write short note on **any two** of the following : (2×5=10)
- i) Bayesian classification.
 - ii) PDCCP layer.
 - iii) Data security in cloud computing system.
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Ph.D. Course Work Examination, 2015
Paper – III : ELECTRONICS AND TELECOMMUNICATION ENGG.
Modern Topics in Electronics and Telecommunication Engineering

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. Solve **any two** : **20**
 - A) Explain why traditional TCP cannot be used in wireless adhoc networks.
 - B) Discuss the major reasons behind the degradation that TCP faces when used in adhoc wireless networks.
 - C) What is the need for layered architecture ? Explain the features of various protocols used in TCP/IP reference model.

2. Solve **any two** : **20**
 - A) Explain cell delineation state diagram during Transmission of ATM Cells.
 - B) List the undesirable propagation characteristics with millimeter wave systems.
 - C) Explain the general difference between the packet format of the ATM and wireless ATM ?

3. Solve **any two** : **20**
 - A) How does a radio signal propagates in the wireless medium ?
 - B) Define medium access and list the different types of medium access techniques for voice oriented network.
 - C) What are the main issues that need to be addressed while designing a MAC protocol for adhoc wireless networks ?

4. Solve **any two** : **20**
 - A) Discuss about the configuration and transmission issues of spread spectrum wireless LANs ?
 - B) If 10 MHz of the allocated spectrum is dedicated to control channels, find an equitable distribution of control channels and voice channels.
 - C) Consider global system for mobile, which is a TDMA/FDD system that uses 25 MHz for the forward link which is broken in to radio channels of 100KHz. If 8 channels are supported on a single radio channels and if the guard band is assumed, find the number of simulations used that can be accommodated in GSM.

P.T.O.



5. Solve **any two** : **20**

- A) What is X.25 protocol ? Explain with a neat diagram.
- B) Briefly discuss the construction of shortened cyclic codes.
- C) Explain the features of TIFF.

OR

6. Solve **any two** : **20**

- A) With the help of neat diagram, explain JPEG encoder in detail.
 - B) Explain video compression principle.
 - C) Briefly discuss why there is need for energy management schemes in adhoc wireless networks.
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Ph.D. Course Work Examination, 2015
PHARMACY
Paper – III : Modern Topics in Pharmaceutical Science

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Describe various terms used in the measurement of bioavailability and discuss factors affecting bioavailability of drug from dosage forms. 10
B) Attempt **any two** : 10
 - 1) Explain significance of dissolution.
 - 2) Compare single dose and multiple dose bioavailabilities.
 - 3) Discuss merits and demerits of using healthy subjects and patients as volunteers for bioavailability study.

2. A) Define pharmacokinetics and explain pharmacokinetic parameters that describe a typical plasma level time curve. 10
B) Attempt **any two** : 10
 - 1) Discuss the different factors that lead to drug interactions.
 - 2) Discuss the factors influencing passive reabsorption of drugs from tubules.
 - 3) Write a note on pH partition hypothesis.

3. A) Enlist the oral novel drug delivery systems. Describe the mechanism of push pull osmotic pump. 10
B) Attempt **any two** : 10
 - 1) Explain in detail biodegradable microspheres.
 - 2) Give limitations of transdermal drug delivery system.
 - 3) What are the criteria for selection of drug candidate for controlled drug delivery system ?

P.T.O.



4. A) Give a detailed account of individualisation of dosage regimen. Also add a note on optimization of dosage regimen. **10**
- B) Attempt **any two** : **10**
- 1) Explain First Order Kinetics.
 - 2) Discuss the different factors that lead to drug interactions.
 - 3) In compartment modelling, elimination is presumed to occur from central compartments only. Why ?
5. A) Explain various aspects of pharmaceutical process validation of solid dosage form. **10**
- B) Attempt **any two** : **10**
- 1) How degradation of pharmaceutical products should be prevented ?
 - 2) Write a note on Partition coefficient.
 - 3) Describe molecular weight determination of polymers.
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Ph.D. Course Work Examination, 2015
MECHANICAL ENGINEERING (Paper – III)
Modern Topics in Mechanical Engineering from Performance
Improvement Perspective

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

- Instructions:** 1) Attempt **all** questions.
2) **Neat** diagrams must be drawn **whenever** necessary.
3) Figures to the **right** indicate **full** marks.
4) **Use** of calculator is **allowed**.
5) **Assume** suitable data, if **necessary**.

1. A) Discuss formulation of product specifications for creating quality by design with suitable example. 10
- B) Write short notes (**any two**) : 10
- i) General consideration for a good design
 - ii) Economics of quality
 - iii) Design changes during production.
2. A) State the advantages and limitations of Quality Function Development (QFD). Discuss at least one successful case of QFD. 10
- B) Attempt **any two** of the following : 10
- 1) Characteristics of QFD as a quality system
 - 2) House of quality
 - 3) Process Capability Index in Machining Operations.
3. A) Discuss the importance of Dr. Deming philosophy developed as a theory of management for improvement of quality, productivity and competitive position to implement Total Quality Management. 10
- B) Write short notes (**any two**) : 10
- i) Robust design
 - ii) Continual improvement in ISO 9001
 - iii) Evaluation of QMS.

P.T.O.



4. A) Daily inspection records are maintained on production of a special-design electronic device. 100 items have been inspected each day for past 20 days. A total of 206 items failed during a particularly severe heat stress test. The four highest and lowest values of p are :

Highest	Lowest
0.54	0.22
0.35	0.16
0.32	0.21
0.34	0.19

- a) Compute the central line and 3-sigma trail control limits for p chart. Is the process operating in control ?
- b) Recommend an aimed at value of p , 3-sigma control limits for continued use of the p chart. 10
- B) Attempt **any two** : 10
- i) List metrological requirement of ISO 9001 quality system.
 - ii) Explain the concept of Six Sigma in Quality Assurance Function.
 - iii) Implementation of ISO 9000.
5. A) List seven basic tools of statistical process control and state importance of one in brief in quality control of manufacturing process. 10
- B) Attempt **any two** : 10
- i) FMEA
 - ii) Do's and Don'ts of six sigma
 - iii) Pareto chart.



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Ph.D. Course Work Examination, 2015
MARATHI (Paper – IV (B))
‘आधुनिक मराठी साहित्य आणि संशोधन’

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

१. अ) खालील प्रश्नाचे सविस्तर उत्तर लिहा.
‘आधुनिकता म्हणजे काय ? ते सांगून आधुनिक वाङ्मयाची वैशिष्ट्ये सांगा.
- ब) खालील कोणत्याही ‘दोन’ प्रश्नांची थोडक्यात उत्तरे लिहा.
i) अव्वल इंग्रजी कालखंडातील मराठी साहित्याचे स्वरूप.
ii) लोकहितवादीच्या ‘शतपत्राचे’ विशेष.
iii) हरिभाऊंच्या सामाजिक कादंबऱ्यांच्या विषयी माहिती.
२. अ) खालील प्रश्नाचे सविस्तर उत्तर लिहा.
केशवसुत संप्रदायाने केलेल्या काव्याचा अंतर्बाह्य बदलाचा परामर्श घ्या.
- ब) खालील कोणत्याही ‘दोन’ प्रश्नांची थोडक्यात उत्तरे लिहा.
i) ‘करमणूक’ कालखंडातील कथावाङ्मयात झालेल्या बदलाचा परामर्श घ्या.
ii) ‘धार आणि काठ’
iii) मराठी नियतकालिकाचे वाङ्कमयीण काय स्पष्ट करा.
३. अ) खालील प्रश्नाचे सविस्तर उत्तर लिहा.
स्वातंत्र्योत्तर कालखंडातील वैचारीक वाङ्मयाचा परामर्श घ्या.
- ब) खालील कोणत्याही ‘दोन’ प्रश्नांची थोडक्यात उत्तरे लिहा.
i) आधुनिक मराठी कवयित्रींच्या कवितेचे स्वरूप स्पष्ट करा.
ii) रा. श्री. जोग यांनी केलेल्या टीकाक्षेत्रातील कामगिरीचे मूल्यमापन करा.
iii) ‘प्रादेशिक’ कादंबरी कशी विकसित होत गेली ते सांगा.

P.T.O.



४. अ) खालील प्रश्नाचे सविस्तर उत्तर लिहा.

स्वातंत्र्योत्तर कालखंडातील काव्यप्रकारमधील विविध प्रवृत्तींचे समालोचन करा.

ब) खालील कोणत्याही 'दोन' प्रश्नांची थोडक्यात उत्तरे लिहा.

i) मराठी नाटकाच्या पडत्या कालत अये आणि रांगणेकर यांनी केलेल्या कार्याचे महत्व स्पष्ट करा.

ii) रा. रं. बोराडे यांच्या साहित्याचा परामर्श घ्या.

iii) कुसुमाग्रजांच्या काव्य प्रवासाचे थोडक्यात विशेष सांगा.

५. अ) वाङ्मय इतिहास लेखन म्हणजे काय ? ते सांगून त्याचे स्वरूप व प्रकार स्पष्ट करा.

ब) खालील कोणत्याही 'दोन' प्रश्नांची थोडक्यात उत्तरे लिहा.

i) साठोत्तरी नवकाव्यातील बदलत्या समाज जिवनाचा वेध घ्या.

ii) मार्क्सवादी समीक्षा पद्धती.

iii) वाङ्मयेतिहास लेखनातील आडचर्चीचा परामर्श घ्या.



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Ph.D. Course Work Examination, 2015
MARATHI (Paper – IV A)
मध्ययुगीन मराठी साहित्य आणि संशोधन

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. अ) मध्ययुगीन वाङ्मयामयाची सांस्कृतिक व सामाजिक परिवर्तनातील योगदानाची चर्चा करा. **10**
ब) लघुत्तरी प्रश्न सोडवा (तीन पैकी दोन) : **10**
 - i) पोवाड्याची परंपरा व स्वरूप सांगा.
 - ii) जैन वाङ्मयाचे योगदान स्पष्ट करून त्यातून आविष्कृत झालेल्या मूल्यांचे स्वरूप नोंदवा.
 - iii) मध्ययुगीन वाङ्मयाच्या संशोधनात येणाऱ्या ठळक अडचणींची चर्चा करा.
2. अ) संत साहित्यामधील सामाजिक व सांस्कृतिक परिवर्तनाची सविस्तरपणे चर्चा करा. **10**
ब) लघुत्तरी प्रश्न सोडवा (तीन पैकी दोन) : **10**
 - i) हस्तलिखिते व संहिताचे स्वरूप थोडक्यात सांगा.
 - ii) बहुजन समाजाशी संत साहित्यातून प्रकट झालेले नाते विशद करा.
 - iii) शाहिरी वाङ्मयातील चटकदार निवेदनाचे स्वरूप सांगा.
3. अ) पंडिती काव्याचे विशेष सांगा. **10**
ब) लघुत्तरी प्रश्न सोडवा (तीन पैकी दोन) : **10**
 - i) साहित्य व धर्माचा अन्योन्य संबंध दर्शवा.
 - ii) मुस्लिम मराठी साहित्यातील शेख महंमदाच्या वाङ्मयीन कार्याचे स्वरूप सांगा.
 - iii) संत साहित्यातील भावनेच्या अभिव्यक्तिचे स्वरूप नमूद करा.

P.T.O.



4. अ) शाहिरी वाङ्मयाचे वेगळेपणाचे वैशिष्ट्ये नोंदवा. 10
- ब) लघुत्तरी प्रश्न सोडवा. (तीन पैकी दोन) : 10
- i) भेदिक वाङ्मयातील प्रबोधनाची भूमिका सांगा.
 - ii) संत साहित्यातील भक्ती प्रवणता स्पष्ट करा.
 - iii) संहिता निश्चिती मधील येणाऱ्या विविध अडथळ्यांची चर्चा करा.
5. अ) बखर गद्याचे स्वरूप सांगून ऐतिहासिक बखरीचे स्वरूप सांगा. 10
- ब) लघुत्तरी प्रश्न सोडवा. (तीन पैकी दोन) : 10
- i) ख्रिस्ती वाङ्मयाची प्रगल्भता नोंदवा.
 - ii) ओंवी व अभंगाच्या संबंधाचे स्वरूप सांगा.
 - iii) बखरीतील ऐतिहासिकता स्पष्ट करा.
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Ph.D. Course Work Examination, 2015
ENGLISH
Paper – IV : Indian English Writings

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : i) **All questions are compulsory.**
ii) **Figures to the right indicate full marks.**

1. A) What are the trends of Nativism and Modernism ? Give references. **10**
- B) Answer the following questions in brief (**any two**) : **10**
- i) Comment critically on Diaspora and Diasporic writing.
- ii) What is the difference between Modernism and Post-modernism theory ? Prove it.
- iii) Write a note on Post-Colonial Discourse.
2. A) How does Sunita Namjoshi develop the theme of Blue Donkey Fables ? **10**
- B) Answer the following questions in brief (**any two**) : **10**
- i) Comment on V.S. Naipaul's observations about India in his travelogue An Area of Darkness.
- ii) How does 'An Area of Darkness' of India hamper the development ? Did he imply some steps ?
- iii) 'An Area of Darkness depicts what actually ails with India' : Do you agree ? Justify.
3. A) 'Vijay Tendulkar's The Court is in Session shows darker side of Indian society' : explain with references. **10**
- B) Answer the following questions in brief (**any two**) : **10**
- i) Communal disbelief in Mahesh Dattani's Final Solutions.
- ii) Comment on plot development of the play Final Solutions.
- iii) Behaviour of characters in the play Final Solutions.

P.T.O.



4. A) Comment on R. Parthasarthy's struggle to establish Indian identity with the help of the poems you have studied. **10**
- B) Answer the following questions in brief (**any two**) : **10**
- i) The theme of 'Rough Passage'.
 - ii) Parthasarthy's emotional affair in 'Home coming'.
 - iii) Pain of 'Exile'.
5. A) Write a detailed note on colonial discourse. **10**
- B) Answer the following questions in brief (**any two**) : **10**
- i) Personal love and meaningful life in Parthasarthy's Trial.
 - ii) Violence in the play The Court is in Session.
 - iii) Theme of Final Solutions.
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Ph.D. Course Work Examination, 2015
ENGLISH
Paper – IV : Subaltern Literature

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : i) **All questions are compulsory.**
ii) **Figures to the right indicate full marks.**

1. A) How does subaltern literature depict ethnicity, gender and ideology of society ? 10
- B) Answer the following questions in brief (**any two**) : 10
 - i) The discourse of literature of orientalism.
 - ii) What is marginality and identity formation ? Explain.
 - iii) What are problems faced by the subaltern writers to express their ideas ? Give references.
2. A) Write about the psychology of Toni Morrison's female characters in the novel The Bluest Eye. 10
- B) Answer the following questions in brief (**any two**) : 10
 - i) Write the note on the approach of Mahesh Dattani in his collected plays Tara.
 - ii) Violence in Coetzee's Waiting for Barbarians.
 - iii) Theme of wole Soyinka's The Road.
3. A) How does Frantz Fanon bring out the trauma of slave community in The Wretched of the Earth ? 10
- B) Answer the following questions in brief (**any two**) : 10
 - i) Narrative style of Coetzee in Waiting for Barbarians.
 - ii) Portrayal of aristocratic society in Mahesh Dattani's Tara.
 - iii) Protagonist of The Bluest Eye.

P.T.O.



4. A) How does Sojourner Truth express the subordinate status of women and colour prejudices through her poems ? Give examples. **10**
- B) Answer the following questions in brief (**any two**) : **10**
- i) Apt expressions of downtrodden in the poems of Langston Hughes.
 - ii) Sojourner Truth's poems display the inhuman attitude of people towards black women. Explain with reference.
 - iii) 'Is Langston Hughes' poem 'Democracy', democratic ? Prove.
5. A) Write the literary features of colonialism and post-colonialism. **10**
- B) Answer the following questions in brief (**any two**) : **10**
- i) Resistance in subaltern literature.
 - ii) Theme of 'Ain't I A Woman'.
 - iii) Cultural Exchange : Langston Hughes' approach.
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Ph.D. Course Work Examination, 2015
Paper – IV (C) : ENGLISH
Linguistics for ELE

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Application of linguistics helps a lot in the teaching of English. **10**
B) Write short notes on **any two** of the following : **10**
 - i) The use of A-V aids.
 - ii) English classroom and mother tongue interference.
 - iii) Synchronic and diachronic linguistics.
 2. A) Discuss in detail the various branches of linguistic. **10**
B) Write short notes on **any two** of the following : **10**
 - i) Allophones of /p, t, k/ sounds.
 - ii) Compounding.
 - iii) Structuralist approach and synchronic study of language.
 3. A) What are diphthongs ? Illustrate with examples. **10**
B) Write short notes on **any two** of the following : **10**
 - i) The roof of the mouth.
 - ii) Falling and rising tone.
 - iii) Lateral sound.
 4. A) Distinguish between inflectional and derivational suffixes. **10**
B) Write short notes on **any two** of the following : **10**
 - i) Minor word formation processes.
 - ii) Affix, stem and root.
 - iii) Terminal and non-terminal node.
 5. A) Point out the advantages of phrase structure rules. **10**
B) Write short notes on **any two** of the following : **10**
 - i) Registers.
 - ii) Signifier and signified.
 - iii) Standard language dialect.
-



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Ph.D. Course Work Examination, 2015
Paper – IV : HINDI

हिन्दी साहित्य विधा (इ) हिन्दी नाटक-एकांकी साहित्य

Day and Date : Monday, 8-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. क) नाटक के तत्त्वों के आधार पर 'सूर्य की अंतिम किरण से सूर्य की पहली किरण तक' नाटक की समीक्षा कीजिए। 10
- ख) किन्हीं दो के उत्तर संक्षेप में लिखिए। (2×5=10)
- I) प्रसादोत्तर युगीन पाँच नाटक एवं उनके नाटककारों के नाम लिखिए।
- II) नाटक में संवाद तत्त्व के महत्त्व पर प्रकाश डालिए।
- III) डॉ. लक्ष्मीनारायण लाल के पाँच नाटकों के नाम लिखिए।
2. क) हिन्दी नाटक के उद्भव को लिखते हुए प्रसादयुग पर प्रकाश डालिए। 10
- ख) किन्हीं दो के उत्तर संक्षेप में लिखिए। (2×5=10)
- I) 'अभंगगाथा' नाटक के आधार पर संत तुकाराम का परिचय दीजिए।
- II) नाटक के भारतीय तत्त्वों की चर्चा कीजिए।
- III) 'हैलो कॉभरेड' नाटक की कथावस्तु लिखिए।
3. क) हिन्दी एकांकी के उद्भव एवं विकासक्रम पर प्रकाश डालिए। 10
- ख) किन्हीं दो के उत्तर संक्षेप में लिखिए। (2×5=10)
- I) हिन्दी के पाँच पौराणिक नाटक एवं उनके नाटककारों के नाम लिखिए।
- II) 'शरणागत' एकांकी के संघर्ष पर प्रकाश डालिए।
- III) भुवनेश्वर लिखित 'पतित' एकांकी के इरदेव सिंह।

P.T.O.



4. क) 'लहरों के राजर्हस' नाटक की समीक्षा कीजिए। 10
- ख) किन्हीं दो के उत्तर संक्षेप में लिखिए। (2×5=10)
- I) 'हैलो कॉभरेड' नाटक के शीर्षक की सार्थकता स्पष्ट कीजिए।
- II) मोहन राकेश के पाँच एकांकियों के नाम लिखिए।
- III) 'सबसे बड़ा आदमी' एकांकी का पात्र-परिचय कराइए।
5. क) एकांकी कला की दृष्टि से 'पडोसिन का कोट' एकांकी की समीक्षा कीजिए। 10
- ख) किन्हीं दो के उत्तर संक्षेप में लिखिए। (2×5=10)
- I) नाटक में देश, काल, वातावरण का महत्त्व।
- II) 'कोल उस्ट' एकांकी की कथावस्तु लिखिए।
- III) 'अभंगगथा' नाटक के उद्देश्य पर प्रकाश डालिए।
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Ph.D. Course Work Examination, 2015

हिंदी प्रश्नपत्र – 4 (IV)

हिंदी साहित्य विधा – (अ) हिंदी काव्य

Day and Date : Monday, 8-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- सूचनाएँ :** 1) किन्हीं चार प्रश्नों के उत्तर लिखिए ।
2) सभी प्रश्नों को समान अंक हैं ।
3) दाईं ओर लिखे हुए अंक प्रश्नों के पूर्णांक दर्शाते हैं ।

1. काव्य की परिभाषा देकर तत्त्वों का विवेचन कीजिए । 25
 2. 'गूँगा नहीं था मैं' के आधार पर डॉ. जयप्रकाश कर्दम के काव्य की विशेषताओं पर प्रकाश डालिए । 25
 3. 'भूमिजा' की सीता का चरित्र-चित्रण कीजिए । 25
 4. 'कुकुरमुत्ता' काव्य का व्यंग्य समझाइए । 25
 5. मुक्तिबोध की रचना 'अंधेरे में' के कथ्य को प्रकाशित कीजिए । 25
 6. निम्नलिखित में से किन्हीं दो पर टिप्पणियाँ लिखिए । 25
 - 1) महाकाव्य के तत्त्व ।
 - 2) 'भूमिजा' का भाव पक्ष ।
 - 3) 'राम की शक्तिपूजा' के राम ।
 - 4) 'अंधेरे में' काव्य में प्रयुक्त प्रतीक एवं बिम्ब योजना ।
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SLR-JJ – 118-B

Seat No.	
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Ph.D. Course Work Examination, 2015
Pape – IV : हिंदी साहित्य विधा
ब) हिंदी कथा साहित्य

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

सूचनाएँ : 1) सभी प्रश्न अनिवार्य हैं।
2) सभी प्रश्नों को समान अंक हैं।

1. अ) उपन्यास के प्रकारों की सोदाहरण चर्चा कीजिए। **10**

अथवा

कहानी का स्वरूप स्पष्ट कीजिए।

ब) निम्नलिखित में से **किन्हीं दो** के उत्तर लिखिए। **10**

- 1) उपन्यास की परिभाषाएँ।
- 2) उपन्यासकार प्रेमचंद।
- 3) कहानी की कथावस्तु।

2. अ) 'सेवासदन' समाजद्वारा प्रताडित नारी जीवन की करुण कथा है''। इसके संदर्भ में समीक्षा कीजिए। **10**

अथवा

'लौटते हुए मुसाफिर' की कथावस्तु बताईए।

ब) निम्नलिखित में से **किन्हीं दो** के उत्तर लिखिए। **10**

- 1) 'सेवासदन' का सत्तार नौजवान।
- 2) 'लौटते हुए मुसाफिर' का देशकाल वातावरण।
- 3) 'सेवासदन' की प्रमुख समस्या।

P.T.O.



3. अ) 'कगार की आग' अभिशप्तों की जीवन गाथा है" चर्चा कीजिए। 10

अथवा

'सेवासदन' की कथावस्तु बताईए।

ब) निम्नलिखित में से किन्हीं दो के उत्तर लिखिए। 10

- 1) 'कगार की आग' - का पिरमा।
- 2) 'कगार की आग' - का उद्देश्य।
- 3) 'सेवासदन' - का शीर्षक।

4. अ) ग्राम जीवन के चितेरा - कथाकार विवेकीराय" कहानियों के आधार पर स्पष्ट कीजिए। 10

अथवा

'टूटते वहम' में चित्रित दलित जीवन की समस्याओं का विवेचन कीजिए।

ब) निम्नलिखित में से किन्हीं दो के उत्तर लिखिए। 10

- 1) 'नई राह की खोज' - का रामचंद्र।
- 2) विवेकीहाथ की कहानियों में चित्रित ग्राम समस्या।
- 3) कथाकार डॉ. सुशीला टाकभैटे।

5. अ) 'ललमनिया तथा अन्य कहानियों' - की प्रमुख विशेषताओं का विवेचन कीजिए। 10

अथवा

'सिलिया' कहानी की समीक्षा कीजिए।

ब) निम्नलिखित में से किन्हीं दो के उत्तर लिखिए। 10

- 1) 'बिछुड़े हुए' - कहानी की चंदा।
- 2) 'ललमनिया - कहानी की कथावस्तु।
- 3) कहानीकार मैत्रेयी पुष्पा।



SLR-JJ – 119

Seat
No.

Ph.D. Course Work in Kannada Examination, 2015
Paper No. – IV : ADVANCED DEVELOPMENT IN KANNADA LANGUAGE

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

*ಸೂಚನೆಗಳು: 1) 'ಎ' ಭಾಗದ ಪ್ರಶ್ನೆಗಳು ಕಡ್ಡಾಯವಾಗಿದ್ದು, ವಿವರವಾಗಿ ಉತ್ತರಿಸಬೇಕು.
2) 'ಬಿ' ಭಾಗದಲ್ಲಿ ಮೂರು ಪ್ರಶ್ನೆಗಳಿದ್ದು, ಎರಡನ್ನು ಮಾತ್ರ ಉತ್ತರಿಸಬೇಕು. ಉತ್ತರ ಸಂಕ್ಷಿಪ್ತವಾಗಿರಲಿ.*

1. ಎ) ಕನ್ನಡ ಭಾಷೆಯ ಪ್ರಾಚೀನತೆ ಕುರಿತು ಬರೆಯಿರಿ. 10
ಬಿ) ಬೇಕಾದ ಎರಡಕ್ಕೆ ಉತ್ತರಿಸಿರಿ. 10
1) ಜಾನಪದ ಎಂದರೇನು ? ಚರ್ಚಿಸಿರಿ.
2) ಭಾಷೆ, ಉಪ-ಭಾಷೆ ಕುರಿತು ಬರೆಯಿರಿ.
3) ದ್ರಾವಿಡ ಭಾಷೆಗಳಾವುವು ? ವಿವರಿಸಿರಿ.
2. ಎ) ಭಾಷೆ ಬೆಳವಣಿಗೆಯ ಕಾರಣಗಳಾವುವು ? ಚರ್ಚಿಸಿರಿ. 10
ಬಿ) ಬೇಕಾದ ಎರಡಕ್ಕೆ ಉತ್ತರಿಸಿರಿ. 10
1) ಭಾರತದಲ್ಲಿ ಭಾಷಾ ವರ್ಗಗಳಾವುವು ?
2) ಗಾದೆ ಎಂದರೇನು ? ವಿವರಿಸಿ.
3) ದ್ರಾವಿಡ ಜನಾಂಗದ ವೈಶಿಷ್ಟ್ಯಗಳನ್ನು ತಿಳಿಸಿರಿ.
3. ಎ) ಜಾನಪದ ನಿಂತ ನೀರಲ್ಲ; ಚಲನಶೀಲವಾದುದು ಎಂಬುದನ್ನು ನಿರ್ದರ್ಶನ ಸಹಿತ ನಿರೂಪಿಸಿರಿ. 10
ಬಿ) ಬೇಕಾದ ಎರಡಕ್ಕೆ ಉತ್ತರಿಸಿರಿ. 10
1) ಶಬ್ದ ಸ್ವೀಕರಣ ಕುರಿತು ಬರೆಯಿರಿ.
2) ಧಾರವಾಡ ಕನ್ನಡ ಕುರಿತು ಬರೆಯಿರಿ.
3) ಕನ್ನಡ ಭಾಷೆ ಸ್ವೀಕಾರ ಮಾಡಿರುವ ಇತರ ಭಾಷೆಯ ಪದಗಳಾವುವು ?

P.T.O.



4. ಎ) ಕನ್ನಡ ಭಾಷೆಯ ಹುಟ್ಟು ಮತ್ತು ಬೆಳವಣಿಗೆಯ ವಿವಿಧ ಹಂತಗಳನ್ನು ನಿರ್ದರ್ಶನಗಳೊಂದಿಗೆ ನಿರೂಪಿಸಿ. **10**
- ಬಿ) ಬೇಕಾದ ಎರಡಕ್ಕೆ ಉತ್ತರಿಸಿರಿ. **10**
- 1) ಜನಪದ-ಜಾನಪದಕ್ಕಿರುವ ವ್ಯತ್ಯಾಸ ಕುರಿತು ಬರೆಯಿರಿ.
 - 2) ಭಾಷೆ ಧ್ವನಿಸಂಕೇತಗಳ ಕುರಿತು ಬರೆಯಿರಿ.
 - 3) ಯಾದೃಚ್ಛಿಕತೆ ಎಂದರೇನು ?
5. ಎ) ಕನ್ನಡವು ಸಂಸ್ಕೃತಜನ್ಯ ಎಂದು ಕರೆಯುವುದು ಸರಿಯೇ ? ವಿವರಿಸಿರಿ. **10**
- ಬಿ) ಬೇಕಾದ ಎರಡಕ್ಕೆ ಉತ್ತರಿಸಿರಿ. **10**
- 1) ಗಂಡಸರ ಹಾಡುಗಳು ಯಾವುವು ?
 - 2) ಕಂಠಸ್ಥ ಸಂಪ್ರದಾಯ ಎಂದರೇನು ?
 - 3) ಭಾಷೆ ಒಂದು ವ್ಯವಸ್ಥೆ ಹೇಗೆ ?
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SLR-JJ – 120A

Seat No.	
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Ph.D. Course Work Examination, 2015
URDU (Paper – IV)
Advanced Development in Urdu – Jadeed Shairi

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

ہدایات : (۱) تمام سوالات لازمی ہیں۔

(۲) ہر جواب سے پہلے متعلقہ سوال ضرور لکھئے۔

(۳) تمام سوالات کے نشانات مساوی ہیں۔

۱. الف) ”غزل اردو شاعری کی آبرو ہے“۔ رشید احمد صدیقی کے مذکورہ بالا قول سے اتفاق یا

10

اختلاف کرتے ہوئے اپنے خیالات قلم بند کیجئے۔

10

ب) مندرجہ ذیل سے صرف دو کے مختصر جواب لکھئے :

(۱) غالب کی شاعری کا مختصر جائزہ لیجئے۔

(۲) مومن کے تغزل پر روشنی ڈالئے۔

(۳) فیض کی شاعری میں عشقیہ مضامین کا احاطہ کیجئے۔

۲. الف) ”اردو شاعری میں قدیم زمانے ہی سے رباعیات کے نمونے ملتے ہیں“۔ مذکورہ

10

بالا خیال کے پیش نظر اردو رباعی کے بتدریج ارتقاء پر روشنی ڈالئے۔

P.T.O.



10 (ب) مندرجہ ذیل سے صرف دو کے مختصر جواب لکھئے :

(۱) امجد حیدر آبادی کی رباعیات کا احاطہ کیجئے۔

(۲) جگت موہن لال رواں کی رباعیات کے موضوعات کا احاطہ کیجئے۔

(۳) جوش ملیح آبادی کی رباعیات پر تبصرہ کیجئے۔

۳. الف) ”رباعی“ کی طرح ”قطعہ“ بھی اردو کی مقبول صنف ہے۔“ مذکورہ بالا قول کے

10 مد نظر ’رباعی‘ اور ’قطعہ‘ کی اہمیت و افادیت پر روشنی ڈالئے۔ مثالیں دیجئے۔

10 (ب) مندرجہ ذیل سے صرف دو کے مختصر جواب دیجئے :

(۱) اقبال کے قطعات کا احاطہ کیجئے۔

(۲) عصر حاضر کے کسی شاعر کے قطعات پر روشنی ڈالئے۔

(۳) اپنے پسندیدہ رباعی گو شاعر کی رباعیات کے موضوعات پر اپنے خیالات کا اظہار کیجئے۔

۳. الف) ”نظم میں خیال کے اعتبار سے ایک تسلسل ہوتا ہے اور نظم کے تمام اشعار ایک

دوسرے میں پیوست ہوتے ہیں۔“ مذکورہ بالا خیال کے پیش نظر نظم کی تعریف

10 بیان کرتے ہوئے اس کی قسموں کا احاطہ کیجئے۔



10 (ب) مندرجہ ذیل سے صرف دو کے مختصر جواب لکھئے :

(۱) اختر الایمان کی نظم نگاری پر اپنے خیالات کا اظہار کیجئے۔

(۲) اقبال کی نظموں کے موضوعات پر تبصرہ کیجئے۔

(۳) فیض کی منظومات پر اپنی معلومات کا احاطہ کیجئے۔

10 .۵ (الف) ”حمد“ کے بتدریج ارتقاء پر اپنی معلومات کا احاطہ کیجئے۔

10 (ب) مندرجہ ذیل سے صرف دو کے مختصر جواب لکھئے :

(۱) نعت کی تعریف بیان کرتے ہوئے نعت گوئی پر روشنی ڈالئے۔

(۲) اپنے پسندیدہ حمد گو شاعر کی حمدوں پر روشنی ڈالئے۔

(۳) نعت گوئی کے وقت کن کن باتوں سے پرہیز لازمی ہے؟



SLR-JJ – 120B

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Ph.D. Course Work Examination, 2015

URDU (Paper – IV)

Advanced Development in Urdu – Jadeed Nasar

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

نوٹ : (1) پانچوں سوالوں کے ”الف“ لازمی ہیں۔

(2) ”ب“ میں دئے گئے کوئی دو کے جواب لکھئے۔

(3) ہر سوال کے مارکس بائیں جانب درج ہیں۔

10 (الف) 1. فنِ خاکہ نگاری کی ابتدا، و ارتقاء پر روشنی ڈالئے۔

10 (ب) کوئی دو کے مختصر جواب لکھئے :

(I) خاکہ نگاری کے اصولوں پر بحث کیجئے۔

(II) اُردو خاکہ نگاری میں مولوی عبدالحق کا مقام و مرتبہ متعین کیجئے۔

(III) خاکہ نگاری کے فنی لوازم بیان کیجئے۔

2. (الف) ناول کے مختلف اقسام کی تعریف بیان کیجئے اور انکی ادبی اہمیت و افادیت

10 واضح کیجئے۔

10 (ب) کوئی دو کے مختصر جواب لکھئے :

(I) ناول کے فنی خصوصیات کا جائزہ لیجئے۔

(II) ناول کے اجزائے ترکیبی بیان کیجئے۔

(III) پریم چند کے سماجی ناولوں پر تبصرہ کیجئے۔



10 3. الف) اُردو افسانہ نگاری کے ابتدائی نقوش پر روشنی ڈالئے۔

10 ب) کوئی دو کے مختصر جواب لکھئے :

(I) اُردو افسانے کے اجزائے ترکیبی کا جائزہ لیجئے۔

(II) منشی پریم چند کی افسانہ نگاری پر روشنی ڈالئے۔

(III) افسانوں میں مکالمے اور منظر نگاری کی اہمیت بیان کیجئے۔

10 4. الف) جمہوریت میں صحافت کی اہمیت و افادیت کا تفصیلی جائزہ لیجئے۔

10 ب) کوئی دو کے جواب لکھئے :

(I) صحافت کی آزادی کے حدود بیان کیجئے۔

(II) ایک اچھے صحافی کے اوصاف حمیدہ پر روشنی ڈالئے۔

(III) صحافت میں تحقیق کی اہمیت بیان کیجئے۔

10 5. الف) اُردو سفر ناموں کی تاریخ بیان کیجئے۔

10 ب) کوئی دو کے مختصر جواب لکھئے :

(I) مولانا الطاف حسین حالی کی سوانح نگاری کا مختصر جائزہ لیجئے۔

(II) حیات جاوید کا تنقیدی جائزہ لیجئے۔

(III) سفر نامے کے خصوصیات بیان کیجئے۔



SLR-JJ – 121A

Seat No.	
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Ph.D. Course Work Examination, 2015
PHYSICS
Paper – IV : Advanced Development in Physics
Solar Cells and Super Capacitors

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions: 1) Answer **all** questions.

2) Figures to the **right** indicate marks.

1. A) Give classification of solar cells. How efficiency of solar cell can be improved ? 10
- B) Answer **any two** :
- i) What are the limitations of single junction solar cell ? 5
- ii) Discuss solar spectrum and useful band gaps of semiconductors. 5
- iii) Explain solar cell parameters. 5
2. A) How heterojunction is formed between n-cds and p-Cu₂S materials ? Give demerits of Cds/Cu₂s solar cells. 10
- B) Answer **any two** :
- i) Explain stability of electrodes in photoelectro-chemical cells. 5
- ii) Explain H₂ production using TiO₂ based PEC cells. 5
- iii) Discuss working of GaAS based solar cell. 5

P.T.O.



3. A) Explain classification of thin film deposition methods. **10**
- B) Answer **any two** :
- i) Advantages of chemical methods. **5**
 - ii) Explain deposition CdS by chemical bath deposition method. **5**
 - iii) Give recent developments in solar cell materials. **5**
4. A) Explain the differences between capacitors, supercapacitors and batteries. **10**
- B) Answer **any two** :
- i) What are the parameters in supercapacitors ? **5**
 - ii) Discuss asymmetric type super capacitor, with an example. **5**
 - iii) What are the limitations of polymer based super capacitors ? **5**
5. A) Explain the working of carbon based super capacitors. **10**
- B) Answer **any two** :
- i) Explain working of composite material based supercapacitor. **5**
 - ii) What are the advantages of electrochemical super capacitors ? **5**
 - iii) Discuss new materials for super capacitor applications. **5**
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SLR-JJ – 121 B

Seat No.	
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Ph.D. Course Work Examination, 2015

PHYSICS

Advanced Development in Physics

Paper – IV : Ferroelectric and Ferrimagnetic Materials

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :** 1) *All questions are **compulsory**.*
2) *All questions carry **equal** marks.*
3) *Draw necessary diagrams **wherever** required.*

1. a) What is polarization in dielectrics ? Explain electric polarization and relaxation in static and time varying field. How dielectric constant does varies with temperature in dielectrics. 10
- b) Attempt **any two** : 10
- i) Explain electromechanical effect.
- ii) What are the ferroelectrics and non-ferroelectrics ? What are the factors affecting on ferroelectric properties of pervoskites ?
- iii) Explain what is Cole-Cole plot. What is the significance ?
2. a) What is pyroelectric effect ? Discuss atleast two applications of pyroelectric effect. 10
- b) Attempt **any two** : 10
- i) Discuss ferroelectric properties of PbTiO_3 and PbZrO_3 .
- ii) What is PTC and NTC behavior in material ? Explain it with suitable example.
- iii) Explain thermodynamics of ferroelectric transition.

P.T.O.



3. a) With the help of suitable diagram explain the working principle of vibrating sample magnetometer. Discuss typical M-H curves obtained for ferrimagnetic and paramagnetic materials. **10**
- b) Attempt **any two** : **10**
- i) What are the limitations for use of metal as a sensing element in Hall probe ? Why semiconductors are preferred as a sensing element in Hall probe ?
 - ii) Explain what is Alternating (Field) Gradient Magnetometer (AGM).
 - iii) Explain magnetic measurements in closed circuit.
4. a) What is crystal anisotropy ? What is physics origin of anisotropy ? Explain anisotropy in cubic and hexagonal crystals. **10**
- b) Write short note on **any two** : **10**
- i) Exchange force and magnetic property.
 - ii) Magnetic properties of spinel ferrites.
 - iii) Domain wall structure and Domain wall motion in ferromagnetic.
5. a) Give the classification of magnetic materials. Explain molecular field theory of ferromagnetism. **10**
- b) Write short note on **any two** : **10**
- i) Hexagonal ferrites
 - ii) Magneto-static energy and domain structure
 - iii) Ferroelectric transitions in BaTiO_3 .
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SLR-JJ – 121C

Seat No.	
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Ph.D. Course Work Examination, 2015
PHYSICS
Advanced Development in Physics
Solid State Gas Sensor Devices (Paper – IV)

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : 1) Answer **all** questions.
2) Figures to the **right** indicate marks.
3) **All** questions carry **equal** marks.

1. a) Discuss requirements of an ideal gas sensor. 10
b) Answer **any two**.
 - i) Explain role of defects in electrical conductivity of semiconductors. 5
 - ii) Discuss catalysts and promoters. 5
 - iii) Give salient features of solution combustion method. 5
2. a) Explain in detail, screen printing technology for thick film formation. 10
b) Answer **any two**.
 - i) Give advantages of thick film sensors. 5
 - ii) Explain vacuum evaporation of copper. 5
 - iii) Explain solid electrolyte based gas sensor. 5
3. a) Explain working of semiconductor gas sensor. 10
b) Answer **any two**.
 - i) Discuss physical model of gas adsorption. 5
 - ii) Explain sputtering method for thin film formation. 5
 - iii) Discuss schottky barrier diode base gas sensor. 5

P.T.O.



4. a) Explain chemical vapor deposition variants for thin film deposition. **10**
- b) Answer **any two**.
- i) Explain formation of quantum dots. **5**
 - ii) Discuss spin coating method for TiO_2 film formation. **5**
 - iii) Discuss role of grain boundaries in electrical conduction. **5**
5. a) Explain electrodeposition mechanism of ZnO film formation. **10**
- b) Answer **any two**.
- i) Explain electrochemical gas sensors. **5**
 - ii) Discuss spillover mechanism. **5**
 - iii) Explain oxidation and dissociation of oxides. **5**
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SLR-JJ – 122 B

Seat No.	
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Ph.D Course Work Examination, 2015
Paper – IV (B) : ELECTRONICS
Embedded Technology and Instrumentation

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) What is an Embedded System ? State important characteristics of Embedded System. What are the typical hardware and software resources used in design of embedded system ? 10
- B) Answer **any two** : 10
 - i) State features of MCS 51. With suitable block diagram explain construction and working of a pH measurement system based on MCS 51.
 - ii) With the help of a neat diagram explain a typical embedded system application in agricultural domain for automatic irrigation system. State clearly the choice of sensors, actuators and interface circuits.
 - iii) What is ISP ? Discuss importance of ISP feature in choosing a microcontroller for domestic appliance control.
2. A) What is importance of IDE ? How does it help in embedded system integration ? Explain with suitable application examples. 10
- B) Answer **any two** : 10
 - i) Illustrate the execution sequence of the different data shift instructions of the 8051. State typical applications of the shifting options.
 - ii) Compare the software delay with hardware delays in terms of execution overheads and ease of handling.
 - iii) Write a C-code for Flashing LED with following repeat sequence-ON for 100 ms, OFF for 300 ms and ON for 320 ms.
3. A) Define real time operation of an embedded system. How does this compare with an interactive system ? 10
- B) Answer **any two** : 10
 - i) Explain with suitable diagrams working of Real with Kernel.
 - ii) Distinguish between Hard and Soft real time systems with suitable examples.
 - iii) What are Finite State Machines ? With suitable example explain programming of an FSM.

P.T.O.



4. A) Discuss importance of Scheduling in RTOS. 10
- B) Answer **any two** : 10
- i) Explain the basic concept of priority based preemptive scheduling.
 - ii) What are the options available for distributed data acquisition in an industrial plant measurement system ?
 - iii) Describe the operation of Context Switching.
5. A) What is a Dead-lock ? Explain with suitable example the deadlock and solution for deadlock resolution. 10
- B) Answer **any two** : 10
- i) With suitable examples explain the purpose and use of Semaphores and Mutexes.
 - ii) Explain the terms : Intertask communication, Queues, Race condition.
 - iii) Explain the RTOS functionalities in a typical real time clock cum calendar and temperature indicator system.
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SLR-JJ – 122-A

Seat No.	
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Ph.D. Course Work Examination, 2015
ELECTRONICS
Paper – IV : Architecture of Wireless Sensor Networks

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. a) List four application of wireless sensor networks. Discuss any one in detail as regards the topology used, routing strategy and design considerations. **10**
- b) Attempt **any two** : **10**
 - i) Explain the various power saving modes implemented by Zigbee protocol.
 - ii) Discuss the design constraints of operating systems for wireless sensor networks with names of two OS.
 - iii) Explain the concept of CDMA.
2. a) Draw the block diagram of a wireless sensor node and discuss the design constraints. State the features of Mica or XYZ mote. **10**
- b) Attempt **any two** : **10**
 - i) State the sequence of operations to transfer data using zigbee.
 - ii) State and explain any three parameters set while configuring a zigbee module.
 - iii) Discuss how WSN can be used in home automation.
3. a) What are the key features of wireless Routing Protocols ? Give two examples of routing protocols used and explain any one in detail. **10**
- b) Attempt **any two** : **10**
 - i) " WSN's are said to be data centric networks". Discuss the statement with one example.
 - ii) Why is multi hop communication required in WSN ?
 - iii) Describe different topologies used in WSN with the help of diagram.

P.T.O.



4. a) Explain the concept of SDR in brief with the help of a block diagram. Give two examples of Silicon radio chips available. **10**
- b) Comment on **any two** : **10**
- a) GPRS is used in wireless networks.
 - b) Zigbee operates in the ISM band.
 - c) Power management is an important issue in WSN.
5. a) List and briefly discuss various challenges in implementing Wireless sensor networks. **10**
- b) Attempt **any two** : **10**
- i) Explain the terms PAN, RFD, GTS used in Zigbee.
 - ii) Suggest the communication and routing protocol to be used for pollution detection in a city where the sensors could be mounted on lamp posts and send data every minute to the base station. Justify your choice.
 - iii) Describe the operational modes of a sensor node in brief.
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SLR-JJ – 123 D

Seat No.	
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Ph.D. Course Work Examination, 2015
POLYMER CHEMISTRY
Paper – IV : Advanced Developments in Polymer Chemistry

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. a) Trace a historical development of “Thermally Stable Polymers” and explain various approaches used to increase stability. 10
- b) Answer **any two** : 10
 - i) Discuss the use of polymer reagents in organic reactions.
 - ii) Give an account on positive working of photoresist.
 - iii) Write in detail properties and application of polymer catalysts.
2. a) Discuss the Solid-Phase synthesis of polypeptides. 10
- b) Answer **any two** : 10
 - i) Explain the properties of the polymers in lithography.
 - ii) What are high performance Polymers ? Give synthesis of any one such polymer.
 - iii) Define the thermal stability of polymer. How it is quantified by instrumental method.
3. a) Give the details of oxidative degradation of natural rubber. 10
- b) Answer **any two** : 10
 - i) Describe the manufacture of poly benzimidazole and bring out its commercial importance.
 - ii) Write an account of thermal degradation of polyolefines.
 - iii) Describe the polymers supports.

P.T.O.



4. a) Describe the need of polymers for controlled release system. **10**
- b) Answer **any two** : **10**
- i) Discuss the synthesis and applications of various nylons.
 - ii) Explain the use of polymeric membranes for different commercial applications
 - iii) Describe the various methods of degradation.
5. a) Discuss any two methods for synthesis of polyimides. **10**
- b) Answer **any two** : **10**
- i) What are the structural requirements for a thermally stable polymer ?
 - ii) Discuss the thermal degradation of PVC.
 - iii) Polysulfones are high performance polymers. Explain.
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SLR-JJ – 123 C

Seat No.	
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Ph.D. Course Work Examination, 2015
CHEMISTRY
Organic Chemistry
Paper – IV (C) : Advanced Development in Organic Chemistry

Day and Date : Monday, 8-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions: 1) *All questions are compulsory.*
2) *All questions carry equal marks.*

1. A) Give an account of following reactions in organic synthesis : 10
 - i) Carbonylation reacton
 - ii) ELBS Persulphate oxidation.
- B) Give the mechanism and applications of (any two) of the following reactions : 10
 - i) Wiergdot reaction
 - ii) Hydroformylation
 - iii) Bischhler-Napierlaski reaction.
2. A) Describe principle and applications of the use of Zeolites in Organic synthesis. 10
- B) Give the applications of the following in synthesis : 10
 - i) Supercritical fluid
 - ii) Use of Enzymes.
3. A) Describe with mechanism the applications of Trifluoroacetic acid and Lead tetraacetate in synthesis. 10
- B) Discuss the mechanism and applications of the following reagents : 10
 - i) Iodobenzene diacetate
 - ii) Organomercury compounds.

P.T.O.



4. A) Give an account of Coumarins and Benzimidazoles as fluorescent brightening agents. **10**
- B) Discuss the photochemistry of the following compounds (any two) : **10**
- i) Carbonyl compounds
 - ii) Photochemistry of arenes.
5. A) Give brief account of Gibberellins as plant growth regulators. **10**
- B) Give synthesis of the following (any two) : **10**
- i) Estrone
 - ii) β -Cuparinones
 - iii) Vitamin-D.
-



SLR-JJ – 123A

Seat No.	
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Ph.D. Course Work Examination, 2015
PHYSICAL CHEMISTRY
Paper – IV : Advanced Development in Physical Chemistry

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :**
- 1) Attempt in **all five** questions.
 - 2) Attempt **any two** sub-questions from question number **1B-5B**.
 - 3) Answer to **all** the questions should be written in the **same** answer book.
 - 4) **All** questions carry **equal** marks.
 - 5) Figures to **right** indicate **full** marks.
 - 6) **Neat** labelled diagrams should be drawn **wherever** necessary.

1. A) Explain in brief activated complex theory. 10
B) Attempt **any two** of the following : 10
 - i) Write a note on homogeneous and heterogeneous catalysis.
 - ii) Comment on theory of reaction kinetics in solutions.
 - iii) Explain kinetics of photochemically induced reactions.
2. A) Explain in brief theory towards density and viscosity properties of aqueous and non-aqueous solvents. 10
B) Attempt **any two** of the following : 10
 - i) Derive Debye-Huckel-Onsager equation of electrolytic conductance.
 - ii) Explain in detail the excess thermodynamic properties of electrolytes.
 - iii) Write a note on Kraus-Bray equation.
3. A) What are the OLEDs ? Explain its structure and mechanism of light emission. 10
B) Attempt **any two** of the following : 10
 - i) Write a note on photochemistry of dyes and pigments.
 - ii) What are the applications of conjugated polymers in light emitting diodes ?
 - iii) Explain in short the single crystal growth technique.

P.T.O.



4. A) Give an account of metal deposition mechanism in detail. **10**
- B) Attempt **any two** of the following : **10**
- i) Explain principle of alloy plating.
 - ii) Write a note on hardness and adhesion of deposits.
 - iii) Discuss the metallurgical principles.
5. A) What are the special properties of surfaces and interfaces ? Explain the experimental technique of XPS. **10**
- B) Attempt **any two** of the following : **10**
- i) Write a note on electronic structure of surfaces.
 - ii) How will you characterize the surfaces by LEED technique ?
 - iii) Write short note on surface phenomenon and adsorption.
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SLR-JJ – 123B

Seat No.	
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Ph.D. Course Work Examination, 2015
CHEMISTRY

Paper – IV (B) : Advanced Developments in Inorganic Chemistry

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions: i) **All questions are compulsory.**
ii) **Figures to the right indicate full marks.**
iii) **Use of log tables and calculators is allowed.**

1. a) What are nido-boranes ? Give reaction of boranes and their derivatives with suitable examples. 10
- b) Explain the following (**any two**) : 10
 - i) PEC cell
 - ii) Ionic conductors
 - iii) Si-P - linkages in silicon compounds.
2. a) Define term silane, explain in brief relation between chemistry of similar a carbon and silicon compounds. 10
- b) Answer the following (**any two**) : 10
 - i) Schiff bases.
 - ii) What are rectifiers ?
 - iii) Sensors.
3. a) What are nanomaterials ? Discuss in brief the types of nanomaterials. 10
- b) Answer the following (**any two**) : 10
 - i) Archno-boranes
 - ii) Ferro electric materials
 - iii) Fractional crystallization.

P.T.O.



4. a) Explain in brief photoelectrochemical and photogalvanic conversions. **10**
- b) Answer the following (**any two**) : **10**
- i) Sublimation
 - ii) Super conducting devices
 - iii) NMR studies of boron hydrides.
5. a) Explain structure of transition metal complexes with Schiff bases and related ligand, with their uses to human beings. **10**
- b) Attempt **any two** of the following : **10**
- i) Applications of nanomaterials
 - ii) Capacitors
 - iii) Fluorescent materials.
-



SLR-JJ – 123 E

Seat No.	
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Ph.D. Course Work Examination, 2015
CHEMISTRY
Analytical Chemistry (Paper – 4) (E)
Advanced Development in Analytical Chemistry

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Although no nitrite selective electrode is available, suggest an indirect method to measure nitrite ion activity. 10
B) Write short notes on **(any two)** : 10
 - i) Potential buffer
 - ii) Mercury cathode
 - iii) Electrography.

2. A) Determine the stability constant of the silver ammine ion from the cell.
 $\text{Ag}|\text{AgNO}_3(0.025\text{M}), \text{NH}_3(1.00\text{M})||\text{KNO}_3||\text{AgNO}_3(0.01\text{M}), \text{KNO}_3(0.015\text{M})/\text{Ag}$.
Which has an emf of +0.394 V at 25°C ? 10
B) Write short notes on **(any two)** : 10
 - i) Precipitation titrations
 - ii) Counter current extractions
 - iii) Simultaneous analysis of mixtures.

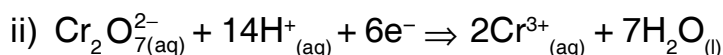
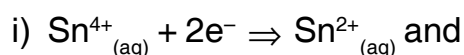
3. A) Explain using an example, how an accurate measurement could contain a large absolute error. 10
B) Write short notes on **(any two)** : 10
 - i) Sensitivity
 - ii) Detection Limits
 - iii) Significant figures.

P.T.O.



4. A) 2.83 g of a sample of haematite iron ore [iron (III) oxide, Fe_2O_3] were dissolved in concentrated hydrochloric acid and the solution diluted to 250 cm^3 . 25.0 cm^3 of this solution was reduced with tin (II) chloride (which is oxidised to Sn^{4+} in the process) to form a solution of iron (II) ions. This solution of iron (II) ions required 26.4 cm^3 of a $0.0200 \text{ mol dm}^{-3}$ potassium dichromate (VI) solution for complete oxidation back to iron (III) ions.

a) Given the half-cell reactions



Calculate the percentage of iron (III) oxide in the ore.

10

B) Write short notes on **(any two)** :

10

i) Redox titrations

ii) Acid-base titrations

iii) Conductimetric titrations.

5. A) What is the principle of radioimmunoassays ?

10

B) Mention any one of the applications of the following techniques **(any two)** :

10

i) Neutron Activation Analysis

ii) Radiochromatography

iii) Radioactivity tracers.



SLR-JJ – 124

Seat No.	
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Ph.D. Course Work Examination, 2015
ZOOLOGY
Paper – IV : Advanced Development in Zoology

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Note : i) **All questions are compulsory.**
ii) **All questions carry equal marks.**
iii) **Draw neat labelled diagrams wherever necessary.**

1. A) Explain the role of hypothalamus as the co-ordinator between pituitary gland and other endocrine glands. 10
B) Write short notes on (**any two**) : 10
 - i) Neurotransmitters
 - ii) Hormones in lactation
 - iii) Effect of low oxygen pressure on the body.

2. A) Give an account on common diseases of fishes and their cure. 10
B) Write short notes on (**any two**) : 10
 - i) Causes of spoilage of fish.
 - ii) Methods of fish presentation.
 - iii) Economic importance of aquarium fishes.

3. A) Describe the different components of biosensor and discuss the use of biosensor for environmental monitoring. 10
B) Write short notes on (**any two**) : 10
 - i) Recombinant DNA technology for enzyme production.
 - ii) Allosteric enzymes.
 - iii) Mechanism of enzyme action.

P.T.O.



4. A) Explain the modern concept of evolution and discuss how does it support Darwinism. **10**
- B) Write short notes on (**any two**) : **10**
- i) Biochemical theory of origin of life.
 - ii) Embryological evidence of evolution.
 - iii) Geographic Isolating mechanism.
5. A) What is stem cell ? Describe the process of erythropoiesis in Mammals. **10**
- B) Write short notes on (**any two**) : **10**
- i) Chemical basis of differentiation.
 - ii) Fertilization and antifertilization reaction.
 - iii) Explain the nuclear control on cytoplasm and influence of the cytoplasm on the nucleus.
-



SLR-JJ – 125 B

Seat No.	
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**Ph.D. Course Work Examination, 2015
GEOGRAPHY
Paper – IV : Recent Trends in Population Geography**

Day and Date : Monday, 8-6-2015

Max.Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Explain approaches to study of population geography with special reference to recent trends. **10**
- B) Write short answer on **any two** of the following : **10**
 - i) State the recent nature of population geography.
 - ii) Write relationship of population geography with other disciplines.
 - iii) Explain the significance of the study of population geography.
2. A) Explain the crude birth rate and reproduction of degree of replacement **10**
- B) Write short answer on **any two** of the following : **10**
 - i) State factors affecting the mortality.
 - ii) Discuss on longevity of life.
 - iii) Write the types of mortality.
3. A) Write the types of sex ratio and describe difference between them. **10**
- B) Write short answer on **any two** of the following : **10**
 - i) State difference between infant and maternal mortality rate.
 - ii) What is fertility ratio ?
 - iii) Discuss an optimum population theory.

P.T.O.



4. A) Explain the techniques of analysis in study of population geography. **10**
- B) Write short answer on **any two** of the following : **10**
- i) Explain the age and sex composition.
 - ii) Write the data source of population.
 - iii) Discuss on crude death rate.
5. A) State the space and time dimension of demographic transition. **10**
- B) Write short answer on **any two** of the following : **10**
- i) Explain the Malthusian theory of population growth.
 - ii) State the survival rate of population.
 - iii) Write the stages of demographic transition.
-



SLR-JJ – 125A

Seat No.	
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Ph.D. Course Work Examination, 2015

GEOGRAPHY

Paper – IV : Recent Trends in Economic Geography

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Critically examine the theory of Alfred Weber's industrial location theory. **10**
B) Write short answer on **any two** of the following : **10**
 - i) Explain the importance of Economic Geography.
 - ii) Explain the raily gravitational model.
 - iii) State the concept of GATT.
2. A) Critically examine the theory of Von Thunen. **10**
B) Write short answer on **any two** of the following : **10**
 - i) Explain the classification of economic activities.
 - ii) Explain the concept of EEC.
 - iii) Write on location of suburban business centers.
3. A) Elucidate different approaches to promote the economic development. **10**
B) Write short answer on **any two** of the following : **10**
 - i) Explain the concept of OPEC.
 - ii) State the multinuclear theory.
 - iii) State difference between wholesale and retail trade.

P.T.O.



4. A) Describe the methods of measurement for economic development. **10**
- B) Write short answer on **any two** of the following : **10**
- i) Describe behavioural location theory.
 - ii) Explain the concept of UNCTAD.
 - iii) Write on sky shopping.
5. A) Discuss resource utilization and environmental degradation with reference to India. **10**
- B) Write short answer on **any two** of the following : **10**
- i) Explain concept of sustainable development.
 - ii) Explain importance of e-mail shopping.
 - iii) Describe different approaches to the study of economic geography.
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SLR-JJ – 125C

Seat No.	
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**Ph.D. Course Work Examination, 2015
GEOGRAPHY (Paper – IV)
Recent Trends in Physical Geography**

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Define Physical Geography and explain its scope. 10
B) Write note (**any two**) : 10
 - 1) Development of Physical Geography.
 - 2) Approaches to the study of landforms.
 - 3) La Nino.
2. A) Describe in detail the currents in Pacific Ocean. 10
B) Write note (**any two**) : 10
 - 1) System concept.
 - 2) Recent trends in geomorphic studies.
 - 3) Geomorphic models.
3. A) Explain the factors affecting ocean currents. 10
B) Write note (**any two**) : 10
 - 1) Atmosphere and gas laws.
 - 2) Structure of atmosphere.
 - 3) Inversion of temperature.

P.T.O.



4. A) What is the biodiversity ? Explain their need and importance. **10**
- B) Write note (**any two**) : **10**
- 1) Global biodiversity.
 - 2) Ozone layer.
 - 3) Conservation of biodiversity.
5. A) Give an account of soil erosion. **10**
- B) Write note (**any two**) : **10**
- 1) Soil texture.
 - 2) Soil structure.
 - 3) Shifting of pressure belts.
-



SLR-JJ – 126 A

Seat No.	
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**Ph.D. Course Work Examination, 2015
APPLIED GEOLOGY**

Paper – IV : Exploration and Management of Mineral Resource

Day and Date : Monday, 8-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) *All questions are compulsory.*
2) *All questions carry equal marks.*

1. A) Describe the chemical characters related to ore bearing granitoids. **10**
B) Answer in short **any two** : **(5×2=10)**
 - a) Lithological and structural guides
 - b) Self potential method
 - c) Seismic refraction method.
2. A) Describe the principles of magnetic survey and add a note on the corrections needed for magnetic data. **10**
B) Explain in brief **any two** : **(5×2=10)**
 - a) Planning of exploration
 - b) Gravitational field of earth
 - c) Biogeochemical survey.
3. A) Write in detail the difference in Wenner and Schlumberger types of electrode configuration. **10**
B) Discuss the salient aspects on **any two** : **(5× 2=10)**
 - a) Scale of Geological exploration
 - b) Electrical well logging
 - c) Dispersion halos.

P.T.O.



4. A) Discuss various sampling techniques, their digestion and analysis. **10**
- B) Write short note on **any two** : **(5×2=10)**
- a) Gravity corrections
 - b) Reconnaissance survey
 - c) Application of resistivity method in groundwater investigation.
5. A) Discuss various types of association of elements in primary geochemical environmental. Add a note of pathfinder for various ore deposits. **10**
- B) Answer **any two** : **(5×2=10)**
- a) Gossans
 - b) Classification of well logging methods
 - c) Radiometric survey.
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Seat No.	
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Ph.D. Course Work (Computer Science) Examination, 2015
Paper – IV : ADVANCED DEVELOPMENT IN COMPUTER SCIENCE
Digital Image Processing

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Discuss the fundamental steps in General Digital Image Processing and compare high level and middle level image processing. **10**
- B) Answer **any two** of the following : **(5×2=10)**
- i) Define, 4-,8-,and m-adjacency.
 - ii) Give the four basic arithmetic operations and their applications in image processing.
 - iii) Discuss the low level image processing.

2. A) Consider the two image subsets S1 and S2 shown in the following figure. For $V= \{1\}$ determine whether these two subsets are (a) 4 adjacent, (b) 8-adjacent or (c) m-adjacent. **10**

	S ₁				S ₂				
0	0	0	0	0	0	0	1	1	0
1	0	0	1	0	0	1	0	0	1
1	0	0	1	0	1	1	0	0	0
0	0	1	1	1	0	0	0	0	0
0	0	1	1	1	0	0	1	1	1

- B) Answer **any two** of the following : **(5×2=10)**
- i) Explain the elements of Visual perception.
 - ii) Define Image sampling and quantization.
 - iii) Discuss the various operations to define pixel relationship.
3. A) Give the basic step for the filtering in the frequency domain and explain the need of preprocessing and post processing. **10**
- B) Answer **any two** of the following : **(5×2=10)**
- i) Define the basic gray level transformation used in enhancement.
 - ii) Explain the use of first derivatives for enhancement through gradient operator.
 - iii) Discuss the homomorphic filter.



4. A) What is Morphology ? Explain the dilation and erosion operation with example. **10**
- B) Answer **any two** of the following : **(5×2=10)**
- i) How do you perform the shape detection using Hit or Miss Transformation ?
 - ii) Explain the thinning process for binary images.
 - iii) Discuss the opening operation.
5. A) Define segmentation. Discuss the discontinuities in segmentation. **10**
- B) Answer **any two** of the following : **(5×2=10)**
- i) Describe the Boundary detection.
 - ii) Illustrate the techniques of point and line detection.
 - iii) Discuss watersheds in segmentation.
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SLR-JJ – 127B

Seat No.	
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Ph.D. Course Work Examination, 2015
COMPUTER SCIENCE
Advanced Development in Computer Science
Paper IV – Elective – II : Data Mining

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. a) Explain in detail about the operation-derived hierarchies and rule-based hierarchies ? 10
b) Answer **any two** of the following : (2×5=10)
 - i) Explain the interestingness measure with example.
 - ii) Describe why concept hierarchy is a powerful form of background knowledge ?
 - iii) Explain the minable view.

2. a) Explain mining association rules with example. Describe the Apriori algorithm. 10
b) Answer **any two** of the following : (2×5=10)
 - i) Gives the difference between single dimension verses multiple dimensional.
 - ii) Describe the transaction reduction.
 - iii) Explain the Icerberg query with example.

3. a) Describe the issues regarding to classification and prediction. Explain data cleaning. 10
b) Answer **any two** of the following : (2×5=10)
 - i) What is model usage for unknown objects ?
 - ii) Describe the predictive modeling in databases.
 - iii) Explain the Genetic algorithm.

P.T.O.



4. a) What are the Model-Based clustering methods ? Explain the Density-Based methods. 10
- b) Answer **any two** of the following : (2×5=10)
- i) Explain the applications of clustering.
 - ii) Describe the type of attributes in clustering analysis.
 - iii) Explain the difference between single verses complete linkage.
5. a) Explain in detail about the additional themes on data mining. 10
- b) Answer **any two** of the following : (2×5=10)
- i) Describe mining complex types of data.
 - ii) What is generalized linear model of statistical data ?
 - iii) Describe the probability and statistical theory of data mining.
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Seat No.	
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Ph.D. Course Work Examination, 2015
STATISTICS (Paper – IV)
Advanced Development in Statistics
Elective – 2 : B) Sequential Analysis

Day and Date : Monday, 8-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. a) Define (i) Stopping time (ii) Closed sequential procedure. Justify that the parametric function $g(p) = 1/p$ can be estimated using sequential sampling, where p is the probability of success in a Bernolli trial. 8
 - b) Define (i) loss function (ii) randomized decision rule and (iii) minimax decision rule. 6
 - c) Show that theory of point estimation is a particular case of decision problem. 6
 2. a) Explain the need for sequential procedure. Derive approximate expression for bounds of Wald's Sequential Probability Ratio Test (SPRT) in terms of its strength. 8
 - b) Define conjugate prior. Show that beta distribution is a conjugate prior for a sample from Binomial distribution. 6
 - c) Show that for a squared error loss function, the bayes estimator is the mean of posterior distribution. 6
 3. a) Define general sequential decision procedure. Check whether the stopping random variable $N = \inf \left\{ n \geq 1; \sum_{i=1}^n X_i = 2 \right\}$ is closed, when $\{X_n\}$ is a sequence of iid Poisson with mean θ random variables. 10
 - b) Construct SPRT (α, β) for testing $H_0 : \theta = \theta_0$ against $H_1 : \theta = \theta_1$, based on a sequence $\{X_n\}$ of iid random variables from $N(\theta, 1)$. 5
 - c) Explain Sten's two-stage procedure for estimating normal mean. 5
 4. a) State and prove Wald's equation. Obtain approximate expressions for OC and ASN functions. 8
 - b) Show that SPRT terminates with probability one. 12
 5. a) Discuss an efficient sequential procedure for estimating parameters of multinomial distribution. 10
 - b) Explain : (i) Unbounded sequential procedure (ii) Fixed width confidence interval. 10
-



SLR-JJ – 129-A

Seat No.	
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Ph.D. Course Work Examination, 2015
STATISTICS (Paper – IV)
Advanced Development in Statistics
Elective – I : A) Industrial Statistics

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions: 1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*

1. a) Explain the purpose of control chart. Describe \bar{X} -control chart and derive average run length of the same stating your assumptions clearly.
b) Answer **any two** of the following :
 - i) Stating your assumptions clearly obtain distribution of run length.
 - ii) What is false alarm ? How do you distinguish between false alarm rate and average run length ?
 - iii) Explain with suitable example use of \bar{X} -chart. **(10+5+5)**

2. a) Describe R-chart. With its purpose why \bar{X} -control and R charts are implemented simultaneously. Compare R-chart and S-chart.
b) Answer **any two** of the following :
 - i) What is rational subgroups and explain its importance ?
 - ii) What are different kinds of errors in operation of control charts ?
 - iii) Distinguish between special causes and change causes. **(10+5+5)**

3. a) Explain in detail single sampling plan for attributes and obtain an expression for OC function of the same.
b) Answer **any two** of the following :
 - i) Explain AQL and AOQL clearly.
 - ii) Describe double sampling plan and advantages of the same.
 - iii) What is sequential sampling plan ? How it is different form fixed sample size plan ? **(10+5+5)**

P.T.O.



4. a) How do you measure capability of any process ? What are the underlying assumptions ? Explain C_{pk} .
- b) Answer **any two** of the following :
- i) Establish relationship between C_p and C_{pk} .
 - ii) Explain under what circumstances C_p and C_{pk} are exactly the same.
 - iii) How do you estimate C_{pk} ? **(10+5+5)**
5. a) Assuming normal distribution, describe acceptance sampling plan for variables when lower specification is given and σ is known. How do you evaluate performance of this sampling plan ?
- b) Answer **any two** of the following :
- i) Explain use and implementation of moving average control chart.
 - ii) What is concept of warning limit ? How it is helpful in process control ?
 - iii) What are runs rules ? Explain with suitable example. **(10+5+5)**
-



SLR-JJ – 130-C

Seat No.	
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Ph.D. Course Work Examination, 2015
MICROBIOLOGY
Paper – IV : Advanced Developments in Microbiology
(Microbial Technology and Fermentations)

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

N. B. : a) **All questions are compulsory.**
b) **All questions carry equal marks.**
c) **Draw neat and well labeled diagrams wherever necessary.**

1. A) Write on Sterilization of bioreactors, nutrients, air, products and effluents. **10**
B) Write short notes on **any two** : **10**
 - i) Types of bioreactors
 - ii) Oxygen transfer and critical oxygen concentration
 - iii) Product formulation.
2. A) Elaborate on various steps involved in Recovery of intracellular components. **10**
B) Write short notes on **any two** : **10**
 - i) Crystallization
 - ii) Biomass separation by centrifugation
 - iii) Therapeutic applications of immobilized enzymes.
3. A) Give an account of commercial production of enzymes. **10**
B) Write short notes on **any two** : **10**
 - i) Spirulina types and production
 - ii) Restriction endonuclease
 - iii) Vinegar production.

P.T.O.



4. A) Describe schematically various steps in production of Tetracyclines. **10**
- B) Write short notes on **any two** : **10**
- i) Types of biotransformation
 - ii) Economic implications of SCP
 - iii) Sources of biocatalysts.
5. A) Write in detail Biosensors – Types and Applications. **10**
- B) Write short notes on **any two** : **10**
- i) Production of cellulases
 - ii) Ergot alkaloids production
 - iii) Industrial production of alcohol.
-



SLR-JJ – 130 A

Seat No.	
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Ph.D. Course Work Examination, 2015
MICROBIOLOGY

Paper No. – IV : Advanced Developments in Microbiology :
A) Medical Microbiology and Immunology

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

N.B. : i) **All questions are compulsory.**
ii) **Figures to the right indicate full marks.**

1. A) Write an essay on “AIDS – etiology and laboratory diagnosis”. 10
B) Write short notes on **(any two)** : 10
 - i) Trichomonas vaginalis
 - ii) Dengue virus
 - iii) Hepatitis – B.

2. A) Discuss in brief “Genetic methods for detecting antibiotic resistance gene in bacteria.”. 10
B) Write short notes on **(any two)** : 10
 - i) Interleukins
 - ii) Hepatitis – A
 - iii) Bacillus anthracis.

3. A) Explain in detail “morphology, cultural characteristics and pathogenicity of corynebacterium diptheriae”. 10
B) Write short notes on **(any two)** : 10
 - i) Histoplasmosis
 - ii) Diagnostic and therapeutic applications of monoclonal antibodies.
 - iii) Interferon.

P.T.O.



4. A) Describe in brief “The pathogenesis and laboratory diagnosis of the disease caused by Wucheraria bancrotti”. **10**
- B) Write short notes on **(any two)** : **10**
- i) Mumps
 - ii) Cryptococcosis.
 - iii) Pathogenicity of Vibrio cholerae.
5. A) Elaborate on “In the recent years variety of methods for serodiagnosis of diseases have been developed”. **10**
- B) Write short notes on **(any two)** : **10**
- i) Laboratory diagnosis of Rabies.
 - ii) Candidiasis.
 - iii) Antibiotic susceptibility testing of anaerobic bacteria.
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SLR-JJ – 130B

Seat No.	
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Ph.D. Course Work Examination, 2015

MICROBIOLOGY

Paper – IV Elective : Advanced Developments in Microbiology
(Environmental and Agricultural Microbiology)

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- N.B. :** 1) *All questions are compulsory.*
2) *All questions carry equal marks.*
3) *Draw neat and well labeled diagrams wherever necessary.*

1. A) Describe the characteristics and treatment of waste generated by textile industry. 10
- B) Write short notes on **any two** : 10
- i) Anaerobic treatment.
 - ii) Root zone technology.
 - iii) Bioremediation of heavy metals.
2. A) Explain the preparation and application of bioinoculants using *Azotobacter species*. 10
- B) Write short notes on **any two** : 10
- i) Hot springs
 - ii) Biological control of soil borne plant pathogen.
 - iii) In situ bioremediation.
3. A) Explain the methods of ex-situ bioremediation. 10
- B) Write short notes on **any two** : 10
- i) EIA.
 - ii) Biofilm development.
 - iii) Phosphate solubilizers.

P.T.O.



4. A) Describe the epidemiology of plant diseases. **10**
- B) Write short notes on **any two** : **10**
- i) Acid springs.
 - ii) Bioherbicides.
 - iii) Trickling filters.
5. A) Describe in details the microbial life at low temperature. **10**
- B) Write short notes on **any two** : **10**
- i) Bioinsecticides.
 - ii) Activated sludge process.
 - iii) Economics of waste treatment.
-



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Seat No.	
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**Ph.D. Course Work Examination, 2015
GEOINFORMATICS (Paper – IV)
Advanced Development in Geospatial Data Analysis**

Day and Date : Monday, 8-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Write a detailed essay on Spatial Analysis Techniques. **10**
B) Short notes (**any two**) : **10**
 - i) Overlay operations
 - ii) Polygon in Polygon
 - iii) Intersection.

2. A) Write a detailed account of Single Layer Operations in GIS. **10**
B) Short notes (**any two**) : **10**
 - i) Cluster classification of point pattern analysis.
 - ii) Buffer Analysis.
 - iii) Deriving slope and aspect from DEM.

3. A) Write a detailed essay on Raster Based Analysis. **10**
B) Short notes (**any two**) : **10**
 - i) Proximity search.
 - ii) Grid based operations in spatial analysis.
 - iii) Local and zonal function.

P.T.O.



4. A) Write a detailed note Network Analysis. **10**
- B) Short notes (**any two**) : **10**
- i) Network data model.
 - ii) C matrices of evaluating point pattern analysis.
 - iii) Random distribution of point pattern analysis.
5. A) Write a detailed note on Surface Analysis Methods. **10**
- B) Short notes (**any two**) : **10**
- i) Relief and Hill shading.
 - ii) TIN.
 - iii) Interpolation methods..
-



SLR-JJ – 132 B

Seat No.	
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Ph.D. Course Work Examination, 2015
ENVIRONMENTAL SCIENCE
Paper – IV : Advanced Development in Natural Resource
Management (NRM)

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : i) **All questions carry equal marks.**

ii) **All questions are compulsory.**

iii) **Draw a well labelled diagrams wherever necessary.**

1. A) Explain importance of biodiversity. Hotspots of biodiversity in India. 10
B) Write short answer (**any two**) : 10
 - i) Importance of wildlife
 - ii) Types of forest in India
 - iii) Causes and consequences of soil erosion.
 2. A) Importance of wetland. And conservation approaches of wetlands. 10
B) Write short answer (**any two**) : 10
 - i) Renewable resources
 - ii) Deforestation causes
 - iii) Types of water resources.
 3. A) Explain the rainwater harvesting for conservation of water. 10
B) Write short answer (**any two**) : 10
 - i) Types of soil in India
 - ii) Threats to biodiversity
 - iii) Water conservation approaches.
 4. A) Define wildlife management and its types. 10
B) Write short answer (**any two**) : 10
 - i) Method of soil conservation
 - ii) Non-Timber Forest Products
 - iii) Ex-situ biodiversity conservation.
 5. A) Describe soil as resource, its pollution and control measures. 10
B) Write short answer (**any two**) : 10
 - i) India as mega biodiversity nation
 - ii) Water cycle
 - iii) Natural gas as fuel.
-



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Seat No.	
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Ph.D. Course Work Examination, 2015
ENVIRONMENTAL SCIENCE
Paper – IV : A) Advanced Development in Environmental Pollution,
Monitoring and Control

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- N.B. :** i) **Each** question carry **equal** marks.
ii) Part – **A** of the questions are **compulsory**.
iii) Solve **any two** from given **three** questions from Part – **B**.

1. A) What is air pollution ? Give the sources of air pollution in detail. 10
- B) Write in brief of **any two** from following : 10
- a) Sources of water pollution.
- b) Radiation pollution.
- c) Effects of NO_x on plants.
2. A) What are the effects of aquatic pollutants on human health ? Explain the effects of nitrates on human health as an example. 10
- B) Write in brief of **any two** of following : 10
- a) Effects of atmospheric Pb on man and animals.
- b) Noise standards.
- c) Thermal pollution.
3. A) What is monitoring ? Explain the monitoring of air pollution as an example. 10
- B) Write short note on **any two** of following : 10
- a) Local environmental problems of India.
- b) Drinking water standards.
- c) Administrative control measures of pollution.

P.T.O.



4. A) How the water pollution is controlled ? Give different methods of water pollution control. **10**
- B) Write in brief of **any two** of following : **10**
- a) Control of dust and particulate matter from air.
 - b) Bio medical waste.
 - c) Marine pollution.
5. A) Which are the global environmental pollution problems ? Explain one global pollution problem as a case study. **10**
- B) Write short notes on **any two** of following : **10**
- a) Abatement of pollution.
 - b) Effect of Noise pollution on man.
 - c) Soil pollution.
-



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Ph.D. Course Work Examination, 2015
BOTANY
Paper – IV : Advanced Development in Botany
Elective Paper – I : Mycology and Plant Pathology

Day and Date : Monday, 8-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :**
- i) **All** questions are **compulsory**.
 - ii) **All** questions carry **equal** marks.
 - iii) Draw **neat** and labeled diagrams **wherever** necessary.
 - iv) Figures to the **right** indicate full marks.

1. A) Describe the various means of dispersal of fungi. 10
- B) Answer **any two** questions out of three : 10
- i) Explain the cell structure of fungi.
 - ii) Give the culture technique of bacteria.
 - iii) Describe various factors affecting plant disease epidemic.
2. A) Explain your answer with respect to genetic engineering in plant pathology. 10
- B) Answer **any two** questions out of three : 10
- i) Describe the types of mycorrhizae with application in agriculture.
 - ii) Classify the plant group fungi as per GM Smith up to class.
 - iii) Add a note on the production of spawn.
3. A) Describe the symptomology of fungal pathogens. 10
- B) Answer **any two** questions out of three : 10
- i) Describe the culture technique of Mycoplasma.
 - ii) Add a note on the viruses as bio control agents.
 - iii) Describe the vegetative methods of reproduction in fungi.

P.T.O.



4. A) Describe the various steps involved in cultivation of Oyster mushroom. **10**
- B) Answer **any two** questions out of three : **10**
- i) Describe the nutritive values of edible mushrooms.
 - ii) Add a note on isolation of mycorrhizal fungi.
 - iii) Explain the physical method of disease control.
5. A) Describe the isolation techniques of fungi. **10**
- B) Answer **any two** questions out of three : **10**
- i) Describe the thallus structure of fungi.
 - ii) Explain the role of sample collection in studying plant pathogens.
 - iii) Describe the gene transfer technique in fungi.
-



SLR-JJ – 133B

Seat No.	
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Ph.D. Course Work Examination, 2015
BOTANY
(Paper – IV) Elective Paper : Advanced Development in Botany
Taxonomy of Angiosperms (A.D.I.B.)

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

Instructions : i) **All questions are compulsory.**
ii) **Draw neat labeled diagrams wherever necessary.**
iii) **Figures to the right indicate full marks.**

1. A) Explain the principles and functions of taxonomy. 10
B) What is typification ? Describe various types of ICBN. 10
 2. A) Explain the principle of Cronquist's system of classification of Angiosperm.
Give the outline, merits and demerits of it. 10
B) Describe the effective and valid publication. Add a note on Priority. 10
 3. A) Draw the male reproductive structure of flower. Add a note on
Microsporogenesis. 10
B) Explain the diversity in angiosperms with respect to form and habitat. 10
 4. A) Explain the role of Botanical gardens in education and research. 10
B) Give the objectives of the BSI. Add a note on its headquarters organization. 10
 5. A) Explain the role of ICAR in green revolution. 10
B) Describe the role of NBPGR in conservation. 10
-



SLR-JJ – 134 B

Seat No.	
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Ph.D. Course Work Examination, 2015
ECONOMICS (Paper – IV) (Elective)
B) Economics of Industry and Labour

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instruction : All questions are compulsory.

1. A) Explain the U-shaped and L-shaped cost curves. **10**
B) Write short answer on **any two** : **10**
 - i) Risks and Uncertainty
 - ii) Types of small industry
 - iii) Importance of small industry.
2. A) Elaborate briefly the Labour Productivity and Wage Relationship. **10**
B) Write short answer on **any two** : **10**
 - i) Cartel
 - ii) Economics of Scale Concept
 - iii) Marginal Cost Pricing and Full Cost Pricing.
3. A) Explain the various classical, neo-classical and bargaining theories of wage determination. **10**
B) Write short answer on **any two** : **10**
 - i) Wage and Inflation
 - ii) Commercial and Development Bank
 - iii) Collective Bargaining.
4. A) Discuss the development of Industrial Development Bank in India. **10**
B) Write short answer on **any two** : **10**
 - i) Paradigms of Labour Market
 - ii) Choice of technology and government labour policies
 - iii) Theories of labour movement.
5. A) Elaborate the concept of fair wages, living and minimum wages. **10**
B) Write short answer on **any two** : **10**
 - i) Money and Capital Market
 - ii) Labour participation in Management
 - iii) Methods of settlement of industrial disputes.



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Ph.D. Course Work Examination, 2015
ECONOMICS
Paper – IV (A) : Economics of Agriculture

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instruction : All questions are compulsory.

1. A) Critically examine Fei-Ranis model. 10
B) Write short answers on **any two** : 10
 - i) Growth with social justice in agriculture
 - ii) Law of diminishing return
 - iii) Mellory theory.
2. A) Discuss on factor-factor relationship in agriculture. 10
B) Write short answer on **any two** : 10
 - i) New technology and shift in production function.
 - ii) Product-product relationship in agriculture.
 - iii) Water-shed development in India.
3. A) Discuss on recent technological changes in agriculture. 10
B) Write short answers on **any two** : 10
 - i) Irrigation policy and water rates
 - ii) Post harvest technology.
 - iii) Corporate farming.

P.T.O.



4. A) Critically examine the progress of institutional finance in agriculture. **10**
- B) Write short answers on **any two** : **10**
- i) W.T.O. and A.O.A.
 - ii) Food security.
 - iii) Regional disparities in agriculture.
5. A) Critically examine the agricultural price policy in India. **10**
- B) Write short answers on **any two** : **10**
- i) Land degradation and its economic implication.
 - ii) Organic farming.
 - iii) Role of Co-operatives.
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Ph.D. Course Work Examination, 2015
A.I.H.C AND A (Paper – IV)
Advanced Developments in Field Archaeology

Day and Date : Monday, 8-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) What are the principle techniques used in site discovery ? 10
B) **Any two** :
 - i) Index trench. 5
 - ii) Systematic sampling. 5
 - iii) Potassium Argon dating method. 5
 2. A) Discuss the step you would take to excavate mud structures. 10
B) **Any two** :
 - i) Archaeological photography. 5
 - ii) C14 dating. 5
 - iii) Underwater archaeology. 5
 3. A) What are the different absolute dating techniques in archaeology ? 10
B) **Any two** :
 - i) Aerial photography. 5
 - ii) Dendrochronology. 5
 - iii) Three-dimensional recording. 5
 4. A) What is conservation ? Explain the basic principles followed in conserving stone object. 10
B) **Any two** :
 - i) Atmospheric pollution. 5
 - ii) Chemical conservation. 5
 - iii) Random sampling. 5
 5. A) What precautions would you take for care and safe keep of exhibits or organic origin namely paper. Wood, ivory, leather and bone ? 10
B) **Any two** :
 - i) Rouletted ware. 5
 - ii) Reserved Slip ware. 5
 - iii) Northern Black Polished ware. 5
-



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**Ph.D. Course Work Examination, 2015
LIBRARY AND INFORMATION SCIENCE**

Paper – IV : Advanced Development in Library and Information Science

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Discuss the role of UGC played in the development of College and University Libraries in India. **10**
- B) Write short notes on **any two** of the following : **10**
 - i) Describe the objectives of ERNET network.
 - ii) Write short note on National Library Policy.
 - iii) Describe the activities and services provide by INFLIBNET network.
2. A) Describe the role of Raja Rammohan Roy Library foundation in the progress and development of Public Library in India. **10**
- B) Answer **any two** of the following : **10**
 - i) Define search study method.
 - ii) Write a note on NICHET.
 - iii) E-resources.
3. A) What is library network ? Describe its various types with the advantages of library network. **10**
- B) Answer **any two** of the following : **10**
 - i) Scientometires
 - ii) UNISIST
 - iii) User Education.

P.T.O.



4. A) Write in brief on experimental studies of the Delhi method with special reference to Library and Information Science. **10**
- B) Write short notes on **any two** : **10**
- i) Bibliometrics
 - ii) User behavioural study
 - iii) E-granthalaya.
5. A) What do you mean by a Public Library ? How does it play its role in the development of the society ? **10**
- B) Answer **any two** of the following : **10**
- i) Chi-square method
 - ii) NISSAT
 - iii) Recent trends in Library and Information Science.
-



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Ph.D. Course Work Examination, 2015
HISTORY (Paper – IV)
Advanced Development in History

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Discuss the failures and achievement of planning in India. **10**
B) Short answer (attempt **any two**) : **10**
 - 1) Constitution of India
 - 2) Eradication of poverty
 - 3) Dr. B. R. Ambedkar.
 2. A) Explain development and methods of irrigation. **10**
B) Short answer (attempt **any two**) : **10**
 - 1) Bicameral legislature
 - 2) Garment industry
 - 3) President's right of political emergency.
 3. A) Discuss the adverse effect of tourism on environment. **10**
B) Short answer (attempt **any two**) : **10**
 - 1) Communication
 - 2) Republic government
 - 3) National Highways.
 4. A) Write in detail about development of steel industry in India. **10**
B) Short answer (attempt **any two**) : **10**
 - 1) Indian army
 - 2) Water transportation
 - 3) Defense training institutions.
 5. A) Explain the challenges before Indian defense forces and suggest the remedies. **10**
B) Short answer (attempt **any two**) : **10**
 - 1) Mumbai Port
 - 2) Defense Ministry
 - 3) Indian Missile Policy.
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No.

Ph.D. Course Work Examination, 2015
POLITICAL SCIENCE
Paper – IV A : Advanced Studies in Indian Politics and Indian
Administration

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Explain the main causes information of coalition politics in India. **10**
B) Answer **any two** of the following : **10**
 - 1) Explain the relation between social movement and ideology.
 - 2) Discuss the concept of decline of coalition politics.
 - 3) Explain the changing pattern of Indian federalism.
 2. A) Social movements in India loses their importance in era of globalisation. Discuss. **10**
B) Answer **any two** of the following : **10**
 - 1) Explain the role of Language in Indian Federalism.
 - 2) Autonomy to Panchayati Raj and 73rd Amendment. Explain.
 - 3) Emergence of local political parties and coalition politics.
 3. A) Evaluate basic features of Indian Constitution. **10**
B) Answer **any two** of the following : **10**
 - 1) Discuss the limitations of directive principles of state policy.
 - 2) 73rd Amendment and role of Gramsabha. Explain.
 - 3) Indian Federalism is Centralised Federalism. Discuss.
 4. A) Explain the importance of Indian Federalism for better democracy. **10**
B) Answer **any two** of the following : **10**
 - 1) Discuss the concept of decentralisation and federalism.
 - 2) What is globalisation ? Explain in Indian context.
 - 3) Social movements are more political in India. Discuss.
 5. A) Explain and evaluate the role of Panchayati Raj as the advanced administration in India. **10**
B) Answer **any two** of the following : **10**
 - 1) Examine the relation between Panchayati Raj and ideal democracy.
 - 2) Explain unitary features of Indian federalism.
 - 3) Coalition politics and progress in global period.
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Seat No.	
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Ph.D. Course Work Examination, 2015
POLITICAL SCIENCE
Paper No – IV (B) : Advanced Studies in International Politics

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

N.B. : i) All questions are compulsory.
ii) Figures to the right indicate full marks.

1. A) Explain the changing nature of International Politics. 10
- B) Answer **any two** questions (in short). 10
- i) W.T.O.
- ii) C.T.B.T.
- iii) Functions of regional organizations.
2. A) Explain the role of Egypt and Syria in middle Eastern Countries. 10
- B) Answer **any two** questions (in short). 10
- i) IMF
- ii) India and Regional Organizations
- iii) Uni-Polar World.
3. A) Review the Indo-China relations. 10
- B) Answer **any two** questions (in short). 10
- i) Disarmament
- ii) SAARC
- iii) Multi-Polar World.

P.T.O.



4. A) Explain the relations between Indo-Pak. **10**
- B) Answer **any two** questions (in short). **10**
- i) ADB
 - ii) ASEAN
 - iii) Arms control.
5. A) Explain the role and prospects of India in Regional Organization. **10**
- B) Answer **any two** questions (in short). **10**
- i) Bi-Polar World
 - ii) NPT
 - iii) WB.
-



Seat No.	
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Ph.D. Course Work Examination, 2015
PHILOSOPHY
Advanced Development in Philosophy (Paper – IV)

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Discuss fully the feminist perceptives of Human nature. 10
B) Solve **any two** :
 - i) Bring out the characteristics of postmodern feminism. 5
 - ii) Explain subjectivism as a moral theory. 5
 - iii) State the characteristics of Dasein. 5
 2. A) 'Postmodernism is a cluster-concept'. Discuss. 10
B) Solve **any two** :
 - i) What are the different phases of feministic philosophy ? 5
 - ii) What should be the role of woman in the development of society ? Discuss. 5
 - iii) Explain objectivism as a moral theory. 5
 3. A) What is meta-ethics ? Explain fully descriptivism as a theory of meta-ethics. 10
B) Solve **any two** :
 - i) Explain the concept of Justies. 5
 - ii) Explain Gadamer's theory of Fore-conceptions and prejudices. 5
 - iii) Distinguish between modern and postmodern. 5
 4. A) Bring out the relaiton between women culture and society. 10
B) Solve **any two** :
 - i) Explain Aurobindo's concept of integral yoga. 5
 - ii) Explain the nature of absolute reality propounded by S. Radhakrishnan. 5
 - iii) Explain in short B. G. Tilak's interpretation of Gita. 5
 5. A) Explain fully the concept of cosmic evolution according to S. Radhakrishnan. 10
B) Solve **any two** :
 - i) Explain the concept of religion of man according to Ravindranath Tagore. 5
 - ii) Explain prescriptivism as a theory of meta-ethics. 5
 - iii) What is feminism ? 5
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Seat No.	
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Ph.D. Course Work Examination, 2015
PSYCHOLOGY
Paper – IV : Advanced Development in Clinical and Counselling
Psychology

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Give the definition of clinical psychology. Describe the history of clinical psychology during the eighteenth and nineteenth centuries. 10
B) Write short notes (**any two**) : 10
 i) Rorschach inkblot ii) Case study iii) TAT
 2. A) Explain the behavioural model in clinical psychology. 10
B) Write short notes (**any two**) : 10
 i) Development of psychoanalysis
 ii) The cognitive model
 iii) Brain structure and function.
 3. A) Discuss the cognitive behaviour modification procedures. 10
B) Write short notes (**any two**) : 10
 i) Group therapy ii) The Neo-Freudians iii) Gestalt therapy.
 4. A) Explain the classification and causes of mental retardation. 10
B) Write short notes (**any two**) : 10
 i) Somatization disorder
 ii) Dissociative amnesia and fugue
 iii) Obsessive-compulsive personality disorder.
 5. A) What is meant by counselling ? Explain preparation for counselling. 10
B) Write short notes (**any two**) : 10
 i) Counselling and psychotherapy
 ii) Role of counsellor
 iii) Counsellor's skills.
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Seat No.	
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Ph.D Course Work Examination, 2015
SOCIOLOGY

Paper – IV : Sociology of Mass Communication and Information Society

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Bringout the nature and scope of sociology of Mass Communication. **10**
B) Write notes on **any two** of the following : **10**
 - i) Nature of Mass Communication.
 - ii) Typology of Communication.
 - iii) Functions of Mass Communication.
 2. A) Distinguish Folk Society from Information Society. **10**
B) Write notes on **any two** of the following : **10**
 - i) Typology of Mass Media.
 - ii) Globalisation and Media.
 - iii) Emergence of Information Society.
 3. A) Examine the nature of Information Communication Technology. **10**
B) Write notes on **any two** of the following : **10**
 - i) Technology as a Social construct.
 - ii) Typology of Communication Technology.
 - iii) ICT and Culture.
 4. A) Critically evaluate Mass Media as an agency of globalization. **10**
B) Write notes on **any two** of the following : **10**
 - i) What is First Media Age all about ?
 - ii) Media and Culture.
 - iii) Media and Entertainment.
 5. A) Evaluate the transformation of society from the stage of industrialism to informationalism. **10**
B) Write notes on **any two** of the following : **10**
 - i) Mass Media is a part of the Service Economy. Discuss.
 - ii) Institutionalization of Media Communication.
 - iii) Political economy of Media Communication.
-



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Seat No.	
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**Ph.D. Course Work Examination, 2015
SOCIAL WORK
Paper – IV : Advanced Development in Social Work**

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Explain the employment opportunities for Social Workers at National level. **10**
B) Short Answers Type (**any two**) : **10**
 - i) State the purpose of social work education.
 - ii) Enumerate the statistics of Accredited Social Work institutions.
 - iii) Write about the financing for Doctoral Course of Social Work Education.
2. A) Explain about the scenario of globalization of social work education. **10**
B) Short Answers Type (**any two**) : **10**
 - i) Define cultural competence.
 - ii) What do you mean by interdisciplinary collaboration ?
 - iii) What is Web Based Learning ?
3. A) Discuss the U.G.C. Schemes for social work education. **10**
B) Short Answers Type (**any two**) : **10**
 - i) Write about the state support for social work education.
 - ii) What are the issues related to accreditation.
 - iii) State the assessment indicators for social work accreditation.

P.T.O.



4. A) Describe the scenario of Global social welfare. **10**
- B) Short Answers Type (**any two**) : **10**
- i) Define international social work research.
 - ii) Write about the Council of Social Work Education.
 - iii) State the role of stakeholders in social welfare.
5. A) Write a detailed note on the context of technology in education and social services delivery. **10**
- B) Short Answers Type (**any two**) : **10**
- i) What is practicum research ?
 - ii) What are the issues in practicum teaching ?
 - iii) State the need of multi-disciplinary academic support.
-



Seat No.	
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Ph.D. Course Work Examination, 2015
JOURNALISM AND MASS COMMUNICATION

Paper – IV : Advanced Development in Media Production Techniques

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions: 1) *All questions are compulsory.*
2) *All questions carry equal marks.*

1. A) What is script ? Explain the various stages of television script writing. **10**
B) Short answer type (**any two**) : **10**
 - i) Write about camera angles and key lighting of television.
 - ii) Write the main department in television channels.
 - iii) State the difference between digital camera and DV camera.
 2. A) Explain different formats of radio programmes. **10**
B) Short answer type : **10**
 - i) What is special audience programme ? Explain the need of Akashwani Youth Programme.
 - ii) Discuss CTP method of newspaper printing.
 3. A) Define community radio and write about educational community radio. **10**
B) Short answer type (**any two**) : **10**
 - i) Write the elements of web designing.
 - ii) Write a note on 'Online newspapers and readers feedback'.
 - iii) Explain 'Mahanews' as a State Government news web portal.
 4. A) Give definitions of public relations. Explain how corporate public relations is important in building image and identity of the organizations. **10**
B) Short answer type (**any two**) : **10**
 - i) Write types of house journals with examples.
 - ii) Discuss the elements of advertising copy.
 - iii) 'Institutional advertising as a PR tool' explain.
 5. A) Explain the role and functions of PR in organising exhibitions. **10**
B) Short answer type (**any two**) : **10**
 - i) State the responsibility of online journalist.
 - ii) How to prepare a plan for Annual Report, explain ?
 - iii) Write a note on 'Cyber Media and Cyber Crime'.
-



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Seat No.	
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Ph.D. Course Work Examination, 2015
Paper – IV : EDUCATION
Advanced Development in Education

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

- Instructions:** 1) **All questions are compulsory.**
2) Item '**A**' from **each** question is **compulsory**, whereas item '**B**' has **internal** option.
3) The figures on **right** side of the question indicate the marks allotted to the question.

1. A) Describe the strategies of e-Learning. **10**
B) Write answer of the following (**any two**) : **10**
1) What is inferential statistics ? State any three techniques.
2) Which are the versions of SPSS ? What are the differences among them ?
3) Describe any five contributions of Ravindranath Tagore to the field of education in present context.
2. A) Explain the impact of National Policy of 1968 on education in present education system. **10**
B) Write short answers on **any two** of the following : **10**
1) How can you use ICT in learning ?
2) Differentiate between educational contribution of Mahatma Gandhi and John Dewey.
3) Explain the use of SPSS in data analysis of educational research.
3. A) Describe the process of development of e-content. **10**
B) Write short notes on **any two** of the following : **10**
1) Educational experiments of Froebel
2) Virtual classroom
3) Linguistic Learning Style.

P.T.O.



4. A) Explain the learning style models. 10
- B) Write answers briefly (**any two**) : 10
- 1) How can you use internet in teaching process ?
 - 2) What are the measures of descriptive statistics ?
 - 3) What are recommendations of University Education Commission ?
(Write any five)
5. A) Describe the seven learning styles. 10
- B) Write short notes on **any two** of the following : 10
- 1) Steps used in calculation of chi square
 - 2) Relevance of educational contribution of M. Gandhi in today's educational system.
 - 3) Secondary Education Commission (1952-53).
-



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Seat No.	
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**Ph.D. Course Work Examination, 2015
PHYSICAL EDUCATION**

Paper – IV : Advanced Development in Physical Education and Sports

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions: 1) **All questions are compulsory.**
2) **Right side figures are indicate marks.**

1. A) Explain sports polices of State Govt. in detail. **10**
B) Short notes (**any two**) : **10**
 - 1) Importance of kinesiology in Physical Education and Sports
 - 2) Stress
 - 3) Effect of Exercises and environment on middle *age*.
 2. A) Write the theories of learning and explain any one with suitable examples. **10**
B) Short notes (**any two**) : **10**
 - 1) Characteristics of personality
 - 2) Scope of anatomy is Physical Education and Sports
 - 3) Kinesiological analysis of back kick in kabaddi.
 3. A) Effect of environment on human physical health. **10**
B) Short notes (**any two**) : **10**
 - 1) Stress management through mediation
 - 2) Neuromuscular co-ordination for best performance
 - 3) Kinanthropometry.
 4. A) Impact of Exercises and training on digestive system. **10**
B) Short notes (**any two**) : **10**
 - 1) Stress management through yoga
 - 2) Janatic Engineering
 - 3) Childhood and Exercises
 5. A) Explain stress and give the various methods of stress relief. **10**
B) Short notes (**any two**) : **10**
 - 1) Effect of environment on training
 - 2) Control *Connet*. sports policies
 - 3) What is meditation ?
-



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Seat No.	
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**Ph.D. Course Work Examination, 2015
LAW**

Paper No. – IV (A) Indian Constitutional Law : The New Challenges

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) What is Federalism ? Discuss on Co-operative Federalism. **10**
- B) Answer **any two** of the following **(2×5=10)**
- i) Concept of state under Indian Constitution in relation to Privatization.
 - ii) Judicial Accountability
 - iii) Affirmative Action Programmes.
2. A) Discuss in detail regarding the provisions of special status of certain states given under Indian Constitution. **10**
- B) Answer **any two** of the following : **(2×5=10)**
- i) Role of Election Commission
 - ii) Freedom of Speech and Expression
 - iii) Federal Comity.
3. A) Explain the concept of Fundamental Rights Versus Directive principles of state policy through different Case-laws. **10**
- B) Answer **any two** of the following : **(2×5=10)**
- i) Gender Justice
 - ii) Sarkaria Commission
 - iii) Public Interest Litigation.

P.T.O.



4. A) Write in detail on Judicial Activism and Judicial Restraint in the light of separation of powers. **10**
- B) Answer **any two** of the following : **(2×5=10)**
- i) Independence of Judiciary
 - ii) Freedom of Press
 - iii) Scheduled Areas.
5. A) Write on the 'PAI foundation' case law and critically analyse its aftermath development in relation to minorities rights. **10**
- B) Answer **any two** of the following : **(2×5=10)**
- i) Judicial Review
 - ii) Fundamental Duties
 - iii) Right to Information.
-



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Ph.D Course Work Examination, 2015
Paper – IV : COMMERCE

Advanced Development in Marketing Management (Elective – II)

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Why is advertising research necessary ? Identify the major areas where advertising research can be helpful. 10
B) Solve **any two** of the following : 10
 - I) What are multidimensional scales ?
 - II) How many scale categories should be used in an itemized rating scale ? Why ?
 - III) Distinguish between monadic and paired comparison tests as applied to new product development.

 2. A) Explain the necessity of sales forecasting for a business firm. What are the steps involved in a forecasting process ? 10
B) Solve **any two** of the following : 10
 - I) What is a simulated test market ?
 - II) Identify the type of data needed to conduct media research.
 - III) What are the major uses of test marketing ?

 3. A) What is meant by motivation research ? Describe its uses and limitations. 10
B) Solve **any two** of the following : 10
 - I) What is meant by trading area analysis ?
 - II) What do you know about pretest market research ?
 - III) Write a note on data gathering techniques.

 4. A) What is social marketing ? Write in detail about tools of social marketing. 10
B) Solve **any two** of the following : 10
 - I) What is the meaning of database marketing ?
 - II) Enlist and explain copy testing methods.
 - III) What do you know about measurement of brand equity ?

 5. A) Write the meaning of distribution research followed by attitude studies of channel members. 10
B) Solve **any two** of the following : 10
 - I) What are the primary scales of measurement ?
 - II) Narrate the objectives of consumer research.
 - III) Outline the need for new product.
-



SLR-JJ – 147A

Seat No.	
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Ph.D. Course Work Examination, 2015
COMMERCE (Paper – IV)
Advanced Development in Accountancy

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Write in detail on 'Convergence of IFRS's with Accounting Standards in India'. **10**
- B) Write answers to **any two** following questions : **10**
- i) What are advantages and disadvantages of Accounting Standards ?
- ii) Write a short note on 'Accounting Standard-6 : Depreciation Accounting'.
- iii) What do you know about 'Business Entity Concept' and 'Cost Concept' ?
2. A) From the following particulars prepare a Cash Budget of Luxury Ltd. for October to December. **10**

Sales		Purchase		Wages and Expenses	
Actual	Rs.	Actual	Rs.	Actual	Rs.
July	3,00,000	July	1,00,000	July	60,000
August	3,50,000	August	1,50,000	August	70,000
September	4,00,000	September	2,00,000	September	64,000
Budgeted :		Budgeted:		Budgeted :	
October	6,00,000	October	3,00,000	October	80,000
November	4,50,000	November	2,50,000	November	72,000
December	5,00,000	December	2,00,000	December	60,000

P.T.O.

**Other Information :**

- a) Credit allowed to customers for 2 months and from creditors 1 month.
- b) Lag in payment of wages and expenses $\frac{3}{4}$ of a month.
- c) Advance tax is to be paid in November Rs. 25,000.
- d) Insurance @ Rs. 5,000 payable every month which is not included in the above 'Wages and Expenses'.
- e) Machinery purchased in December amounted to Rs. 1,50,000.
- f) 10% of sales and purchases are made for cash.
- g) Selling commission is payable @ 5% on sales payable in the month following the month of collection.
- h) The bank Balance on 1st October is 1,00,000.

B) Write answers to **any two** following questions : **10**

- i) Explain basic steps in a value analysis project.
- ii) What is the difference between performance budgeting and traditional budgeting ?
- iii) Write a note on 'Balance Scorecard'.

3. A) ABC Ltd. provides you the following data :

Debt-equity Ratio (Long-term debt/Shareholder's fund) 2:1

Capital Gearing Ratio 3:1

(Funds bearing fixed payments to equity shareholder's fund)

15% long-term debt funds Rs. 800 crores

Tax rate 30%

15% Preference share capital ?

Financial leverage 1.5 times

Price Earning Ratio (PE ratio) 5 times

Immovable property (held as investment) Rs. 100 crores

Calculate Economic Value Added (EVA).

10



B) Write answers to **any two** following questions : 10

- i) What is 'Future Contract' ?
- ii) What do you know about Asset Pricing Models ?
- iii) Explain characteristics of derivatives.

4. A) A Co. plans to acquire B Co. The following information is available :

	A Co.	B Co.
Total current earnings, E	Rs. 50 million	Rs. 20 million
Number of outstanding shares, S	20 million	10 million
Market price per share, P	Rs. 30	Rs. 20

- a) What is the maximum exchange ratio acceptable to the shareholders of A Co. if the P/E ratio of the combined entity is 12 and there is no synergy gain ?
- b) What is the minimum exchange ratio acceptable to the shareholders of B Co. if the P/E ratio of the combined entity is 11 and there is a synergy benefit of 5% ?
- c) Assuming that there is no synergy gain, at what level of P/E multiple will the lines ER_1 and ER_2 intersect ? 10

B) Write answers to **any two** following questions : 10

- i) What is internal audit ?
- ii) Write note on 'Economic Crime Investigation'.
- iii) Explain the meaning of revenue centre.

5. A) What are different types of audit ? 10

B) Write answers to **any two** following questions: 10

- i) Describe the advantages of cost audit.
 - ii) What is management audit ?
 - iii) Explain the need of decentralization.
-



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Seat No.	
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Ph.D. Course Work Examination, 2015
CIVIL ENGINEERING (Paper No. – IV)
Elective – I : Advanced Development in Civil Engineering
(Advanced Development in Environmental Engineering and Water
Resources Engineering)

Day and Date : Monday, 8-6-2015

Total. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. a) What are different zones of sedimentation ? Explain the design parameters for sedimentation tank. 10
b) Explain the lime soda process of water softening with stoichiometric equations and necessity of excess lime treatment and recarbonation. 10
 2. a) Give the stack emission control standards. Mention the methods of collection and testing of stack flue gases. 10
b) Explain the mathematical models for determining dispersion of air pollutants emitted from stack. What factors affect the maximum ambient air pollution concentration ? 10
 3. a) Describe the procedure of Environmental Impact Assessment for installation of new sugar industry. 10
b) What is meant by Sanitary landfill ? Give the design principles and constructional details for such landfill for city solid waste disposal. 10
 4. a) Explain the relationship between rainfall and runoff and how the runoff is estimated for different types of physical surface conditions. 10
b) What is meant by Rain Water Harvesting ? Explain the techniques of storing rainwater for drinking and for recharging ground water. 10
 5. a) Explain the tropical meteorology and its impact on Monsoon. 10
b) Write short notes on **any two** of the following : 10
 - i) Cyclones in Indian Sea
 - ii) Indian rainfall in various seasons
 - iii) Major categories of world climates.
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Seat No.	
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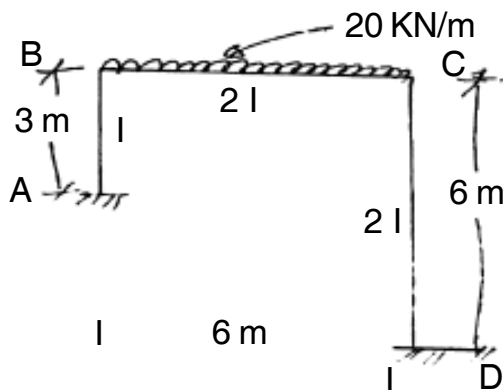
Ph.D. Course Work Examination, 2015
Civil Engineering (Paper No. – IV)
Elective – ADVANCED DEVELOPMENTS IN CIVIL ENGINEERING
Advanced Development in Structural Engineering and Concrete Technology

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : 1) **All questions are compulsory.**
2) *Make suitable assumptions, if required.*

1. Analyze the frame shown below by stiffness method and draw BMD. 20



2. a) What are the advantages of stiffness method of analysis. 5
- b) Derive the member oriented stiffness matrix for a pin joined plane frame member. Transform this matrix to structure oriented axis by using concept of rotation of axis. 15
3. Write note on :
- a) Fundamentals of finite element method. 5
- b) Explain difference between plain stress and plain strain problems and derive stress-strain relation for both the problems. 10
- c) Explain use of Pascal's Triangle. 5

P.T.O.



4. Write notes on : **(5×4 = 20)**
- a) High Strength Concrete
 - b) Light Weight Concrete
 - c) Use of Fly Ash in Concrete
 - d) Advanced non-destructive methods.
5. Write notes on :
- a) Advantages of fiber reinforced concrete. **5**
 - b) Interaction between fibers and matrix. **7**
 - c) Properties of various types of fibers in Fiber Reinforced Concrete. **8**
-



SLR-JJ – 148B

Seat No.	
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Ph.D. Course Work Examination, 2015
CIVIL ENGINEERING
Advanced Development in Civil Engineering
Paper – IV Elective : Advanced Development in Geotechnical
Engineering and Construction Management

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Note : In each question (A) is compulsory and attempt any two sub questions from (B).

1. A) Derive an expression for influence factor used in calculating vertical stress at a point due to embankment loading. 10
- B) i) What are the field conditions that generally favor swelling in an expansive soil ? 5
- ii) Enlist the characteristics influenced by local soil conditions and factors on which the extent of influence depends. 5
- iii) Explain Epicenter, Epicentral distance, focus and focal distance with a neat sketch. 5
2. A) Write a note on :
 - a) Recent advances in the linear system for landfill
 - b) Closure of landfill. 10
- B) i) Explain negative skin friction in pile and pile group. 5
- ii) Explain “Laterally loaded piles.” 5
- iii) What is RQD ? Explain its role in bearing capacity of rock. 5

P.T.O.



3. A) What do you mean by Attenuation of stress waves ? Explain material damping. **10**
- B) i) Why do you consider only the critical path in determining the probability of finishing a project within the scheduled time ? **5**
- ii) Explain the precedence network. **5**
- iii) What do you mean network crashing ? Why it is done ? **5**
4. A) Prepare a structure of balance sheet and profit loss account statement as per the companies act with suitable example. **10**
- B) i) What is expected value ? How it is used in decision tree analysis ? **5**
- ii) How accounting break even analysis is done ? **5**
- iii) What are pros and cons of simulation ? **5**
5. A) What is selective approach ? List and explain various selective approaches used in materials management. **10**
- B) i) Explain inputs given to M.R.P. state examples. **5**
- ii) State areas of application of integrated materials management system using computers. **5**
- iii) Explain with example replenishing model. **5**
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Seat No.	
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Ph.D. Course Work Examination, 2015
ADVANCED DEVELOPMENT IN COMPUTER SCIENCE AND
ENGINEERING (Paper – IV)
Advanced Developments in Distributed Systems

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

Instructions: 1) *All questions are compulsory.*
2) *Figures to right indicate full marks.*
3) *Assume suitable data wherever necessary.*

1. a) What are the major issues in designing a distributed operating system ? 10
b) Attempt **any two** questions : 10
 - 1) Differentiate between monolithic kernel and microkernel approaches for designing a distributed operating system ? Discuss their relative advantages and disadvantages.
 - 2) Why is scalability an important feature in the design of distributed operating system ? Discuss some of the guiding principles for designing a scalable distributed system.
 - 3) Why heterogeneity is unavoidable in many distributed systems ? What are some types of the common incompatibilities encountered in heterogeneous distributed system ?

2. a) What is piggybacking of a message ? How does it help in reducing network traffic ? Give some examples where the piggybacking scheme may be used to improve performance in distributed systems. 10
b) Attempt **any two** questions : 10
 - 1) What are the main reliability issues in designing a message passing system ? Describe suitable mechanism for handling each of these messages ?
 - 2) What is datagram ? Why are multi-diagram used in IPC ?
 - 3) Explain with suitable diagram an example of fault tolerant communication between a client and server.

P.T.O.



3. a) What are main design issues in designing a transparent RPC mechanism ? Is it possible to achieve complete transparency of an RPC mechanism ? If no, explain why ? If yes, explain how ? **10**
- b) Attempt **any two** questions : **10**
- 1) Discuss the relative advantages and disadvantages of using large block size and small block size in the design of a block based Distributed Shared Memory (DSM) system.
 - 2) What are the basic protocols used for ensuring sequential consistency ?
 - 3) Discuss the relative advantages and disadvantages of the various data-locating mechanisms that may be used in a DSM system that uses the Nonreplicated Migrating Blocks (NRMB) strategy.
4. a) What is deadlock ? What are the four necessary conditions for a deadlock to occur ? Give suitable examples to prove that if any one of the four conditions is absent, no deadlock is possible. **10**
- b) Attempt **any two** questions : **10**
- 1) Differentiate between preemptive and non-preemptive process migration.
 - 2) What are the modes for organizing threads ?
 - 3) Discuss load balancing and load sharing approaches in distributed systems.
5. a) What are the desirable features of a good Distributed File System (DFS) ? **10**
- b) Attempt **any two** questions : **10**
- 1) Explain file caching schemes for Distributed File System (DFS).
 - 2) What are the advantages of file replication ?
 - 3) Explain one way authentication protocol based on symmetric cryptosystem.
-



SLR-JJ – 151-C

Seat No.	
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Ph.D. Course Work Examination, 2015
ELECTRONICS ENGINEERING
Advanced Development in Electronics Engineering
Paper – IV Elective : Advanced Development in Soft Computing
Paradigms

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Note : *All questions are compulsory and carry equal marks.*

SECTION – I

1. Write short note on :
 - i) Integrate model
 - ii) Finite model.
2. How ANN is useful in speech recognition ?
3. How ANN is useful in control application ? Explain with one application.
4. Write short note on :
 - i) Single sample identification
 - ii) Multi feature pattern recognition.
5. Write short note on :
 - i) Syntactic recognition
 - ii) Partition in fuzzy pattern recognition.

SECTION – II

6. Explain any one real time application using GA.
 7. Explain with respect to Genetic modeling :
 - i) Bitwise operator
 - ii) Generation cycle.
 8. Explain in details fuzzy genetics hybrid model.
 9. Draw and explain with neat sketch fuzzy back propagation.
 10. Explain fuzzy association memory hybrid system with one application.
-



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Seat No.	
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**Ph.D. Course Work Examination, 2015
PHARMACY**

Paper – IV : Advanced Development in Pharmaceutical Sciences

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) What are the different phases of clinical trial ? Explain in detail. **10**
B) Answer **any two** : **10**
 - i) What are the points to be considered by a person to participate in a clinical trial ?
 - ii) Write a brief note on design and conduct.
 - iii) What is Phase IV clinical trials ?
2. A) What are adverse drug reactions ? Explain its different types. **10**
B) Answer (**any two**) : **10**
 - i) Give the typical components of an ADR reporting Form.
 - ii) Explain in brief the significance of reporting ADR.
 - iii) Explain in brief how to develop therapeutics guideline. For which formulations is it necessary ?
3. A) What are pharmacokinetic drug interactions ? Explain the different causes for such interaction. **10**
B) Answer (**any two**) : **10**
 - i) Explain the benefits and hazards of pharmacodynamic interactions with suitable example.
 - ii) How to seek the drug information ? Add a note on the different persons that seek drug information and their needs.
 - iii) Write in brief about management of drug interaction.

P.T.O.



4. A) What are drug information resources ? Explain the objectives of utilizing drug information resources. **10**
- B) Answer (**any two**) : **10**
- i) Write in brief about the agencies involved in development of therapeutic guidelines.
 - ii) Write a note on functions of the participating parties in clinical trials.
 - iii) Explain in brief the search strategies followed for getting drug information.
5. A) Explain the role of pharmacist in rational use of drugs. **10**
- B) Answer (**any two**) : **10**
- i) Explain the factors responsible for irrational use of drugs.
 - ii) Write in brief about the guidelines for rational prescribing.
 - iii) Write in brief about the obstacles in rational use of drugs.
-



SLR-JJ – 153 B

Seat No.	
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Ph.D. Course Work Examination, 2015
Paper – IV : MECHANICAL ENGINEERING (Elective – II)
Advanced Development in Mechanical Design Engineering

Day and Date : Monday, 8-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) Answer **all five** questions.

2) **All** questions carry **equal** marks.

1. A) Explain the principle of weighted point method for selection of material for a machine component. **10**
- B) Explain **any two** : **10**
 - 1) What is the significance of using heterogeneous materials for worm and worm wheel ?
 - 2) Explain the low cycle fatigue and high cycle fatigue. Give practical examples.
 - 3) Write down the relationship between dynamic load carrying capacity, the equivalent dynamic load and bearing life.
2. A) What is modal analysis and how can it be used for finding the forced vibration response of typical three degrees of freedom (undamped) vibration system ? **10**
- B) Explain **any two** : **10**
 - 1) Concept of Eigen value problem
 - 2) How does a continuous system differ from a discrete system in the nature of its equation of motion ?
 - 3) Holzer's method.
3. A) What are different mechanisms of fracture ? Explain any two mechanisms with neat diagrams. **10**
- B) Explain **any two** : **10**
 - 1) Significance of Crack Tip Opening Displacement (CTOD).
 - 2) Plastic zone shape according to Von Mises criteria.
 - 3) Discuss the significance and limitations of J integral as a fracture parameter.

P.T.O.



4. A) What is the basic idea behind the finite element method and what is shape function ? 10
- B) Explain **any two** : 10
- 1) How is the distributed load converted into equivalent joint force vector in FEM.
 - 2) Different approaches used in FEM.
 - 3) Methods to solve the simultaneous non-linear equations in FEM.
5. A) Describe the various approaches available to increase the reliability of a multicomponent complex system. 10
- B) Explain **any two** : 10
- 1) Markov model.
 - 2) Reliability data : acquisition and analysis.
 - 3) Redundancy factor and derating factor.
-



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Seat No.	
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Ph.D. Course Work Examination, 2015
MECHANICAL ENGINEERING (Paper – IV)
Advanced Development in Industrial and Production Engineering
(Elective)

Day and Date : Monday, 8-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. a) Explain the competing on cost, quality, flexibility and speed with example. **10**
b) Answer **any two** :
 - 1) Explain the operation role in corporate strategy. **5**
 - 2) What is casual and time series model of forecasting. **5**
 - 3) Write short notes on trends and seasonality. **5**
2. a) Explain process layout, product layout and service layout with example. **10**
b) Answer **any two** :
 - 1) Explain the technology of Aggregate planning. **5**
 - 2) What are the tolls for capacity planning ? **5**
 - 3) Write short notes on process of aggregation. **5**
3. a) Explain the assumption and formulation of EOQ and also explain the importance of Economic manufacturing batch size. **10**
b) Answer **any two** :
 - 1) Explain behavior of cost in relation to inventory. **5**
 - 2) What is joint cycle for multiple product ? **5**
 - 3) Write short notes on approach of determining buffer stock. **5**

P.T.O.



4. a) Explain distribution and information technology of supply chain management. **10**
- b) Answer **any two** :
- 1) Explain measuring of supply chain management. **5**
 - 2) What are basic element of lean production ? **5**
 - 3) Write short notes on KANBAN. **5**
5. a) Explain the application of load profile and Grantt chart with example. **10**
- b) Answer **any two** :
- 1) Explain Priority sequencing rules. **5**
 - 2) What is forward and backward scheduling ? **5**
 - 3) Write short notes on Theory of constraints. **5**
-



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M.Phil / Ph.D. Course Work Examination, 2015
PHYSICAL CHEMISTRY
Paper – III : Modern Topics in Physical Chemistry

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) **All questions are compulsory and carry equal marks.**
2) **Use of scientific calculator is allowed.**
3) **Neatly drawn and labeled diagrams are necessary.**

1. A) What do you mean by non-stoichiometry ? Illustrate how one can create it in binary compounds. 10
- B) Answer **any two** : 10
- i) List different defects found in crystals. Explain any one of them.
 - ii) Describe various factors which affect crystal structures ?
 - iii) Discuss in brief the interstitial solid solutions.
2. A) What are crystal imperfections ? What are the effects of these imperfections on the properties and behavior of materials ? 10
- B) Answer **any two** : 10
- i) Explain with suitable example how ^{14}C dating is used in age determination.
 - ii) Write on Laue method of X-ray crystal structure analysis.
 - iii) What are symmetry elements and operations ? Mention various symmetry elements present in a cube.

P.T.O.



3. A) What are radio tracers ? Discuss how this technique is used in health physics. **10**
- B) Answer **any two** : **10**
- i) Discuss various forensic applications of neutron activation analysis.
 - ii) Lists various nuclear radiations. Mention their characteristics.
 - iii) Illustrate radio chromatographic technique.
4. A) What are different techniques available to synthesize nanomaterials ? Discuss any one chemical method in detail. **10**
- B) Answer **any two** : **10**
- i) Describe vapor phase transport method for synthesis of any inorganic composite solid.
 - ii) Illustrate various features of ionic crystals.
 - iii) Diffraction angle 2θ equal to 16.8° for a crystal having inter planar distance in the crystal is 0.4 nm when second order diffraction was observed. Calculate the wavelength of X-rays used.
5. A) Give a view of nanomaterials usage in diagnostic applications. **10**
- B) Answer **any two** : **10**
- i) Discuss magnetic properties of nanomaterials.
 - ii) Describe how size reduction alters the properties of nanomaterials.
 - iii) Explain the principle and working of AFM technique.
-



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Ph.D. Course Work Examination, 2015
SOCIAL SCIENCE
Paper – I : Research Methodology and Information Communication Technology (ICT)

Day and Date : Tuesday, 2-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : Attempt **all** questions.

*Figures to the **right** indicate **full** marks.*

1. A) What is inductive and deductive research ? Illustrate with an example. **10**
B) Write short notes on **any two** of the following : **10**
 - i) Five steps of testing hypothesis.
 - ii) Research design.
 - iii) Citation index.

2. A) What is research ethics has to be followed while writing of report ? **10**
B) Write short notes on **any two** of the following : **10**
 - i) Code book and code sheet in SPSS.
 - ii) H-index.
 - iii) Types of data collection methods.

3. A) Write regression equations of x on y and y on x for the following data : **10**

x :	45	48	50	55	65	70	75	72	80	85
y :	25	30	35	30	40	50	45	55	60	65

B) Write short notes on **any two** of the following : **10**
 - i) Measures of dispersion.
 - ii) Empirical relationship between mean, mode and median.
 - iii) Difference between sampling and census.

P.T.O.



4. A) How SPSS can be opened ? How a file is created ? Write steps. What are the interfaces of SPSS and their functions ? **10**
- B) Write short notes on **any two** of the following : **10**
- i) Chi-square test.
 - ii) Impact factor.
 - iii) ISSN and ISBN.
5. A) What are the application softwares ? Write steps to convert word to PDF. **10**
- B) Write short notes on **any two** of the following : **10**
- i) Steps of writing a report.
 - ii) Components of e-reviews.
 - iii) Use of GIS and GPS.
-



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Ph.D. (English/Kannada/Urdu) (Course Work) Examination, 2015
RESEARCH METHODOLOGY AND ICT (Paper – I)

Day and Date : Tuesday, 2-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Define the nature and scope of literary research. 10
B) Answer **any two** : 10
 - i) Practicle review
 - ii) Distinction between literary and social research.
 - iii) Research concepts.
 2. A) Explain the importance of problemetisation in research. 10
B) Answer **any two** : 10
 - i) Historical research
 - ii) Experimental research
 - iii) Research methodology.
 3. A) What is the role of languages in literary research ? Explain. 10
B) Answer **any two** : 10
 - i) Study of Dialects
 - ii) Language classifications
 - iii) Scientific study of languages.
 4. A) What are the broad areas of research ? Explain. 10
B) Answer **any two** : 10
 - i) Importance of the period in research
 - ii) Study of a special author
 - iii) Literary forms.
 5. A) Explain the importance ICT in research work. 10
B) Answer **any two** : 10
 - i) Analytical research
 - ii) Data oriented research
 - iii) Research Findings.
-



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Ph.D. Course Work Examination, 2015
EDUCATION

Research Methodology and Information Communication Technology
(ICT) (Paper – I)

Day and Date : Tuesday, 2-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) What do you mean by Research ? Explain its significance in present situation. 10
संशोधन म्हणजे काय ? वर्तमान परिस्थितीत याचे महत्त्व स्पष्ट करा.
- B) Answer **any two** of the following : 10
कोणत्याही दोन प्रश्नांची उत्तरे द्या :
- 1) Difference between qualitative and quantitative research.
गुणात्मक व संख्यात्मक संशोधनातील फरक.
 - 2) Difference between scale and questionnaire.
मापिका व प्रश्नावलीतील फरक.
 - 3) Difference between review of literature and research literature.
साहित्य अवलोकन व संशोधन साहित्य अवलोकन यातील फरक.
2. A) What are the different methods of acquiring knowledge ? Explain any two. 10
ज्ञान संपादनाच्या विविध पद्धती कोणत्या हे सांगून त्यातील दोन स्पष्ट करा.
- B) Answer **any two** of the following : 10
कोणत्याही दोन प्रश्नांची उत्तरे द्या :
- 1) Errors in conducting research.
संशोधन करतांना आढळणाऱ्या त्रुटी.
 - 2) Advantages of standardized tool.
प्रमाणित साधनांचे फायदे.
 - 3) Field of educational research.
शैक्षणिक संशोधनाची क्षेत्रे.

P.T.O.



3. A) What precaution will you take while analysing data ? 10
 माहितीचे विश्लेषण करतांना तुम्ही कोणती दक्षता घ्याल ?
- B) Answer **any two** of the following : 10
 कोणत्याही दोन प्रश्नांची उत्तरे द्या :
- 1) Analysis of variance (ANOVA)
 फरकाचे विश्लेषण
 - 2) Difference between F-Test and T-Test
 टी मूल्य व एफ मूल्यातील फरक
 - 3) Factor analysis.
 घटक विश्लेषण.
4. A) Write about importance of e-information in research. 10
 संशोधनातील ई माहितीचे महत्त्व लिहा.
- B) Answer **any two** of the following : 10
 कोणत्याही दोन प्रश्नांची उत्तरे द्या :
- 1) e-submission
 ई सादरीकरण
 - 2) e-book
 ई पुस्तक
 - 3) e-sources of research.
 संशोधनासाठीची ई-साधने.
5. A) What are the different types of educational research ? Explain with its
 relevance. 10
 शैक्षणिक संशोधनाचे विविध प्रकार कोणते सांगून त्याची यथार्थता स्पष्ट करा.
- B) Answer **any two** of the following : 10
 कोणत्याही दोन प्रश्नांची उत्तरे द्या :
- 1) h-index
 एच-इण्डेक्स
 - 2) Patents
 पेटेण्टस्
 - 3) ISBN Books.
 आय.एस.बी.एन. पुस्तके.
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Ph.D. Course Work Examination, 2015

HINDI

Research Methodology and Information Communication Technology
(ICT)

Paper – 1 : अनुसंधान प्रक्रिया और जानकारी संवाद तकनीक

Day and Date : Tuesday, 2-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

सूचनाएँ : 1) सभी प्रश्न अनिवार्य हैं।
2) दाईं ओर प्रश्न के पूर्णांक हैं।

1. अ) अनुसंधान के स्वरूप को समझाते हुए तुलनात्मक अनुसंधान पर प्रकाश डालिए। 10
- ब) किन्हीं दो के संक्षिप्त उत्तर लिखिए : 10
- i) वर्णनात्मक अनुसंधान।
- ii) विधा विशेष का अध्ययन।
- iii) अनुसंधान की संकल्पना।
2. अ) अनुसंधान के विविध क्षेत्रों का परिचय दीजिए। 10
- ब) किन्हीं दो के संक्षिप्त उत्तर लिखिए : 10
- i) अनुसंधान का उद्देश्य।
- ii) भाषा का वैज्ञानिक अध्ययन।
- iii) बोलियों के अनुसंधान का स्वरूप।

P.T.O.



3. अ) अनुसंधान की प्रमुख पद्धतियों का विवेचन कीजिए। 10
- ब) किन्हीं दो के संक्षिप्त उत्तर लिखिए : 10
- i) विशेष लेखक का अध्ययन।
 - ii) क्षेत्रीय कार्य का महत्त्व।
 - iii) सामग्री संकलन।
4. अ) प्रबंध लेखन के स्वरूप पर प्रकाश डालिए। 10
- ब) किन्हीं दो के संक्षिप्त उत्तर लिखिए : 10
- i) अनुसंधान में विश्लेषण एवं मूल्यांकन।
 - ii) अनुसंधान की व्याप्ति।
 - iii) प्रबंध लेखन में 'परिशिष्ट'।
5. अ) अनुसंधान कार्य में संगणक किस प्रकार उपयोगी सिद्ध होता है ? स्पष्ट कीजिए। 10
- ब) किन्हीं दो के संक्षिप्त उत्तर लिखिए : 10
- i) शोध-प्रबंध की रूपरेखा।
 - ii) निष्कर्ष की स्थापना।
 - iii) प्राक्कल्पना।
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Ph.D. Course Work Examination, 2015
Law
RESEARCH METHODOLOGY AND INFORMATION COMMUNICATION
TECHNOLOGY (Paper – I)

Day and Date : Tuesday, 2-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions: 1) Answer **all five** questions.
2) **All** questions carry **equal** marks.

1. A) How do you define a Research Problem ? Support with examples to illustrate your answer. 10
B) Short notes (on **any two**) : 10
 - i) Survey Method
 - ii) Interview Method
 - iii) Sociological Research.

2. A) “A systematic bias results from errors in the sampling procedures” What do you mean by a systematic bias ? Describe the important causes responsible for such a bias. 10
B) Short notes (on **any two**) : 10
 - i) Socio-Legal Research
 - ii) Current trend in Legal Research.
 - iii) Applied and Fundamental Research.

3. A) Point out the important limitations of test of hypothesis. What precaution the researcher must take while drawing inferences as per the results of the said tests ? 10
B) Short notes (on **any two**) : 10
 - i) Types of Report
 - ii) Advantages and limitations of sampling
 - iii) Objectives of Legal Research.

P.T.O.



4. A) Discuss in brief E-Submission. What is the advantages while in submission and its types. **10**
- B) Short notes (on **any two**) : **10**
- i) Compulsory license
 - ii) Electronic mail
 - iii) Alternative and Modification in h-index.
5. A) Explain the procedure for obtaining the Patent. **10**
- B) Short notes (on **any two**) : **10**
- i) Reporting
 - ii) Digital libraries.
 - iii) Grant and sealing of patent.
-



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Ph.D. Course Work Examination, 2015
COMMERCE
Research Methodology & Information and Communication
Technology (ICT) (Paper – I)

Day and Date : Tuesday, 2-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) What is Research design ? Discuss in short the different research designs. **10**
- B) Write short notes (**any two**) : **10**
- i) Format of Report writing
 - ii) Errears in Research
 - iii) Research proposels and Aspects.
2. A) Discuss the various measures of central tendencies. **10**
- B) Write short notes (**any two**) : **10**
- i) Kurtosis and moments
 - ii) Theory of Attributes and Association
 - iii) Nonparametric tests.
3. A) State the information Technology issues for management, social implication and future with technology. **10**
- B) Write short notes (**any two**) : **10**
- i) Impact of ICT on social and economic development
 - ii) Information processing cycle
 - iii) Definitions of ICT.

P.T.O.



4. A) Discuss word documents with various prints options. **10**
- B) Write short notes (**any two**) : **10**
- i) Editing Text in word processing Document.
 - ii) Word processing package and their uses in creating documents.
 - iii) Formating word processing documents.
5. A) State the various types of E-resources. **10**
- B) Write short notes (**any two**) : **10**
- i) Concept of internet
 - ii) Assessing information from internet
 - iii) Technologies of internet.
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Ph.D. Course Work Examination, 2015
Paper – I : RESEARCH METHODOLOGY AND INFORMATION
COMMUNICATION TECHNOLOGY (ICT)
(Civil Engineering) (Paper – I)

Day and Date : Tuesday, 2-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

Note : All questions are compulsory.

1. A) Explains in brief any ten general or specific characteristics of research. 10
B) Solve **any two** questions from the following : 10
 - 1) What are the qualities to be possessed by a good researcher ?
 - 2) Describe the steps in identification of a research problem.
 - 3) What is the need for review of literature ?
2. A) What is the importance of a Research Plan ? What information should be included in a Research Plan ? 10
B) Solve **any two** questions from the following : 10
 - 1) What are the elementary statistical techniques of analysis ?
 - 2) What precautions should be taken in data collection for research ?
 - 3) Describe in brief the classification of experiments and experimental procedures.
3. A) Describe the process of model formulation based on simulation. 10
B) Solve **any two** questions from the following : 10
 - 1) What are the common errors in experimental design ?
 - 2) Differentiate between descriptive and inferential data with suitable examples.
 - 3) Describe the techniques used for validating the experiments.



4. A) What is the importance of data analysis ? Describe the different types of analysis of data pointing out significance of each. **10**
- B) Solve **any two** questions from the following : **10**
- 1) Differentiate between dependent and independent variables with suitable examples.
 - 2) Explain the significance of correlation coefficient. How is it calculated ?
 - 3) What are the methods of testing Linearity/Non linearity of a model ?
5. A) Describe the general format of a good Research Report. **10**
- B) Solve **any two** questions from the following : **10**
- 1) What do you mean by h-index and citation index ? How is it computed ?
 - 2) What is the procedure for filing a patent in India ?
 - 3) What are the referencing systems used in a report writing ?
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**Ph.D. Course Work Examination, 2015
MARATHI**

Paper – II : मराठी साहित्यातले नवे प्रवाह

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

१. अ) समाज आणि साहित्य यांचा अनुबंध स्पष्ट करा. १०
- ब) लघुत्तरी प्रश्न (कोणतेही दोन) : १०
- १) नारायण सुर्वे यांच्या कवितेतील वर्गीय जाणिव
- २) आनंद यादव यांच्या कादंबरीतील कृषी वास्तव
- ३) आंबेडकरी विचारधारौ आणि दलित साहित्य.
२. अ) १९६० नंतरच्या मराठी कादंबरीचा आढावा घ्या. १०
- ब) लघुत्तरी प्रश्न (कोणतेही दोन) : १०
- १) श्याम मनोहर यांच्या कादंबऱ्या
- २) भालचंद्र नेमाडे यांची कविता
- ३) अरविंद गोखलेच्या कथा.
३. अ) दलित साहित्य निर्मितीची कारणे स्पष्ट करा. १०
- ब) लघुत्तरी प्रश्न (कोणतेही दोन) : १०
- १) वामन निंबाळकर यांची कविता
- २) केशव मेश्राम यांचे ललित गद्य
- ३) दलित कादंबरी.

P.T.O.



४. अ) स्त्रीवादाचे विविध प्रवाह स्पष्ट करा. १०
- ब) दिर्घोत्तरी प्रश्न (कोणतेही दोन) : १०
- १) अनुराधा पाटील यांच्या कवितेतील स्त्री वेदनेचे स्वरूप
- २) प्रिया तेंडुलकर यांच्या कथेतील स्त्रीवादी जाणिवा
- ३) गौरी देशपांडे यांच्या कादंबऱ्या.
५. अ) आदिवासी साहित्याच्या प्रेरणा स्पष्ट करा. १०
- ब) दिर्घोत्तरी प्रश्न (कोणतेही दोन) : १०
- १) भुजंग मेश्राम यांची कविता
- २) माधव सरकुंडे यांचे कादंबरी लेखन
- ३) वाहरू सोनवणे यांची कविता.
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Ph.D. Course Work Examination, 2015
ENGLISH
Recent Trends in Critical Theories (Paper – II)

Day and Date : Thursday, 4-6-2015

Max. Marks : 100

Time : 11 .00 a.m. to 2.00 p.m.

1. A) Write a detailed note on feminist literary studies. 10
B) Write short notes on **any two** of the following : 10
 - i) First Wave Feminist Criticism.
 - ii) Feminist Criticism and Lacan.
 - iii) Elaine Showalter's *Gynocriticism*.
 2. A) "Stylistics is a mediatory branch between Linguistics and Literary Criticism". Discuss. 10
B) Write short notes on **any two** of the following : 10
 - i) Poetic Language and Ordinary Language.
 - ii) Style as Deviation.
 - iii) Schemes and Tropes.
 3. A) Comment on the 'historicity of text and textuality of history' in the light of New Historicism. 10
B) Write short notes on **any two** of the following : 10
 - i) Literature and History.
 - ii) Individuality of author.
 - iii) John Branningan's views on New Historicism.
 4. A) Discuss personal identity and politics as the major concern of Lesbian and Gay Criticism. 10
B) Write short notes on **any two** of the following : 10
 - i) Queer Theory.
 - ii) Marginalization and Lesbian and Gay Criticism.
 - iii) Cognitive Grammar.
 5. A) Discuss New Aestheticism as 'post-theoretical' ? 10
B) Write short notes on **any two** of the following : 10
 - i) Ecofeminism.
 - ii) Romanticism and Ecocriticism.
 - iii) Pollution and Ecocriticism.
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Ph.D. Course Work Examination, 2015

HINDI

Paper – II : हिंदी साहित्य : नये प्रवाह

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

सूचनाएँ : 1) सभी प्रश्न अनिवार्य हैं।
2) दाईं ओर निर्देशित पूर्णांक हैं।

1. अ) जैन दर्शन का परिचय दीजिए। 10

अथवा

हिंदी गद्य के प्रसार में ईसाइयों का योगदान स्पष्ट कीजिए।

आ) किन्हीं दो प्रश्नों के उत्तर लिखिए। 10

- 1) हिंदी के प्रसार में आर्यसमाज का योगदान
- 2) भारतीय स्वतंत्रता आंदोलन में हिंदी की भूमिका
- 3) भारतीय हिंदी साहित्य पर इस्लाम का प्रभाव

2. अ) राष्ट्रियता तथा अंतरराष्ट्रीयता की संकल्पना पर प्रकाश डालते हुए उसका स्वरूप समझाइए। 10

अथवा

हिंदी लोक जागरण का विवेचन कीजिए।

आ) किन्हीं दो प्रश्नों के उत्तर लिखिए। 10

- 1) आधुनिकता बोध की विशेषताएँ
- 2) औद्योगिक संस्कृति का स्वरूप
- 3) पुनरूत्थान और हिंदी

P.T.O.



3. अ) गान्धीवादी विचारधारा को समझाइए। 10

अथवा

अस्तित्ववाद की प्रेरणाभूमियाँ विशद कीजिए।

आ) किन्हीं दो प्रश्नों के उत्तर लिखिए। 10

- 1) अंतः श्चेतनावाद का स्वरूप
- 2) मनोविश्लेषणवाद का हिंदी पर प्रभाव
- 3) आधुनिकतावाद की प्रवृत्तियाँ.

4. अ) स्त्री-विमर्श की विस्तृत चर्चा कीजिए। 10

अथवा

घुमन्तू जातियों के जागरण पर प्रकाश डालिए।

आ) किन्हीं दो प्रश्नों के उत्तर लिखिए। 10

- 1) आदिवासी विमर्श
- 2) अंबेडकरवाद और दलित साहित्य
- 3) मंडल आयोग का स्वरूप

5. अ) मार्क्सवाद प्रमुख प्रवृत्तियाँ सोदाहरण समझाइए। 10

अथवा

उत्तर आधुनिकतावाद का प्रभाव विशद कीजिए।

आ) किन्हीं दो प्रश्नों के उत्तर लिखिए। 10

- 1) वैदिक दर्शन की विशेषताएँ
 - 2) सत्यशोधक समाज का कार्य
 - 3) चार्वाक दर्शन
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**Ph.D. Course Work Examination, 2015
KANNADA**

Paper – II : Recent Trends in Kannada Literature

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. a) ಕನ್ನಡದಲ್ಲಿ ಸ್ತ್ರೀವಾದ ಬೆಳೆದು ಬಂದ ಬಗೆಯನ್ನು ವಿವರಿಸಿ. 10
b) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : (5+5=10)
1) ಮಾರ್ಕ್ಸ್‌ವಾದಿ ಸ್ತ್ರೀವಾದ 2) ಬಿ.ಟಿ. ಲಲಿತಾ ನಾಯಕ್ 3) ಅಕ್ಕಮಹಾದೇವಿ.
2. a) ಕನ್ನಡ ದಲಿತ ಸಾಹಿತ್ಯಕ್ಕೆ ಉಂಟಾದ ಪ್ರಭಾವ-ಪ್ರೇರಣೆಗಳನ್ನು ಕುರಿತು ವಿವರಿಸಿ. 10
b) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : (5+5=10)
1) ಮಾಗಿ
2) ಗೌರ್ಮೆಂಟ್ ಬ್ರಾಹ್ಮಣ
3) ಹೋರಾಟದ ಸಾಗರಕ್ಕೆ ಸಾವಿರಾರು ನದಿಗಳು.
3. a) ಬಂಡಾಯ ಸಾಹಿತ್ಯದ ಧೈಯೋದ್ದೇಶಗಳನ್ನು ವಿವರಿಸಿ. 10
b) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : (5+5=10)
1) ವಚನಕಾರರ ಬಂಡಾಯ ಮನೋಭಾವ
2) ಸಮಾಜಪ್ರಜ್ಞೆ
3) ಚೆನ್ನಣ್ಣ ವಾಲೀಕಾರ.
4. a) ಕನ್ನಡ ಸಾಹಿತ್ಯ ವಿಮರ್ಶೆಯ ಇತ್ತೀಚಿನ ಒಲವು-ನಿಲುವುಗಳನ್ನು ಕುರಿತು ಚರ್ಚಿಸಿ. 10
b) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : (5+5=10)
1) ಅನ್ವಯಿಕ ವಿಮರ್ಶೆ 2) ಮನಃಶಾಸ್ತ್ರೀಯ ವಿಮರ್ಶೆ 3) ಶೈಲಿಶಾಸ್ತ್ರ
5. a) ವಾಸ್ತವವಾದದ ಸ್ವರೂಪವನ್ನು ವಿವರಿಸಿ. 10
b) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : (5+5=10)
1) ರಮ್ಯವಾದ
2) ಕನ್ನಡದಲ್ಲಿ ವಾಸ್ತವವಾದ
3) ನವೋದಯದ ಮೇಲೆ ರಮ್ಯವಾದದ ಪ್ರಭಾವ.



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Ph.D. Course Work Examination, 2015

URDU (Paper – II)

Recent Trends in Urdu

Day and Date : Thursday, 4-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

ہدایات : (۱) تمام سوالوں کے جواب مطلوب ہیں۔

(۲) ہر سوال کے نشان محاذی درج ہیں۔

10

۱. الف) بحیثیت سوانح نگار شبلی نعمانی کی خدمات کا جائزہ لیجئے۔

یا

شبلی کے اسلوب بیان کی نمایاں خصوصیات تحریر کیجئے۔

10

ب) درج ذیل سے صرف دو پر نوٹ لکھئے :

(1) آثار الصنادید

(2) مقدمہ شعر و شاعری

(3) ابن الوقت

10

۱۱. الف) 'ترقی پسند تحریک ایک عالم گیر تحریک تھی' وضاحت کیجئے۔

یا

ترقی پسند شعرا میں فیض کا مقام متعین کیجئے۔



10 (ب) درج ذیل سے صرف دو سوالوں کے مختصر جواب لکھئے :

- (1) پریم چند کی ناول نگاری کے محاسن پر روشنی ڈالئے۔
- (2) ناول نگاری میں پلاٹ کی اہمیت پر اظہار خیال کیجئے۔
- (3) مختصر افسانہ کی تعریف لکھئے۔

10 .III (الف) جدید اردو شاعری کے آغاز و ارتقاء کا جائزہ لیجئے۔

یا

”جدید اردو شاعری کے بانی آزاد اور حالی ہیں“ وضاحت کیجئے۔

10 (ب) درج ذیل سے صرف دو سوالوں کے مختصر جواب لکھئے :

- (1) رباعی اور قطعہ کے فرق کو مثالوں سے واضح کیجئے۔
- (2) ’غزل اردو شاعری کی آبرو ہے‘ اظہار خیال کیجئے۔
- (3) ”جاں نثار اختر کی غزل زندگی کے موڑ پر انسانیت کے کرب کی کہانی ہے“ وضاحت کیجئے۔

10 .IV (الف) حلقہ ارباب ذوق کے کسی ایک نمائندہ شاعر کے فن کا جائزہ لیجئے۔

یا

ن م راشد کی شاعری پر تنقیدانہ روشنی ڈالئے۔



10

(ب) درج ذیل سے صرف دو پر نوٹ لکھئے :

(1) پابند نظم

(2) نظم معرا

(3) آزاد نظم

10

.V الف) اردو ڈرامے کے ارتقاء کا جائزہ لیجئے۔

یا

ڈراما انارکلی کی زبان اور اندازِ بیان پر سیر حاصل تبصرہ کیجئے۔

10

(ب) درج ذیل سے صرف دو پر اظہارِ خیال کیجئے :

(1) ،شکنتلا، کالی داس کا شاہکار ہے۔

(2) شیخ علی وجودی شرر کا کامیاب کردار ہے۔

(3) ثریا کا کردار ”انارکلی“ کا سب سے زیادہ جاندار کردار ہے۔



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**Ph.D. Course Work Examination, 2015
PHYSICS
Paper – II : Recent Trends in Physics**

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. What are various crystal systems ? Explain Powder X-ray diffraction method to determine crystal structure. What is role of Bragg's law in crystal structure determination ?
 2. Explain principle and working of X-ray diffractometer. State its few applications.
 3. What is principle and working of FESEM ? What are its advantages over SEM ?
 4. How to determine band gap energy of a semiconductor from optical absorption study ? What is difference between direct and indirect band gap energy semiconducting materials ?
 5. Explain principle and working of Atomic Force Microscopy.
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Ph.D. Course Work Examination, 2015
Electronics
Paper – II : RECENT TRENDS IN ELECTRONICS

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Generate 100 uniformly distributed random numbers on the interval [10, 50]. Find its average and standard deviation. Display it. Display a graph of range [10, 50] divided into 5 bins versus number of random values generated falling in each bin. Label the graph properly. **10**
- B) Solve **any two** : **(5 marks each)**
 - 1) Explain with suitable example how Matlab handles 3 dimensional arrays.
 - 2) Explain any five special values (like 'pi') predefined in Matlab.
 - 3) Explain function 'interp'.
2. A) Explain with suitable example and Matlab code how 'dir2cas' can function realize filter. **10**
- B) Solve **any two** : **(5 marks each)**
 - 1) Explain a function to realize cascade form of a filter.
 - 2) Explain any two functions to implement window functions.
 - 3) Explain function to plot frequency domain response of a filter.
3. A) With suitable examples show the usefulness of 'switch' and 'try/catch'. Construct. **10**
- B) Solve **any two** : **(5 marks each)**
 - 1) Explain concept of cell array. What are its advantages ?
 - 2) With suitable example explain concept of function handle.
 - 3) Write the features of Lab VIEW.

P.T.O.



4. A) What are the basic steps in image DFT filtering (using Image Processing Toolbox). Explain these steps along with corresponding Matlab code. **10**
- B) Solve **any two** : **(5 marks each)**
- 1) Explain high frequency emphasis filter and its realization using Matlab.
 - 2) With suitable example explain function 'mat2gray'.
 - 3) With suitable example explain function 'imhist'.
5. A) How vectorization is supported in Matlab ? What are its advantages compared to other programming language (like C) ? Explain with suitable example. **10**
- B) Solve **any two** : **(5 marks each)**
- 1) What is stem plot ? With suitable example explain stem plot.
 - 2) Explain Matlab function to implement convolution.
 - 3) Explain how a spatial domain filter is implemented using 'imfilter'.
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Ph.D. Course Work Examination, 2015
INORGANIC CHEMISTRY
Recent Trends in Inorganic Chemistry (Paper – II)

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions:** 1) Attempt in **all five** questions.
2) **All** the questions carry **equal** marks.
3) Figures to the **right** indicate **full** marks.

1. A) Give an account of the basic principle, instrumentation of Mossbauer spectroscopy. What is Doppler shift ? Illustrate how will you detect the oxidation state and inequivalent of Mossbauer atoms ? 10
- B) Answer the following (**any two**) : 10
- i) Explain in brief isomer shift in Mossbauer spectroscopy.
- ii) What do you mean by quadrupole splitting ? Explain with suitable example.
- iii) Write a note on synthesis of TiO_2 and its applications.
2. A) Give a short account on cluster compounds. Explain the synthesis and applications of Sn(II) and Sn(IV) complexes of cluster compounds. 10
- B) Answer the following (**any two**) : 10
- i) Explain the term intermetallic compounds with suitable example.
- ii) Write short note on Organotin compounds.
- iii) What do you mean by mixed oxide material ? How will you prepare $SrTiO_3$ and explain its applications.
3. A) Describe the what quantity is measured and how the measurement is performed for each of the following techniques. 10
- a) TGA b) DTA c) DSC

P.T.O.



- B) Answer the following (**any two**) : **10**
- i) How will you investigate the decomposed products by NIR, IR and Mass Spectroscopy ?
 - ii) Give the applications of DSC technique.
 - iii) Explain the mechanism Photodegradation with suitable examples.
4. A) Discuss the principle, Instrumentation and applications of XRD with respect to block diagram. **10**
- B) Answer the following (**any two**) : **10**
- i) Explain principle and working of AAS technique and give its analytical applications.
 - ii) Write short note on AFM.
 - iii) Give the principle of PEC and its working.
5. A) Discuss the X-ray absorption spectroscopy with special reference the principle, block diagram and working. How will you identify the crystalline compounds by using X-ray absorption spectroscopy ? **10**
- B) Answer the following (**any two**) : **10**
- i) Give a short account on X-ray absorption spectra of transition metal complexes.
 - ii) Write a short note on X-ray monochromators.
 - iii) Explain the synthesis, applications of Fe_2O_3 .
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Ph.D. Course Work Examination, 2015
POLYMER CHEMISTRY
Recent Trends in Polymer Chemistry

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

Instructions: 1) *All questions are compulsory and carry equal marks*
2) *Use of scientific calculator is allowed.*

1. a) Discuss the relationship between ultimate structure and polymer properties. What are the requirements in terms of properties and structure for a polymer to be useful as elastomer, fibre or plastic ? 10
- b) Answer **any two** : 10
 - i) How do you control the molecular weight of a step-growth polymer prepared by polycondensation of AA and BB types of monomers ?
 - ii) Write a note on the analysis of flow in a single screw extruder.
 - iii) Discuss the methods of characterization of polymer blends.
2. a) What is living radical polymerization ? Discuss the mechanism of ATRP. Explain the effect of various components on ATRP. 10
- b) Answer **any two** : 10
 - i) Describe the applications of conducting polymers.
 - ii) What are the different types of polymer blends based on the compatibility of the two components ? What are the major differences in their properties ?
 - iii) Discuss the rotational casting process.
3. a) Discuss in details the process of thermoforming. 10
- b) Answer **any two** : 10
 - i) How the molecular weight of a polymer is determined by end group analysis ?
 - ii) Write a note on solid state polymerization.
 - iii) Discuss the factors affecting chain transfer reactions.

P.T.O.



4. a) Discuss in details the manufacture, properties and applications of PET. **10**
- b) Answer **any two** : **10**
- i) What is Trommsdort effect ? What are the factors that affect the autoacceleration phenomenon ?
 - ii) Write a note on LEDs.
 - iii) Discuss the isofree-volume theory of glass transition.
5. a) Most of the commercial polymers are organic and therefore dielectrics. What are the requirements that a polymer may be a conducting polymer ? Discuss the synthesis of polyaniline. **10**
- b) Answer **any two** : **10**
- i) Discuss the process of RIM.
 - ii) What is the rate of a radical chain polymerization depends on the square root initiator concentration ?
 - iii) Discuss the synthesis and applications of polyurea.
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Ph.D. Course Work Examination, 2015
CHEMISTRY

Paper – II : Recent Trends in Physical Chemistry

Day and Date : Thursday, 4-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions: 1) Answer **all** questions.
2) **All** questions carries **equal** marks.

1. A) Explain principle and instrumentation involved in NMR spectroscopy. Give its application. 10
- B) Answer **any two** questions :
 - i) Explain the appearance of m/z at 44 in the mass spectrum $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$. 5
 - ii) How are appearance potential and ionization potential are determined from mass spectrometry ? 5
 - iii) Sketch the normal mode of vibrations in H_2O and CO_2 molecule and explain which modes are IR active and inactive. 5
2. A) Explain salient features of that explains decreases in heat capacity of solids at low temperature. 10
- B) Answer **any two** questions :
 - i) Explain the atomic heat of diamond is very less than $3R$ at low temperature. 5
 - ii) Explain the liquid crystals. 5
 - iii) An intrinsic semiconductor has a band gap of 1. eV. Calculate its fractional increase in electrical conductivity of a semiconductor on heating from 300K to 320 K. 5
3. A) Discuss in detail preparation and application of sol-gel process. 10
- B) Answer **any two** questions : 5
 - i) What do you mean by spin coating technique ? Explain with example. 5
 - ii) What are electrical devices ? Mention their characteristics. 5
 - iii) Give an account of photovoltaic devices. 5

P.T.O.



4. A) Discuss the kinetics and mechanism of homogeneous catalysis with suitable example. **10**
- B) Answer **any two** questions. **5**
each. **5**
- ii) Write a note on Menger and Portony theory for micellar catalysis. **5**
- iii) Write a note on auto catalyzed reactions. **5**
5. A) Discuss the partial molar quantities. **10**
- B) Answer **any two** questions.
- i) Explain excess thermodynamic function for liquid mixture. **5**
- ii) Explain dipolar interactions for dilute solutions. **5**
- iii) Write a note on Debye equation for polar molecules. **5**
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Ph.D. Course Work Examination, 2015
ORGANIC CHEMISTRY
Recent Trends in Organic Chemistry (Paper – II)

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :** i) Attempt in **all five** questions.
ii) **All** the questions carry **equal** marks.
iii) Figures to the **right** indicate **full** marks.

1. a) Explain the stereochemistry of ring fusion in yohimbine. **10**
b) Answer the following (**any two**) : **10**
i) Explain the asymmetric synthesis is a stereo selective synthesis.
ii) Describe the conformations of cholestane.
iii) What is the fused ring system ? Explain the synthesis of bicycle [3.2.0] heptane.
2. a) Explain the reaction and mechanism of Vilsmeier-Haack reaction. **10**
b) Explain the following reactions (**any two**) : **10**
i) Mc Lafferty rearrangement
ii) Skraup synthesis
iii) Madelung Indole synthesis.
3. a) Explain important features in IR and NMR spectroscopy. **10**
b) Assign the signals and deduce the structure of following (**any two**) : **10**
i) M.F. $C_5H_{10}O_2$; IR: 2967, 1741, 1437, 1362, 1298, 1148, 1098, 997, 880 cm^{-1} ;

P.T.O.



PMR : 0.95 (t, J = 6Hz, 30 mm) ; 1.62 (sextet, J = 6Hz, 20 mm);
2.28 (t, J = 6 Hz, 20 mm); 3.65 (S, 30 mm); Mass : m/z 102 (M^+); 87, 74,
71, 59, 55, 43 (base), 42, 41, M^+ very weak.

ii) M.F. C_7H_8O ; UV : 220, 270, 285 nm (ϵ 7500, 2200, 2100); IR : 1600, 1500,
1250, 750, 690 cm^{-1} ; NMR : 3.8 (S, 18 mm), 6.85 (m, 18 mm),
7.2 (t, J = 7.5 Hz, 12mm).

iii) M.F. C_6H_5NO ; UV : 228, 265 nm (ϵ 2500, 1400 respectively); IR : 2720 (w),
1710, 1600, 1500 (w), 850 cm^{-1} NMR : 7.24 (d, J = 5.5 H_2 , 10 mm),
8.7 (d, J = 5.5 Hz, 10 mm), 10.04 (S, 5mm).

4. a) Explain the COSY experiments with suitable examples. **10**
- b) Answer the following (**any two**) : **10**
- i) What is 2D-NMR ? Describe with suitable examples.
 - ii) What is C^{13} NMR ? Explain their applications.
 - iii) What is NOESY ? Explain.
5. a) How would you distinguish between ethylamine, diethylamine and triethyl amine on the basis of mass spectroscopy ? **10**
- b) Answer the following (**any two**) : **10**
- i) Give the typical fragmentation pattern in benzyl methyl ether.
 - ii) Determine the structure of the compound whose m/e values are m/e 74 (molecular ion), 56, 43 and 31 (base peak).
 - iii) How do you explain that m/e 94 ion is formed in the mass spectrum of phenetol ?
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**Ph.D. Course Work Examination, 2015
ANALYTICAL CHEMISTRY (Paper – II)
Recent Trends in Analytical Chemistry**

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

- N.B. :** 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Draw neat and labeled diagrams wherever necessary.**
4) **Use of calculator is allowed.**

1. A) Explain the principle and technique involved in ICP-AES technique. Give its advantages over flame photometry. **10**
- B) Attempt **any two** of the following : **10**
- i) Explain the role of supporting electrolyte and maximum suppressor in polarography.
 - ii) Explain the role of ESR spectroscopy in the study of free radicals.
 - iii) Explain the principle of ion-pair chromatography.
2. A) Explain various types of currents in polarography with their significance. **10**
- B) Attempt **any two** of the following : **10**
- i) Draw a block diagram of reflection ESR spectrometer.
 - ii) Give applications of gel permeation chromatography.
 - iii) Explain the principle of thermometric titrations.
3. A) Explain the phenomenon of hyperfine coupling in ESR spectroscopy. Calculate the ESR frequency of an unpaired electron in a magnetic field 0.33 Tesla. Given $g = 2$ and $\beta = 9.273 \times 10^{-24} \text{ JT}^{-1}$ and $h = 6.626 \times 10^{-34} \text{ Js}$. **10**
- B) Attempt **any two** of the following : **10**
- i) Explain the technique of bonded phase extraction.
 - ii) What are Grotrian diagrams ? Explain their roles in emission spectroscopy.
 - iii) Give advantages of stripping voltammetry over DC polarography.



4. A) Ion pair chromatography is a subset of reversed phase chromatography. Explain. **10**
- B) Attempt **any two** of the following : **10**
- i) Give advantages of DSC over thermogravimetry.
 - ii) Explain working of total consumption burner in flame photometry.
 - iii) Explain the nature of curve obtained in the amperometric titration of Pb^{2+} with SO_4^{2-} ions giving reason.
5. A) Discuss various factors affecting TGA curve. How TGA technique can be applied to determine Curie Point ? **10**
- B) Attempt **any two** of the following : **10**
- i) Explain spectral and chemical interferences in flame photometry.
 - ii) Derive equation of polarographic wave and explain significance of half wave potential.
 - iii) Give principle of ESR spectroscopy.
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Ph.D. Course Work Examination, 2015
ZOOLOGY
Paper – II : Recent Trends in Zoology

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

- Instructions :** 1) **All questions are compulsory.**
2) **Figures on right hand side indicate marks.**
3) **Draw labeled diagrams wherever necessary.**

1. A) Explain the principle and applications of scanning and transmission electron microscopy. **10**
- B) Write short notes (**any two**) : **10**
 - i) Fixatives and fixation of tissues
 - ii) Whole mount staining
 - iii) Histological staining.
2. A) Give the chemistry and classification of carbohydrates and add a note on quantitative detection of carbohydrates. **10**
- B) Write short notes (**any two**) : **10**
 - i) Composition of blood
 - ii) Paper chromatography
 - iii) Spectrophotometer.
3. A) Describe various cloning vehicles used in genetic engineering. **10**
- B) Write short notes (**any two**) : **10**
 - i) Requirements of animal cell and tissue culture laboratory
 - ii) Rocket immunoelectrophoresis
 - iii) Chemistry and classification of hormones.

P.T.O.



4. A) Explain the methods of collection, preservation and maintenance of animals for biodiversity study. **10**
- B) Write short notes (**any two**) : **10**
- i) Use of computer in biostatistics
 - ii) Application of computer in biodiversity study
 - iii) Proteomics.
5. A) Explain the use of internet to biologist. **10**
- B) Write short notes (**any two**) : **10**
- i) Phylogenic analysis
 - ii) Search engine
 - iii) Components of bioinformatics.
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**Ph.D. Course Work Examination, 2015
GEOGRAPHY (Paper – II)
Recent Trends in Geography**

Day and Date : Thursday, 4-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Discuss the general nature of geographical knowledge during medieval period. **10**
B) Short Answer Type (**Any two**) : **10**
 - 1) Chinese contribution to geography.
 - 2) Human Poverty Index (HPI).
 - 3) Idiographic approach.
 2. A) Explain the behavioural approach in geography. **10**
B) Short Answer Type (**Any two**) : **10**
 - 1) Indicators of Human Development Index.
 - 2) Dark Age.
 - 3) Role and utility of theory.
 3. A) Distinguish between area and region. **10**
B) Short Answer Type (**Any two**) : **10**
 - 1) Importance of scaling in geography.
 - 2) Application of geography in planning and development of tourism.
 - 3) Greek contribution to physical geography.
 4. A) Define the models and explain the types of models. **10**
B) Short Answer Type (**Any two**) : **10**
 - 1) Alexander Von Humboldt as a founder of modern geography.
 - 2) Population policy during 9th Plan (1997-2002).
 - 3) Concept of space.
 5. A) Write an essay on human resource development in India. **10**
B) Short Answer Type (**Any two**) : **10**
 - 1) Stages of regionalization.
 - 2) Homothetic approach.
 - 3) Geography as a scientific discipline.
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Ph.D. (Course Work) Examination, 2015
APPLIED GEOLOGY
Paper – II : Recent Trends in Geology

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

Instructions: 1) Answer **all** questions.
2) **All** questions carry **equal** marks.

1. A) What are fluid inclusions ? Explain the fluid inclusion studies in mineral exploration.
B) Answer **any two** :
 - a) Scanning electron microscopy
 - b) Report Writing
 - c) Mass spectrographic analysis
2. A) What are fission tracks ? How is fission track used for age determination of rocks ?
B) Write note on **any two** :
 - a) Atomic Absorption Spectrometry
 - b) Differential Thermal Analysis
 - c) Sampling methods
3. A) Write in detail application of Aerial photo interpretation in Geology.
B) Explain **any two** :
 - a) Field procedures in Geology
 - b) Morphology and classification of Fluid inclusions
 - c) Dry chemical analysis



4. A) Enumerate various methods used for detailed mineralogical study of rocks or ore.
B) Discuss **any two** :
 - a) Preparation of geological section
 - b) Fluid inclusions in pegmatites
 - c) Inductively Coupled Plasma

 5. A) Explain briefly the principle and procedure of X-ray Diffraction. Explain their application in mineral exploration.
B) Answer **any two** :
 - a) Radioactive minerals
 - b) Statistical methods used for geological data analysis
 - c) Drilling methods.
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Ph.D. (Course Work) Examination, 2015
COMPUTER SCIENCE
Recent Trends in Computer Science (Paper – II)

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Describe the various methods used for software measurement. **10**
B) Write short notes on **(any two)** : **10**
 - i) Software Quality Assurance
 - ii) Communication Techniques
 - iii) Software Processes.

 2. A) Explain different types of collectors in object relational databases. **10**
B) Write short notes on **(any two)** : **10**
 - i) Naming Conventions for Objects
 - ii) Abstract Data Types
 - iii) Standalone v/s Distributed databases.

 3. A) Define Data Mining. Describe in detail the Data Integration and Transportation. **10**
B) Write short notes on **(any two)** : **10**
 - i) Data Reduction
 - ii) Data Warehouse
 - iii) Data Cube Technology.

 4. A) What is cipher ? Describe the Substitution Ciphers and Transposition ciphers. **10**
B) Write short notes on **(any two)** : **10**
 - i) Data Encryption Standards
 - ii) Digital Signatures
 - iii) Network security model.

 5. A) Discuss the impact of underlying assumptions in artificial intelligence. **10**
B) Write short notes on **any two** : **10**
 - i) Problem characteristics
 - ii) Design issues of search programs
 - iii) AI Techniques.
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Ph.D. Course Work Examination, 2015
MATHEMATICS (Paper – II)
Recent Trends in Mathematics

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions: 1) **All** questions are **compulsory**.
2) Figures to the **right** indicate **full** marks.

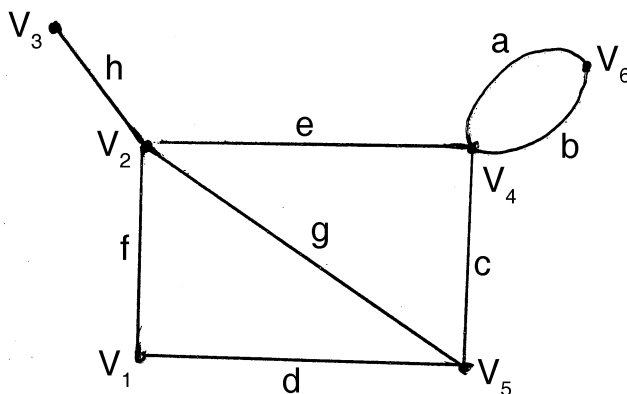
1. A) Define incidence matrix.

Prove that two graphs G_1 and G_2 are isomorphic if and only if their incidence matrices $A(G_1)$ and $A(G_2)$ differ only by the permutations of rows and columns. **10**

B) Attempt **any two** of the following : **10**

i) If $A(G)$ is an incidence matrix of a connected graph G with n vertices then prove that the rank of $A(G)$ is $n-1$.

ii) Write the incidence matrix $A(G)$ of the following graph G .



iii) Define cut-set matrix.

Prove the rank of cut-set matrix $C(G)$ is equal to the rank of the incidence matrix $A(G)$, which equals the rank of graph G .



2. A) Define poset and lattice. 10

Prove that a poset $\langle L, \leq \rangle$ is a lattice if $\sup H$ and $\inf H$ exist for any finite nonvoid subset H of L .

B) Attempt **any two** of the following : 10

i) Let L be a lattice and let I be nonvoid subset of L . Then prove that I is an ideal if and only if $a, b \in I$ implies that $a \vee b \in I$ and $a \in I, x \in L, x \leq a$ imply that $x \in I$.

ii) Prove that the dual of a distributive lattice is distributive.

iii) In any lattice prove that the following inequalities hold :

$$a) (x \wedge y) \vee (x \wedge z) \leq x \wedge (y \vee z)$$

$$b) (x \wedge y) \vee (x \wedge z) \leq x \wedge (y \vee (x \wedge z)).$$

3. A) Let $\alpha_1, \alpha_2, \dots, \alpha_n$ be any n constants and let x_0 be any real number, then prove that there exists a solution Φ of $L(y) = 0$ on $-\infty < x < \infty$ satisfying

$$\Phi(x_0) = \alpha_1, \Phi'(x_0) = \alpha_2, \dots, \Phi^{(n-1)}(x_0) = \alpha_n. \quad 10$$

B) Attempt **any two** of the following : 10

i) Show that $\cos kx, \sin kx, \cosh kx, \sinh kx; k \neq 0$ are solutions of $y^{(4)} - k^4 y = 0$.

ii) If Φ_1, Φ_2 are any two linearly independent solutions of $L(y) = 0$ on an interval I , then prove that every solution Φ of $L(y) = 0$ can be written uniquely as $\Phi = c_1 \Phi_1 + c_2 \Phi_2$. where c_1, c_2 are constants.

iii) Find all solutions of $y''' - 3y' + 2y = 0$.

4. A) Explain the steps in the method of truth-value restrictions. 10

If a fuzzy conditional and qualified proposition is given by

P : "If χ is A then γ is B is very true.", where $A = 1/x_1 + .5/x_2 + .7/x_3$,

$B = .6/y_1 + 1/y_2$ and S stands for very true; let $S(a) = a^2$ for all $a \in [0, 1]$.

If " χ is A' " is given where

$A' = .9/x_1 + .6/x_2 + .7/x_3$ then obtain the fuzzy set B' in the conclusion

" γ is B' " using the method truth-value restrictions.



B) Attempt **any two** of the following : 10

i) Define convex fuzzy set.

Prove that a fuzzy A on r is convex if and only if

$$A(\lambda x_1 + (1 - \lambda)x_2) \geq \min [A(x_1), A(x_2)] \text{ for all } x_1, x_2 \in r.$$

ii) Define fuzzy complement.

Prove that if c is a continuous fuzzy complement then c has a unique equilibrium.

iii) Describe the concept of a fuzzy set in your own words.

5. A) Let R be a ring with unity. Prove that an R -module M is cyclic if and only if

$M \simeq R/I$ for some a left ideal I of R .

10

B) Attempt **any two** of the following :

10

i) State and prove implicit function theorem.

ii) State and prove inverse function theorem.

iii) Let M be a simple R -module. Then show that $\text{Hom}_R (M, M)$ is a division ring.



Ph.D. Course Work Examination, 2015
STATISTICS (Paper – II)
Recent Trends in Statistics

Day and Date : Thursday, 4-6-2015
 Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Let X_1 and X_2 have independent gamma distributions with parameters α, θ

and β, θ respectively. Define $Y_1 = \frac{X_1}{X_1 + X_2}$ and $Y_2 = X_1 + X_2$.

i) Find the joint p.d.f. of Y_1 and Y_2 .

ii) Find marginal p.d.f. of Y_1 and Y_2 .

10

B) Attempt **any two** :

i) Let Z_1 and Z_2 be independent standard normal random variables $N(0, 1)$.

Show that $Y_1 = \frac{Z_1}{Z_2}$ has Cauchy distribution.

5

ii) Explain weak law of large numbers with examples.

5

iii) Let the r.v.s $X_1, X_2 \dots X_K$ be independent and let $X_i \sim P(\lambda_i), i = 1, 2 \dots K$.

Then show that $\sum_{i=1}^K X_i$ follows Poisson distribution with $\lambda_1 + \lambda_2 + \dots + \lambda_K$

parameters.

5

2. A) A r.v. X has p.d.f. $f(x) = \frac{e^{-x}x^{\alpha-1}}{\Gamma(\alpha)}$; $x \geq 0, \alpha > 1$. Show that $P(X \geq c) = P(Y \leq \alpha - 1)$.
 If Y is Poisson r.v. with parameter c .

10

B) Attempt **any two** :

i) Find m.g.f. of Chi-square distribution.

5

ii) If a function F is d.f. defined as $F(x) = \begin{cases} 0 & x \leq 0 \\ \alpha + K.e^{-\frac{x^2}{2}} & x > 0 \end{cases}$
 Determine α and K . Find its p.d.f.

5

iii) Explain Monte-Carlo simulation with application.

5

P.T.O.



3. A) Consider the function $f_{X, Y}$ defined by $f_{X, Y}(x, y) = 8xy$ $0 < x \leq y < 1$ **10**

- i) Verify that $f_{X, Y}$ is indeed, p.d.f.
- ii) Determine marginal and conditional p.d.f.'s
- iii) Calculate $E(X | Y = y)$ and $E(Y | X = x)$
- iv) Calculate $V(X | Y = y)$.

B) Attempt **any two** :

i) Let X have a logistic distribution with p.d.f. $f(x) = \frac{e^{-x}}{(1+e^{-x})^2}$ $-\infty < x < \infty$.

Show that $Y = \frac{1}{1+e^{-x}}$ has a $U(0, 1)$ distribution. **5**

ii) Let $f(x) = \frac{1}{\pi(1+x^2)}$ $-\infty < x < \infty$ be the p.d.f. of Cauchy r.v. X . Show that

$E(X)$ does not exist. **5**

iii) Explain Midsquare method of generating random numbers. **5**

4. A) Given the function $F(X)$ as

$$F(x) = \begin{cases} 0 & x < 0 \\ \frac{x^2}{4} & 0 \leq x < 1 \\ \frac{1}{2} & 1 \leq x < 2 \\ \frac{x}{3} & 2 \leq x < 3 \\ 1 & 3 \leq x \end{cases}$$

- i) Show that $F(X)$ is a d.f.
- ii) Decompose $F(x)$
- iii) Find mean and variance of $F(x)$. **10**



B) Attempt **any two** :

i) Define :

i) Conditional probability

ii) Marginal and conditional distribution

iii) Independent events.

5

ii) Show that 'lack of memory' is a characterising property of the exponential distribution.

5

iii) For any non-negative r.v.X with d.f.f shows that if E (X) exists then

$$E (X) = \int_0^{\infty} (1 - F (X)) dx .$$

5

5. A) Prove that any distribution function f (x) can be expressed as

$$f (x) = \alpha f_d + (1 - \alpha) f_c \text{ where } f_c \text{ is continuous and } f_d \text{ is discrete d.f., } 0 < \alpha < 1.$$

10

B) Attempt **any two** :

i) The joint p.d.f of X, Y is $f (x, y) = \frac{3}{16} (x^2 + y^2), 0 \leq y \leq x \leq z$. Show that X and Y are independent.

5

ii) The joint p.d.f of r.v.'s X, Y, Z is $f (x, y, z) = e^{-(x+y+z)}$ $x, y, z \geq 0$
0 o.w.

Find P (X < Y).

5

iii) Let X have the following pmf $f (x) = \binom{r+X-1}{X} p^r (1-p)^X$ $X = 0, 1, 2, \dots$

Where $0 < p < 1$ and $r > 0$ is an integer. Calculate the m.g.f of X.

5





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Ph.D. Course Work Examination, 2015
Microbiology
Paper – II : RECENT TRENDS IN MICROBIOLOGY

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions: 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

1. A) Discuss in detail principle, working and applications of mass spectroscopy. **10**
B) Write notes on **any two** : **10**
 - i) Radioactivity measurement by GM counter
 - ii) Determination of molecular weight of proteins
 - iii) Southern blot.
2. A) How will separate proteins by using ion exchange chromatography ? Add note on its applications. **10**
B) Explain in brief **any two** of the following : **10**
 - i) Applications of IR
 - ii) Eukaryotic gene expression in bacterial system
 - iii) Density gradient centrifugation.
3. A) Discuss in detail polymerase chain reaction. **10**
B) Write short notes on **(any two)** : **10**
 - i) Liquid scintillation cocktail
 - ii) Role of lipid profiling in identification of bacteria
 - iii) Cell fractionation by ultracentrifuge.



4. A) What do you understand about the technique autoradiography ? **10**
- B) Explain in short **(any two)** : **10**
- i) Applications of DNA fingerprinting
 - ii) Agarose gel electrophoresis
 - iii) Applications of UV-visible spectrophotometer in biology.
5. A) How will proceed for bacterial identification by using molecular tools ? **10**
- B) Explain in short **(any two)** : **10**
- i) Applications of X-ray crystallography
 - ii) Applications of HPLC
 - iii) Dot blot hybridization.
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Ph.D. Course Work Examination, 2015
ENVIRONMENTAL SCIENCE
Paper – II : Recent Trends in Environmental Science

Day and Date : Thursday, 4-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- N.B. :** i) **Each** questions carry **equal** marks.
ii) **Part A** of the questions are **compulsory**.
iii) Solve **any two** from given three questions from **Part B** of question.

1. A) Give the principle and working of colorimeter and add note on its use. **10**
B) Write in brief on **any two** of the following : **10**
a) Application of GPS.
b) Application of GIS in ecology.
c) History of remote sensing.
2. A) What is the use of NMR ? Explain the principle, components and working of NMR. **10**
B) Write in brief on **any two** of the following : **10**
a) Sample preparation for nephelometric analysis.
b) NDIS.
c) FTIR.
3. A) What is the use of HPLC ? Give its principle and explain how it works. **10**
B) Write in brief on **any two** of the following : **10**
a) Principle of AAS.
b) Types of cameras.
c) Types of sensors used in remote sensing.

P.T.O.



4. A) What is aerial photography ? Give the different types of aerial photographs and add a note on its geometry. **10**
- B) Write short notes on **any two** of the following : **10**
- a) Scope of GIS
 - b) Nature and sources of errors in GPS signals.
 - c) Mass spectrophotometer.
5. A) Explain how the remote sensing and GIS is used in disaster management. **10**
- B) Write in brief on **any two** of the following : **10**
- a) Use of GIS in urban management.
 - b) Remote sensing in India.
 - c) ICPES.
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Ph.D. Course Work Examination, 2015
BOTANY (Paper – II)
Recent Trends in Botany

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Explain principles involved in dark field and phase contrast microscope. 10
B) Attempt **any two** of the followings : 10
 - i) Explain basic principles of centrifugation.
 - ii) Describe fixatives used in cytological techniques.
 - iii) Describe applications of micrometry.
 2. A) Describe column chromatography. 10
B) Attempt **any two** of the followings : 10
 - i) Describe applications of UV-VIS absorption spectrophotometry.
 - ii) Describe microphotography.
 - iii) Explain Beer-Lamberts law.
 3. A) Describe the method of herbarium preparation. 10
B) Attempt **any two** of the followings : 10
 - i) Explain scanning electron microscopy.
 - ii) Describe NMR spectrometry.
 - iii) Explain microbial staining technique.
 4. A) Explain Giger-Muller and Liquid Scintillation counter. 10
B) Attempt **any two** of the followings : 10
 - i) Describe the methods of sterilization.
 - ii) Explain the micrometry technique.
 - iii) Describe the role of isotopes in biochemistry.
 5. A) Describe the equipments used in culture techniques. 10
B) Attempt **any two** of the followings : 10
 - i) Describe the principles and applications of a Camera Lucida.
 - ii) Explain density gradient separation.
 - iii) Describe MASS spectrometry.
-



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Ph.D. Course Work Examination, 2015
LIBRARY AND INFORMATION SCIENCE
Paper – II : Recent Trends in Library and Information Science

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Black figures to the right indicates full marks.**

1. A) What is RSS feeds and explain its uses in library and information centres ? **10**
B) Short answer type (**any two**) : **10**
 - i) Differentiate between Web 1.0 and Web 2.0.
 - ii) Explain the concept of e-governance.
 - iii) What do you mean by DBMS ?

2. A) Discuss in detail in the step to be adopted in the digitization process. **10**
B) Short answer type (**any two**) : **10**
 - i) Highlight the features of D-Space.
 - ii) Explain the concept of Metadata.
 - iii) Give the list of proprietary and Open source RDBMS software.

3. A) Explain the concept of resource sharing and the barriers associated in resource sharing in the present context. **10**
B) Short answer type (**any two**) : **10**
 - i) Explain the need for Consortia.
 - ii) Write a note on INDEST.
 - iii) Explain the concept of RDBMS.

P.T.O.



4. A) What do you mean by Internet security ? Suggest various measure to be taken to secure internet in a library. **10**
- B) Short answer type (**any two**) : **10**
- i) Explain the concept of Hub and Switch.
 - ii) Explain with suitable diagram the use of Routers in a network.
 - iii) State the need for DBMS.
5. A) Explain the need for information literacy and highlight the standards of ACRL for information literacy. **10**
- B) Short answer type (**any two**) : **10**
- i) Explain the concept of computer literacy.
 - ii) Explain in short any two methods of imparting information literacy programme.
 - iii) Write a note on SQL.
-



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Ph.D. Course Work Examination, 2015
ECONOMICS (Paper – II)
Recent Trends in International Economics

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

1. A) Examine the Linder's theory of volume of trade and demand pattern. 10
B) Answer **any two** questions of the following. 10
 - i) Discuss the relationship between economic growth and international trade.
 - ii) Describe the gains from international trade.
 - iii) What do you know about dumping ?

2. A) Describe the Posner's theory of technological gap. 10
B) Answer **any two** questions of the following. 10
 - i) How does free trade affect the domestic prices ?
 - ii) Explain the linkage between globalization and trade.
 - iii) Describe the term intra-industry trade.

3. A) Elucidate the Vernon's product cycle theory. 10
B) Answer **any two** questions of the following. 10
 - i) What are the objectives of the WTO ?
 - ii) Differentiate between GATT and WTO.
 - iii) Explain the liberalization measures adopted in India.

P.T.O.



4. A) Assess the trends in composition of India's foreign trade since 1991. **10**
- B) Answer **any two** questions of the following. **10**
- i) Describe the impact of liberation on Indian economy.
 - ii) Elucidate the export promotion measures implemented in India.
 - iii) Explain salient features of India's trade policy since 1991.
5. A) Assess the trends in foreign direct investment in the post reform India. **10**
- B) Answer **any two** questions of the following. **10**
- i) Elucidate the impact of WTO on Indian economy.
 - ii) Describe the role of FDI in export infrastructure development in India.
 - iii) What do you know about Special Economic Zones (SEZs) ?
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**Ph.D. Course Work Examination, 2015
A.I.H.C. AND A (Paper – II)
Recent Trends in Indian Archaeology**

Day and Date : Thursday, 4-6-2015

Max. Marks : 100

Time : 11 .00 a.m. to 2.00 p.m.

1. A) Discuss the Acheulian phase in India with suitable example. **10**
B) **Any two** :
 - i) Australopethicus. **5**
 - ii) Bhimbetka. **5**
 - iii) Vidharbha megalithic scenario. **5**
 2. A) Outline the important features of the town planning and architecture of Harappan Civilization. **10**
B) **Any two** :
 - i) Harappan script. **5**
 - ii) Kalibangan. **5**
 - iii) Cemetry 'H' culture. **5**
 3. A) Discuss the theory of four ashramas and its implication in ancient India. **10**
B) **Any two** :
 - i) Different types of South Indian Megalithic burials. **5**
 - ii) Ashmounds. **5**
 - iii) Cult of Sacrifice. **5**
 4. A) Critically examine important principles and various factors responsible for the spread of Jainism in Ancient India. **10**
B) **Any two** :
 - i) Vishnu. **5**
 - ii) Rudra. **5**
 - iii) Historical account of worship of Shiva Linga. **5**
 5. A) What are the differnt megalithic burials in South India ? Discuss their origins. **10**
B) **Any two** :
 - i) Basic tenets of Jainism. **5**
 - ii) Soma. **5**
 - iii) Nalanda University. **5**
-



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Ph.D. Course Work Examination, 2015
SCIENCE
Paper No. I : Research Methodology and ICT

Day and Date : Tuesday, 2-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instruction : Answer all questions.

1. A) Explain an imperial basis of laws, theory and deductive system. 10
B) Answer **any two**. 10
 - i) Discuss on the hypothesis.
 - ii) Explain the block schematic of scientific approach.
 - iii) State the dynamic theory of construction.
2. A) Explain the formulation of research problems, accuracy of definition and research design. 10
B) Answer **any two** : 10
 - i) Discuss on Review of literature.
 - ii) Write note on the preparation of thesis.
 - iii) Explain the types of research.
3. A) Explain the planning of experiments and record keeping. 10
B) Answer **any two**. 10
 - i) Write on presentation of research outcome.
 - ii) Discussion on the SCOPUS.
 - iii) Write note on results and discussion.

P.T.O.



4. A) State the types of data and various methods of data collection. **10**
- B) Answer **any two**. **10**
- i) Write on sampling methods.
 - ii) Write note on ANOVA and ANCOVA.
 - iii) Discuss on filing of patent.
5. A) What is the use of impact factor ? How calculate it ? **10**
- B) Answer **any two**. **10**
- i) Write on listing of various journals in relevant topic.
 - ii) What is the difference between ISSN and ISBN.
 - iii) State the application of internet browsing in research.
-



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Ph.D. Course Work Examination, 2015
HISTORY (Paper – II)
Recent Trends in Indian History

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Long answers type question : 10
 - i) Evaluate the work of James Mill as a colonial Historian in the Indian History.
- B) Short answers type question (**any two**) : 10
 - i) Discuss the thoughts of V. A. Smith through the books “Early History of India” and “Akbar the Great Mughal.”
 - ii) State the work of M. G. Ranade in the Nationalist School.
 - iii) Trace the Irfan Habib as a Marxist Historian.
2. A) Long answers type question : 10
 - i) Give the main features of Marxist History writing in Indian History.
- B) Short answers type question (**any two**) : 10
 - i) Sketch the role of Mount Stuart Elphinston in the colonial trend.
 - ii) Write a short note on the theory of “Hegemony”.
 - iii) What is the role of Regional History in the National History ?
3. A) Long answers type question : 10
 - i) Explain the great contribution of Dr. Ranjit Guha as a creator of Subaltern trend in Indian History writing.
- B) Short answers type question (**any two**) : 10
 - i) Describe the thoughts of K. P. Jayswal through the books “Hindu Polity” and “History of India”.
 - ii) Throw the light on the books “Myth and Reality” and “Introduction to the Study of Indian History” of D. D. Kosambi.
 - iii) Trace the work of Jean Lyotard as a post modernism writer.

P.T.O.



4. A) Long answers type question : 10
i) What is the nature of Regional and Local History ?
- B) Short answers type question (**any two**) : 10
i) Discuss the concept of “History from down Below”.
ii) Describe the work of Dr. Bipin Chandra in the Marxist trend.
iii) Give the contribution of Jean Baudrilard in the post modernism trend.
5. A) Long answers type question : 10
i) What is the post modernization ?
- B) Short answers type question (**any two**) : 10
i) Sketch the role of R. C. Dutta as a Nationalist Historian.
ii) Discuss the articles of Sumit Sarkar.
iii) What is the importance of Local History ?
-



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Ph.D. Course Work Examination, 2015
POLITICAL SCIENCE
Paper – II : Recent Trends in Political Science

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :** 1) **All questions are compulsory.**
2) **All questions carry equal marks.**
3) **Figures to the right indicate marks.**

1. A) Explain the principles of Environmentalism. 10
- B) Write short answers on **any two** of the following : 10
- 1) Write the Relevance of Multiculturalism.
- 2) State the meaning of ecologism.
- 3) Discuss the features of distributive justice.
2. A) Critically evaluate the theory of communitarianism. 10
- B) Write short answers on **any two** of the following : 10
- 1) Meaning of alternative development.
- 2) Write the features of globalization.
- 3) Write the nature of accountability of Public Administration.
3. A) Comment on the role of Lokpal. 10
- B) Write short answers on **any two** of the following : 10
- 1) Write the influences on John Rawl.
- 2) State the elements of communitarianism.
- 3) Write the causes of corruption.

P.T.O.



4. A) Explain the features of multiculturalism. 10
- B) Write short answers on **any two** of the following : 10
- 1) Need of Lokayukta.
 - 2) Meaning of development administration.
 - 3) Write the effects of globalization on development administration.
5. A) What is mean by Accountability ? Explain the principles of accountability of public administration. 10
- B) Write short answers on **any two** of the following : 10
- 1) Write the challenges before development administration.
 - 2) State the features of Governance.
 - 3) Write the nature of alternative development.
-



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Ph.D. Course Work Examination, 2015
PHILOSOPHY (Paper – II)
Recent Trends in Philosophy

Day and Date : Thursday, 4-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) How Moore refutes the philosophy of idealism ? 10
B) Write short answers (**any two**) : 10
 - 1) What is Atomic facts according to Russell ?
 - 2) Write Kirkegard's view on Freedom.
 - 3) Explain the 'Extension of Cartesian method of doubt' by Husserl.

2. A) What is Logical Atomism ? 10
B) Write short answers (**any two**) : 10
 - 1) What is Sartre's view about God ?
 - 2) Write brief essay on Moore's defence of common sense.
 - 3) Explain 'Unconditioned Mind' according to J. Krishnamurthy.

3. A) Give an account of phenomenology. 10
B) Write short answers (**any two**) : 10
 - 1) State Russell's view on Atomic Statements.
 - 2) What is Linguistic Analysis ?
 - 3) What is J. Krishnamurthy's concept of philosophy ?

P.T.O.



4. A) How Sartre defines the concept of Nothingness ? 10
- B) Write short answers (**any two**) : 10
- 1) Explain the theory of Correspondence theory of truth.
 - 2) What is the nature of Russell's theory of Description ?
 - 3) How K.C. Bhattacharya explains subject as freedom ?
5. A) Write an essay on K.C. Bhattacharya's philosophy. 10
- B) Write short answers (**any two**) : 10
- 1) What is Kirkegard's view on responsibility ?
 - 2) What is Logical construction ?
 - 3) Explain K.C. Bhattacharya's view on Truth and Error.
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Ph.D. Course Work Examination, 2015
PSYCHOLOGY
Paper – II : Recent Trends in Psychology

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions: 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**

1. A) Explain the organizational principles of perception. 10
B) Answer **any two** short notes of the following : 10
 - 1) Top-down process
 - 2) Operant conditioning
 - 3) The Echoic memory.

2. A) Explain the schedules of reinforcement. 10
B) Answer **any two** short notes of the following : 10
 - 1) Vision and the brain
 - 2) Autobiographical memory
 - 3) Maslow's need hierarchy.

3. A) Describe the concept of 'Long-term memory'. 10
B) Answer **any two** short notes of the following : 10
 - 1) Critical thinking
 - 2) Cannon-Bard theory of emotion
 - 3) Subtests of the Wechsler Adult Intelligence scale.



4. A) Describe the types of reasoning. 10
- B) Answer **any two** short notes of the following : 10
- 1) Causes of forgetting
 - 2) Non-verbal communication
 - 3) A componential approach of reasoning.
5. A) Define motivation and explain the biological motives. 10
- B) Answer **any two** short notes of the following : 10
- 1) The mental model approach of reasoning
 - 2) Social motives
 - 3) Gardner's theory of multiple intelligence.
-



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Ph.D. Course Work Examination, 2015
Paper – II : SOCIOLOGY
Recent Trends in Sociological Theory

Day and Date : Thursday, 4-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Explain the critical approach of Habermass to communication theory. **10**
B) Write short notes on **any two** of the following : **10**
 - i) Luhman's basic approach.
 - ii) Nature of Neo-Marxism.
 - iii) Contribution of George Lukacs.
2. A) Evaluate Garfinkel's contribution to ethnomethodology. **10**
B) Write short answers on **any two** of the following : **10**
 - i) Basic conceptual core of ethnomethodology.
 - ii) Basic assumptions of Phenomenology.
 - iii) Edmund Hussrel's Phenomenology.
3. A) Explain the nature of structuralism and outline the contribution of Levi-strauss in it. **10**
B) Write short answers on **any two** of the following : **10**
 - i) Structuralism as a method
 - ii) Althusser's structural Marxism
 - iii) Reflexive sociology.

P.T.O.



4. A) Define Post-structuralism and evaluate the need of post-structuralism. **10**
- B) Write short answers on **any two** of the following : **10**
- i) Archaeology of knowledge.
 - ii) Gidden’s structuration theory.
 - iii) Linguistic structuralism.
5. A) Describe the major roots of post-modern theory. **10**
- B) Write short answers on **any two** of the following : **10**
- i) Foucault’s post-structuralism.
 - ii) Derrida’s Deconstructionism.
 - iii) Meta-Narratives.
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Ph.D. Course Work Examination, 2015
SOCIAL WORK
Paper – II : Recent Trends in Social Work Course Content

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Critically examine the Backward Class Welfare Policy of India. 10
B) Give answers in short (**any two**). 10
 - i) Transfer of Dowry Property.
 - ii) Town Planning.
 - iii) Employee Morale.
2. A) Discuss in detail performance appraisal and its importance in individual development. 10
B) Give answers in short (**any two**) : 10
 - i) Motivation
 - ii) Communication
 - iii) Professional skills of development functionaries.
3. A) Explain administrative structure and functions of Urban Community Development. 10
B) Give answers in short (**any two**) : 10
 - i) Beginning of Social Work Education.
 - ii) Ideologies of Non-Government Organizations.
 - iii) Dalits and Social Work.

P.T.O.



4. A) State the impact of Liberalization, Privatization and Globalization on rural development. **10**
- B) Give answers in short (**any two**) : **10**
- i) National Association of Social Workers (NASW)
 - ii) Child Protection
 - iii) Role of HRD Manager.
5. A) What functions the State should and should not undertake in the achievement of Social Welfare Goals according to Maclver. **10**
- B) Give answers in short (**any two**) : **10**
- i) Rehabilitation of displaced persons.
 - ii) Central Social Welfare Board (C.S.W.B).
 - iii) Social Defence Programme.
-



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Ph.D. Course Work Examination, 2015
JOURNALISM AND MASS COMMUNICATION
Paper No. – II : Recent Trends in Mass Communication and Society

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions: 1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***

1. A) Explain characteristics of Mass Communication and state the term 'Mass Society'. 10
B) Short answer type (**any two**) : 10
 - i) What is Communication Theory ? Explain Agenda Setting Theory.
 - ii) Write about the Democratic Participant Theory of Press.
 - iii) State the need of alternative communication theories.
2. A) Describe the main trends of Indian Press after 1990's. 10
B) Short answer type (**any two**) : 10
 - i) 'Raja Ram Mohan Roy as a social reformer journalist'. Discuss.
 - ii) Write a note on 'underground press and emergency'.
 - iii) Write about FDI in Indian television media.
3. A) How content analysis is useful for mass media research ? Explain. 10
B) Short answer type (**any two**) : 10
 - i) State the various areas of print media research.
 - ii) Define case studies and write type of case studies.
 - iii) Write the 'Media planning' in advertising research.

P.T.O.



4. A) What is culture and discuss the term 'Cultural imperialism' ? **10**
- B) Short answer type (**any two**) : **10**
- i) State the role of media on 'Women and violence'.
 - ii) Describe the emerging issues in environmental journalism.
 - iii) Write a note on 'Human Riouts and Media'.
5. A) Discuss the role of PCI on 'paid news' issue. **10**
- B) Short answer type (**any two**) : **10**
- i) Define media ethics and state the need of media ethics.
 - ii) Explain the term freedom of expression and its Constitutional provisions.
 - iii) Write on 'Indian Information Act, 2000'.
-



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Ph.D. Course Work Examination, 2015
EDUCATION (Paper – II)
Recent Trends in Education

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) How does media literacy affect the role of the teacher ? Explain. 10
B) Answer **any two** of the following. 10
 - a) Distinguish between direct assessment and authentic assessment.
 - b) Explain the factors/characters of critical thinking skills.
 - c) State the problems in achieving an excellence in education.

2. A) What is the impact of Globalization on higher education ? 10
B) Answer **any two** of the following. 10
 - a) State the core values of Assessment and Accreditation in higher education.
 - b) What are the barriers in education for sustainable future ?
 - c) Discuss the imbalanced factors in the education system in India.

3. A) State the aspects of creativity. Explain the methods and techniques for fostering the student's creativity. 10
B) Answer **any two** of the following. 10
 - a) Explain the need and importance of short-term training programmes.
 - b) What do you mean by multi-grade teaching ? What is the position of multi-grade teaching in India today ?
 - c) Merits and demerits of teleconferencing in education.

P.T.O.



4. A) How will you apply behaviour theories of leadership for transformational leadership in your institution as a Head/Principal ? **10**
- B) Answer **any two** of the following. **10**
- a) “Manager is superior to the leader for bringing reform in higher education”. Comment on this statement.
 - b) Explain the trait theories of leadership.
 - c) Why there is a need of research to improve the leadership quality in India ?
5. A) Whether there is a difference between quality of Government and self-financing higher education institutions ? If yes, Why ? **10**
- B) Answer **any two** of the following. **10**
- a) What do you, mean by ‘Quality Audit in Higher Education’ ?
 - b) How will be overcome the problems in bringing Total Quality Management in higher education ?
 - c) “Quality Audit improves the quality of higher education institutions”. Discuss the statement.
-



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Ph.D. Course Work Examination, 2015
PHYSICAL EDUCATION (Paper – II)
Recent Trends in Physical Education and Sports

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

Suggestions : 1) *All questions are compulsory.*
2) *Write figures are indicate marks.*

1. A) Explain the role, scope and limitations of womens in participation in sports. **10**
B) Write short notes (**any two**) : **10**
 - 1) Exercises for mental health.
 - 2) National integration through sports
 - 3) Yogic practices for good health.
2. A) Explain in detail the new apparatus in sports and games with suitable examples. **10**
B) Write answers (**any two**) : **10**
 - 1) Balance diet for good health
 - 2) Miner research project
 - 3) Newton's laws
3. A) Explain the new measures in exercise physiology used. **10**
B) Write short notes : **10**
 - 1) Applications of Biomechanics in shot-put
 - 2) Government policies of physical health
 - 3) Funding policies for major project

P.T.O.



4. A) Explain about the international research project in detail. **10**
- B) Write answers (**any two**) : **10**
- 1) New techniques of testing of physical abilities in sports.
 - 2) Group activities for healthy life
 - 3) Physical activities for disable persons.
5. A) Write on modern technology in sports for better performs. **10**
- B) Write short notes (**any two**) : **10**
- 1) Advanced equipments in sports and games.
 - 2) Research institutes in physical education in India.
 - 3) Mechanical principals used in jumping events.
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Ph.D. Course Work Examination, 2015
LAW
Law and Social Transformation in India (Paper – II)

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : i) **All questions are compulsory.**
ii) **Figures to the right indicate full marks 10 marks each.**

1. A) Explain the contribution of National Commission and State Commission for protection of children. 10
B) Write short notes on **any two** : 10
 - a) Bhudan movement
 - b) Legal status of live-in relationship in India
 - c) Socialistic thought on law and justice.
2. A) “Law must be sufficiently flexible to take into account social realities in order to provide the maximum of people’s wants with the minimum of friction and waste”. Examine the correctness of the statement in Indian context. 10
B) Write short notes on **any two** : 10
 - a) Sustainable development v/s environment protection
 - b) Domestic violence against women
 - c) Agrarian reforms.
3. A) ‘A country cannot be developed without the participation of village unit-local self government.’ – Mahatma Gandhiji. Explain. 10
B) Write short notes on **any two** : 10
 - a) Religious minorities-legal protection
 - b) Multilanguage system
 - c) Law as a product of tradition and culture.



4. A) How does community as a social institution work as a divisible factor irrespective of the fact that India is a secular state ? **10**
- B) Write short notes on **any two** : **10**
- a) Right to Education of the Children
 - b) Preconception and prenatal diagnostic techniques Act
 - c) Reservation for women in local self government.
5. A) Explain the development and assess contribution of ADR in the justice delivery system in India. **10**
- B) Write short notes on **any two** : **10**
- a) Mandal commission and amendment in the constitution of India.
 - b) Sons of soil and regionalism
 - c) Naxalite movement-causes and cure.
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Ph.D. Course Work Examination, 2015
Commerce
Paper – II : RECENT TRENDS IN COMMERCE

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

N.B. : i) *Attempt all questions.*
ii) *All questions carry equal marks.*

1. a) What are the problems and prospects of Global E-Commerce ? **10**
b) Explain **any two** of the following : **10**
 - i) E-Commerce in developing countries
 - ii) E-payment role in E-Commerce
 - iii) Business between B2B and B2C.
2. a) What do you mean by E-CRM ? Explain its role in changing world of work. **10**
b) Write short notes on **any two** of the following : **10**
 - i) What is the role of RFID and Barcode in E-Commerce
 - ii) Role of M-Commerce in computing environment
 - iii) Changing role of commerce.
3. a) Describe the role of IT system in managing Business environment. **10**
b) Explain **any two** of the following : **10**
 - i) Trends in Social Commerce
 - ii) Social Currency
 - iii) Social Rewards.

P.T.O.



4. a) What is just in case system ? Explain its significance in international business. **10**
- b) Write short notes on **any two** of the following : **10**
- i) New Trends in international trade
 - ii) Just in time system
 - iii) Contribution of service sector in Indian Economy.
5. a) Explain service quality with suitable examples. **10**
- b) Write short notes (on **any two**) : **10**
- i) Business intelligence
 - ii) Data mining and decision support
 - iii) IT and Business Services.
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Ph.D. Course Work Examination, 2015
CIVIL ENGINEERING
Paper – II : Recent Trends in Civil Engineering

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

- Instructions :** i) Solve **any five** questions.
ii) **Assume** any suitable data if necessary and mention it **clearly**.
iii) Use of non-programmable calculator is **allowed**.

1. i) Explain with example how to use formulae and functions in spread sheet tool. **10**
ii) Write a short note on : **10**
a) Open Office
b) Use of Internet
2. i) Explain the different features and functions available in presentation tools. **10**
ii) What is World Wide Web (WWW) and its use in research work. **10**
3. i) Perform four iterations of the Newton-Raphson Method to find the smallest root of the equations **10**
 $f(x) = x^3 - 5x + 1 = 0$
The smallest positive root lies in the interval (0, 1). Take the initial approximation as $x_0 = 0.5$.
- ii) For the following data, calculate the differences and obtain the forward and backward difference polynomials. Interpolate at $X = 0.25$ and $X = 0.35$. **10**

x	0.1	0.2	0.3	0.4	0.5
f(x)	1.40	1.56	1.76	2.00	2.28



4. i) For the Matrix $\begin{bmatrix} 1 & 2 & -2 \\ 1 & 1 & 1 \\ 1 & 3 & -1 \end{bmatrix}$ 10

Find all the eigen values and corresponding eigen vectors.

- ii) A trapezoidal footing is to be produced to support square columns of 30 cm and 50 cm size respectively. Columns are 6 m apart and SBC of soil is 400 kN/m². A bigger column carries 5000 kN and smaller 3000 kN. Design a suitable size of the footing so that it does not extend beyond the face of the column. 10
5. i) A survey of 200 firms found the following evidences regarding profitability and market share. Do you find the data below gives you significant evidence to conclude that market share and profitability are related ? Test hypothesis at 0.01 level of significance. 10

	Market Share			
Profitability	Upto 10%	11.25%	>25%	Total
Low	36	14	16	66
Medium	26	22	16	64
High	16	24	62	70
Total	78	60	94	200

- ii) Write short notes on **any two** distributions with appropriate engineering examples. 10
- Binomial
 - Normal
 - Log-Normal
6. i) A company has deputed 4 different batches (A, B, C, D) of its employees to four different training programmes which aims to train them with negotiation skill. Each batch consists of 5 employees of same qualification and experience.



After training programme, company conducted a test and employees scored marks as per following table. Perform ANOVA to check whether there is any significant difference between the training of A, B, C and D by assuming a significance level of 5%. 10

Employees	Scores of Batches with training programmes			
	A	B	C	D
1	80	70	65	90
2	90	60	50	89
3	96	55	58	85
4	85	85	55	95
5	70	90	40	80

Calculate at 5% significance level whether there is any difference between salesman, between areas and/or between weeks.

- ii) Explain in detail the use of Poisson's distribution with appropriate engineering examples. 10



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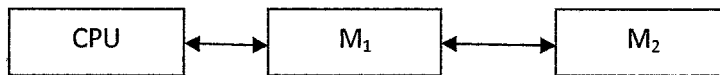
Ph.D. Course Work Examination, 2015
COMPUTER SCIENCE AND ENGINEERING
Paper – II : Recent Trends in Computer Science and Engineering

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Consider a two-level memory hierarchy (M_1, M_2) for a computer system, as depicted in the following diagram

10



Let C_1 and C_2 be the costs per bit, S_1 and S_2 storage capacities, and t_1 and t_2 be the access times of the memories M_1 and M_2 , respectively. The hit ration H is defined as the probability that the logical address generated by the CPU refers to the information stored in M_1 . Answer the following questions associated with this virtual memory system.

- What is the average cost C per bit of the entire memory hierarchy ?
- Under what conditions will the average cost per bit C approach C_2 ?
- What is the average access time t_a for the CPU to access a word from the memory system ?

- B) Answer **any two** out of three :

- Draw and explain the three level memory hierarchy systems using two processors. 5
- Draw the flowchart for cache operation for fetch. 5
- What is RAID ? Explain the various levels provided by RAID. 5

2. A) If a total of 32 MHz of bandwidth is allocated to a particular FDD cellular telephone system which uses two 25 KHz simplex channels to provide full duplex voice and control channels. Compute the number of channels available per cell if a system uses :

- 7-cell reuse
- 12-cell reuse
- 19-cell reuse.

If 1 MHz of allocated spectrum is dedicated to control channels, determine an equitable distribution of control channels and voice channels in each cell for each of above three systems.

10

P.T.O.



- B) Answer **any two** out of three :
- i) What were the problems of conventional mobile telephone system ?
How these problems are taken care of by Cellular Technology ? **5**
 - ii) What are the pros and cons of having smaller cells in Mobile Networks ? **5**
 - iii) Give an explain the WAP Programming model. **5**
3. A) How a parallel algorithm is used for finding the connected components of a graph (assume any graph with 5 nodes) ? **10**
- B) Answer **any two** out of three :
- i) Differentiate between the models of computations for parallel computations. **5**
 - ii) When are the parallel algorithms “work optimal” ? **5**
 - iii) How to compute a length of shortest path of a given graph by using parallel algorithm ? **5**
4. A) Explain following sources of optimization : **10**
- a) Common Sub Expression Elimination
 - b) Variable Propagation
 - c) Code Movement
 - d) Dead Code Elimination
 - e) Loop Optimization.
- B) Answer **any two** out of three :
- i) What is peephole optimization ? **5**
 - ii) What are the issues in Automatic Code Generation ? **5**
 - iii) List and explain in brief the major categories of clustering algorithms in data mining. **5**
5. A) Explain Two Phase Commit Protocol for distributed database system.
How 2PC protocol responds to different types of failures such as failure of a participating site, failure of the coordinator and network partition ? **10**
- B) Answer **any two** out of three :
- i) What are the different types of distributed data storage ? **5**
 - ii) How image mining can be done using wavelet transform ? **5**
 - iii) How neural network can be used for data mining ? **5**
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Ph.D. Course Work Examination, 2015
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Paper – II : Recent Trends in Electronics & Telecommunication
Engineering

Day and Date : Thursday, 4-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Note : All questions are compulsory and carry equal marks.

SECTION – I

1. Explain Array and Matrix operation supported by MATLAB with suitable examples.
2. Write the MATLAB statements required to calculate $y(t)$ from the equation

$$y(t) = \begin{cases} -3t^2 + 5 & t \geq 0 \\ 3t^2 + 5 & t < 0 \end{cases}$$

3. Write MATLAB program to convert Cell Array to structure.
4. Define any five graphics features used in GUI programming with MATLAB.
5. Write MATLAB program to create 2D and 3D plot with one example each.

SECTION – II

6. What is the significance of signal to noise ratio in modulation / demodulation techniques.
 7. Write MATLAB program for Designing of IIR Butterworth filter.
 8. Explain in detail the design of Adaptive filters.
 9. Explain any five function used in signal processing toolbox of MATLAB.
 10. Write MATLAB code for Minimal Mean Square Error (MMSE) algorithm.
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Ph.D. Course Work Examination, 2015
MECHANICAL ENGINEERING (Paper – II)
Recent Trends in Mechanical Engineering from Technology
Management Perspective

Day and Date : Thursday, 4-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : 1) Answer **all five** questions.
2) Assume suitable data **if necessary**.
3) Figures to the **right** indicate **full** marks.

1. A) What is technology management ? How management function supports technology management ? 10
- B) Answer **any two** : 10
- 1) Discuss the role of government in technology development.
- 2) Explain :
- i) Copyrights and
- ii) Trademarks.
- 3) Write a short note :
- i) SWOT Analysis
- ii) Technology Transfer Process.
2. A) Explain morphological analysis with suitable example. 10
- B) Answer **any two** : 10
- i) How technology forecasting helps to be competitive in market ?
- ii) Explain growth curves.
- iii) State your views about ensuring technological leadership.
3. A) Explain with example any one technique for technology forecasting. 10
- B) Answer **any two** : 10
- i) State the factors affecting rate of technology diffusion.
- ii) How will you relate innovation time and innovation cost ?
- iii) Write about project management from perspective of new technology implementation.

P.T.O.



4. A) Discuss technological changes and industrial relationship. **10**
- B) Answer **any two** : **10**
- i) What is technology outsourcing ?
 - ii) Comment on integration of people and technology from perspective of social issues.
 - iii) How the psychological factors affect adoption of new technology ?
5. A) What is Technology Assessment with respect to technology choice and acquisition ? **10**
- B) Solve **any two** : **10**
- 1) Discuss the technology adoption phases.
 - 2) Discuss the Entrepreneur opportunities and technology changes.
 - 3) Discuss the social consequence of technological changes.
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Ph.D. Course Work Examination, 2015
MARATHI (Paper – III)
मराठी साहित्यातील नव्या संकल्पना

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

१. अ) वास्तववादाचे स्वरूप आणि वैशिष्ट्ये सांगा. १०
- ब) पुढीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे द्या : १०
- १) वास्तववादी वाङ्मय म्हणजे काय ?
- २) मराठीतील वास्तववादा विषयीची विविध मतमतांतरे सांगा.
- ३) वास्तववादाच्या मर्यादा सांगा.
- ४) वास्तववादाची संकल्पना स्पष्ट करा.
२. अ) अस्तित्ववाद म्हणजे काय पाश्चात्यांचे विचार सांगा. १०
- ब) पुढीलपैकी दोन प्रश्नांची थोडक्यात उत्तरे लिहा : १०
- १) अस्तित्ववादी कादंबरीचे विशेष लिहा.
- २) वास्तववाद आणि अस्तित्ववाद यांच्यातील भेद सांगा.
- ३) मराठी साहित्यातील अस्तित्ववादाचे निराळेपण विशद करा.
- ४) अस्तित्ववादा विषयीची अभ्यासकांची वैचारिक भूमिका सांगा.
३. अ) आधुनिकते संकल्पना साधार स्पष्ट करा. १०
- ब) पुढीलपैकी दोन प्रश्नांची थोडक्यात उत्तरे लिहा : १०
- १) आधुनिकता मराठी साहित्यामध्ये कशी येते ते सोदाहरण लिहा.
- २) उत्तर आधुनिकतेचे स्वरूप विशद करा.
- ३) आधुनिकतेचे ठळक विशेष नोंदवा.
- ४) आधुनिकता आणि उत्तर आधुनिकता या मधील फरक स्पष्ट करा.

P.T.O.



४. अ) मराठी साहित्यातील देशीवाद स्पष्ट करा. १०
- ब) पुढीलपैकी दोन प्रश्नांची थोडक्यात उत्तरे लिहा : १०
- १) देशीवादा विषयीचे विविध मते नोंदवा.
 - २) देशीवादाच्या मर्यादा स्पष्ट करा.
 - ३) गणेश देवी यांनी देशीवादाचा विचार कसा सांगितला ते लिहा.
 - ४) मराठी साहित्यामध्ये देशीवाद टिकून राहिल काय ? चर्चा करा.
५. अ) संरचनावाद म्हणजे काय ? ते उलगडून दाखवा. १०
- ब) पुढीलपैकी दोन प्रश्नांची थोडक्यात उत्तरे लिहा : १०
- १) संरचनावादी समीक्षांच्या मर्यादा स्पष्ट करा.
 - २) मराठी साहित्यातील एका कलाकृतीचे संरचनावादी दृष्टिकोनातून विश्लेषण करा.
 - ३) रूपवादी समीक्षेची परंपरा सांगा.
 - ४) भाषा आणि संरचनावाद मधील नाते विशद करा.
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Ph.D. Course Work Examination, 2015
ENGLISH (Paper – III)
(Modern Trends in Drama, Novel and Poetry)

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

SECTION – I

1. A) Discuss major characteristics of Modernism in literature. 10
B) Write a note on **any two** of the following : 10
 - i) Post modernism
 - ii) Realism in drama
 - iii) The birth of the Dadaist Movement.

2. A) What are the conventions of the Theatre of the Absurd ? 10
B) Write a note on **any two** of the followings : 10
 - i) Surrealism
 - ii) Epic Theatre
 - iii) The Symbolic Movement.

3. A) Discuss the use of absurdity in *Waiting for Godot*. 10
B) Write a note on **any two** of the followings : 10
 - i) Swiss Cheese
 - ii) Brecht's view of religion in *Mother Courage and Her Children*
 - iii) Kattrin.

P.T.O.



4. A) Write an essay on Joyce's use of stream of consciousness technique in *A Portrait of the Artist as a Young Man*. **10**
- B) Write a note on **any two** of the followings : **10**
- i) Issue of racism in *The Grass is Singing*
 - ii) Mary Turner
 - iii) Charlie Slatter.
5. A) Discuss the theme of the post war depression and futility in *The Wasteland*. **10**
- B) Write a note on **any two** of the followings : **10**
- i) The view of nature presented in "Hawk Roosting"
 - ii) Symbolism in "The Thought Fox"
 - iii) Theme of "Pike".
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**Ph.D. Course Work Examination, 2015
HINDI**

प्रश्न पत्र – 3 : हिन्दी साहित्य : आलोचना के नए आयाम

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. अ) साहित्य और आलोचना का परस्पर संबंध विशद कीजिए। 10
आ) निम्नलिखित में से **किन्हीं दो** पर टिप्पणियाँ लिखिए। 10
 - i) आ. शुक्ल
 - ii) आ. नंददुलारे वाजपेयी
 - iii) रमणिका गुप्ता।
2. अ) शैलीवैज्ञानिक आलोचना का विवेचन कीजिए। 10
आ) निम्नलिखित में से **किन्हीं दो** पर टिप्पणियाँ लिखिए। 10
 - i) समाजशास्त्रीय आलोचना
 - ii) मार्क्सवादी आलोचना
 - iii) मनोविश्लेषणवादी आलोचना।
3. अ) साहित्य के समाजशास्त्र को स्पष्ट कीजिए। 10
आ) निम्नलिखित में से **किन्हीं दो** पर टिप्पणियाँ लिखिए। 10
 - i) साहित्य और इतिहास दर्शन
 - ii) साहित्य का मनोवैज्ञानिक अध्ययन
 - iii) साहित्य और वैज्ञानिक बोध।

P.T.O.



4. अ) हिंदी साहित्य के ग्रामबोध पर प्रकाश डालिए। 10
- आ) निम्नलिखित में से **किन्हीं दो** पर टिप्पणियाँ लिखिए। 10
- i) आंचलिकता
 - ii) महानगरीय बोध
 - iii) नवभांडवलक्षर (नवउपभोक्तावाद)।
5. अ) तुलनात्मक अध्ययन की प्रविधि को स्पष्ट कीजिए। 10
- आ) निम्नलिखित में से **किन्हीं दो** पर टिप्पणियाँ लिखिए। 10
- i) साहित्यकार के संदर्भ में युग का तुलनात्मक अध्ययन
 - ii) कृति के संदर्भ में भाषा का तुलनात्मक अध्ययन
 - iii) कृति के संदर्भ में दर्शन का तुलनात्मक अध्ययन।
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Ph.D. Course Work Examination, 2015
KANNADA
Paper – III : Modern Topics in Kannada

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) ಆಧುನಿಕ ಕನ್ನಡ ನಾಟಕಗಳ ಪ್ರೇರಣೆ-ಧೋರಣೆ ಕುರಿತು ನಿರೂಪಿಸಿರಿ. 10
- B) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : 10
- 1) ಚಂದ್ರಶೇಖರ ಕಂಬಾರ
- 2) ಆಧುನಿಕ ಕನ್ನಡ ನಾಟಕಗಳ ಸ್ವರೂಪ
- 3) ಕನ್ನಡ ನಾಟಕ ಸಾಹಿತ್ಯದ ಉಗಮ-ವಿಕಾಸ.
2. A) ಆಧುನಿಕ ಕನ್ನಡ ಕಾವ್ಯದ ಹುಟ್ಟು - ಬೆಳವಣಿಗೆ ಕುರಿತು ಬರೆಯಿರಿ. 10
- B) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : 10
- 1) ನವೋದಯ ಯುಗದ ಕನ್ನಡ ಕಾವ್ಯ
- 2) ಸಿದ್ಧಲಿಂಗಯ್ಯ
- 3) ಆಧುನಿಕ ಕನ್ನಡ ಮಹಾಕಾವ್ಯಗಳು.
3. A) ಆಧುನಿಕ ಕನ್ನಡ ನಾಟಕ ಸಾಹಿತ್ಯದಲ್ಲಿ ನಡೆದ ಸಂಶೋಧನೆ ಕುರಿತು ಪರಿಶೀಲಿಸಿರಿ. 10
- B) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : 10
- 1) ಆಧುನಿಕ ಕನ್ನಡ ಕಾವ್ಯದಲ್ಲಿ ನಾಡು-ನುಡಿ ಅಭಿಮಾನ
- 2) ಬೇಂದ್ರೆ
- 3) ಆಧುನಿಕ ಕನ್ನಡ ನಾಟಕಗಳ ತಂತ್ರ.

P.T.O.



4. A) ಕನ್ನಡ ನಾಟಕ ಸಾಹಿತ್ಯ ಕ್ಷೇತ್ರಕ್ಕೆ ಲಂಕೇಶರ ಕೊಡುಗೆ ಕುರಿತು ನಿರೂಪಿಸಿರಿ. **10**
- B) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : **10**
- 1) ಗಿರೀಶ್ ಕಾರ್ನಾಡ್
 - 2) ಪ್ರತಿಮಾ ನಾಟಕ ರಂಗ.
 - 3) ನವ್ಯ ಕಾವ್ಯ.
5. A) ಕವಿತೆ ವಾರ್ಷಿಕ- 2008ರ ಪಠ್ಯದ ಕಾವ್ಯದಲ್ಲಿ ಮೂಡಿಬಂದ ನಿಸರ್ಗ ಸೌಂದರ್ಯ ಕುರಿತು ಬಣ್ಣಿಸಿರಿ. **10**
- B) ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ : **10**
- 1) ಕವಿತೆ ವಾರ್ಷಿಕ-2008 ರ ಭಾಷೆ
 - 2) ಕವಿತೆ ವಾರ್ಷಿಕ-2008 ರಲ್ಲಿ ಮೂಡಿಬಂದ ಸಾಮಾಜಿಕ ವಿಡಂಬನೆ
 - 3) ಕವಿತೆ ವಾರ್ಷಿಕ-2008 ರ ಲೋಕ ಸಂದೇಶ.
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Ph.D. Course Work Examination, 2015
URDU (Paper – III)
Modern Topics in Urdu

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

ہدایات : (۱) تمام سوالات کے جوابات مطلوب ہیں۔

(۲) تمام سوالوں کے نشانات مساوی ہیں۔

10 (الف) علامہ اقبال سوانح حیات کا اجمالی خاکہ پیش کیجئے۔

10 (ب) صرف دو پر مختصر نوٹ لکھئے :

(۱) علامہ اقبال کی حب الوطنی کا محاسبہ کیجئے۔

(۲) ترقی پسند شعراء میں جاں نثار اختر کا مقام متعین کیجئے۔

(۳) سلیمان خطیب کی مزاحیہ شاعری کا جائزہ لیجئے۔

10 (الف) سلیمان خطیب کی سوانح حیات کا جائزہ لیجئے۔

10 (ب) دو پر مختصر جواب مطلوب ہیں :

(۱) جاں نثار اختر کی شاعری میں عورت کا مقام متعین کیجئے۔

(۲) علامہ اقبال کے کلام میں عشق رسول پر روشنی ڈالئے۔

(۳) سلیمان خطیب کی طنزیہ شاعری کا جائزہ لیجئے۔



۱۰ ۳. الف) مولانا ابو الکلام آزاد کی خطوط نگاری کا جائزہ لیجئے۔

۱۰ ب) کسی دو پر مختصر جواب لکھئے :

- (۱) پطرس بخاری کی انشاء پردازی پر نقد و تبصرہ کیجئے۔
- (۲) خاکہ ”گدڑی کا لال۔ نور خاں“ کا مرکزی خیال پیش کیجئے۔
- (۳) مولوی عبدالحق کی خاکہ نگاری کا اجمالی خاکہ پیش کیجئے۔

۱۰ ۳. الف) علامہ اقبال کی شاعری پر نقد و تبصرہ کیجئے۔

۱۰ ب) صرف دو پر مختصر جواب لکھئے :

- (۱) علامہ اقبال بحیثیت شاعر مشرق واضح کیجئے۔
- (۲) جاں نثار اختر کی ترقی پسند شاعری کا جائزہ لیجئے۔
- (۳) مولوی عبدالحق کی خاکہ نگاری نام دیومالی پر روشنی ڈالئے۔

۱۰ ۵. الف) ”غبار خاطر“ خطوط کا مجموعہ ہی نہیں بلکہ انشائیوں کا مجموعہ ہے۔ اس قول کی روشنی

۱۰ میں ابو الکلام آزاد کی خطوط نگاری کا جائزہ لیجئے۔

۱۰ ب) صرف دو پر مختصر جواب لکھئے :

- (۱) اردو خاکہ نگاری کی تدریجی تاریخ بیان کیجئے۔
- (۲) مولانا ابو الکلام آزاد کی جدید نثر نگاری کا جائزہ لیجئے۔
- (۳) ”سویرے جو کل میری آنکھ کھولی“ کا مرکزی خیال پیش کیجئے۔



SLR-JJ – 82

Seat
No.

Ph.D. (Course Work) Examination, 2015
PHYSICS
Paper – III : Modern Topics in Physics

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions : 1) **All** questions carry **equal** marks.
2) Figures to the **right** indicate **full** marks.

1. A) Define gas sensor. What are the important properties of gas sensor ? Explain in detail the mechanism of oxide gas sensor along with proper diagrams and equations. **10**
- B) Solve **any two** of the following : **10**
 - 1) Write a note on lithography technique.
 - 2) What are the chemical deposition methods ? Discuss any one of them.
 - 3) Explain FET devices for gas sensing.
2. A) What is photovoltaic effect ? Explain the nature of p-n junction in detail. Draw I-V characteristics in dark and under illumination and show that solar cell can generate power. **10**
- B) Solve **any two** of the following : **10**
 - 1) How to determine fill factor, diode ideality factor and efficiency of a solar cell ?
 - 2) Write a note on dye sensitized solar cells.
 - 3) Explain the methods of deducing series and shunt resistances of a solar cell.

P.T.O.



3. A) What is Ragone plot ? Discuss in detail the characteristics of a supercapacitor. **10**
B) Solve **any two** of the following : **10**
- 1) Compare battery with supercapacitor.
 - 2) What is the origin of pseudo capacitance ?
 - 3) Explain the method of estimating specific capacitance from cyclic voltammetry.
4. A) Explain in detail the magneto-electric coupling effect in Bi based compounds. **10**
B) Solve **any two** of the following : **10**
- 1) Distinguish ferroelectric and ferromagnetic materials.
 - 2) Write a note on charge ordering.
 - 3) Explain the current status of research in ME composites. What is the highest achieved ME output reported ?
5. A) What are the types of fuel cell ? Explain in detail the operating principles of hydrogen-oxygen and phosphoric acid based fuel cells. **10**
B) Solve **any two** of the following : **10**
- 1) What is the difference between battery and fuel cell ?
 - 2) What are the applications of fuel cells ?
 - 3) Write a note on dilute magnetic semiconductors.
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Seat No.	
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**Ph.D. Course Work Examination, 2015
ELECTRONICS (Paper – III)
Modern Topics in Electronics**

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

Instructions: 1) Answer **all five** questions.
2) **All** questions carry **equal** marks.

1. A) Write a note on ARM7 and ARM 9 families ? 10
B) Answer **any two** of the following : 10
 - 1) Draw the block diagram of LPC 2378 microcontroller.
 - 2) Explain pipelining in context with ARM7 with a suitable example.
 - 3) Which are the four major design rules in RISC philosophy ?

2. A) Describe AMBA bus protocol in detail. 10
B) Answer **any two** of the following : 10
 - 1) Define the instruction set of ARM processor.
 - 2) Define :
 - a) Brown Out detector
 - b) Wake up timer
 - c) Watchdog timer.
 - 3) Explain the states of ARM processor.

3. A) Write on evolution of programmable logic devices. 10
B) Answer **any two** of the following : 10
 - 1) Develop VHDL code for 8 bit updown counter.
 - 2) Write Verilog code for 16 to 4 priority encoder.
 - 3) Differences between Verilog and VHDL.



4. A) Describe Integrated-Circuit-Packages Environment in brief. **10**
- B) Answer **any two** of the following : **10**
- 1) Mention the main characteristics of a Wireless Sensor Network. Also name some predominant standards commonly used in WSN communications.
 - 2) Mention the characteristics of Zigbee Module. Also mention the Zigbee device types.
 - 3) Give details of software ZigBee architecture. Also list some applications areas of ZigBee.
5. A) What is SoC ? Mention the levels of Modelling Abstraction. **10**
- B) Answer **any two** of the following : **10**
- 1) Explain the salient features of Xilinx XC7000 CPLDs.
 - 2) Mention the significant characteristics of FPGAs along with their advantages and disadvantages.
 - 3) Mention the steps involved in VLSI design flow.
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Seat No.	
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Ph.D. Course Work Examination, 2015
MODERN TOPICS IN INORGANIC CHEMISTRY
Paper – III : Inorganic Chemistry

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Discuss the primary photophysical process of metal complex with suitable examples. 10
B) Attempt **any two** of the following : 10
 - i) What is stoke shift ? Explain its usefulness in the study of fluorescence.
 - ii) Discuss the photochemistry of Cr(III) complexes.
 - iii) Distinguish between excitation and emission spectra of metal complexes.

2. A) What is the role of iron in the plant and animals ? 10
B) Attempt **any two** of the following : 10
 - i) What is ferritin ? How it can act as a buffer against iron deficiency and overload ?
 - ii) What is meant by hereditary hemochromosis ? Mention few symptoms of hemochromosis.
 - iii) Give the biological significance of iron.

3. A) Explain briefly the inner and outer sphere redox reactions with the suitable examples. 10
B) Attempt **any two** of the following : 10
 - i) Give the classification of substitution mechanism for the substitution reactions.
 - ii) Explain how the ligand substitution takes place in the square planar complexes.
 - iii) Give the classification of redox reactions.

P.T.O.



4. A) Derive the Nernst equation and explain how it is used to ion selective electrode ? **10**
B) Attempt **any two** of the following : **10**
- i) Draw the schematic diagram for the fluoride ion selective electrode and explain its working.
 - ii) Discuss the mercury ion selective electrode and its determination.
 - iii) How to increase sensitivity and selectivity of ion selective electrodes ?
5. A) Give the mechanism of oxidative addition and reductive elimination reactions. **10**
B) Attempt **any two** of the following : **10**
- i) In what way the observed oxidation states of lanthanides are related to their electronic structures ?
 - ii) Show the variation of magnetic moment with various lanthanides and explain.
 - iii) Why do the lanthanide ions give rise to very sharp bands in their electronic spectra ?
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Seat No.	
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**Ph.D. Course Work Examination, 2015
POLYMER CHEMISTRY (Paper – III)
Modern Topics in Polymer Chemistry**

Day and Date : Saturday, 6-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :** 1) Attempt **all five** questions.
2) **All** the questions carry **equal** marks.
3) Figures to the **right** indicate **full** marks.
4) Use of log tables and calculators is **allowed**.

1. A) What are crystalline and amorphous phases in polymers ? Describe the XRD technique to find % crystallinity in polymers. **10**
- B) Answer **any two** of the following :
- i) Describe preparation of hydrogel. **5**
 - ii) Describe merits of click polymerization. **5**
 - iii) Explain the meaning of MALDI-TOF. **5**
2. A) Discuss basic principle of NMR. Explain chemical shift and C-H spin coupling in CMR taking example of ethanol. **10**
- B) Answer **any two** of the following :
- i) What are boron polymers ? Describe synthesis of carboranes. **5**
 - ii) Describe a method for determination of T_g by dilatometry. **5**
 - iii) Illustrate the application of XRD to find size and orientation of crystallites in polymer. **5**
3. A) Describe carbon-13 solid state NMR of polybutadienes. **10**
- B) Answer **any two** of the following :
- i) With the help suitable example state applications of polymers alloys. **5**
 - ii) Discuss interfacial polymerization to get High Molecular weight polycarbonates. **5**
 - iii) Describe with neat diagram CMR of PET. **5**

P.T.O.



4. A) Describe FAB-MS of polymers for characterization of polymers. **10**
- B) Answer **any two** of the following :
- i) Discuss any five factors affecting Tg of polymers. **5**
 - ii) Describe preparation of any one Boron containing polymer. **5**
 - iii) Compare merits of Bulk polymerization with respect to solution polymerization. **5**
5. A) With the help of suitable example describe application of DSC techniques for the characterization of polymers. **10**
- B) Answer **any two** of the following :
- i) Compare Natural Vs Synthetic polymers. **5**
 - ii) Explain advantages of polymer membranes for fuel cells. **5**
 - iii) Bring out the significance of polymer adhesives. **5**
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SLR-JJ – 84 A

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Ph.D. Course Work Examination, 2015
PHYSICAL CHEMISTRY
Paper – III : Modern Topics in Physical Chemistry

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) **All questions are compulsory and carry equal marks.**
2) **Use of scientific calculator is allowed.**
3) **Neatly drawn and labeled diagrams are necessary.**

1. A) What do you mean by non-stoichiometry ? Illustrate how one can create it in binary compounds. 10
- B) Answer **any two** : 10
- i) List different defects found in crystals. Explain any one of them.
 - ii) Describe various factors which affect crystal structures ?
 - iii) Discuss in brief the interstitial solid solutions.
2. A) What are crystal imperfections ? What are the effects of these imperfections on the properties and behavior of materials ? 10
- B) Answer **any two** : 10
- i) Explain with suitable example how ^{14}C dating is used in age determination.
 - ii) Write on Laue method of X-ray crystal structure analysis.
 - iii) What are symmetry elements and operations ? Mention various symmetry elements present in a cube.

P.T.O.



3. A) What are radio tracers ? Discuss how this technique is used in health physics. **10**
- B) Answer **any two** : **10**
- i) Discuss various forensic applications of neutron activation analysis.
 - ii) Lists various nuclear radiations. Mention their characteristics.
 - iii) Illustrate radio chromatographic technique.
4. A) What are different techniques available to synthesize nanomaterials ? Discuss any one chemical method in detail. **10**
- B) Answer **any two** : **10**
- i) Describe vapor phase transport method for synthesis of any inorganic composite solid.
 - ii) Illustrate various features of ionic crystals.
 - iii) Diffraction angle 2θ equal to 16.8° for a crystal having inter planar distance in the crystal is 0.4 nm when second order diffraction was observed. Calculate the wavelength of X-rays used.
5. A) Give a view of nanomaterials usage in diagnostic applications. **10**
- B) Answer **any two** : **10**
- i) Discuss magnetic properties of nanomaterials.
 - ii) Describe how size reduction alters the properties of nanomaterials.
 - iii) Explain the principle and working of AFM technique.
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SLR-JJ – 84C

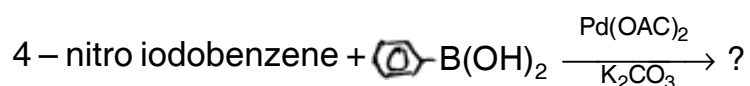
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Ph.D. Course Work Examination, 2015
ORGANIC CHEMISTRY
Paper – III(C) : Modern Topics in Organic Chemistry

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Predict the product of the following reaction. Outline mechanism involved in reaction. Give its applications in organic synthesis. **10**



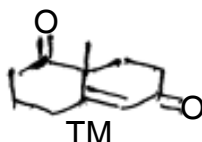
- B) Answer **any two** of the followings : **(2×5=10)**

- Give synthesis and uses of methyl dopa.
- How are organoboranes prepared ? Discuss its applications in organic synthesis.
- Give an account of retrosynthetic analysis of five membered heterocycles.

2. A) Discuss mechanism and applications of Stille reaction in C-C bond formation. **10**

- B) Answer **any two** of the followings : **(2×5=10)**

- Illustrate with suitable example, the mechanism and applications of the Mannich reaction in C-heteroatom bond formation.
- Plan the synthesis of the following TM. Give retrosynthetic approach.



- Discuss use of phase transfer catalysts in organic synthesis.

P.T.O.



3. A) Give an account of carbonylation reaction with respect to mechanism and applications. 10
- B) Answer **any two** of the followings : (2×5=10)
- i) Give synthesis and uses of the Melphalan.
 - ii) By using retrosynthetic analysis approach, how will you prepare p-methoxy acetophenone ?
 - iii) Write a note on use of hypervalent iodine reagent in organic synthesis.
4. A) Explain the following selectivities involved in retro-synthetic analysis using suitable examples. 10
- i) Regioselectivity
 - ii) Chemoselectivity
 - iii) Stereoselectivity
- B) Answer **any two** of the followings : (2×5=10)
- i) Illustrate with suitable examples-use of oxidation of alkenes in synthesis of C-heteroatom bond formation.
 - ii) Discuss the mechanism and applications of Heck reaction in C-C bond formation.
 - iii) Give preparation of organonickel compounds. Discuss its synthetic utility.
5. A) Give an account of Anti-AIDS drugs. Discuss their mode of action. Give structures and uses of any two commonly used Anti-AIDS drugs. 10
- B) Answer **any two** of the followings : (2×5=10)
- i) Give an account of use of ionic liquids in organic synthesis.
 - ii) Write note on Alkene metathesis.
 - iii) Write an account of structure and mode of action of cephalexin.
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Ph.D. Course Work Examination, 2015
CHEMISTRY
Analytical Chemistry
Modern Topics in Analytical Chemistry (Paper – III)

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Describe the working principle of GC-MS and mention its applications. 10
- B) Short answer type (**any two**) : 10
- i) Write a note on principle and working of scanning electron microscopy.
 - ii) Explain the terms Ruggedness Robustness and system suitability in analytical method development.
 - iii) Deduce the structure of organic compound which has the following spectral data.
Molecular formula : C_7H_5OCl .
IR : (mjol) : 3070, 2900, 1730, 1595, 1425, 1360 and 830 cm^{-1} .
NMR : ($CDCl_3$) ; δ ppm. 9.0(S, H). 7.6(d, 2H) and 8.2(d, 2H).
2. A) Draw the block diagram of ESCA. Explain the working and applications of ESCA. 10
- B) Short answer type (**any two**) : 10
- i) Write a note on phenomenon and characteristics of fluorescence.
 - ii) Discuss the various kinds of pumps used in HPLC. What are advantages and disadvantages of each.
 - iii) How will you be able to differentiate between the following pair using 1H NMR and ^{13}C NMR data ?
i) $H_3C - CO - CH_3$ and $H_3C - CO - CH_2CH_3$.

P.T.O.



3. A) Sketch the block diagram of ICP-MS, label the components and explain their working and applications. **10**
- B) Short answer type (**any two**) : **10**
- i) What are the fingerprint region and functional group region in the IR spectrum ? Give their significance.
 - ii) Write a note on NOESY experiment and its applications.
 - iii) Describe the procedure for identification of molecular in peaks in mass spectrum.
4. A) Draw the block diagram of X-ray diffraction spectrometry. Label the components, explain its working and applications. **10**
- B) Short answer type (**any two**) : **10**
- i) Explain the limit of quantification and limit of detection in analytical method.
 - ii) Write the principle and application of LC-NMR-MS technique.
 - iii) How will you be able to differentiate between the following pair using ^1H NMR data and ^{13}C NMR data.
5. A) Describe the principle, working and applications of mass spectroscopy. **10**
- B) Short answer type (**any two**) : **10**
- i) Discuss the on-line detection of natural products by using CE – MS technique.
 - ii) Write a note on supercritical fluid extraction chromatograph.
 - iii) Discuss the organic, inorganic and biological applications of fluorescence spectroscopy.
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Ph.D. Course Work Examination, 2015
ZOOLOGY
Paper – III : Modern Topics in Zoology

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) What is cancer ? Write a brief note on types of cancer genes. **10**
- B) Write short notes on (**any two**) : **10**
- i) Mitochondria
 - ii) Chloroplast
 - iii) Signal transduction.
2. A) Define gene frequencies with suitable example. **10**
- B) Write short notes on (**any two**) : **10**
- i) Gametic selection
 - ii) Migration
 - iii) Gene pool.
3. A) Write a essay on acid rain. **10**
- B) Write short notes on (**any two**) : **10**
- i) Bioremediation of soil
 - ii) Ozone
 - iii) Ultraviolet light.

P.T.O.



4. A) What is Giardiasis ? Explain the morphology and life cycle of causative organism. 10
- B) Write short notes on (**any two**) : 10
- i) Rabies
 - ii) Chikungunya
 - iii) Head lice.
5. A) Describe in detail - Biological classification given by Linnaeus. 10
- B) Write short notes on (**any two**) : 10
- i) Indian bustuard
 - ii) Vanishing of wild life
 - iii) International code of Zoological Nomenclature (ICZN).
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Ph.D Course Work Examination, 2015
GEOGRAPHY
Paper – III : Modern Topics in Geography

Day and Date : Saturday, 6-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :** 1) *Each question is compulsory.*
2) *Solve questions serially.*
3) *Figures to the right indicate full marks.*

1. A) What is the role of modern themes in development of geography as subject ? **10**
B) Write short answers (**any two**) : **10**
i) What is the impact of soil erosion on agriculture ?
ii) Describe briefly the nature of gender geography.
iii) What causes acid rain ?
2. A) Describe the role of green house gases in climate change. **10**
B) Write short answers (**any two**) : **10**
i) Define and categorize earthquake.
ii) What are the common causes of drought in Maharashtra ?
iii) List the National Disaster Agencies of India.
3. A) Describe the paradigms in geography with special reference to regional geography. **10**
B) Write short answers (**any two**) : **10**
i) What is areal differentiation ?
ii) Define microwave remote sensing.
iii) What are the elements of GIS ?

P.T.O.



4. A) Describe geography as a science of relationship and distribution. **10**
- B) Write short answers (**any two**) : **10**
- i) What are the elements of GPS ?
 - ii) What is imagery ?
 - iii) What is EMR ?
5. A) Describe data structure with reference to raster and vector data. **10**
- B) Write short answers (**any two**) : **10**
- i) What are the merits of GIS based cartography ?
 - ii) What is the prime reason of recent monsoon failure in India ?
 - iii) What are the bases of organic agriculture practice ?
-



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Ph.D. (Course Work) Examination, 2015
APPLIED GEOLOGY
Modern Studies in Geology (Paper – III)

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Discuss in detail the importance of Remote Sensing and GIS in Geology. **10**
B) Write short notes on **any two** : **10**
 - i) Vadoze zone
 - ii) Importance of MS in Geology
 - iii) Hydrogeology of Solapur district.
 2. A) Discuss in detail the importance of Morphotectonic approach in Geology. **10**
B) Write short notes on **any two** : **10**
 - i) Water table
 - ii) Importance of weathering in Economic geology
 - iii) Peached aquifers.
 3. A) Discuss in detail the importance of Geophysics in Mineral exploration. **10**
B) Write short notes on **any two** : **10**
 - i) XRF
 - ii) Importance of ICP in geology
 - iii) Unconfined aquifers.
 4. A) Discuss in detail the importance of fluid inclusions in mineral exploration. **10**
B) Write short notes on **any two** : **10**
 - i) SEM-EDS
 - ii) Importance of Geomorphology in Economic Geology
 - iii) Artisan wells.
 5. A) Discuss in detail the importance of Geochemistry in Geological exploration. **10**
B) Write short notes on **any two** : **10**
 - i) XRD
 - ii) Importance of Fission tracks in Geology
 - iii) Karst topography.
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Ph.D. Course Work Examination, 2015
COMPUTER SCIENCE
Paper – III: Modern Topics in Computer Science

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. Solve the following : 10
 - A) What are the features of XML ?
 - B) Attempt the following (**any two**) : 10
 - i) How can child elements be specified upon using a sequence compositor ?
 - ii) How is metadata handled by XML ?
 - iii) What is the role of the doctype declaration in reference to XML ?
2. Attempt the following: 10
 - A) How do we set the priority of a thread ?
 - B) Attempt the following (**any two**) : 10
 - i) What do we understand by busy waiting ?
 - ii) Can we use Thread.sleep() for real-time processing ?
 - iii) What is the purpose of the class java.lang.ThreadLocal ?
3. Answer the following : 10
 - A) Why generalization is very strong ? Justify by stating an example.
 - B) Attempt the following (**any two**): 10
 - i) Differentiate Aggregation and containment.
 - ii) Compare persistent and non-persistent objects.
 - iii) Explain the term “analysis and design” in context with OOAD.



4. Attempt the following : 10
- A) What are the various components in sequence diagrams ?
 - B) Answer the following (**any two**) : 10
 - i) Enlist the Process Workflows that evolve through SDLC phases ?
 - ii) Explain Relationships with brief explanation.
 - iii) Enlist nine modeling diagrams that are frequently used.
5. Attempt the following : 10
- A) What are the main differences between ASP and ASP.NET ?
 - B) Answer the following (**any two**) : 10
 - i) Enlist ADO.NET features ? What are benefits ? Is there any limitations ?
 - ii) What is the use of Error Provider Control ?
 - iii) Explain how Viewstate is being formed and how it's stored on client ?
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Ph.D. Course Work Examination, 2015
STATISTICS (Paper – III)
Modern Topics in Statistics

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Each question carries 20 marks.**

1. A) Let X_1, X_2, \dots, X_n be independent and identically distributed Bernoulli r.v.'s with probability of success p and denote $T_n = X_1 + X_2 + \dots + X_n$. Show that

i) $\frac{T_n(T_{n-1})}{n(n-1)}$ is an unbiased estimator of P^2 .

ii) $\frac{T_n(T_{n-1})(T_{n-2})}{n(n-1)(n-2)}$ is an unbiased estimator of P^3 .

Also, investigate the consistency of the above estimator.

B) Attempt **any two** :

i) Explain method of moment estimation. Give an example.

ii) If T_n is a consistent estimator of a parameter θ and g is a continuous function. Show that $g(T_n)$ is a consistent estimator of $g(\theta)$.

iii) Let X_1, X_2, \dots, X_n be a random sample from $f(x|\theta, \sigma) = \frac{1}{2\sigma} e^{-\frac{|x-\theta|}{\sigma}}$, $x \in \mathbb{R}$,

$\theta \in \mathbb{R}$ and $\sigma > 0$. Obtain maximum likelihood estimator of θ . **(10+10)**

2. A) Define UMVUE. Obtain UMVUE of $\frac{\theta(2\theta+1)}{(\theta+1)}$ based on a random sample of size n from the distribution with pdf.

$$f(x|\theta) = \frac{x+1}{\theta(\theta+1)} e^{-x/\theta}, \quad 0 < x < \infty, \theta > 0$$



B) Attempt **any two** :

- i) State and prove factorization theorem in case of discrete distribution.
- ii) Explain (a) Fisher information (b) minimal sufficient statistic with illustration.
- iii) Let X_1, X_2, \dots, X_n be independent r.v.'s each uniform on $(0, \theta)$. Let $Y_n = \max(X_1, X_2, \dots, X_n)$ Show that Y_n is sufficient for θ . (10+10)

3. A) State Neyman-Pearson lemma and prove its sufficiency part.

B) Attempt **any two** :

- i) Define most powerful test (MP). Develop M.P. test for testing $H_0 : f(x) = e^{-x}$, $x > 0$ and $f(x) = e^{-(x-1)}$, $x > 1$ of size α , $0 < \alpha < 1$.
- ii) For a sample of size 1 from pdf

$$f(x, \theta) = \frac{2}{\theta^2} (\theta - x), 0 < x < \theta$$

Find the likelihood ratio test of $\theta = \theta_0$ against $\theta \neq \theta_0$

- iii) Define SPRT and state Wald's fundamental lemma. (10+10)

4. A) Let X_1, X_2, \dots, X_n be a random sample of size n from $N(\mu, \sigma^2)$. Find 100 $(1-\alpha)$ % confidence interval for (i) μ when σ^2 known (ii) μ when σ^2 unknown.

B) Attempt **any two** :

- i) Define :
 - a) Confidence set
 - b) Unbiased confidence set.
- ii) Describe pivotal quantity method to obtain a shortest length confidence interval.
- iii) Write a brief note on chi-square test for goodness of fit. (10+10)

5. A) Describe the sign test and signed rank for one sample problem.

B) Write short notes on **any two** :

- i) Bootstrap confidence interval
- ii) U-statistic
- iii) Cramer-Rao inequality. (10+10)



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Ph.D. Course Work Examination, 2015
MICROBIOLOGY
Paper – III : Modern Topics in Microbiology

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) Write an essay on BLAST phylogenetic analysis. **10**
B) Answer briefly (**Any two**) : **10**
 - 1) Give an brief account on gene prediction.
 - 2) What is metagenomics ? Specify its use in microbial diversity of uncultivable organisms.
 - 3) Give the therapeutic application of gold nanoparticles.
 2. A) Write short note on DNA micro array. **10**
B) Answer briefly (**Any two**) : **10**
 - 1) How would you predict 3D-structure of protein using DNA and protein sequence ?
 - 2) How would you carry out whole genome restriction mapping ?
 - 3) How would you process and publish data using bioinformatics ?
 3. A) Write an essay on Nanobiotechnology advantages and disadvantages. **10**
B) Answer briefly (**Any two**) : **10**
 - 1) What is accession number ? How you can get accession number for your DNA sequence ?
 - 2) Explain drug discovery platform.
 - 3) Give the principles and application of the separation technology in proteome.
 4. A) Write an short note on microbial genomics for antibiotic targeted discovery. **10**
B) Answer briefly (**Any two**) : **10**
 - 1) Give the application of mass spectrometry in proteomics.
 - 2) Give brief-note on metabolite identification and pathway integration.
 - 3) What is nanoparticle internalisation ? How would you find out cytotoxicity ?
 5. A) Write an essay on NCBI. **10**
B) Answer briefly (**Any two**) : **10**
 - 1) How would you use metagenomics for identifying potential producers.
 - 2) Give the importance of 2-d fluorescence difference gel electrophoresis in proteomics.
 - 3) How would you determine the size of *metabolome* ?
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Ph.D. Course Work Examination, 2015
GEOINFORMATICS
Paper – III : Modern Topics in Geoinformatics

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

1. A) Write a detailed Essay on Geo Data Base Design and Modeling. **10**
B) Short notes (**any two**) : **10**
 - i) Web mapping softwares
 - ii) Open source data base
 - iii) Web mapping automation.
 2. A) Write a detailed Account of Satellite, Control and Ground Segments of GPS. **10**
B) Short notes (**any two**) : **10**
 - i) Data input in GPS
 - ii) Modes of coordinate collection
 - iii) Differential GPS.
 3. A) Write a detail essay on Maximum Likelihood Supervised Classification. **10**
B) Short notes (**any two**) : **10**
 - i) Training site selection
 - ii) Density slicing
 - iii) NDVI Applications.
 4. A) Write a detailed note on Spatial Autocorrelation and Regression. **10**
B) Short notes (**any two**) : **10**
 - i) Moran's Mapping Clusters
 - ii) Hot Spot Analysis
 - iii) Band Ratios for Image Arithmetic.
 5. A) Write a detailed note on Advantages and Limitations of Open Source Software and Applications. **10**
B) Short notes (**any two**) : **10**
 - i) Concepts of Cloud computing
 - ii) GIS Scope and Applications in Cloud computing
 - iii) Unsupervised image classification.
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Ph.D. Course Work Examination, 2015
ENVIRONMENTAL SCIENCE
Paper – III : Modern Topics in Environmental Science

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

Instructions : i) **All questions are compulsory.**
ii) **All questions carry equal marks.**
iii) **Draw a well labelled diagrams wherever necessary.**

1. A) Write an account on molecular biological techniques in species conservation. **10**
B) Write short answers (**any two**): **10**
 - i) Agro forestry
 - ii) Use of bio-pesticides.
 - iii) Petroleum pollutant biodegradation.
2. A) What is waste ? Add a note on different waste handling methods. **10**
B) Write short answer (**any two**): **10**
 - i) The Green chem-program.
 - ii) Chemistry of pollutant and sustainable development.
 - iii) Green products.
3. A) Give the principle, application and design of primary water treatment. **10**
B) Write short answer (**any two**): **10**
 - i) Methods of treated waste water for disposal in surface water.
 - ii) Concept of waste water.
 - iii) Advanced waste water treatment methods.

P.T.O.



4. A) Write an elaborative account on 'Lotka Voltera Model. **10**
- B) Write short answer (**any two**): **10**
- i) Point sources stream pollution model.
 - ii) Approach to development of model.
 - iii) Sensitivity analysis.
5. A) Write an elaborative account on Environmental Impact Assessment (EIA). **10**
- B) Write short answer (**any two**): **10**
- i) Corporate Social Responsibility (CSR)
 - ii) Environmental Planning.
 - iii) Fair environmental practices in trade.
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Ph.D. Course Work Examination, 2015
Paper No. – III : BOTANY
Modern Topics in Botany

Day and Date : Saturday, 6-6-2015

Max. Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :**
- i) All questions are compulsory.*
 - ii) Draw **neat** labelled diagrams or flow sheets **wherever** necessary.*
 - iii) Figures to the **right** indicate **full** marks.*

1. A) What are PGR's ? Give applications of any three PGR's in agriculture. **10**
- B) Answer **any two** of the following : **10**
- i) Describe the technique of fruit preservation.
 - ii) Comment on the status of ethnobotany in Maharashtra.
 - iii) List three examples of antibiotics that are microbially produced. Write about their role.
2. A) Describe in detail the technique of production of biodiesel from Jowar. **10**
- B) Write notes on (**any two**) : **10**
- i) Secondary metabolites.
 - ii) Restriction mapping.
 - iii) Cut flowers.
3. A) Describe different techniques for preservation of vegetables. **10**
- B) Answer **any two** of the following : **10**
- i) Mention the applications of Algal fertilizers.
 - ii) What is PCR ? Briefly describe the various steps of PCR.
 - iii) Explain the cloning in bacteria.

P.T.O.



4. A) Discuss the methods for preparing chimeric DNA. **10**
- B) Answer **any two** of the following : **10**
- i) Write about the metabolism of leafy vegetables during storage.
 - ii) Mention the applications of biotechnology in agriculture.
 - iii) Give the classification of PGR's.
5. A) What are bacterial fertilizers ? Describe the method of its preparation and give their applications. **10**
- B) Write notes on (**any two**) : **10**
- i) Petrocrops.
 - ii) Regulation of fruit ripening.
 - iii) Scope of ethnobotany.
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Ph.D. Course Work Examination, 2015
ECONOMICS
Paper – III : Modern Theories in Economics

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

Instructions : 1) Attempt **all** questions.
2) Figures to the **right** indicate **full** marks.

1. A) Critically examine Solow's model of long-run growth. 10
B) Write short notes on **any two** of the following : 10
 - i) Price discrimination
 - ii) Bain's empirical findings
 - iii) Disembodied technical progress.

2. A) State the Bertrands Duopoly model. 10
B) Write short notes on **any two** of the following : 10
 - i) Full cost pricing
 - ii) Market structure
 - iii) Kinked demand curve.

3. A) Discuss Marris model of the managerial enterprise. 10
B) Write short notes on **any two** of the following : 10
 - i) Fixed exchange rates
 - ii) Franco Modigliani model
 - iii) Barometric price leadership.

P.T.O.



4. A) Critically discuss the monetary approach to the balance of payments problem. **10**
- B) Write short notes on **any two** of the following : **10**
- i) Objectives of fiscal policy
 - ii) Current account
 - iii) Hall and Hitch report.
5. A) What is an equilibrium rate of exchange ? How is it determined ? **10**
- B) Write short notes on **any two** of the following : **10**
- i) Scope of monetary policy
 - ii) Product differentiation
 - iii) Cartels.
-



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Ph.D. Course Work Examination, 2015
A.I.H.C. & A
MODERN TOPICS IN INDIAN ART (Paper – III)

Day and Date : Saturday, 6-6-2015

Total Marks : 100

Time : 11.00 a.m. to 2.00 p.m.

1. A) Write an essay on Harappan art. 10
- B) Answer **any two** : 10
- i) Write salient features of rock-art, Bhimbetka.
- ii) Write a note on terracotta figurines from Mohen-jo-daro.
- iii) Discuss in brief the salient features of Shunga art.
2. A) Describe the salient features of Stupa architecture with special reference to Sanchi. 10
- B) Answer **any two** : 10
- i) Write a note on remains of Palace of Pataliputra.
- ii) Write a note on Bodhagaya.
- iii) Describe in brief salient features of Chaitya at Bhaje.
3. A) Write an essay on rock-cut caves, Ajanta. 10
- B) Answer **any two** : 10
- i) Write a note on Vishwakarma cave, Ellora.
- ii) Describe salient features of rock-cut Gupta cave temples, Udaigiri.
- iii) Write a note on Gupta-Vakataka Temple, Nachna-Kuthara.

P.T.O.



4. A) Write salient features of “Nagar” style of temple architecture with special reference to Khajuraho. **10**
- B) Answer **any two** : **10**
- i) Write in brief a note on Sun temple, Konark.
 - ii) Discuss in brief salient features of Sea shore temple, Mahabalipuram.
 - iii) Write a note on paintings of Ajanta.
5. A) Write an essay on Koppeshwar Mahadev Temple, Khidrapur. **10**
- B) Answer **any two** : **10**
- i) Write in brief salient features of Chola temples.
 - ii) Describe in brief Hari-Hara temple, Kudal-Sangam.
 - iii) Write a note on paintings of Badami.
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Ph.D. Course Work Examination, 2015
Paper – III : LIBRARY AND INFORMATION SCIENCE
Modern Topics in Library and Information Science

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Total Marks : 100

1. A) What are principles of scientific management ? Describe in detail. 10
B) **Any two** :
 - 1) What are the different managerial techniques ? 5
 - 2) Discuss the different levels of organization structure. 5
 - 3) What is Six Sigma ? 5
2. A) Describe job description in detail. 10
B) **Any two** :
 - 1) Enumerate the analysis of job evaluation. 5
 - 2) What are the different recruitment procedures ? 5
 - 3) What do you mean by performance appraisal ? 5
3. A) What are different budgeting techniques ? 10
B) **Any two** :
 - 1) What is PPBS ? 5
 - 2) What is ZBB ? 5
 - 3) What is cost benefit analysis ? 5

P.T.O.



4. A) Enumerate the re-engineering of library service in detail. **10**
- B) **Any two :**
- 1) What is SWOT analysis ? **5**
 - 2) What are evaluation techniques of library services ? **5**
 - 3) Describe PERT/CPM. **5**
5. A) What is collection development ? What are the principles collection developments ? **10**
- B) **Any two :**
- 1) What is TQM ? **5**
 - 2) Differentiate between information management and knowledge management in brief. **5**
 - 3) Define out sourcing. **5**
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Ph.D. Course Work Examination, 2015
HISTORY
Paper – III : Modern Topics in History

Day and Date : Saturday, 6-6-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 100

Instructions : i) **All questions carry equal marks.**
ii) **All questions are compulsory.**

1. A) Explain the origin and growth of 'Shakta Sect' in Ancient India. **10**
B) Short answers (attempt **any two**): **10**
 - i) Write a note on Jainese Philosophy.
 - ii) Explain the causes of decline the Bouddha Religion.
 - iii) Write short answer on "Shad Darshan".
2. A) State the information about the Hinyan Mountain Sculpture in Ancient India. **10**
B) Short answers (attempt **any two**): **10**
 - i) Write short answer on Sanchi Stup of Ancient India.
 - ii) Write short note on Kailasnath Temple in Ellora.
 - iii) Write short answer on Indo-Islamic Architecture.
3. A) State the information about the Manasabdari System in Mughal Period. **10**
B) Short answers (attempt **any two**): **10**
 - i) Write note on social condition in period Sultanshahi.
 - ii) Write short answer on industries in Vijaynagar Empire.
 - iii) Explain the Allauddhin Khilji's remedy of economy.

P.T.O.



4. A) Discuss the Agricultural condition of Chh. Shivaji Maharajas period. **10**
- B) Short answers (attempt **any two**): **10**
- i) Write short note on social life under the Peshwa Period.
 - ii) Explain the tax-system of British rule in Maharashtra.
 - iii) State the causes of renaissance in India.
5. A) Discuss the features of the British Administration in India. **10**
- B) Short answers (attempt **any two**): **10**
- i) Write a note on the role of Lord Cornwallis in India.
 - ii) Write short information about Dalit Movement in British India.
 - iii) Write short answer on Feminist Movement in British rule.
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