SLR-U – 1

Seat No.	

B.Sc. – I (Semester – I) (Biotechnology) (CGPA Pattern) Examination, 2015
ENGLISH COMPULSORY
'On Track' English Skills for Success

Day and Date : Thursday, 29-10-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

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

1. Rewrite the following sentences by choosing the correct alternative : **14**

1) The man from the west lived in the city of _____ after moving away from New York.

a) Washington b) Mexico
c) Chicago d) New Jersy

2) The note that the man from the west received was in fact from _____

a) his friend Jimmy b) his wife
c) Chicago police d) the owner of the restaurant

3) In the end the narrator refused to accept all of Miss Krishna's possession except _____

a) a cigarette lighter
b) a little nine-inch clock
c) a tiny glazed coffee cup
d) a small Burmese box

4) The writers attitude towards Miss Krishna was one of _____

a) deep affection and admiration
b) apathy and patience
c) hatred and contempt
d) tolerance and patience

5) The word 'almighty tool' refers to _____
   a) a scientific tool b) an electronic tool
   c) an all powerful method d) the almighty god
6) 'The Myth of Artificial Intelligence' is written by _____
   a) Anita Desai b) Attila Narin
   c) Nargis Dalal d) Dr. Abdul Kalam
7) The phrase 'like the flame of her marriage' is the _____ used in the poem.
   a) simile b) metaphor
   c) personification d) alliteration
8) In the poem 'Bangle Sellers', bangles are token of _____
   a) freedom b) sacrifice
   c) shackles d) prosperity
9) The words 'Kiltartan cross' refer to _____
   a) a well known place in Ireland b) an Irish Church
   c) the battle field d) a pilgrim place
10) Kedar painted the picture _____
   a) hisself b) herself c) himself d) itself
11) The population of the tiger has increased in India.
   The underlined word is a _____ noun.
   a) proper b) common c) collective d) material
12) _____ Hutatma express runs between Solapur and Pune.
   a) A b) An c) The d) No article
13) My brother returned home _____ 10 P.M.
   a) on b) in c) at d) to
14) Mrs. Khanna looked _____ the orphan child after his parents death.
   a) after b) about c) at d) for

2. Answer in brief **any seven** of the following questions : **14**
   1) Why did Jimmy send another police officer to arrest Bob ?
   2) What had happened to 'Big Joe Brady's restaurant ?
   3) What is the narrator's initial opinion of Miss Krishna ?

4) Why does the narrator decide to terminate Miss Krishna's stay at her house ?
5) What are the many facets of intelligence ?
6) Why can computers 'not think' in the same way as human being ?
7) Which colours of bangles are suitable for a maiden's wrist ?
8) How does the Irish Airman imagine he will die ?

3. A) Write short paragraphs on **any two** of the following : **8**
   1) Importance of tree plantation
   2) My hobby
   3) Solar energy.

   B) Answer **any two** of the following questions in about **eight** lines **each** : **6**
   1) What sort of relationship did Bob and Jimmy share ?
   2) How did Krishna's sister behave with the narrator ?
   3) What image of bangle sellers at the temple do you gather from the poem ?

4. Write an essay on **any one** of the following : **14**
   1) The reasons of farmers suicides.
   2) The role of youth in nation building.

5. Read the following passage and make notes of it. Use an appropriate title for your notes. **14**

Advertising is the way in which the manufacturer is able to communicate with his customer. In India it is a gigantic task, when one remembers that there are nearly 400 million potential customers. Not all of them yet have reached the stage, when they have money for more than the barest minimum of goods and clothing but many have already started earning enough money to allow them to look for some modest improvement in their living standards. Thus, purchasing power is sure to increase as India's plans develop. More customers will be created, and it is through advertising that they will learn how their new earnings can buy them a fuller life.

Now, let us look for a moment at how advertising works – how it tells people about goods which will make the world a more comfortable place for them to live in. To be effective, advertising must first attract attention, but more important, it

must be noticed by people in the right way. Advertisements which clamour our for attention in a cheap or vulgar way do not bring any credit to the products they sell. Just as in life it is easy to be noticed, but, less easy to be respected; so it is with advertising. You can print your advertisement upside down and it will attract a lot of attention, but that does not mean that people will think more of the product. That is why the advertiser has to be very careful about humour, if he makes a reader laugh, he must be sure to see the laugh is not at the expense of the product. That does not mean humour has no place in advertising. It can brighten advertising and make it memorable.

The real job of the advertisement is to sell. It has to be convincing. Market research has revealed the needs and desires of the customers and the product has been designed to meet those needs. Now, the advertising must base itself on that research and must explain to the consumer how the product is going to benefit them.

All advertising must reach the right people. There are a number of ways communicating with the potential customers advertising media they are called they are the newspapers and magazines, cinema advertising, shop display material, posters and soon. The job of combining the right media to reach the greatest number of potential customers with the right sort of impact at the lowest cost is an intricate and important one.

SLR-U – 2

Seat No.	

B.Sc. – I (Semester – I) (C.G.P.A. Pattern) Examination, 2015
BIOTECHNOLOGY
Ecology and Microbiology

Day and Date : Friday, 30-10-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

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

SECTION – I
(Ecology)

1. Rewrite the following sentences by choosing correct alternatives given below : **5**

1) In atmospheric structure, the layer in which most of the ozone has been concentrated is known as _____
   a) Stratosphere b) Troposphere c) Mesosphere d) Thermosphere

2) The energy flow within an ecosystem is _____
   a) Multidirectional b) Unidirectional
   c) Reversible d) Bidirectional

3) All of the populations of different species that inhabit a certain area is known as _____
   a) Community b) Keystone species
   c) Endangered species d) None of the above

4) _____ is an example of gaseous type of biogeochemical cycle.
   a) Hydrological cycle b) Nitrogen cycle
   c) Phosphorus cycle d) Sulphur cycle

5) _____ is one of the two hotspots present in India.
   a) Eastern Ghats b) Western Ghats
   c) Coastal regions d) Sunderbans

P.T.O.

2. Answer **any five** of the following : **10**

i) Draw a neat labelled diagram of aquatic food web.

ii) Give percentage wise distribution of water present on the earth.

iii) Enlist any four hotspots present in the world.

iv) Define resource and give its types.

v) Explain secondary succession.

vi) Explain Ex-Situ conservation with suitable example.

vii) Write full forms of IUCN and CITES.

3. A) Write short notes on **any two** of the following : **10**

i) Chipko Movement.

ii) Biosphere

iii) Oxygen cycle.

B) Answer **any one** of the following : **10**

i) Explain the importance of Biodiversity and give an account on its conservation measures.

ii) Explain the process of ecological succession with suitable example and add a note on forest ecosystem.

SECTION – II
(Microbiology)

1. Rewrite the following sentences by choosing correct alternatives given below : **5**

1) The technique of antiseptic surgery was introduced by _____

a) Robert Koch b) Louis Pasteur

c) Joseph Lister d) Har Govind Khorana

2) _____ is the structural component of cell membrane.

a) Amino sugars b) N – acetyl glucosamine

c) Phospholipids d) Polysaccharides

3) Number of chromosomes present in a prokaryotic cell is _____

a) 1 b) 2 c) 3 d) 4

4) Comma shaped bacteria is_____

a) Pasteuria b) Bacillus

c) Staphylococcus d) Vibrio

5) _____ selective media used for cultivation of fungi.

a) Mac Conkey's Agar b) Blood agar

c) Milk agar d) Sabouraud's agar

2. Answer **any five** of the following : **10**

i) Define virology and give any two examples of viruses.

ii) Define capsule and slime layer.

iii) Give any four characteristics of Archaebacteria.

iv) Flagellar arrangement in bacteria.

v) Arrangement of bacteria.

vi) Give Koch's postulate.

vii) Reserve food materials in bacteria.

3. A) Write short notes on **any two** of the following : **10**

i) Louis Pasteur's contributions.

ii) Structure flagella in bacteria.

iii) General characteristics of viruses.

B) Answer **any one** of the following : **10**

i) Write an account on applied branches in microbiology.

ii) Write an account on structure of spore and its germination in bacteria.

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SLR-U – 3

Seat No.	

B.Sc. I (Semester – I) (C.G.P.A. Pattern) Examination, 2015
BIOTECHNOLOGY
Introduction to Biosciences

Day and Date : Saturday, 31-10-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N.B. : *1)* ***All*** *questions are* ***compulsory****.*
2) Answer to the both Sections are to be written in ***separate*** *answer book.*
3) Draw ***neat*** *labelled diagram* ***wherever*** *necessary.*
4) Figures to the ***right*** *indicate* ***full*** *marks.*

SECTION – I

(Plant Sciences)

1. Choose the correct answer from given alternatives : **5**

1) _____ algae used as Biofertilizers in rice field to increase fertility of soil.
   a) Nostoc b) Anabaena
   c) Oscillatoria d) All of the above

2) A companion cell is always present with
   a) Sieve tube b) Sieve cell
   c) Tracheid d) Vessels

3) Lichen constitutes a
   a) Link between algae and fungi
   b) Link between algae and bacteria
   c) Symbiotic thallus of an algae and fungus
   d) Mycorrhizal association of roots

4) Artificially ripening of fruits can be induced by _____ treatment.
   a) Auxins b) Gibberellins
   c) Ethylene d) All of these

P.T.O.

5) Dendrochronology is the means to find out
   a) diameter of the tree
   b) height of the tree
   c) approximate age of the tree
   d) the number of branches

2. Answer **any five** of the following : **10**

   i) Write any four economic importance of Gymnosperms.

   ii) Enlist five principles of ICBN.

   iii) Write functions of complex tissue.

   iv) What is fertilization ?

   v) Enlist aggregate fruits with suitable examples.

   vi) What is periderm ?

   vii) Describe growth curve.

3. A) Write short notes on **any two** of the following : **10**
   i) General characters of pteridophytes.
   ii) Write note on simple tissues with their functions.
   iii) Breaking of seed dormancy.

   B) Answer **any one** of the following : **10**
   i) Give brief outline of Bentam and Hooker's system of classification.
   ii) What is secondary growth ? Describe with suitable diagram and add note on annual rings.

SECTION – II

(Animal Science)

1. Choose the correct answer from the given alternatives : **5**

   i) Spicules are found in
      a) Sycon
      b) Plasmodium
      c) Hydra
      d) Earthworm

   ii) Presence of water vascular system is the unique characteristic of
      a) Arthropoda
      b) Protochordata
      c) Echinodermata
      d) Mollusca

iii) Silk filament is made up of a central core of fibrous protein called _____ and surrounding envelope of gelatinous protein called _____

a) sericin, fibroin, b) fibroin, sericin

c) sericin, fibrinogen d) fibrinogen, sericin

iv) _____ is also known as rock bee.

a) Apis dorsata b) Apis indica

c) Apis mellifera d) Apis florea

v) _____ is a chondrichthyes fish.

a) Labeo b) Scoliodon

c) Catla d) Mrigal

2. Answer **any five** of the following : **10**

i) What is Lac culture ?

ii) Write parasitic adaptations of Ascaris.

iii) Give the economic importance of sericulture.

iv) Describe the general characters of class reptilia.

v) Write a note on - Royal jelly.

vi) Distinguish between chondrichthyes and osteichthyes.

vii) Give the characters of Urochordata.

3. A) Answer **any two** of the following : **10**

i) Give an account of host-parasite relationship.

ii) Describe the parts of Artificial bee hive.

iii) Write the general characters of phylum Arthropoda. Enlist its classes with one example each.

B) Answer **any one** of the following : **10**

i) Give an account on Life cycle of Plasmodium Vivax.

ii) Define aquaculture. Mention their types. Write a note on maintenance of aquaculture.

_____

a) Auxins b) Gibberllins

c) Ethylene d) All of these

5) Dendrochrohology is the means to find out

a) diameter of the tree b) height of the tree

c) approximate age of the tree d) the number of brarehes

2. Answer **any five** of the following : **8**

i) Write any four economic importance of Gymnosperms.

ii) Enlist five principles of ICBN.

iii) Write functions of complex tissue.

iv) What is fertilization ?

v) Enlist aggregate fruits with suitable examples.

vi) What is periderm ?

vii) Describe grouth curve.

3. A) Write short notes on **any two** of the following : **10**

i) General characters of pteridophytes.

ii) Write note on simple tissues with their functions.

iii) Breaking of seed dormancy.

B) Answer **any one** of the following : **10**

i) Give brief outline of Bentam and Hooker's system of classification.

ii) What is secondary growth ? Describe with suitable diagram and add note on annual rirgs.

SLR-U – 4

Seat No.	

B.Sc. – I (Semester – I) Examination, 2015
(CGPA Pattern)
BIOTECHNOLOGY
Fundamentals of Chemistry and Biophysics

Day and Date : Monday, 2-11-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N.B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***Use*** *of log table/calculator is* ***allowed****.*

SECTION – I
(Chemical Science)

1. Select the most correct alternative from among those given below and write the complete sentence. **5**

i) C_2H_2 molecule is _____ in shape.
a) linear b) triangular
c) tetrahedral d) angular

ii) _____ is an example of essential element in biological processes.
a) Mg b) B c) Ge d) Si

iii) In case of cyclic process _____
a) $Q = -W$ b) $Q = W$ c) $-Q = W$ d) $W = \Delta H$

iv) $2NO + O_2 \longrightarrow 2NO_2$ is _____ reaction.
a) unimolecular b) bimolecular
c) termolecular d) pseudounimolecular

v) $H_{2(g)} + N_{2(g)} + Fe_{(s)} \longrightarrow NH_{3(g)}$ is an example of _____ catalysis.
a) homogeneous b) heterogeneous
c) auto d) pseudo

2. Answer **any five** of the following : **10**
   i) Define the terms bond length and bond energy.
   ii) What are ionic solids ? Give any two examples.
   iii) Write values of bond angle and shape of CH_4 and C_2H_4 molecules.
   iv) Write any two characteristics of first order reaction.
   v) What is first law of thermodynamics give its mathematical expression ?
   vi) Define Helmholtz free energy write relation between ΔH and ΔG.
   vii) Define the terms half-cell potential and e.m.f.

3. A) Answer **any two** of the following : **10**
   i) How will you compare between ionic and covalent compounds.
   ii) For a first order reaction the time for half change is 72 min. how much time will it take for 90% completion.
   iii) Derive the expression, $\Delta H = \Delta U + \Delta n\, RT$.

   B) Answer **any one** of the following : **10**
   i) What are different types of electrodes ? Write construction and working of glass electrode.
   ii) What are buffers ? Derive henderson equation for acidic basic buffers.

SECTION – II
(Biophysics)

1. Select correct alternative from the following : **5**
   i) When an angle of incidence i is equal to 45°, by the law of reflection an angle of reflection r is equal to _____
      a) 45° b) 50° c) 30° d) 90°
   ii) _____ indicates the resistance offered by a material when an attempt is made to change in its shape.
      a) Young's modulus b) Modulus of rigidity
      c) Bulk modulus d) None of these
   iii) Audible range of frequency is _____
      a) 20 Hz to 20 kHz b) 10 Hz to 10 kHz
      c) 20 kHz to 200 kHz d) 1 Hz to 20 kHz

iv) Surface tension of liquids _____ with rise in temperature.
   a) increases
   b) does not change
   c) decreases
   d) may increase or decrease

v) The SI unit of stress is _____
   a) N/m^2 b) $dyne/cm^2$ c) N/m d) kg/m

2. Answer **any five** of the following : **10**
   i) What do you mean by population inversion ?
   ii) State the principle of superposition of waves.
   iii) State the properties of ultrasonic waves.
   iv) Define :
      a) tensile stress
      b) volume stress.
   v) What do you mean by
      a) streamline flow
      b) turbulent flow.
   vi) State any two laws of reflection of light.
   vii) State Hooke's law.

3. A) Attempt **any two** of the following : **10**
      i) Define Young's modulus, Bulk modulus and modulus of rigidity and state the relation between them.
      ii) Write a note on Nicol Prism.
      iii) What is Doppler effect ? Explain any two applications of Doppler effect.

   B) Attempt **any one** of the following : **10**
      i) State Bernoulli's theorem and explain the working of venturimeter.
      ii) Describe Jaeger's method for measurement of surface tension.

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SLR-U – 5

Seat No.	

B.Sc. I (Semester – I) Examination, 2015
(CGPA Pattern)
BIOTECHNOLOGY
Cell Biology & Biostatistics

Day and Date : Tuesday, 3-11-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N.B. : *1) **All** questions are **compulsory**.*
*2) Draw a neat labelled diagram **wherever** necessary.*
*3) Figures to the **right** indicates **full** marks.*
*4) Calculator is **allowed**.*

SECTION – I

(Cell Biology)

1. Multiple choice questions. **5**

1) _____ is known as protein factories of cell.
   a) Nucleus b) Ribosome
   c) Chloroplast d) Mitochondria

2) Actin filaments are known as
   a) Microtubules b) Intermediate filaments
   c) Microfilaments d) Neuro filaments

3) _____ is known as programmed cell death.
   a) Necrosis b) Apoptosis
   c) Cell quit d) Cell suicide

4) Fluid mosaic model of plasma membrane was proposed by
   a) Singer and Nicolson b) Watson and Crick
   c) Dunielli and Davson d) Totum and Lederberg

5) Protein synthesis is also known as
   a) Translation b) Transcription
   c) Replication d) Transformation

P.T.O.

2. Answer **any five** of the following : **10**

   i) PPLOs

   ii) Functions of RER

   iii) Cell Growth

   iv) Wobble hypothesis

   v) Gap junctions

   vi) Properties of cancer cells

   vii) Paracrine signalling.

3. A) Write short notes on **any two** of the following : **10**

   i) Describe mitosis and add a note on its significance.

   ii) Define genetic code and add a note on its properties with suitable example.

   iii) Describe fluid mosaic model of plasma membrane.

   B) Answer **any one** of the following : **10**

   i) Describe structure, types and functions of cytosketetal proteins.

   ii) Describe different types passive transport mechanisms with suitable examples.

SECTION – II

(Biostatistics)

1. Multiple choice questions : **5**

   1) From the Ogive curve, we can determine

   a) Mean b) Median

   c) Mode d) None of these

   2) _____ is the best measure of dispersion.

   a) Range b) Mean deviation

   c) Quartile deviation d) Standard deviation

3) In a symmetrical distribution

a) Mean < median < mode
b) Mean > median > mode
c) Mean = mode = median
d) None of these

4) When the value of $\beta_2 < 3$, it is

a) Mesokurtic
b) Platykurtic
c) Leptokurtic
d) None of these

5) Probability of an impossible event is

a) Zero
b) One
c) Between 0 and 1
d) None of these

2. Answer **any five** of the following : **10**

i) Define combine mean.

ii) State the empirical relation between mean and median.

iii) Coefficient of variation of series is 80 and standard deviation is 30. What is its mean ?

iv) Define Poisson distribution.

v) Explain cluster sampling.

vi) A card is selected at random from a well-shuffled ordinary pack of 52 playing cards. Find the probability of getting face card ?

vii) State addition law and multiplication law.

3. A) Write short notes on **any two** of the following : **10**

i) Mode by graphical method.

ii) Skewness.

iii) Define regression. Explain line of regression Y on X. State coefficient of regression of Y on X.

B) Answer **any one** of the following : **10**

i) Let A and B be two events connected with a random experiment such that

$P(A) = \frac{1}{2}$, $P(A \cup B) = \frac{3}{9}$ $P(B') = \frac{5}{8}$

Find :

i) $P(A \cap B)$

ii) $P(A' \cap B)$

iii) $P(A \cap B')$

iv) $P(A' \cup B')$

v) $P(A' \cap B')$.

ii) Calculate the arithmetic mean by step deviation method :

Plant height (cms)	**No. of varieties**
0 – 10	10
10 – 20	15
20 – 30	25
30 – 40	30
40 – 50	20

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SLR-U – 6

Seat No.	

B.Sc. (Biotech.) (Semester – II) Examination, 2015
ENGLISH COMPULSORY (New CGPA Pattern)
On Track : English Skills for Success

Day and Date : Thursday, 5-11-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

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

1. Rewrite the following sentences by choosing the correct alternative given below **each** : **14**

1) Wernher von Braun advised Dr. A.P.J Abdul Kalam to make rocketry his mission and_____
   a) Profession b) Glory c) Religion d) Division

2) To succeed in any mission, says Dr. Kalam, one needs _____
   a) Single handed victory b) Single man's devotion
   c) Single attempt success d) Single minded devotion

3) The Parliament of religions was to be held in _____
   a) America b) Singapore
   c) Canada d) South Africa

4) When did Vivekanand leave Bombay ?
   a) On September 11, 1893 b) On May 31, 1893
   c) On May 15, 1893 d) On June 5, 1893

5) The Lusaka Zoo presents_____as the World's most dangerous animal.
   a) Man b) Woman
   c) Carnivorous animals d) Reptiles

P.T.O.

6) The main reason of the serious economic problems of the majority is _____

a) Famine b) Negligence c) Drought d) Ignorance

7) Brahma is a Hindu deity who is responsible for _____

a) The creation of the World b) The maintenance of the world

c) The destruction of the World d) The rules of governing the World

8) The poem "Brahma" displays the influence of _____ on Emerson.

a) The Vedas b) The Upanishads

c) The Geeta d) The Puranas

9) The people on whose graves the full moon shines were_____

a) Poor people b) Simple people

c) Superstitious people d) Moon-dependent people

10) Today the moon is merely an attraction for_____

a) The poets b) The children

c) The lovers d) The scientists

11) The gentleman would not drink _____tea without your company.

a) my b) her c) our d) his

12) _____ are the European people.

a) English b) The English c) An English d) The english

13) The _____ refused to admit him in the science stream.

a) Principle b) Principal c) Prince d) Princess

14) Who won the race ? The_____ or the tortoise ?

a) here b) hair c) hare d) heir

2. Answer **any seven** of the following questions in **two** to **three** sentences **each** : **14**

1) What kind of personality was Von Braun, according to Dr. Kalam ?

2) What happened to the first V-Z missile when it was first tested ?

3) Who were the other Indians present at the Parliament of Religions ?

4) Where did Swami Vivekanand leave for and why ?

5) Human rights are against the government. How ?

6) What message does the poem "Brahma" leave for us ?

7) What is the theme of the poem "Full Moon" ?

8) Is the moon depicted as a challenge or a threat or a comfort in the poem ?

3. A) Write short answers on **any two** of the following : **8**

1) Summarise the points of advice that Von Braun gave Dr. Kalam.

2) How was Vivekananda's speech at the Parliament of Religions different from those of the other speakers ? How did it create a magic on the occasion ?

3) Examine Palkhivala's evaluation of the current status of human rights in the World.

B) Answer **any two** of the following questions briefly : **6**

1) What is a notice ?

2) What are the aspects of a good CV ?

3) What is an e-mail ?

4. You are Anne Jacob, a graduate in Chemical Engineering from the NIT Warangal. You have three years experience as an assistant project engineer with a fertilizer company. Write an email application letter in response to an advertisement for the post of Project Engineer in a well-known Petrochemical Company. Refer only briefly to your educational qualifications and work experience in the body of the letter and say that you are attaching your C.V. and testimonials for the company's reference. **14**

OR

You are the principal of the Arya College of Arts and Science, Lucknow. Prepare an agenda for a meeting with the head of the English department and the secretary and the treasurer of the college's literary association. The meeting has been called to discuss the venue, date, time.

5. Write a suitable C.V. for the post of lecturer in the Senior College in English subject. **14**

SLR-U – 7

Seat No.	

B.Sc. – I (Semester – II) (New CGPA Pattern) Examination, 2015
BIOTECHNOLOGY
Environmental Pollution and Microbial Techniques

Day and Date : Friday, 6-11-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N. B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) Draw ***neat*** *labelled diagrams* ***wherever*** *necessary.*

SECTION – I
(Environmental Pollution)

1. Rewrite the following sentences by choosing correct alternatives given below : **5**

i) Volcanic eruption release _____ in the atmosphere.
   a) PAH b) Mist
   c) SO_2 d) O_3

ii) The effect of oil on marine organisms includes _____
   a) Direct lethal toxicity
   b) Physiological disorders
   c) Change in biological habitats
   d) All of the above

iii) _____ is/are responsible for soil pollution.
   a) Agricultural waste b) Mineral matter
   c) Oxides of sulphur d) Hydrocarbons

iv) _____ is an ionizing radiation.
   a) Electromagnetic radiations
   b) Solar radiations
   c) Alpha (α) particles
   d) None of the above

v) _____ plant is extensively cultivated for production of biodiesel.
   a) Neem b) Jatropha
   c) Soyabean d) Moringa

P.T.O.

2. Answer **any five** of the following : **10**

i) Mention any four sources of gaseous air pollutant.

ii) Explain with suitable example point and non-point sources of water pollution.

iii) What are the impacts of mining on soil quality ?

iv) Enlist any four radioactive isotopes.

v) Explain OTEC.

vi) Give composition of Biogas.

vii) What is green house effect ?

3. A) Write short notes on **any two** of the following : **10**

i) Explain the causes and effects of ozone layer depletion.

ii) Write in brief about non-biological methods of biomass energy generation.

iii) Explain the sources and effects of soil pollution.

B) Answer **any one** of the following : **10**

i) State the salient features of Air (Prevention and Control of Pollution) Act, 1981.

ii) Explain with suitable example nuclear fission and nuclear fusion. Add a note on treatment of nuclear waste.

SECTION – II
(Microbial Techniques)

1. Rewrite the following sentences by choosing correct alternatives given below : **5**

1) _____ method is used for capsule staining.

a) Giemsa's b) Grams

c) Manvels d) Alberts

2) Giemsa's stain is an example of _____

a) Acidic b) Neutral

c) Basic d) None of these

3) Gas pack is used for culturing _____

a) Anaerobes b) Aerobes

c) Both of these d) None of these

4) U.V. rays are effective against bacteria at _____ nm.
   a) 150 b) 390
   c) 265 d) None of these

5) Autoclave is working on _____ principle.
   a) Dry heat b) Moist heat
   c) Radiation d) Desiccation

2. Answer **any five** of the following : **10**

   i) Define sterilization and give its methods.

   ii) Define Diauxic growth.

   iii) Define synthetic media and give any two examples of it.

   iv) Define pasteurisation and give its different methods.

   v) Define stain. Give its examples.

   vi) Define disinfection. Give examples of disinfectants.

   vii) Give different methods used for maintenance of pure culture of microorganisms.

3. A) Write short notes on **any two** of the following : **10**
      i) Pour plate technique.
      ii) Mechanism of acid fast staining.
      iii) Synchronous growth.

   B) Answer **any one** of the following : **10**
      i) Write an account on physical agents used for sterilization.
      ii) Write an account on laboratory methods used for determination of bacterial growth.

_____

SLR-U – 8

Seat No.	

B.Sc. I (Semester – II) (New CGPA Pattern) Examination, 2015
BIOTECHNOLOGY
Biochemistry and Cell Physiology

Day and Date : Saturday, 7-11-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Draw **neat** labelled diagrams **wherever** necessary.*
*3) Figures to the **right** indicate **full** marks.*
*4) Answers of Section **I** and **II** should be written in **separate** answerbooks.*

SECTION – I
(Biochemistry)

1. Multiple choice questions. **5**

1) Pellagra is a disorder due to the deficiency of
   a) vitmin B1 b) vitamin B12
   c) vitamin B3 d) vitamin B5

2) The interconversion of α and β forms of anomeric sugars is called as _____ rotation.
   a) optical b) dextro c) levo d) muta

3) Antibodies are of _____ type of protein.
   a) Globular b) Fibrous
   c) Saturated d) Unsaturated

4) Prostaglandins and leukotriens are synthesized from _____ by cyclooxygenase pathway.
   a) Arachidonic acid b) Ergosterol
   c) Glycerol d) Hexane

5) B type of DNA has _____ base pairs per turn.
   a) 10 b) 11 c) 12 d) 14

P.T.O.

2. Answer **any five** of the following : **10**

i) Draw the chemical structure of sucrose.

ii) What is meant by amphoteric character of protein ?

iii) What are ecosanoid compounds ?

iv) Give the classification of vitamins.

v) State the Chargaff's rule for nucleic acids.

vi) Write about secondary structure of protein.

vii) What are enantiomers ?

3. A) Write short notes on **any two** of the following : **10**

i) Watson and Crick model of DNA.

ii) Properties of monosaccharides and its cyclic structure.

iii) Fat soluble vitamins.

B) Answer **any one** of the following : **10**

i) Describe the classification and structure of lipids. Add a note on ecosanoid compounds.

ii) Describe the 3D conformation of proteins. Add a note on biologically important peptides.

SECTION – II
(Cell Physiology)

1. Multiple choice questions. **5**

1) The evaporation of water from the aerial parts of plant is called

a) Respiration b) Photosynthesis

c) Transpiration d) Transcription

2) Chlorophyll contain

a) Fe b) K c) Mg d) Mn

3) Artificial ripening of fruits is caused by the treatment of

a) 1 AA b) NaCl c) Ethylene d) Kinetin

4) Structural and functional unit of kidney is

a) Nephron b) R.B.C. c) Neuron d) Nerve cell

5) _____ gland is called as master endocrine gland.

a) Thyroid b) Pituitary c) Thymus d) Adrenal

2. Answer **any five** of the following : **10**
   1) Define photosynthesis.
   2) What is meant by stomatal transpiration ?
   3) Draw a neat labelled diagram of Malphigian body.
   4) What is meant by double circulation.
   5) Define reflex action.
   6) Hormones of Heart.
   7) Regulation of Respiration.

3. A) Write short notes on **any two** of the following : **10**
      1) Describe in detail light reaction.
      2) Explain C4 pathway in plants.
      3) Describe in detail mechanism of hormone action.

   B) Answer **any one** of the following : **10**
      1) Describe in detail human digestive system.
      2) Explain in detail central neural system in humans.

SLR-U – 9

Seat No.	

B.Sc. – I (Semester – II) (New CGPA Pattern) Examination, 2015
BIOTECHNOLOGY
Biometry and Tissue Culture

Day and Date : Monday, 16-11-2015 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N. B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) *Answers to* ***each*** *Section are to be written in* ***separate*** *answer book.*
3) ***Draw*** *neat labelled diagram* ***wherever*** *necessary.*
4) *Figures to the* ***right*** *indicate* ***full*** *marks.*

SECTION – I
(Biometry)

1. Rewrite the following sentences by choosing correct alternatives : **5**

1) If A = {7, 8, 6} and B = {6, 9} then B – A = _____
   a) {7, 8} b) {6}
   c) {9} d) {7, 8, 9}

2) If $z = 5 + 7i$ then $z - \bar{z}$ = _____
   a) 14 i b) –14i c) 10 d) –10

3) If $y = 7x^2 - 5x + 2$ then $y'(0)$ = _____
   a) 7 b) – 7 c) 5 d) – 5

4) If $f(x) = 5 \sin x + 9 \cos x$ then f(0) = _____
   a) 5 b) 13 c) 9 d) 0

5) Matrix $A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ is _____
   a) Unit matrix b) Symmetric matrix
   c) Singular matrix d) Diagonal matrix

P.T.O.

2. Answer the following **(any five)** : **10**

1) If A = {3, 4}, B = {7, 8} then find A x B.

2) If $z_1 = 5 - 2i$, $z_2 = 7 + 2i$ then find $Z_2 \cdot Z_1$.

3) If $g(x) = 2x^3 + 1$ and $f(x) = 3x^2 - 1$ find $g \circ f$.

4) Evaluate $\lim_{n \to 0} (1 + 5x)^{1/2x}$.

5) If $y = (\sin x)^x$ then find $\frac{dy}{dx}$.

6) Evaluate $\int (4 \sin 5x - x^2)\, dx$.

7) Evaluate $\begin{bmatrix} 5 & 0 \\ 7 & 1 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \end{bmatrix}$.

3. A) Attempt **any two** of the following : **10**

1) Draw the Venn diagram of

i) $A' \cap B$

ii) $A' \cap B'$

2) If $y = 3\frac{\log x}{x} + 5$ then find $\frac{dy}{dx}$.

3) Evaluate $\int 5x \cos x \, dx$.

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

1) Examine the maxima and minima of the function.
$f(x) = 4x^3 - 30x^2 + 72x + 10$. Also find the maximum and minimum values of f(x).

2) Find A^{-1} and rank of matrix

$$A = \begin{bmatrix} 2 & 3 & 4 \\ 4 & 3 & 1 \\ 1 & 2 & 4 \end{bmatrix}$$

SECTION – II

(Introduction to Tissue Culture)

1. Rewrite the following sentences by choosing correct alternatives : **5**

1) The synthesis of Cytokinins is thought to occur mainly in the _____
   a) Root tips
   b) Shoot tip
   c) Leaf tip
   d) Young fruit

2) Micro-elements are essential as _____ for many biochemical reactions.
   a) Enzymes
   b) Catalysts
   c) Co-factor
   d) Nitrogen source

3) After disaggregation of tissue and culturing them we get _____
   a) Continuous cell line
   b) Clumps of cells
   c) Primary culture
   d) Secondary culture

4) Viable cells are impermeable to _____
   a) Propidium iodide
   b) Fluoresin
   c) Neutral red
   d) Eosin Y

5) _____ method is quick and cheap method of cell separation.
   a) Physical
   b) Clinical
   c) Laboratory
   d) Enzymatical

2. Answer the following **(any five)** : **10**

   1) Growth room in PTC.
   2) Culture vessel in PTC.
   3) Stage I of micro-propagation.
   4) What is totipotency ?
   5) Secondary cell line.
   6) Micropipettes.
   7) History of animal tissue culture.

3. A) Answer the following **(any two)** : **10**

   1) Explain production of haploid plants by anther culture.
   2) Describe in detail suspension culture.
   3) Give details of instruments used in animal tissue culture laboratory.

   B) Answer the following **(any one)** : **10**

   1) Discuss different stages of invitro clonal propagation w.r.t. callus of enlist its applications.
   2) Describe in detail synthetic media for animal tissue culture.

SLR-U – 10

Seat No.	

B.Sc. – I (Semester – II) Examination, 2015
New (CGPA Pattern)
BIOTECHNOLOGY
Taxonomy and Computer Science

Day and Date: Tuesday, 17-11-2015 Total Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

N.B. : *1) **All** questions are **compulsory**.*
*2) Answer to the **both** Section are to be written in **separate** answer book.*
*3) Draw **neat** labelled diagram **wherever** necessary.*
*4) Figures to **right** indicate **full** marks.*

SECTION – I

(Taxonomy)

1. Choose the **correct** answer from given alternatives : **5**

1) Cycas plant is _____
   a) Monecious b) Diocious
   c) Monodioecious d) Diomonoecious

2) Scorpion belongs to phylum _____
   a) Echinodermata b) Mollusca c) Arthropoda d) Porifera

3) _____ group of micro-organisms can produce mycelium.
   a) Mycoplasm b) Virus c) Actinomycetes d) Chlamydia

4) Extraction of penicillin is takes place from _____
   a) Penicillium notatum b) Aspergillus niger
   c) Myxogastres d) Claviceps purpurea

5) _____ comprises exclusively marine animals.
   a) Mollusca b) Echinodermata
   c) Porifera d) Coelenterata

P.T.O.

2. Answer **any five** of the following : **10**

i) Binomial nomenclature

ii) Write a note on Rickettsia

iii) Sporophyte

iv) Phylogenetic scheme of classification

v) Enlist classes of protozoa

vi) Economic Importance of pteridophytes

vii) General characters of Mammalia.

3. A) Write a note on **any two** of the following : **10**

i) Give an account on numerical taxonomy and its applications.

ii) Enlist phenetic and phylogenetic characters of micro-organism.

iii) Explain salient features of class Aves.

B) Answer **any one** of the following : **10**

i) Explain in detail general characters and Economic importance of Gymnosperms.

ii) Describe general characters of Reptilia and enlist its classes.

SECTION – II
(Computer Science)

1. Choose the **correct** alternatives from the given below : **5**

1) The file extension of MS-Excel is _____

a) .doc b) .xls

c) .mdb d) .txt

2) Internet Explorer is an example of _____

a) Operating system b) Browser

c) Program d) None of these

3) A smallest unit of binary _____

a) Bit b) Byte

c) kB d) mB

4) First computer generation is based on _____
   a) Vacuum Tubes b) Transistors
   c) IC d) VLSI

5) _____ bytes means one kilobytes.
   a) 1000 bytes b) 1024 bytes
   c) 2048 bytes d) 512 bytes

2. Answer **any five** of the following : **10**

1) Explain CPU
2) Output devices
3) URL
4) .com
5) RAM
6) Hardware and Software
7) Program.

3. A) Answer **any two** of the following : **10**

1) Explain any three types of operating system.
2) Explain network topology with its types.
3) Explain flowchart with its symbols.

B) Answer **any one** of the following : **10**

1) Explain History of Computer.
2) Explain what is Internet and write a difference between Internet, extranet, Intranet.

_____

SLR-U – 11

Seat No.	

B.Sc. – I (Bio-Tech.) (Semester – II) Examination, 2015
ENGLISH (Compulsory) (Old)
On Track : English Skills for Success

Day and Date : Thursday, 5-11-2015 Max. Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

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

1. Fill in the blanks by choosing correct alternative : **10**

1) _____ had become a cult figure in America after creating the Saturn rocket in the Apollo Mission.
   a) Dr. Abdul Kalam b) Verner von Braun
   c) Vikram Sarabhai d) Dr. Brahm Prakash

2) On which day was the first session of the Parliament of Religions scheduled to begin ?
   a) On May 31, 1893 b) On September 11, 1893
   c) On September 21, 1894 d) On May 31, 1894

3) _____ was launched in May 1961.
   a) Anti-Slavery society
   b) UNO
   c) Amnesty International
   d) UN Declaration against torture and degrading treatment

4) In the poem 'Brahma' the poet presents the essence of the _____
   a) Philosophy of Socrates b) Hindu Philosophy
   c) Christian Philosophy d) Jain Philosophy

5) The vanished Gods to me appear ; And one to me are _____.
   a) shadow and sunlight b) far and forgot
   c) doubter and doubt d) shame and fame

P.T.O.

6) Who is the 'Goddess' in the poem 'Full Moon' ?
   a) Moon b) Laxmi
   c) Menaka d) Saraswati

7) They have the _____ jackets.
   a) mens b) mens'
   c) men's d) man's

8) Who won the race ? The _____ or the tortoise ? Tie up your _____. It is falling over your eyes.
   a) hair, hare b) hare, hair
   c) hear, hare d) here, hair

9) The antonym of diffident is _____.
   a) competent b) confident
   c) difficult d) tolerant

10) Rakesh is the _____ singer in the class.
   a) better b) best
   c) good d) more good

2. Answer **any five** of the following questions in brief : **10**
   1) What advice did Verner von Braun give to Dr. Kalam ?
   2) Who was Verner von Braun and what was his contribution to science and to the world ?
   3) Which type of progress struck Vivekananda on his arrival in the west ?
   4) What is the essence of Vivekananda's speech at the Parliament of Religions ?
   5) What are the signs of hope for a better world that Palkhivala sees ?
   6) What do you mean by 'human rights' ?

3. A) Answer **any two** of the following questions in brief : **6**
   1) What is the message of the poem 'Brahma' ?
   2) What is the central theme of the poem 'Full Moon' ?
   3) Explain any two images in the poem 'Brahma'.

B) Answer **any two** of the following in brief : **4**

1) As Sam Thomas, Secretary of the Press Club of India, write a notice informing the Club's members about its annual meeting scheduled to be held in No. 3, Barakhamba Road, New Delhi, on 6 December 2014 from 10 a.m. to 1 p.m. Also invite the members to lunch in the Club's reception hall.

2) Prepare an agenda for the above mentioned meeting.

3) Suppose the above mentioned meeting was held as per the schedule. You are the secretary of the club. Prepare the minutes of the same meeting.

4. Answer **one** of the following questions : **10**

1) You are the secretary of the Bharat Sports Club in your town. The meeting of the office bearers of the club is scheduled for the 15th of next month. Prepare an agenda for the meeting and then draft the minutes of the meeting.

2) You are Prerana Pai living at 24, Marigold Apartment, Indira Nagar, Bengaluru and you have just received a letter of appointment as Assistant Executive in the accounts department of Samtron Industries, 124, Shubham Complex, M.G. Road, Bengaluru. Write an email to inform your confirmation to join the same company within given time.

5. You wish to apply for the post of an Executive Human Resource Manager in Infosys Company. Prepare a CV for the said post. **10**

SLR-U –12

Seat No.	

B.Sc. – I (Semester – II) (Old) Examination, 2015
BIOTECHNOLOGY
Environmental Pollution and Microbial Techniques
Paper – I : Pollution

Day and Date : Friday, 6-11-2015 Total Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

N.B. : *1)* ***All*** *questions are* ***compulsory***.
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Draw ***neat*** *and labelled diagrams* ***whenever*** *necessary.*

1. Select the appropriate answer from each of the following and rewrite the sentence : **10**

1) _____ is not a renewable energy resource.
   a) Solar radiation b) Wind energy
   c) Thermal energy d) Tidal energy

2) The major cause of land degradation in India is _____
   a) Soil erosion
   b) Water pollution
   c) Application of organic fertilizer
   d) None of the above

3) _____ is an biodegradable substance.
   a) Oil b) Garbage
   c) Plastic d) Pesticide

4) Biopesticide may be of following type _____
   a) Microbial b) Botanical
   c) Biochemical d) All the above

P.T.O.

5) _____ of the following causes depletion of ozone layer.

a) H_2S b) Smoke

c) Nitrogen d) Aerosols

6) Bhopal gas tragedy in 1984 was caused due to_____

a) Carbonyl Chloride b) Carbon Monoxide

c) Methyl Isocyanate d) Nuclear Explosion

7) Acid rain is an rainfall having pH _____

a) Greater than 7 b) Equal to 7

c) Greater than 5.5 d) Equal to 5.5

8) The device which uses wind energy is _____

a) Wind mill b) Fuel cell

c) Solar panel d) Wind farm

9) Thermal pollution of water body may cause _____

a) Mutagenic effect in aquatic animal

b) Death of fish and other aquatic animals

c) Increases aquatic productivity

d) None of the above

10) Why DDT is banned ?

a) Long persistent in the environment

b) Easily degradable

c) Used against mosquito killing

d) Kills good insect like butterflies

2. Answer **any five** of the following : **10**

   1) Explain types of waste.

   2) Enlist sources of soil pollution.

   3) Write down impact of mining.

   4) Write down effect of nuclear waste.

   5) What is eutrophication ?

   6) Which are non renewable energy resources ?

3. A) Answer **any two** of the following : **6**

      1) Write down in brief Air (Prevention and control of pollution) Act.

      2) Explain mechanism of acid rain formation.

      3) Write down sources of water pollution.

   B) What is renewable energy ? Explain Biogas Generation with suitable diagram. **4**

4. Answer **any two** of the following : **10**

   1) Write down case history on Minamata disease .
   2) Write down effect of global warming.
   3) Explain effect of marine pollution on aquatic ecosystem.

5. Answer **any one** of the following : **10**

   1) Explain conservation method to control soil pollution.

   2) Write down sources and effect of air pollution.

SLR-U – 13

Seat No.	

B.Sc. I (Semester – II) (Biotechnology) Examination, 2015
ENVIRONMENTAL POLLUTION AND MICROBIAL TECHNIQUES (Old)
Paper – II : Microbial Techniques

Day and Date : Saturday, 7-11-2015 Max. Marks : 50

Time : 10.30 a.m. to 12.30 p.m.

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*

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

1. Rewrite the complete sentence by correct alternative given below : **10**

1) Basic dye has _____ charge on its chromophore group.

a) Negative b) Positive

c) Neutral d) Negative and positive

2) The organism which use CO_2 as carbon source and light as energy source belongs to

a) Photoautotrophs b) Chemotrophs

c) Photoheterotrophs d) Lithotrophs

3) Acid fastness of mycobacterium is due to presence of _____ in their cell wall.

a) Mycolic acid b) Teichoic acid

c) Malic acid d) Pyruvic acid

4) _____ acts as mordant in Gram's staining procedure.

a) Crystal violet b) 95% alcohol

c) Safranin d) Gram's iodine

5) _____ wavelength of U.V. is the most germicidal.

a) 200 nm b) 260 nm c) 390 nm d) 150 nm

6) Viruses are cultivated on _____ media.

a) Synthetic b) Selective

c) Living d) Enriched

P.T.O.

7) The growth phase where number of cells increase exponentially or by geometric progression is called _____ phase.
   a) Lag b) Log c) Stationary d) Death

8) Clostridium perfrengene is an _____ spore forming organism.
   a) Aerobic b) Facultative c) Anaerobic d) None of these

9) Hot air ovan is based on _____ principle.
   a) Dry heat b) Moist heat c) Radiation d) Dessication

10) _____ acts as solidifying agent in microbial culture media.
   a) NaCl b) Peptone
   c) Yeast extract d) Agar-agar

2. Answer **any five** of the following : **10**
   i) Give any two examples of enriched and selective media.
   ii) Define pure culture. Enlist different methods of isolation.
   iii) Define filteration. Give different types of filters.
   iv) Give mode of action of alcohol (ethanol) on bacterial cell.
   v) In which medium it is used and give its function sodium taurocholate.
   vi) Define diauxic growth.

3. A) Write short note on (**any two**) : **6**
   i) Explain mechanism and procedure of Albert's staining method.
   ii) Embryonated egg technique.
   iii) Peptidoglycan theory to explain Gram's staining mechanism.

   B) Explain an account on synchronous growth. **4**

4. Write a brief note on (**any two**) : **10**
   i) Nutritional requirements of microorganisms.
   ii) Different methods of preservation of pure culture.
   iii) Explain principle and mechanism of moist heat used for sterilization.

5. Answer **any two** of the following : **10**
   i) Laboratory methods of determination of bacterial growth.
   ii) Different media used for cultivation of microorganisms.
   iii) Mechanism and principle of acid fast staining.

_____

SLR-U – 15

Seat No.	

B.Sc. – I (Semester – II) (Biotechnology) (Old) Examination, 2015
BIOCHEMISTRY AND CELL PHYSIOLOGY
Paper – II : Cell Physiology

Day and Date : Tuesday, 17-11-2015 Total Marks : 50

Time : 10.30 a.m. to 12.30 p.m.

N.B. : *1) **All** questions are **compulsory**.*
*2) Draw a **neat** labelled diagram **wherever** necessary.*
*3) Figures to **right** indicate **full** marks.*

1. Choose the **correct** answer from given alternatives. **10**

1) Oxygen liberated during photosynthesis comes from _____
   a) H_2O b) CO_2
   c) Glucose d) Chlorophyll

2) Water loss from plants through stomata is known as _____
   a) Respiration b) Photosynthesis
   c) Transcription d) Transpiration

3) _____ is known as critical elements for plants.
   a) C, P, K b) N, P, K
   c) N, P, C, K d) C, P, K, Ca

4) Hill reaction is also known as _____
   a) Dark reaction b) Blackman reaction
   c) Light reaction d) None of these

5) _____ hormone known as fruit ripening hormone.
   a) Auxin b) Cytokinin
   c) Ethylene d) ABA

6) Emulsification of fat is function of _____
   a) Bile juice b) Gastric juice
   c) Pancreatic juice d) Intestinal juice

7) CO_2 is transported in the form of _____ in human blood.

a) Phosphates b) Sulphates

c) Carbonates d) Chlorides

8) Structural and functional unit of kidney is _____

a) Nephron b) Neuron

c) Cyton d) Nerve cell

9) Human heart is made up of _____ muscles.

a) Skeletal b) Smooth c) Cardiac d) Connective

10) Pituitary gland is _____ gland.

a) Exocrine b) Endocrine

c) Mesocrine d) Both a and b

2. Answer **any five** of the following : **10**

1) Define photorespiration.

2) What is cuticular transpiration ?

3) Regulation of respiration in humans.

4) Draw a neat labelled diagram of Nephron.

5) Enlist different types of joints.

6) Hormones of heart and its role.

3. A) Answer **any two** of the following : **6**

1) Explain process of reflex action.

2) Describe double circulation in human being.

3) Write a note on vernalisation and its applications.

B) Describe in detail C4 pathway. **4**

4. Answer **any two** of the following : **10**

   1) Describe in detail mechanism of absorption of elements.

   2) Explain non-cyclic photophosphorylation in plants.

   3) Describe in detail human digestive system.

5. Answer **any two** of the following : **10**

   1) Explain mechanism of urine formation.

   2) Describe central neural system in humans.

   3) Describe composition of human blood.

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SLR-U – 16

Seat No.	

B.Sc. – I (Biotech) (Semester – II) Examination, 2015
BIOMETRY AND TISSUE CULTURE (Old)
Biometry (Paper – I)

Day and Date : Wednesday, 18-11-2015 Total Marks : 50

Time : 10.30 a.m. to 12.30 p.m.

N.B. : *1)* ***All*** *questions are* ***compulsory****.*

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

1. Rewrite the following statements by choosing **correct** alternatives. **10**

1) If $A = \{7, 8, 5\}$ and $B = \{5, 9\}$ then A – B = _____

a) $\{7, 8\}$ b) $\{5\}$ c) $\{9\}$ d) $\{7, 8, 9\}$

2) Which of the following is an empty set ?

a) $\{0\}$ b) $\{\phi\}$ c) ϕ d) 0

3) If $z = 2 - 3i$ then $z + \bar{z}$ =_____

a) 4 b) 6i c) – 4 d) – 6i

4) i^3 = _____

a) i b) – i c) 1 d) – 1

5) If $f(x) = 5x^2 + 5x + 1$ then f(0) = _____

a) 1 b) 0 c) 50 d) 10

6) f(x) = 5 sin x is

a) Linear function b) Polynomial function

c) Trigonometric function d) Logarithmic function

P.T.O.

7) $\int 3x^2\,dx$ = _____

a) 6x b) 6 c) x^3 d) $\frac{x^3}{3}$

8) If f(x) = 7cosx then $f'(0)$ is

a) 0 b) 7 c) – 7 d) 1

9) Matrix A = $\begin{bmatrix} 2 & 4 \\ 4 & 3 \end{bmatrix}$ is

a) Unit matrix b) Symmetric matrix

c) Singular matrix d) Diagonal matrix

10) If $\begin{vmatrix} 2 & x \\ -4 & 3 \end{vmatrix} = 0$ then x = _____

a) $\frac{3}{2}$ b) $-\frac{3}{2}$

c) 0 d) 3

2. Attempt **any five** of the following. **10**

1) If A = $\{7, 8\}$ and B = $\{5, 3\}$ then find $B \times A$.

2) If $z_1 = 5 + 3i$ and $z_2 = 7 - 4i$ then find $z_1.z_2$.

3) If $g(x) = 5x^2$ and f(x) = 7cosx then find fog.

4) Evaluate $\lim_{x \to 0} \frac{\tan 7x}{\sin 3x}$.

5) If $y = (\cos x)^x$ then find $\frac{dy}{dx}$.

6) Evaluate $\int (5\cos 3x - x^3)dx$.

3. A) Attempt **any two** of the following : **6**

1) If $A = \{1, 4, 7, 10\}$ $B = \{2, 4, 6, 7, 11\}$ $C = \{3, 5, 8, 9, 12\}$ then find

i) $A \cup B$ ii) $B \cap C$ iii) $A - B$

2) Evaluate $\lim_{x \to 5} \frac{x^2 - 9x + 20}{x^2 - 6x + 5}$.

3) $\int \sin^2 x \, dx$.

B) Find the minors and cofactors of the elements of the **4**

matrix $A = \begin{bmatrix} 1 & 0 & 3 \\ -3 & 4 & -2 \\ 2 & -1 & 0 \end{bmatrix}$

4. Attempt **any two** of the following : **10**

1) Find the square root of the complex number $-8 - 6i$.

2) If $y = \frac{2x^9}{3} - \frac{5}{7} x^7 + 6x^3 - x$ find $\frac{dy}{dx}$ at $x = 1$.

3) If $y = x \sin x + \cos x$. Find $\frac{dy}{dx}$.

5. Attempt **any two** of the following : **10**

1) If $x^2 + y^2 = \sin xy$ find $\frac{dy}{dx}$.

2) If $A = \begin{bmatrix} 1 & 0 & 3 \\ -3 & 4 & -2 \\ 2 & -1 & 0 \end{bmatrix}$ find A^{-1}.

3) Evaluate $\int 2x \sin x \, dx$.

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Seat No.	

B.Sc. Biotechnology – I (Semester – II) Examination, 2015
BIOMETRY AND TISSUE CULTURE (Paper – II)
Introduction to Tissue Culture (Old)

Day and Date : Thursday, 19-11-2015 Total Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory.***
2) Figures to ***right*** *indicate* ***full*** *marks.*
3) Draw ***neat*** *and* ***labeled*** *diagrams.*

1. Rewrite the following sentences by choosing **correct** alternatives. **10**

1) Most common measurement of cell viability are based on _____ integrity.
   a) Membrane b) Mitochondria
   c) Cytoplasm d) Chloroplast

2) So as to obtain _____ it is necessary that tissue must be disaggregated.
   a) Continuous cell line b) Primary culture
   c) Clumps of cells d) Secondary culture

3) _____ of the cell represents their survival.
   a) Capacity b) Toxicity
   c) Viability d) Capability

4) Vitamin _____ used as an anti-oxidant in MS media.
   a) K b) C c) B d) E

5) Development of adventitious organs from undifferentiated cell mass in tissue culture by the process of differentiation is knows as _____
   a) Organogenesis b) Suspension culture
   c) Embryogenesis d) Callus culture

6) Cobalt and nickel inhibit _____ synthesis.

a) Gibberellins b) Ethylene c) Vitamin B d) Auxin

7) _____ is a type of organogenesis by which only adventitious shoot bud initiation takes place.

a) Cytogenesis b) Rhizogenesis

c) Caulogenesis d) Embryogenesis

8) _____ considered as father of plant tissue culture.

a) Harrison b) Carrel

c) Thimann d) Haberlandt

9) _____ described procedure to obtain passaged monolayer.

a) Dulbecco b) Earle c) Harrison d) Carrel

10) Two important enzymes used for disaggregation of tissue are _____

a) Trypsin, Pectinase b) Collaginase, Trypsin

c) Cellulase, Trypsin d) Collaginase, Pectinase

2. Answer the following (**any five**). **10**

1) Media room in PTC.

2) Greenhouse.

3) Stage I of micropropagation.

4) Role of inverted microscope.

5) Natural media for ATC.

6) Write a note on continuous cell line.

3. A) Answer the following (**any two**). **6**

   1) Write a note on callus culture.

   2) Explain the method of organ culture.

   3) Write a note on Cytodifferentiation.

   B) Describe different requirements for animal cell and tissue culture. **4**

4. Answer the following (**any two**). **10**

   1) Explain tissue culture technique to produce novel plants.

   2) Describe in detail role of macronutrients in MS media.

   3) Give details of instruments used in animal tissue culture laboratory.

5. Answer the following (**any two**). **10**

   1) Give detail account on methods of protoplast culture.

   2) Describe laboratory design for animal tissue culture.

   3) Give details of cold trypsinization.

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Seat No.	

B.Sc. – I (Semester – II) Examination, 2015
BIOTECHNOLOGY (Old)
Taxonomy and Computer Science
Paper – I : Taxonomy

Day and Date : Friday, 20-11-2015 Max. Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

N. B. : *1)* ***All*** *questions are* ***compulsory****.*
2) ***Draw*** *well labelled diagrams* ***wherever*** *necessary.*

1. Multiple choice question : **10**

1) A bacterial variant with distinctive antigenic property is known as _____
   a) Serovar b) Morphovar c) Biovar d) Species

2) _____ is blood serum protein that binds to specific antigens.
   a) Enzyme b) Antibody c) Harmone d) Stain

3) Pinus is _____
   a) Monoecious b) Dioecious c) Sterile d) All of these

4) _____ are soft bodied animals.
   a) Fishes b) Mollusca c) Arthropoda d) Aves

5) _____ animals bears mammary glands.
   a) Aves b) reptiles c) Mammals d) Pisces

6) Fern belong to _____
   a) Angiosperm b) Bryophyta c) Algae d) Pteridophyta

7) MOSS belongs to _____
   a) Fungi b) Bryophyta c) Angiosperm d) Algae

8) _____ classification is based on morphological characteristics.
   a) Phenetic b) Phylogenic c) Genetic d) Natural

9) _____ consists of bacteria with typical gram negative cell wall.
   a) Gracilicutes b) Firmicutes c) Tenericutes d) Mendosicutes

10) Cockroach belongs to phylum _____
   a) Annelida b) Mollusca c) Arthropoda d) Protozoa

2. Answer **any five** of the following : **10**
   1) Define cryptogamous.
   2) Give classification of Hydra.
   3) Urochordata.
   4) Conventional taxonomy.
   5) Enlist five kingdom system
   6) Economic importance of fungi.

3. A) Answer **any two** of the following : **6**
      1) Give general characters of Urochordata.
      2) Rickettsia.
      3) Enlist principles of taxonomy.
   B) Give general characters of fishes. **4**

4. Answer **any two** of the following : **10**
   1) Describe general characters of Gymnosperms.
   2) Explain G. M. Smith classification for pteridophytes.
   3) Give detail account on criteria for bacterial classification.

5. Answer **any one** of the following : **10**
   1) Give detail account on class aves.
   2) Describe general characters and classification in angiosperms.

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Seat No.	

B.Sc. – I (Semester – II) (Biotechnology) Examination, 2015
COMPUTER SCIENCE (Old)
Taxonomy and Computer Science (Paper – II)

Day and Date : Saturday, 21-11-2015 Total Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

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

1. Choose the correct alternative from the following and rewrite the sentences : **10**

1) Operating system is a _____
   a) Hardware b) Software c) Input device d) Output device

2) _____ is step by step instructions which are written for solving a problem.
   a) Algorithm b) Flow chart c) Chart d) Picture Code

3) The Excel, the default file name is _____
   a) Document1 b) Book1 c) Presentation1 d) Table1

4) To cut, the shortcut key is _____
   a) Ctrl+X b) Ctrl+V c) Ctrl+C d) Ctrl+P

5) RAM stands for _____
   a) Read Access Memory b) Random Access Memory
   c) Random Accurate Memory d) None

6) _____ topology has central controller.
   a) Star b) Ring c) Bus d) None

7) _____ devices give the desired result to the user.
   a) Output b) Input c) Storage d) Utility

8) To paste, the shortcut key is _____
   a) Ctrl+N b) Ctrl+V c) Ctrl+O d) Ctrl+X

9) _____ topology has a common cable.
   a) Ring b) Bus c) Star d) None

10) The protocol that used to transfer file is called _____
   a) FTP b) HTML c) HTTP d) SMTP

2. Answer **any five** of the following : **10**
   1) Explain any two methods to calculate total in excel.
   2) Explain any four principles of algorithm.
   3) Explain LAN.
   4) Explain need of Database.
   5) Explain copy and paste operations in word.
   6) Explain the following terms :
      1) Computer
      2) Modem.

3. A) Answer **any two** of the following : **6**
      1) Explain how to prepare chart in Excel.
      2) Explain basics of Networking.
      3) Explain history of Computers.
   B) What is Network topology ? Explain any two types of topologies. **4**

4. Answer **any two** of the following : **10**
   1) Explain the types of Data Transmission Mode.
   2) What is networking ? Explain its applications.
   3) Explain any two input devices.

5. Answer **any two** of the following : **10**
   1) Explain Intranet and extranet.
   2) Explain use of Internet.
   3) Explain the features of LINUX Operating System.

SLR-U – 20

Seat No.	

B.Sc. – II (Biotechnology) (Sem. – III) (New) (CGPA) Examination, 2015
INHERITANCE BIOLOGY

Day and Date : Monday, 23-11-2015 Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

Instructions *: 1)* ***All*** *questions carry* ***equal*** *marks.*
2) Figures to ***right*** *indicate* ***full*** *marks.*
3) ***Draw*** *neat and labeled diagrams.*

1. Rewrite the following sentences by using correct alternative. **14**

1) The method of construction of maps of different chromosomes is called _____
   a) genetic mapping b) linkage mapping
   c) cross over map d) all of these

2) Mendel selected *Pisum sativum* for hybridization experiments because, it is _____
   a) self pollinating b) annual plant
   c) produce viable seeds d) all of these

3) X chromosome of father is transferred to _____
   a) Son b) Grandson c) Daughter d) Both Son and Daughter

4) Roans are produced in cattle's because both alleles _____ expressed.
   a) partially b) alternately c) equally d) simultaneously

5) Plasmagenes are located on the _____ DNA.
   a) Chromosomal b) Mitochondrial
   c) Nuclear d) X and Y chromosomal

6) Extra-nuclear inheritance by chloroplast was first studied in _____ by Carl Correns.
   a) BGA b) Maize
   c) Four 'O' Clock plant d) Cyanobacteria

P.T.O.

7) In _____ disease blood clotting is absent or clots very slowly.
   a) Hemophilia b) Colorblindness
   c) Hypertrichosis d) Night blindness

8) Natural transforming bacteria produce _____ factor during internalization of foreign DNA.
   a) Complement b) Compatibility
   c) Component d) Competence

9) Virulent phages responsible for _____ type of life cycle in the host cell.
   a) Lysogenic b) Lysolytic
   c) Lysolytic and Lysogenic d) None of the above

10) In 1946 J. Lederberg and E. Tatum discovered process of _____ in bacteria.
   a) Transduction b) Conjugation
   c) Transformation d) Transcription

11) In four 'O' clock plants, formation of green, pale or white and variegated leaves on same plant in a cross between _____
   a) Variegated × Variegated b) Green × Variegated
   c) Pale or White × Variegated d) Green × Green

12) Y linked genes are also called as _____
   a) autosomal b) X-linked
   c) Holandric genes d) None of these

13) In supplementary gene action, the ratio is _____
   a) 9 : 3 : 3 : 1 b) 9 : 7 c) 9 : 3 : 4 d) 13 : 3

14) Monohybrid phenotypic ratio in the F2 generation is _____
   a) 9 : 3 : 3 : 1 b) 1 : 1 : 1 : 1 c) 9 : 3 : 4 d) 1 : 2 : 1

2. Answer the following (**any 7**). **14**

   i) What is test cross ?

   ii) What is epistatic gene ?

   iii) What is linkage ?

   iv) What is lysogeny ?

v) What are phages ?

vi) What is maternal inheritance ?

vii) What is Hypertrichosis ?

viii) What is Haplodiploidy ?

ix) Significance of crossing over.

3. A) Answer the following (**any 2**). **10**

i) Prove law of dominance with suitable example.

ii) Describe process of mapping by tetrad analysis.

iii) Describe multiple alleles with suitable example.

B) Describe process of conjugation with neat labeled diagram. **4**

4. Answer **any two** of the following. **14**

i) Explain X and Y linked inheritance with any one suitable example.

ii) Explain Cytoplasmic inheritance with any two suitable examples.

iii) Describe process of generalized and specialized transduction.

5. Answer **any two** of the following. **14**

i) Explain modifications of Mendelian ratios with any two suitable examples.

ii) Describe process of crossing over with neat labeled diagram.

iii) Describe genetic organization in bacteria.

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Seat No.	

B.Sc. II (Semester – III) (CGPA) Examination, 2015
BIOTECHNOLOGY
Cytogenetics and Population Genetics (New)

Day and Date : Tuesday, 24-11-2015 Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Draw ***neat*** *labeled diagram* ***wherever*** *necessary.*

1. Choose and write a correct answer from given **four** alternatives : **14**

1) In chromosomal aberration, the loss of one or more genes from the chromosome is termed as
   a) Duplication b) Deletion c) Inversion d) Translocation

2) The individuals having one chromosome extra to diploid genome are called
   a) Nullisomy b) Trisomy c) Tetrasomy d) Monosomy

3) Polytene chromosome was first observed by
   a) Balbiani b) Painter c) Bridges d) Both a and b

4) The ultimate source of Genetic variability is
   a) Migration b) Genetic drift c) Mutation d) Selection

5) Chromosome with equal arms is
   a) Acrocentric b) Metacentric
   c) Submetacentric d) Telocentric

6) Chiasma formation is observed in _____ stage.
   a) Pachytene b) Diplotene c) Leptotene d) Zygotene

7) The Mutagenicity of various chemicals is investigated by
   a) AME'S Test b) Replica plate
   c) Clb technique d) Attached X chromosome technique

P.T.O.

8) The proportion of different alleles of a gene present in a mendelian population is
   a) Gene pool b) Gene frequency
   c) Genotype frequency d) Gemetic pool

9) The number of nucleosomes present in the solenoid structure is
   a) 8 b) 9 c) 6 d) 4

10) The size of inverted terminal repeats in complex transposons is
   a) 48 nucleotide pair b) 38 nucleotide pair
   c) 58 nucleotide pair d) 28 nucleotide pair

11) The most commonly used absolute measure of dispersion is
   a) Variance b) Range
   c) Mode d) Standard deviation

12) When the ratio of RNA and DNA is high cell initiates _____ division.
   a) Mitosis b) Meiosis c) Amitosis d) Both a and b

13) The largest value is 175 and smallest value is 70 the range of the number is
   a) 100 b) 70 c) 105 d) 175

14) Transposable elements was first discovered by _____ in 1958.
   a) Barbara McClintock b) H.J. Muller
   c) T.H. Morgan d) G.J. Mendel

2. Solve **any seven** of the following : **14**

1) Define mean.
2) What are Slave genes ?
3) What is complex transposon ?
4) What is Aneuploidy ?
5) What are Microsatellites ?
6) What is a Solenoid ?
7) Define Mutagen.
8) What is chromatin ?
9) What is Mitosis ?

3. A) Attempt **any two** of the following : **10**
   1) Write in detail about Heterochromatin and Euchromatin with examples.
   2) Write about the different types of bacterial transposons.
   3) Write about Minisatellites.

   B) Solve : **4**

   Write in detail about the process of mitosis with a neat labeled diagram.

4. Attempt **any two** of the following : **14**
   1) Write in detail about the structural changes in chromosome.
   2) Describe multiple factor hypothesis with suitable example.
   3) Write a detail account on Karyotyping.

5. Attempt **any two** of the following : **14**
   1) Write in detail about Hardy Weinberg Law and its application.
   2) What are Giant Chromosomes ? Explain in detail about it with a neat labeled diagram.
   3) Write a note on effects of Environment on Quantitative traits.

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Seat No.	

B.Sc. – II (Biotechnology) (New CGPA Pattern) (Semester – III) Examination, 2015
BIOPHYSICAL INSTRUMENTS

Day and Date : Thursday, 26-11-2015 Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

N.B. : * ***All*** *questions are* ***compulsory.***
* *Figures to the* ***right*** *indicate* ***full*** *marks.*
* *Draw* ***neat*** *labelled diagrams* ***wherever*** *necessary.*

1. Choose and write correct answer from given four alternatives. **14**

1) _____ is a laser based biophysical technique employed in cell counting.
   a) X-ray diffraction b) NMR
   c) Flow cytometry d) Dosimetry

2) X-ray diffraction fails to detect the presence of substances _____
   a) Containing a magnetic field b) Containing high carbon concentration
   c) Having two or more isotopes d) Containing less than 5% of mixture

3) Back scattered electrons after sample interaction are detected in _____ microscopy.
   a) Transmission electron b) Scanning electron
   c) Fluoroscence d) Dark field

4) _____ is the derived SI unit of ionising radiation dose in dosimetry.
   a) Grey b) Swedberg
   c) Joules/mole d) Sievert

5) _____ rotors are designed to hold the sample containers at a constant angle relative to central axis.
   a) Vertical b) Fixed angle
   c) Swinging bucket d) Horizontal

P.T.O.

6) In electromagnetic wave, the oscillations are _____ to the direction of propagation of wave and energy.
   a) Right angles b) Left angles
   c) Parallel d) Perpendicular
7) _____ is used as a reference internal solution in glass electrode.
   a) 0.1 mol/L KCl b) 1 mol/L KCl
   c) 0.1 mol/L AgCl d) 1 mol/L AgCl
8) in isopycnic centrifugation, the particles are separated based on their _____
   a) Density b) Mass
   c) Volume d) Surface tension
9) _____ part of the monochromator is a dispersing element.
   a) Collimating lens b) Entrance slit
   c) Diffraction grating d) Exit slit
10) In atomic absorption spectroscopy, elements are detected by absorption of radiation by free atoms, in _____ state.
   a) Solid b) Liquid
   c) Gaseous d) Inert
11) Thick suspension of _____ is used for mixing during determination of IR spectra of solids.
   a) Wax b) Terpene
   c) Castor oil d) Nujol
12) _____ is the tendency of particles in a suspension to settle down.
   a) Sedimentation b) Viscosity
   c) Density d) Elasticity
13) _____ dose represents the mean energy imparted to matter by ionising radiation.
   a) Equivalent b) Absorbed
   c) Effective d) Reactive
14) Light pulses generated on release of photoelectrons on incidence of radiation are detected in _____
   a) Flow cytometry b) GM counting
   c) Scintillation counting d) Circular dichroism

2. Solve **any seven** of the following : **14**
   1) Define pH and name the indicators used for its determination.
   2) What is Relative centrifugal force ?
   3) How the image is formed in dark field microscopy ?
   4) Write the principle of turbidometry.
   5) Draw a labelled diagram of Geiger Muller counter.
   6) What are bending vibrations ?
   7) Give examples of hazardous effect of radiations.
   8) Define radioactivity and state its unit.
   9) What are different instrumental parts of compound microscope.

3. A) Attempt **any two** of the following : **10**
      1) Describe the electromagnetic spectrum and different molecular energy levels in it.
      2) Describe the measurement of pH. What are possible errors in it ?
      3) Write a note on X-ray diffraction.

   B) Write about the biological applications of radioisotopes. **4**

4. Solve **any two** of the following : **14**
   1) Describe the instrumentation and applications of UV-visible spectroscopy.
   2) Describe different types of centrifugation techniques.
   3) Describe the principle and applications of Nuclear Magnetic Resonance Spectroscopy.

5. Solve **any two** of the following : **14**
   1) Describe the optical principle and working of SEM and TEM.
   2) Describe the principle, instrumentation and applications of IR-spectroscopy.
   3) Describe the interaction of radioactivity with matter. Add a note on dosimetry.

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Seat No.	

B.Sc. – II (Semester – III) Examination, 2015
BIOTECHNOLOGY
Analytical Techniques (New CGPA)

Day and Date : Friday, 27-11-2015 Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

Instructions : *1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
*3) Draw **neat** and labeled diagrams.*

1. Rewrite the following sentences by choosing correct alternatives : **14**

1) Purpose of using stacking gel is to _____ proteins.

a) Separate b) Analyse

c) Distribute d) Concentrate

2) _____ is extensively used chromatographic technique to determine base composition of nucleic acid.

a) Adsorption b) Affinity

c) Ion exchange d) Gel permeation

3) _____ is the physical method of cell disruption.

a) Lysozyme b) Osmotic shock

c) Alkali d) Detergents

4) _____ is a faster purification technique than dialysis.

a) Ultrafiltration b) Immobilization

c) Ultracentrifugation d) Cell disruption

5) Electrophoresis in _____ gel is referred as PAGE.

a) Agar b) Starch

c) Agarose d) Acrylamide

6) _____ method is especially used for the separation of 4s and 5s t-RNA.
   a) Affinity chromatography
   b) Ion exchange chromatography
   c) Molecular exclusion chromatography
   d) HPLC

7) _____ proteins are under represented during 2-D gel electrophoresis.
   a) DNA b) Membrane
   c) Cellular d) Organelle

8) _____ constructed first working dialyzer in 1943.
   a) Willem Kolff b) Ronald Ross
   c) Morris Wilkins d) Nakamura

9) In 1994 _____ coined the term proteome into the scientific community.
   a) Mark Webber b) Rutherford
   c) Filipe Anderson d) Marc Wilkins

10) BCA stands for
   a) Bromide Catalytic Assay b) Bergmanns Centrifugation Assay
   c) Bicinchoninic Acid Assay d) Baltimore's Citrate Assay

11) _____ method used for estimation of reducing sugar only.
   a) Anthrone b) DNSA
   c) Bradford d) Orcinol

12) Instead of Ammonium Persulphate _____ can be used for polymerization of acrylamide in SDS-PAGE.
   a) Riboflavin b) Pyridoxine
   c) Kinetin d) Thimidine

13) Volume of _____ per unit time is known as flow rate.
   a) Stationary phase b) Slurry
   c) Sample d) Mobile phase

14) _____ involves quantitative study of global changes in protein expression in cell or tissue.
   a) Protein microarray
   b) Protein interaction mapping
   c) Protein expression mapping
   d) Protein precipitation

2. Answer the following (**any seven**) : **14**
   1) Write a note on starch as support media.
   2) Draw neat and labeled diagram of ascending chromatography.
   3) Explain heat shock as a physical method of cell disruption.
   4) Write a short note on acid value of fat.
   5) Describe short note on limitations of 2D electrophoresis.
   6) Explain French press as method of cell disruption.
   7) Explain the principle of DNSA method.
   8) Define iodine number of fat.
   9) What is salting in and salting out.

3. A) Answer the following (**any two**) : **10**
      1) Describe western blotting.
      2) Explain the chromatography technique used for separation of volatile compounds.
      3) Discuss ammonium sulphate precipitation of protein.

   B) Comment on the advantages and disadvantages of Bradford and BCA assay. **4**

4. Answer the following (**any two**) : **14**
   1) Write a note on resorcinol method of carbohydrate estimation.
   2) Describe sample taking for 2D gel electrophoresis.
   3) Discuss basic principle of electrophoresis.

5. Answer the following (**any two**) : **14**
   1) Describe general column chromatography technique for separation of molecule.
   2) Discuss lowery assay for protein estimation with advantages and disadvantages.
   3) Explain edman degradation for microsequencing.

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Seat No.	

B.Sc. II (Semester – III) Examination, 2015
BIOTECHNOLOGY (New CGPA)
Immunology – I

Day and Date : Saturday, 28-11-2015 Max. Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Figures to the **right** indicate **full** marks.*
*3) Draw **neat** labeled diagrams **wherever** necessary.*

1. Choose the correct alternative and rewrite the sentences again : **14**

i) Iron-binding protein, lactoferrin present in milk has _____ ability.
a) antigen presentation b) microbial growth inhibition
c) immune suppression d) phagocytosis

ii) Horny outer layer of the skin called stratum corneum is made from _____
a) sebum b) fatty acid c) keratin d) cartilage

iii) In cell-mediated immunity _____ will perform role in target cell killing.
a) perforins b) granzymes c) fragmentins d) all of these

iv) Predominantly formed antibody in secondary immune response is _____
a) IgG b) IgM c) IgD d) IgE

v) Mature antibody-secreting cells are called _____
a) Plasma cells b) T cells
c) Immunoblasts d) Neutrophils

vi) _____ act as B cell growth and differentiating factor (BCGF and BCDF) in humoral immunity.
a) IL-2 b) IL-5 c) IL-6 d) All of these

vii) Erythroblastosis fetalis, hemolytic disease of newborn is caused by _____ hypersensitivity.
a) Type I b) Type II c) Type III d) Type IV

P.T.O.

viii) Systemic Lupus Erythematosus (SLE) is most characteristically associated with _____

a) anti-nuclear antibodies b) amyloidosis

c) rheumathoid arthritis d) lymphoid cell tumors

ix) The most important cells involved in the destruction of virus-infected cells are _____

a) B cells b) Macrophages

c) Cytotoxic T cells d) T_H cells

x) Survival of fetus from the viral attack is done by trophoblast cells by synthesizing _____

a) IFN-ω b) IFN-β c) IFN-γ d) IFN-δ

xi) *Trypanosoma cruzi*, causative agent of Chagas' disease prevents expression of _____ receptors on T cells and induces immune-suppression.

a) IL-6 b) IL-4 c) IL-2 d) IL-8

xii) Transmission of syphilis through blood transfusion can be avoided by storage of blood for more than _____

a) 12 hours b) 1 day c) 2 days d) 3 days

xiii) A suitable organism for use in recombinant vaccines is _____ virus.

a) influenza b) vaccinia c) smallpox d) polio

xiv) _____ cells are not used for monoclonal antibody production using hybridoma technique.

a) Plasma b) B clone c) Myeloma d) B lymphocyte

2. Define and explain **any seven** of the following : **14**

i) Phagocytosis

ii) Primary immunity

iii) T cell dependent antigen

iv) Perforin proteins

v) Serum sickness
vi) Direct Coomb's test
vii) Monoclonal antibodies
viii) Non-specific immunity
ix) Rh blood group.

3. A) Answer **any two** of the following : **10**
   i) What is autoimmunity ? Explain Hemolytic autoimmune diseases.
   ii) Write in detail on immunity to viruses.
   iii) Write in brief on Systemic Lepus Erythematosus.

   B) Write in brief on delayed type hypersensitivity. **4**

4. Answer **any two** of the following : **14**
   i) Explain Humoral Immune response in detail.
   ii) Write an essay on monoclonal antibody production and its applications.
   iii) Write an essay on first line of defense.

5. Answer **any two** of the following : **14**
   i) Explain cell-mediated immune response in detail.
   ii) Write in detail with examples on traditional vaccines.
   iii) Write in detail on ABO blood group system.

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SLR-U – 25

Seat No.	

B.Sc. (Part – II) (Semester – III) Examination, 2015
(New) (CGPA)
BIOTECHNOLOGY
Immunology – II

Day and Date : Monday, 30-11-2015 Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Draw **neat** and labelled diagrams **wherever** necessary.*

1. Rewrite the following sentences by choosing the correct alternative given below : **14**

i) Hematopoietic – inducing microenvironment is provided by _____
   a) Progenitor cells b) Erythrocytes
   c) Stromal cells d) NK cells

ii) Secondary immune response is characterized by the production of _____ type of antibodies.
   a) IgM b) IgD c) IgG d) IgA

iii) Antibodies labeled with enzymes are used in _____ test.
   a) Immunofluorescence b) ELISA
   c) Complement fixation d) Agglutination

iv) Most abundant class of immunoglobulin found in body is _____
   a) IgM b) IgA c) IgD d) IgG

v) The smallest unit of antigenicity is _____
   a) Epitope b) Adjuvant c) Hapten d) Antibody

vi) Widal test is example of _____ type of reaction.
   a) Agglutination b) Precipitation
   c) Flocculation d) Complement fixation

vii) Forssman antigen is example of _____ antigen.
   a) Auto b) Heterophile c) Microbial d) None of these

P.T.O.

viii) _____ glycoprotein acts as antiviral agents that inhibit intracellular viral replication.

a) Lysozyme b) Interferon

c) Fibronectin d) None of these

ix) _____ test is used in diagnosis of Enteric fever.

a) VDRL b) Tuberculin

c) Widal d) Montoux

x) In alternate pathway binding of _____ stabilizes the C_3bBb.

a) Serine protease b) Lectin

c) Properdin d) C1

xi) Example of mucosa-associated lymphoid tissue is _____

a) Thymus b) Peyer's patches

c) Spleen d) Lymph node

xii) Interleukin (IL-2) is produced by _____

a) B cells b) Macrophages

c) T_H cells d) Neutrophils

xiii) _____ is most likely to induce a strong immune response.

a) Nucleic acid b) Glycolipid

c) Phospholipid d) Glycoprotein

xiv) Viral antigens are processed and presented by _____ pathway.

a) Endocytic b) Cytosolic c) Class II MHC d) Complement

2. Answer **any seven** of the following : **14**

i) Define antibody and give different types of Antibody.

ii) Give mechanism of hematopoiesis.

iii) Define Agglutination and give types of agglutination reactions.

iv) Give properties of Cytokines.

v) Factors affecting Antigenicity.

vi) Functions of complement system.

vii) Apoptosis.

viii) Opsonization.

3. A) Answer **any two** of the following : **10**

   i) Write an account on alternative complement pathway.

   ii) Write an account on primary lymphoid organs.

   iii) Give an account on processing and presentation of exogenous antigen.

   B) Give basic structure and functions of antibody. **4**

4. Answer **any two** of the following : **14**

   i) Write a note on MHC Class II molecule.

   ii) Write note on Immunofluorescence test.

   iii) Write note on complement fixation test.

5. Answer **any two** of the following : **14**

   i) Write short note on principle of antigen and antibody interaction.

   ii) Write note on cells of immune system.

   iii) Secondary lymphoid organs.

SLR-U – 26

Seat No.	

B.Sc. II (Semester – III) (Old) (Biotechnology) Examination, 2015
GENETICS
Inheritance Biology – I

Day and Date : Monday, 23-11-2015 Max. Marks : 50

Time : 2.30 p.m. to 4.30 p.m.

N.B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Draw diagram ***wherever*** *necessary.*

1. Rewrite the sentences by choosing correct alternatives. **10**

1) An organism with two identical alleles for a given trait is
   a) Segregating b) Homozygous
   c) Dominant d) Hermaphrodite

2) Crossing over is advantageous because it brings about
   a) Variation b) Linkage c) Inbreeding d) Stability

3) When a plant of F_1 generation is crossed with homozygous dominant parent, it is known as
   a) Simple cross b) Test cross
   c) Back cross d) Special cross

4) The unit of crossing over is
   a) Deci Morgan b) Centi Cistron
   c) Centi Morgan d) Deci Cistron

5) _____ is sex linked inheritance.
   a) Night blindness b) Anemia
   c) Colour blindness d) Cretinism

6) Female child receives X-chromosome from
   a) Her father b) Her mother
   c) Both the parents d) Extra nuclear DNA

7) The actual transformation of bacterial from involved
   a) S II $\rightarrow$ S III b) S II $\rightarrow$ R III
   c) R II $\rightarrow$ S III d) S II $\rightarrow$ R II

8) The word 'genetics' was introduced by
   a) Mendel b) Bateson c) Morgan d) Sulton

9) Universal donor belongs to the blood group
   a) O b) A c) B d) AB

10) In Fur colour of rabbits _____ skin colour is dominant over other alleles.
   a) Himalayan b) Agouti c) Albino d) Chinchilla

2. Answer the following **(any 5)** : **10**

1) What is co-dominance ?
2) What are pseudo alleles ?
3) Define linkage.
4) What is monohybrid cross ?
5) What is transduction ?
6) Define phenotype.

3. A) Answer the following **(any 2)** : **6**

1) What is incomplete dominance ? Explain with suitable example.
2) Write a note on crossing over.
3) Describe the sex determination in Drosophilla.

B) Define conjugation and explain its mechanism. **4**

4. Answer the following **(any 2)** : **10**

1) Explain the inheritance of xy linked genes.
2) Describe bacterial transformation in detail.
3) What are multiple alleles ? Explain self incompability in plants.

5. Answer the following **(any 2)** : **10**

1) Explain in detail supplementary gene interaction with suitable example.
2) Explain the gene mapping by tetrad analysis.
3) Explain the cytoplasmic male sterility in plants controlled by mitochondrial DNA.

SLR-U – 27

Seat No.	

B.Sc. – II (Sem. – III) (Old) Examination, 2015
BIOTECHNOLOGY
Cytogenetics and Population Genetics – II

Day and Date : Thursday, 24-11-2015 Max. Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

N. B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Draw neat labelled diagram ***wherever*** *necessary.*

1. Choose the correct alternative and rewrite the sentence again. **10**

1) During cell division, RNA and protein synthesis takes place during _____
   a) G_1 and G_2 phases b) S-phase
   c) M phase d) Cytokinesis

2) In Anaphase _____
   a) The nuclear division occurs b) Cytoplasm division occurs
   c) Chromosome division occurs d) Centromere division occurs

3) Transversion is _____
   a) Replacement of adenine with guanine
   b) Replacement of purine with purine
   c) Replacement of purine with pyrimidine and vice versa
   d) Addition of bases to pre-existing chain

4) The change involves variation in the entire set of chromosome (genome), the phenomenon is called _____
   a) Euploidy b) Hyperploidy c) Aneuploidy d) Hypoploidy

5) The study of inheritance of phenotypic trait in a given population is called _____
   a) Gene pool b) Gene frequency
   c) Population genetics d) Genetic equilibrium

P.T.O.

6) The Balbiani rings are present in _____ chromosome.
   a) Polytene chromosome
   b) Lampbrush chromosome
   c) B-chromosome
   d) All of these

7) LINEs stands for _____
   a) Long Interspersed Nuclear Sequences
   b) Large Interrelated Nuclear Sequence
   c) Long Interrelated Nuclear Sequence
   d) Long Interacting Nuclear Sequence

8) Typical retroposons contain _____ gene.
   a) pol b) gag c) env d) all of these

9) _____ is quantity obtained by dividing the sum of the values of items in a variable by their number.
   a) Median b) Mean c) Mode d) Mean deviation

10) _____ is hypothesis to explain quantitative variation by assuming the interaction of polygenes each with a small additive effect on the character.
   a) Multiple Factor Hypothesis
   b) Wobble Hypothesis
   c) Pleotrophism
   d) Multiple Alleles.

2. Answer **any five** of the following. **10**

1) Define Mitosis.

2) Define Mutagen.

3) What are satellite DNA ?

4) Define aneuploidy.

5) What is inbreeding ?

6) Define variance.

3. A) Answer **any two** of the following. **6**
   1) Write a note on X-chromosome.
   2) Write a note on effect of the environment on quantitative traits.
   3) Explain conservative transposition.

   B) Explain Hardy-Weinberg law of equilibrium. **4**

4. Answer **any two** of the following. **10**
   1) Describe in detail polytene chromosome.
   2) Describe genetic basis for evolution of crop plants with suitable example.
   3) What are mutagens ? Write a note on physical and chemical mutagens.

5. Answer **any two** of the following. **10**
   1) Describe in detail structural alterations of chromosome.
   2) Write a note on transposable elements in E. Coli.
   3) Explain the different parameters for handling quantitative data in genetics.

SLR-U – 28

Seat No.	

B.Sc. II (Semester – III) (Biotechnology) (Old) Examination, 2015
BIO TECHNIQUES
Biophysical Techniques – I

Day and Date : Thursday, 26-11-2015 Max. Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory****.*
2) Draw neat labelled diagram ***wherever*** *necessary.*
3) Figures to the ***right*** *indicate* ***full*** *marks.*

1. Rewrite the following sentences choosing the correct alternative. **10**

1) One of the following compound is not used as a gradient maker in density gradient centrifugation
   a) Sucrose b) Glycerol
   c) CsCl d) Maltose

2) In _____ type of microscopes, the field surrounding a specimen appears black, while the object itself is brightly illuminated.
   a) Compound microscope b) Phase contrast microscopy
   c) Dark field microscopy d) Fluorescence microscopy

3) Calomel electrode consists of
   a) Mercury and mercury chloride
   b) Metallic silver coated with a layer of potassium chloride
   c) Polished platinum wire with $AgCl_2$
   d) All of the above combinations

4) The measurements made in a flow cytometer are based on _____
   a) Absorbance b) Fluorescence
   c) Transmittance d) Radioactivity

5) _____ is used to denote direction dependent light absorption.
   a) Diffraction b) Retraction
   c) Reflection d) Dichroism

P.T.O.

6) The detector preferably used in a nephalometer is a _____

a) Photomultiplier tube
b) Katharometer
c) Scintillation detector
d) Photo tube

7) _____ is the source of radiation in a UV-vis spectrophotometer.

a) Tungsten lamp
b) Xenon-arc lamp
c) Hydrogen
d) Halogen lamp

8) The first simple microscope was invented by

a) E. Ruska
b) Galelio
c) Leuwenhoek
d) Alexander Fleming

9) Which of the following isotope has very long half life ?

a) ^{15}N
b) ^{14}C
c) ^{36}Cl
d) ^{18}O

10) The unit of radioactivity in SI system is

a) Curie
b) Millicurie
c) Femto curie
d) Becquerel

2. Answer the following (**any five**). **10**

1) Write short note on types of transitions in electromagnetic spectrum.
2) Magnification of compound microscope.
3) Electromagnetic spectrum regions.
4) Dissociation of acids.
5) Effective dose equivalent

3. A) Answer the following **(any two)**. **6**

1) Enlist the errors in pH measurement.
2) What is nuclear stability ? Explain.
3) Calibration of spectrophoto meter.

B) Write the principle and working of a scanning electron microscope. **4**

4. Answer the following **(any two)**. **10**

   1) Give the principle and working of a Geiger Muller Counter.

   2) Explain the technique of X-ray diffraction.

   3) Write down the applications of Isopycnic centrifugation.

5. Answer the following **(any two)**. **10**

   1) What are the reasons for deviation from Beer-Lambert's law.

   2) Why is cedar wood oil used in compound microscope for higher resolution ? Give reason and mechanism.

   3) Enlist the biological applications of Radioisotopes.

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SLR-U – 29

Seat No.	

B.Sc. – II (Semester – III) (Old) (Biotechnology) Examination, 2015
BIOTECHNIQUES
Biochemical Techniques – II

Day and Date : Friday, 27-11-2015 Max. Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

Instructions** : 1) **All** questions are **compulsory.
*2) Draw **neat** labelled diagram **wherever** necessary.*
*3) Figures to the **right** indicate **full** marks.*

1. Rewrite the following sentences choosing the correct alternatives : **10**

1) The support material used in a PAGE is _____
   a) Agar b) Agarose c) Acrylamide d) Starch

2) The first step of 2-D-gel electrophoresis is _____
   a) PAGE b) Paper electrophoresis
   c) Agarose gel electrophoresis d) Isoelectric focussing

3) The flow rate of _____ is measured per unit volume of time.
   a) Mobile phase b) Stationary phase
   c) Slurry d) Sample

4) _____ is an extensively used technique to determine the charge on a biomolecule.
   a) Adsorption chromatography b) Ion exchange chromatography
   c) Affinity chromatography d) Fast protein Liquid Chromatography

5) _____ is the process of precipitation of proteins in solution by the addition of large amount of inorganic salt.
   a) SDS PAGE b) Salting In
   c) Salting Out d) Western blotting

6) _____ is an artificial replacement therapy for loss of kidney function.
   a) Haemolysis b) Cell lysis c) Catalysis d) Dialysis

7) _____ is used to stain proteins on gel.
   a) Coomasie Brilliant Blue b) Poncaeu
   c) Ethedium bromide d) Eosin Blue

P.T.O.

8) _____ is a technique for protein transfer on a membrane.
   a) Precipitation b) Western Blotting
   c) Southern Blotting d) Northern Blotting
9) _____ gives information needed for the synthesis of oligonudeotide.
   a) Blotting b) Blocking
   c) Macrosequencing d) Microsequencing
10) The technique of two dimensional gel electrophoresis was developed by _____
   a) Klose, Muller b) Muller, Farrel
   c) O'Farrel, Klose d) Wilkins, Muller

2. Answer the following (**any five**) : **10**
   1) Role separating gel in SDS-PAGE.
   2) Sample application in Gas liquid chromatography.
   3) Cell homogenization.
   4) Write the principle of Lawry Assay.
   5) Write a note on protein interaction mapping.
   6) How is the electrophoretic mobility of a molecule be affected by a buffer ?

3. A) Answer the following (**any two**) : **6**
      1) Explain the technique of southern blotting.
      2) Give the role of starch as a support material in gel electrophoresis.
      3) Write a note on two dimensional paper chromatography.
   B) Discuss the limitations of Immobilization. **4**

4. Answer the following (**any two**) : **10**
   1) Edman Degradation
   2) HPLC
   3) Autoradiography.

5. Answer the following (**any two**) : **10**
   1) Technique of ultrasonication
   2) Applications of MALDI
   3) Immunostaining.

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SLR-U – 30

Seat No.	

B.Sc. II (Biotechnology) (Semester – III) Examination, 2015
IMMUNOLOGY (Old)
Cell and Organs of Immunity – I

Day and Date : Saturday, 28-11-2015 Max. Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

N.B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Draw ***neat*** *labeled diagrams* ***wherever*** *necessary.*

1. Choose the correct alternative and rewrite the sentence again. **10**

1) T cells will mature in _____
   a) Spleen b) Bone marrow
   c) Thymus d) Lymph node

2) Example of Mucosa-associated tissue is _____
   a) Peyer's patches b) Spleen
   c) Lymph node d) Thymus

3) The HLA Complex of genes are located on the short arm of human autosomal chromosome no. _____
   a) 15 b) 12 c) 6 d) 3

4) Two or more cytokines that mediates similar functions are called _____
   a) redundant b) synergic c) pleiotropic d) antagonist

5) β-sub families are examples of _____ family.
   a) immunoglobulin b) integrin
   c) cadherin d) selectin

6) Cell surface proteins which joines to glycosyl-phosphatidylinositol (GPI) are grouped in _____ type.
   a) I b) II c) III d) IV

7) ABO blood group antigens are examples of _____
   a) isoantigens b) autoantigens
   c) hapten d) adjuvants

P.T.O.

8) _____ antibody can cross the placenta.
   a) IgM b) IgD c) IgE d) IgG

9) In complement fixation test Amboceptor is _____
   a) Anti-sheep RBCs b) Anti-Rabbit RBCs
   c) Sheep RBCs d) Rabbit RBCs

10) Chromogenic substrates are used in _____
   a) RIA b) ELISA c) VDRL test d) Widal test

2. Define and explain **any five** of the following : **10**
   1) Hematopoisis.
   2) Cytokines.
   3) Complement.
   4) Endocytosis.
   5) Hapten.
   6) Precipitation.

3. A) Write short note on **any two**. **6**
   1) Heterophile antigen.
   2) Structure of MHC class I.
   3) Rocket immuno electrophoresis.

   B) Write briefly on complement activation. **4**

4. Answer **any two** of the following. **10**
   1) Write an essay on structure and functions of Lymph node.
   2) Write an essay on immunodiffusion techniques.
   3) Write an essay on Adjuvants.

5. Answer **any two** of the following. **10**
   1) Write an essay on properties of cytokines.
   2) Write an essay on structure and functions of IgG.
   3) Write an essay on structure and function of Thymus.

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SLR-U – 31

Seat No.	

B.Sc. – II (Biotechnology) (Semester – III) Examination, 2015
IMMUNOLOGY (Old)
Immune Effecter Mechanisms – II

Day and Date : Monday, 30-11-2015 Max. Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

N.B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicates* ***full*** *marks.*
3) Draw ***neat*** *labeled diagrams* ***wherever*** *necessary.*

1. Choose the correct alternative and rewrite the sentence again : **10**

1) Vaginal secretion contain _____, which is degraded by lactobacillus and converted into lactic acid, hence creates unfavorable environment for the growth of microbes.

a) Uric acid b) Glycogen

c) Lactoferrin d) Sebum

2) In Humoral immunity interaction of CD40 and CD40L provides signal Z, while _____ will provide co-stimulation for TH cell activation.

a) B7 – CD28 b) BCR – TCR

c) MHC – TCR d) BCR – TLR4

3) In cell mediated immunity _____ will perform role in target cell killing.

a) Perforins b) Granzymes

c) Fragmentins d) All of these

4) Haemophilus influenza type b is the example of _____ vaccine.

a) Toxoid b) Live

c) Capsular polysaccharide d) Attenuated

5) _____ will be used for fussion of B lymphocytes and myeloma cells in monoclonal antibody synthesis technique.

a) HAT b) PEG

c) Ig d) HGPRT

6) Primary mediator of anaphylaxis called serotonin is formed by decarboxylation of _____

a) Histidine b) Alanine

c) Tryptophan d) Lysine

7) Vit. B_{12} deficiency is observed in _____ autoimmune disease.

a) Pernicious anemia b) Phacoanaphylaxis

c) Myasthenia gravis d) SLE

8) _____ is the tissue transferred between genetically identical individuals.

a) Autograft b) Allograft

c) Xenograft d) Isograft

9) In the B blood group person _____ type of isoantibodies are present.

a) Anti – B b) Anti – A

c) Anti – AB d) Anti – D

10) _____ will make iron unavailable which is required for the growth of microbes.

a) Transferrin b) Lactoferrin

c) Ferritin d) All of these

2. Define and explain **any five** given below : **10**

1) Vaccine
2) Primary immune response
3) Autoimmunity
4) Allergen
5) Xenograft
6) Erythroblastosis fetalis.

3. A) Write short note on **any two** of the following : **6**

   1) SLE

   2) Immunity to bacteria

   3) Second line of defence.

   B) Write on ABO blood group system. **4**

4. Answer **any two** of the following : **10**

   1) Write an essay on Humoral immunity.

   2) Describe organ specific autoimmune diseases with specific examples.

   3) Write in briefly on non-specific immunity to the various infections.

5. Answer **any two** of the following : **10**

   1) Write an essay on cell mediated immunity.

   2) Write an essay on anaphylaxis.

   3) Write an essay on hybridoma technology for monoclonal antibody synthesis.

SLR-U – 32

Seat No.	

B.Sc. II (Semester – IV) (New) Examination, 2015
BIOTECHNOLOGY
Molecular Biology of Gene

Day and Date : Tuesday, 1-12-2015 Max. Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Draw a **neat** labelled diagram **wherever** necessary.*
*3) Figures to the **right** indicate **full** marks.*

1. Rewrite the sentences using correct alternatives. **10**

1) DNA is polynucleotide chain of
   a) Ribonucleotides b) Deoxyribonucleotides
   c) Both a and b d) None of these

2) In DNA, glycosidic bond joins
   a) Deoxyribose sugar to nitrogen base
   b) Deoxyribose sugar to phosphate
   c) Phosphate to nitrogen base
   d) None of these

3) _____ codon is initiation codon present at 5′ end of mRNA molecule.
   a) UAA b) UGA c) UAG d) AUG

4) Synthesis of new RNA molecule using DNA strand as template is called
   a) Translation b) Transcription
   c) Transpiration d) Respiration

5) _____ is removing positive supercoils formed ahead of replication fork in eukaryotes.
   a) DNA Gyrose b) DNA helicase
   c) Topoisomerases I and II d) DNA ligase

6) _____ responsible for maintaining DNA as single stranded in prokaryotic DNA replication process.
   a) DNA B b) DNA G
   c) FEN – 1 endonuclease d) SSBP

P.T.O.

7) RNA primers are removed by _____ in prokaryotic DNA replication process.
   a) DNA polymerase – I b) DNA polymerase – II
   c) DNA polymerase – III d) DNA polymerase – V

8) In B-DNA _____ base pairs are present.
   a) 10 b) 11 c) 12 d) 9

9) Double strand breaks are repaired by _____ pathway.
   a) Base excision repair b) NHEJ pathway
   c) Mismatch repair d) SOS repair

10) In photoreactivation repair pathway _____ enzyme are involved.
   a) DNA glycosylase b) AP endonuclease
   c) Photolyase d) DNA polymerase

2. Answer the following **(any 5)** : **10**
   1) Degeneracy of genetic code.
   2) Okazaki fragments.
   3) Semiconservative DNA replication.
   4) Topoisomerases.
   5) Photoreactivation.
   6) Xeroderma pigmentosum.

3. A) Answer **any two** of the following : **6**
   1) Cot curve
   2) Properties of genetic code.
   3) Rolling circle of model of DNA replication.

   B) Describe in detail DNA damage. **4**

4. Answer **any two** of the following : **10**
   1) Describe Watson and Crick model of DNA.
   2) Explain replication process in prokaryotes.
   3) Describe mismatch and excision repair pathway.

5. Answer **any two** of the following : **10**
   1) Describe replication process in eukaryotes.
   2) Explain organization of DNA in eukaryotes.
   3) Describe in detail recombinational repair mechanism.

_____

SLR-U – 33

Seat No.	

B.Sc. – II Biotechnology (Semester – IV) (New) Examination, 2015
MOLECULAR BIOLOGY
Gene Regulation

Day and Date : Wednesday, 2-12-2015 Max. Marks : 50

Time : 10.30 a.m. to 12.30 p.m.

N.B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) Draw a ***neat*** *labelled diagram* ***wherever*** *necessary.*
3) Figures to the ***right*** *indicate* ***full*** *marks.*

1. Rewrite the following sentences by choosing correct alternatives : **10**

1) In eukaryotes, mRNA molecule is transcribed by _____

a) RNA polymerase – I b) RNA polymerase – II

c) RNA polymerase – III d) DNA polymerase

2) In prokaryotes, promotor sequences are recognized by _____ of RNA polymerase.

a) rho protein b) Sigma factor

c) W factor d) Core enzyme

3) During RNA modification in eukaryotes _____ is responsible for removal of introns.

a) Spliceosome b) Ribosome

c) Endonuclease d) DNA polymerase – I

4) In eukaryotes, _____ are required to convert hnRNA molecule into mature mRNA molecule.

a) Capping b) Polyadenylation

c) Splicing d) All of these

5) During translation process, _____ enzyme is required to transfer free amino acid on tRNA molecule.

a) Peptidyl transferase b) Aminoacyl tRNA synthetase

c) Translocase d) ATP synthetase

6) _____ is not a termination codon.

a) UUA b) UAG c) AUG d) UGA

7) In lactose operon, _____ act as inducer.

a) Tryptophan b) Regulatory protein

c) Repressor molecule d) Lactose

8) In tryptophan operon, tryptophan is act as _____

a) Repressor b) Co-repressor

c) Apo-repressor d) Inducer

9) In eukaryotic transcription process, the activators binds to _____ sequences.

a) Promoters b) Enhancer c) Operator d) Start point

10) In lac operon, β-Galactosidase enzyme is encoded by _____ gene.

a) Lac 'Y' b) Lac 'Z' c) Lac 'a' d) Regulatory gene

2. Answer **any five** of the following : **10**

1) Transcription unit

2) Introns and Exons

3) Aminoacyl tRNA synthetases

4) Operon concept

5) Signal Integration

6) Alternative splicing mechanisms.

3. A) Answer the following **(any 2)** : **6**

   1) Explain initiation of transcription in prokaryotes.

   2) Explain mRNA modification in eukaryotes.

   3) Describe structure and assembly of ribosome involved in translation process.

   B) Explain lactose operon regulation. **4**

4. Answer **any two** of the following : **10**

   1) Describe translation process in eukaryotes.

   2) Explain intrinsic and extrinsic termination of transcription in prokaryotes.

   3) Explain transcription process in eukaryotes.

5. Answer **any two** of the following : **10**

   1) Explain mechanism of transcriptional regulation in eukaryotes with suitable example.

   2) Explain tryptophan operon regulation.

   3) Describe regulation of translation.

SLR-U – 34

Seat No.	

B.Sc. II Biotechnology (Semester – IV) (New) Examination, 2015
Tissue Techniques
PLANT TISSUE CULTURE

Day and Date : Thursday, 31-12-2015 Max. Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

Instructions : *1) **All** questions carry **equal** marks.*
*2) Figures to **right** indicate **full** marks.*
*3) Draw **neat** and labeled diagrams.*

1. Rewrite the following sentences by using correct alternative : **10**

1) Elements required by plants in higher concentration than 0.5 mmol/liter referred as
   a) vitamins b) cofactors
   c) macromolecules d) micromolecules

2) Auxin is synthesized at _____ region.
   a) shoot apex b) root c) branches d) internode

3) The part of a plant used for culturing is called
   a) callus b) scion c) stock d) explant

4) Ethylene is employed for
   a) ripening of fruit b) stimulation of cell division
   c) increasing light d) root growth

5) The fusion of nucleated cell with enucleated cell leads to form
   a) chromosome b) cybrid
   c) hybrid d) symmetric hybrid

6) Stomata are more open in plants grown in presence of higher
   a) Uranium b) Potassium c) Magnesium d) Calcium

7) The shoot tip culture is used to prepare _____ plants.
   a) protein free b) vitamin free c) virus free d) chromosome

P.T.O.

8) For protoplast culture _____ medium is used.
   a) Nagata and Takebe b) White
   c) Haberlandt d) MS

9) _____ is most commonly used as solidifying agent in media.
   a) Auxins b) Agar c) Sodium d) Ampicillin

10) _____ is the variation which occurs in plants during plant tissue culture.
   a) Somatic Hybrid b) Cybrid
   c) Somaclonal variation d) Callus

2. Answer the following (**any 5**) : **10**
   1) Define batch culture.
   2) What are Hybrid ?
   3) Define sterilization.
   4) What is a protoplast ?.
   5) What are haploid plants ?
   6) What is micropropagation ?

3. A) Answer the following (**any 2**) : **6**
      1) Write a note on isolation of protoplast by enzymatic method.
      2) Write applications of mineral constituents in culture medium.
      3) Write a note on cellular totipotency.
   B) Write a detailed account on artificial seed synthesis. **4**

4. Answer **any two** of the following : **10**
   1) Give detail account on infrastructure of plant tissue culture laboratory.
   2) Give detail account on somatic hybrid selection methods.
   3) Write an essay on suspension culture.

5. Answer **any two** of the following : **10**
   1) Write a note on micropropagation for production of virus free plants.
   2) Write a note selection of somaclonal variants.
   3) Give a detail account on applications of plant tissue culture.

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SLR-U – 35

Seat No.	

B.Sc. (Biotechnology) (Semester – IV) Examination, 2015
TISSUE TECHNIQUES
Animal Tissue Culture (New)

Day and Date : Friday, 4-12-2015 Max. Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

***Instructions** : 1) **All** questions are **compulsory**.*
*2) Figures to **right** indicate **full** marks.*
*3) **Draw** neat and **labeled** diagrams.*

1. Rewrite the following sentences by choosing correct alternatives : **10**

1) Most preferred method for sterilization of animal cell culture media is
   a) Filter sterilization b) Autoclaving
   c) Heat d) Steam

2) _____ uses hanging drop technique to culture frog nerve cell.
   a) Carrel b) Ross Harrison
   c) Butler d) Freshney

3) Which of the following method used for activation of plastic substrate ?
   a) UV Radiation b) Heat
   c) γ Radiation d) Visible light

4) _____ serum is routinely used in animal cell culture.
   a) Horse b) Amphibian
   c) Insect d) Bovine

5) Transfer of cell from primary culture to form secondary culture is known as
   a) Sub culturing b) Trypsinization
   c) Enzymatic disaggregation d) Mechanical disaggregation

6) In primary culture, cell divide to give different type of cells by _____ process.
   a) Proliferation
   b) Differentiation
   c) Cultivation
   d) Initiation

7) _____ is a physical method used to get all the cells in same phase of growth in culture.
   a) TLC
   b) HPLC
   c) Cell size and sedimentation
   d) Electrophoresis

8) Normal cell divide a limited number of time and then die is a predetermined event known as
   a) Differentiation
   b) Proliferation
   c) Cell density
   d) Senescence

9) Hybridoma technique used for monoclonal antibodies discovered by
   a) Milstein
   b) Harrison
   c) Carrel
   d) Skoog

10) Isolation of lymphocyte from blood is carried out by using
   a) PBS
   b) Ficol Hypaque
   c) EMEM
   d) BSS

2. Answer the following (**any five**) : **10**

1) Define serum.
2) Write a note on CO_2 Incubator.
3) Explain in brief insect cell line.
4) Write a note on Cell synchronization.
5) Explain in brief Karyotyping.
6) Write a note on packing of glasswares.

3. A) Answer the following (**any two)** : **6**

   1) Write a note on Initiation of cell culture.

   2) Write a note on cell repositories and their function.

   3) Explain characteristics of animal cell in culture.

   B) Describe sterilization practices in ATC. **4**

4. Answer the following (**any two**) : **10**

   1) Describe in detail Karyotyping.

   2) Explain in detail natural media used in ATC.

   3) Give details of apoptosis.

5. Answer the following (**any two**) : **10**

   1) Discuss in detail complete culture media.

   2) Describe any two technique of organ culture.

   3) Explain milestones in animal cell culture.

SLR-U – 36

Seat No.	

B.Sc. II (Biotechnology) (Semester – IV) Examination, 2015
METABOLISM (New)
Bioenergetics and Enzymology

Day and Date : Saturday, 5-12-2015 Max. Marks : 50

Time : 10.30 a.m. to 12.30 p.m.

N.B. *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Draw labelled diagrams ***wherever*** *necessary.*

1. Write following sentences selecting the most correct answer from given options. **10**

1) _____ is the isoenzyme present in heart and RBCs.
a) LDH 3 b) LDH 1 c) LDH 5 d) LDH 4

2) _____ is an antibody that expresses catalytic activity.
a) Novozyme b) Ribozyme c) Zymogen d) Abzyme

3) _____ site is the site other than active site for binding of an effector molecule during enzyme regulation.
a) Stereospecific b) Receptor c) Allosteric d) Promoter

4) In _____ inhibition, the inhibitor molecule binds to the enzyme substrate complex.
a) Uncompetitive b) Noncompetitive
c) Competitive d) Irreversible

5) Transfer of phosphate molecule from high energy phosphate compound to substrate is catalysed by _____ enzymes.
a) Phosphatase b) Kinase c) Phosphorylase d) Protease

6) The free energy of hydrolysis of ATP molecule to ADP is _____ Kcal/mol.
a) –10.9 b) – 7.3 c) – 9.1 d) – 3.7

7) Standard _____ electrode is used as a reference during calculation of standard redox potential.
a) Oxygen b) Silver c) Calomel d) Hydrogen

8) _____ are the groups of atoms with odd number of electrons formed on oxygen interactions.
a) Free radicals b) Cations c) Anions d) Zwitterions

9) The universal conservation of energy is described by _____ law of thermodynamics.

a) First b) Second c) Third d) Fourth

10) There is neither exchange of heat nor energy with the surroundings by the _____ system.

a) Open b) Closed c) Isolated d) Reverse

2. Answer **any five** of the following. **10**

1) What is aldol condensation ?

2) What is clinical importance of LDH isoenzymes ?

3) Define specific activity and turnover number.

4) What is cofactor ? Give an example.

5) What is significance of Vmax ?

6) Define redox potential and state its unit.

3. A) Answer **any two**. **6**

1) What is Lineweaver Burk plot ? State its limitations.

2) Write a note on nonprotein enzymes.

3) What is active site of an enzyme ? State its features.

B) Derive the Michaelis Menten equation. **4**

4. Answer **any two**. **10**

1) Give in detail-classification of enzymes with examples.

2) Discuss the common biochemical reactions.

3) Discuss the free energy concept and explain how it is determined.

5. Answer **any two**. **10**

1) Write a note on regulation of enzymes in living systems.

2) Discuss the oxidation reduction reactions.

3) Discuss enzyme catalysis and describe various factors affecting enzyme activity.

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Seat No.	

B.Sc. – II (Biotechnology) (Semester – IV) Examination, 2015
METABOLISM – II (New)

Day and Date : Monday, 7-12-2015 Max. Marks : 50
Time : 10.30 a.m. to 12.30 p.m.

N. B. : *1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Write biochemical reactions ***wherever*** *necessary.*

1. Write following sentences selecting most correct answer from given options : **10**

1) The enzyme phosphorylase is involved in _____ reaction of carbohydrate metabolism.

a) Glycolysis b) TCA cycle
c) Glycogenesis d) Glycogenolysis

2) The end product of glycolysis is _____ acid.

a) Acetic b) Citric
c) Lactic d) Fumaric

3) _____ does not exchange protons during electron transport in respiratory chain.

a) NAD^+ b) FMN
c) Coenzyme Q d) Cytochromes

4) Hydrogen cyanide (HCN) is an inhibitor of _____ in electron transport chain.

a) Flavoprotein
b) NADH dehydrogenase
c) Cytochrome C
d) Cytochrome aa_3

P.T.O.

5) Conversion of solar radiation into ATP from ADP and phosphate in plant pigment is called as _____
   a) Photophosphorylation
   b) Oxidative phosphorylation
   c) Substrate level phosphorylation
   d) None of a), b) or c)

6) Chlorophyll is _____ containing porphyrin molecule.
   a) Fe^{2+} b) Ca^{2+}
   c) Mg^{2+} d) Mo^{2+}

7) In human body lipids are stored in _____ tissue.
   a) Liver b) Adipose
   c) Muscle d) Connective

8) _____ molecule transports fatty acid into mitochondria.
   a) Carnitine b) Oxalic acid
   c) Pyruvic acid d) Glycerol

9) _____ is an unusual amino acid involved in urea synthesis.
   a) Arginine b) Ornithine
   c) Aspartic acid d) Glycine

10) Transamination reactions require _____ coenzyme.
   a) Lipoic acid b) Coenzyme A
   c) Flavoprotein d) Pyridoxal phosphate

2. Answer **any five** from below : **10**

1) Write down the names of enzymes and different coenzymes involved in the conversion of pyruvic acid to acetyl CoA.
2) How is the reducing potential transported from cytosol to mitochondria ?
3) What is difference between C_4 and C_3 pathway of photosynthesis ?
4) Write down one decarboxylation reaction generating biologically important product.
5) How is the biosynthesis of pyrimidine regulated ?
6) Where are the triglycerides hydrolysed in body ? What are the product formed ?

3. A) Solve **any two** : **6**
   1) Discuss energy generated in glycolysis.
   2) What is importance of pentose phosphate pathway ?
   3) Write names of components present in different complexes of respiratory chain.

   B) Show Z scheme of photosystems and differentiate between cyclic and non-cyclic photophosphorylation. **4**

4. Answer **any two** : **10**
   1) Describe glycogenic and ketogenic amino acids and their degradation.
   2) Write and describe the reactions for biosynthesis of a saturated fatty acid.
   3) Discuss the biosynthesis and degradation of purines.

5. Attempt **any two** : **10**
   1) Write and describe the reaction of gluconeogenesis.
   2) Write down electron transport chain and explain the chemiosmotic coupling hypothesis.
   3) Discuss transamination reaction and add a note on urea cycle.

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Seat No.	

B.Sc. III (Biotechnology) Semester – V Examination, 2015
ENGLISH (Compulsory) (New)

Day and Date : Thursday, 29-10-2015 Max. Marks : 50

Time : 2.30 p.m. to 4.30 p.m.

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

1. A) Rewrite the following sentences by choosing the correct alternatives. **6**

1) The average parson teaches _____ at the village school.
   a) honesty and equality b) loyalty and religion
   c) deference to the rich d) religion and law

2) Shaw believes that a society must be judged by
   a) its average parson b) its few rebels
   c) its journalists and editors d) its millions of obedient subjects

3) The united states was founded on the principle that
   a) all men are equal
   b) white men are superior
   c) it is under God
   d) a govt. is of the people, by the people and for the people

4) The _____ have already consecrated the ground at Gettysburg.
   a) clergy b) founding fathers
   c) common people d) soldiers

5) The value accorded to _____ prevented women from living a free life like male writers.
   a) decency b) humility
   c) anonymity d) chastity

6) Why are there so few writers among women and the working classes ?
   a) their talents are mocked and suppressed
   b) they have no interest in writing
   c) they are illiterate
   d) their talents are more inclined towards scientific discoveries.

B) Choose the appropriate modal in the following : **2**

1) You _____ be frank with your parents.

a) may b) should c) might d) could

2) Hamid _____ climb the tall coconut palm in his field when he was just ten.

a) can b) could c) may d) might

C) Rewrite the following sentences in indirect speech. **2**

1) I said to the men, "You can keep your boxes in the room".

2) "Take the certificates that you left here two days ago", said the principal to the student.

2. Answer the following questions in **two-three** sentences **each**. (**any five**) **10**

1) What does the average parson do ?

2) Why do so many women writers choose to remain anonymous ?

3) What according to Lincoln, would give the nation a new birth of freedom ?

4) How does society erode the talents of women writers ?

5) What according to Shaw, will cure people of sickness ?

6) Why did Lincoln say the task of consecration and dedication was impossible ?

3. A) Answer the following questions in about **fifty** words (**any two**). **6**

1) What did Abou Ben Adhem ask the angel ?

2) Why does the poet ask the captain to rise up ?

3) What request did Abou Ben Adhem make ?

B) Write short reports on **any two** of the following : **4**

1) Making an omlette

2) A scientific experiment

3) Sitar maestro honoured.

4. Answer **any one** of the following questions. **10**

1) Write a group discussion on the topic 'Global Warming'.

2) Write a group discussion on the topic 'Information Technology'.

5. Answer the following question. **10**

Prepare a presentation to promote a new <u>washing machine</u> in the market giving five charts or slides.

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SLR-U – 45

Seat No.	

B.Sc. Biotechnology – III (Semester – V) (New) Examination, 2015
PLANT DEVELOPMENT

Day and Date : Friday, 30-10-2015 Total Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

1. Multiple Choice Question. **10**

1) Which of the following is the most common type of ovule found in Angiosperm ?
   a) Orthotopous ovule b) Anatropous ovule
   c) Hemianatropous ovule d) Circinotropous ovule

2) In bisexual flowers to check self pollination stamens or anthers are removed in bud condition, a technique is known as _____
   a) Hybridization b) Cutting
   c) Emasculation d) All of these

3) The entry of pollen tube through integuments is known as _____
   a) Mesogamy b) Prorogamy
   c) Chalazogamy d) Monogamy

4) _____ is the type of endosperm formation in which the first division and several of the following divisions are unaccompanied by wall formation.
   a) Helobial type b) Nuclear type
   c) Cellular type d) Acellular type

5) _____ is the exalbuminous seed.
   a) Castor b) Pea
   c) Rice d) Wheat

6) When the basal as well as apical cells contribute to the development of embryo is known as _____

a) Asterad type
b) Crucifer type
c) Solanad type
d) Chenopodial type

7) Arabidopsis thaliana is member of _____

a) Brassicaceae
b) Arabidopsis
c) Asteraceae
d) Bignoniaceae

8) _____ is/are the component of cell wall.

a) Cellulose
b) Hemicellulose
c) Pectin
d) All of these

9) Which of the following are the physiological effects of Auxin ?

a) Cell division
b) Cell elongation
c) Root initiation
d) All of these

10) _____ is also known as stress hormone.

a) Auxin
b) Abscisic acid
c) Cytokinins
d) Gibberellins

2. Answer **any five** of the following : **10**

1) Write the different methods to store pollen grains.

2) Define fruit and give its types.

3) What is mean by Hydrophily ?

4) What are the significance of double fertilization ?

5) What are the salient features of Arabidopsis thaliana ?

6) What are the practical application of Gibberellins ?

7) Which are the phase of cell growth ?

3. A) Answer **any two** of the following : **6**

   1) What are different kinds of embryo development in dicotyledon ?

   2) Flower patterning.

   3) Sporophytic self incompatibility.

   B) Explain the process of fertilization in Angiosperms. **4**

4. Answer **any two** of the following : **10**

   1) Short note on vectors involved in pollination.

   2) What is apomixis and give detail account on it ?

   3) Give general account Abscisic acid, with its practical application.

5. Answer **any two** of the following : **10**

   1) Development of male gametophyte.

   2) Short note on cell wall formation in plants.

   3) What is polyembryony and give detail account on it ?

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Seat No.	

B.Sc. – III Biotechnology (Semester – V) (New) Examination, 2015
ANIMAL DEVELOPMENT

Day and Date : Saturday, 31-10-2015 Total Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

Instructions : *1)* ***All*** *questions carry* ***equal*** *marks.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Draw ***neat*** *and* ***labeled*** *diagrams.*

1. Rewrite the following sentences by using **correct** alternative. **10**

1) Development of an egg without fertilization is called_____
   a) Sexual reproduction b) Parthenogenesis
   c) Agamogenesis d) Gametogenesis

2) Chick egg is _____
   a) A lecithal b) Centrolecithal
   c) Microlecithal d) Telolecithal

3) Regulative theory was proposed by _____
   a) Weismann b) Driesh
   c) Spemann d) Roux

4) Mosaic theory was proposed by _____
   a) Weismann b) Driesh c) Spemann d) Roux

5) In oogenesis _____ number of ovum was formed from 10 oogonial cells.
   a) 10 b) 20 c) 30 d) 40

P.T.O.

6) Chick egg cleaves through _____ type of cleavage.

a) Equal holoblastic b) Unequal holoblastic

c) Meroblastic d) Superficial meroblastic

7) In _____ blastopore opening is going to develop in to anus.

a) Deuterostome b) Protostome

c) Mesostome d) Heterostome

8) _____ is act as inhibitor of cleavage.

a) Protein b) DNA

c) Yolk d) RNA

9) Primitive streak formation begins after _____ hrs of fertilization.

a) 6-7 b) 12 c) 7-8 d) 19

10) Cancer of muscle cells is called _____

a) Carcinoma b) Melanoma

c) Sarcoma d) Osteoma

2. Answer the following (**any 5**). **10**

i) Organizer theory.

ii) Formation of spermatids.

iii) Control of spermatogenesis.

iv) Laws of cleavage.

v) Blastulation.

vi) Malignancy.

3. A) Answer the following (**any 2**). **6**

   i) Write a note on oogenesis in insects.

   ii) Describe post-fertilization changes in egg cytoplasm.

   iii) Write a note on meamorphosis.

   B) Describe blastulation in telolecithal egg. **4**

4. Answer **any two** of the following : **10**

   i) Explain in detail preformation and organizer theory.

   ii) Describe the structure of typical graffian follicle.

   iii) Explain planes and patterns of cleavage.

5. Answer **any two** of the following : **10**

   i) Describe process of gastrulation and add a note on general metabolism.

   ii) Write note on acrosome and cortical reaction.

   iii) Describe regeneration in invertebrates.

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Seat No.	

B.Sc. (Part – III) (Semester – V) Examination, 2015
BIOTECHNOLOGY (Old)
Fermentation Technology

Day and Date : Saturday, 31-10-2015 Total Marks : 50

Time : 2.30 p.m. to 4.30 p.m.

Instructions : *1)* ***All*** *questions are* ***compulsory****.*

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

1. Rewrite the following sentences by choosing the **correct** alternative given below. **10**

1) Economic fermentation of an industrial product is done by using _____
   a) Synthetic media
   b) Waste as a raw material
   c) Living media
   d) Semi synthetic media

2) The production of substances in industrial microbiology occur in the sequence _____
   a) Fermentation, downstream processing, removal of waste, inoculation
   b) Inoculation, downstream processing, fermentation, removal of waste
   c) Inoculation, fermentation, downstream processing, removal of waste
   d) Removal of waste, inoculation, fermentation, downstream processing

3) Cell number or biomass of batch culture exhibits curve of _____
   a) J shape
   b) C-shape
   c) S (sigmoid)
   d) None of these

4) _____ technique is used for selection of auxotrophic mutants.
   a) Penicillin
   b) Alcohol
   c) Acid
   d) None of these

5) _____ indicator are used in primary screening for acid producing organism.
   a) Gas
   b) pH
   c) Electric
   d) None of these

6) Pilot plant fermentor _____ liters capacity.

a) 100-500 b) 1-2

c) 1,00,000 d) None of these

7) Industrial amylase production is carried out by _____ bacteria.

a) *Bacillus licheniformis* b) *E. coli*

c) *Saccharomyces cerevisiae* d) *Bacillus cereus*

8) End point determination assay are meant for _____ substances.

a) Amino acids b) Vitamins

c) Antibiotic d) None of these

9) _____ is used as precursor in Penicillin G production.

a) Phenyl acetic acid b) Hydroxy Phenyl acetic acid

c) Phenoxyacetic acid d) None of these

10) _____ are present in the fermentor to avoid vortex formation.

a) Sparger b) Baffles

c) Impeller d) Antifoam agents.

2. Answer **any five** of the following : **10**

1) Define crude and synthetic media.

2) Give different methods of strain improvement.

3) Give fermentation medium and organism used for production of Vitamin B_{12}.

4) Give examples Antifoam agents.

5) Define Scale up of fermentation.

6) Define Fermentation.

3. A) Answer **any two** of the following : **6**

   1) Write down the characteristics of an ideal fermentor.

   2) Crowded plate Technique.

   3) Describe in detail the inoculum preparation.

   B) Write an essay on Penicillin fermentation. **4**

4. Answer **any two** of the following : **10**

   1) Explain in detail Microbial growth kinetics in continuous culture.

   2) Application of Computer in fermentation technology.

   3) Write an account on different methods of centrifugation used for purification of fermented broth.

5. Answer **any two** of the following : **10**

   1) Explain Turbidimetric and End point Determination assay.

   2) Secondary screening.

   3) Give an account on Fermentation economics.

SLR-U – 50

Seat No.	

B.Sc. – III (Semester – V) Examination, 2015
BIOTECHNOLOGY (Old)
Plant Development

Day and Date: Monday, 2-11-2015 Total Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

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

1. Choose the **correct** answer from given alternatives : **10**

1) In suspension cultures, elicitation can be done by
   a) Chitin b) Pectin
   c) U.V. light d) All of these

2) Tissue culture technique was first performed successfully by
   a) Hilderbrandt b) Haberlandt
   c) P.R. White d) Gautheret

3) Cell suspension culture is agitated at rpm of
   a) 120 b) 50
   c) 160 d) 170

4) Which of the following enzymes is used for obtaining protoplasts ?
   a) Macerozyme b) Cellulose
   c) Pectinase d) All of these

5) Cryopreservation is based on which of the following ?
   a) Liquid CO_2 b) Liquid helium
   c) Liquid nitrogen d) All of these

6) Embryo formation by unfertilized egg is known as _____
   a) Parthenogenesis b) Diplospory
   c) Apospor d) Parthenocarpy

7) Filiform apparatus' associated with _____
   a) Antipodals b) Synergids
   c) Egg d) Embryo cell

8) _____ is the largest cell of the embryo sac.
   a) Synergids b) Antipodal
   c) Central cell d) Egg

9) 'Recognition reaction' of sexual incompatibility occurs at _____ level.
   a) Physiological b) Biochemical
   c) Molecular d) Intraspeci

10) In male gametophyte _____ eventually forms the pollen tube.
   a) Generative cell b) Vegetative cell
   c) Egg cell d) Sperm cell

2. Answer **any five** of the following : **10**
   1) Application of Ehtyline.
   2) What is vernalization ?
   3) Absicsic acid.
   4) Types of biodiversity.
   5) Mature embryo sac.
   6) TMV.

3. A) Answer **any two** of the following : **6**
   1) Practical applications of Gibberellins.
   2) What are Auxuns ?
   3) Floral patterning.

   B) Application of polyembryony. **4**

4. Answer **any two** of the following : **10**

   1) Give an account on protoplast culture.

   2) Describe In-situ conservation of biodiversity.

   3) Describe development of dicot embryo.

5. Answer **any two** of the following : **10**

   1) Write an essay on photoperiodism.

   2) Describe development of male gametophyte.

   3) Causes and applications of Apomixis.

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Seat No.	

B.Sc. Biotechnology (Part – III) (Semester – V) (New) Examination, 2015
Paper – I : BIOINFORMATICS AND NANOTECHNOLOGY

Day and Date : Monday, 2-11-2015 Total Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

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

1. Rewrite the sentence using **correct** alternative given below : **10**

1) _____ is developed by NCBI to retrieve information from database.
   a) SRS b) Entrez
   c) Yahoo d) Google

2) The possible translational reading frame in every nucleic acid sequence is _____
   a) Three b) One
   c) Six d) Nine

3) The PubMed provides information of _____ database.
   a) Nucleotide b) Protein
   c) Genome d) Literature

4) The study of complete genome of organism is known as _____
   a) Proteomics b) Metagenomics
   c) Genomics d) Pharmacology

5) SWISS-PROT represents _____ database.
   a) Nucleic acid sequence b) Protein sequence
   c) Genome sequence d) Cancer chromosome

6) The term nano was first coined by _____
   a) Alexander Fleming b) Richard Fynmann
   c) John Tyndall d) Rutherford

P.T.O.

7) High energy ball milling is a _____ method of nanoparticle synthesis.
   a) Physical b) Chemical
   c) Biological d) Natural

8) _____ is the gathering of entities without any external influence.
   a) Polymerization b) Degradation
   c) Isomerization d) Self assembly

9) For investigations of surfaces by atomic force microscopy, a pointed tip is mounted on a _____ which then mounted on a peizo drive.
   a) Cantilever b) Photomultiplier
   c) Photodiode d) Monochromator

10) The ability of one molecule to attract and bind to another is often referred to as _____
   a) Crystallization b) Molecular recognition
   c) Agglumeration d) Coagulation

2. Answer **any five** of the following : **10**

1) What is consensus sequence ? Give example.
2) Write a note on BLOSUM matrices.
3) What is CATH database ?
4) What is lithography ?
5) Enlist the names of different nanostructures.
6) What is quantum mechanics ?
7) What is the difference between top down and bottom up approach of nanomaterial synthesis ?

3. A) Answer **any two** of the following : **6**

1) What is alignment ? Enlist the different tools used for alignment.
2) Write about the fundamental science behind nanotechnology.
3) Add a note on 'nano sized biosystems'. Give an example.

B) Describe in detail the tools used for gene prediction. **4**

4. Answer **any two** of the following : **10**

   1) Write a note on secondary protein sequence databases.

   2) Describe various properties of nanostructures.

   3) Describe the applications of nanomaterials in cleaning environment.

5. Answer **any two** of the following : **10**

   1) Give applications of Bioinformatics in different field.

   2) Illustrate different methods of nanomaterial synthesis.

   3) What is sequence alignment ? Explain multiple sequence alignment using Clustal X.

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Seat No.	

B.Sc. – III (Biotechnology) (Semester – V) (New) Examination, 2015
RECENT TRENDS IN BIOTECHNOLOGY

Day and Date : Tuesday, 3-11-2015 Max. Marks : 50
Time : 2.30 p.m. to 4.30 p.m.

Instructions *: 1)* ***All*** *questions carry* ***equal*** *marks.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) Draw ***neat*** *and labeled diagrams* ***wherever*** *necessary.*

1. Write following sentences selecting most correct answer from the given options : **10**

1) Phytoremediation is carried out with the help of _____
   a) Eichhornia b) Rhizobium
   c) Arabidopsis d) Casuarina

2) A treatment process that uses microorganisms to break hazardous substances into less toxic substances is known as _____
   a) Biotransformation b) Bioremediation
   c) Detoxification d) Decontamination

3) The persistent of DTT in soil is _____
   a) 10 months b) 18 days
   c) 10 years d) 25 days

4) _____ is an enclosing of droplet of solution of enzyme in a semi permeable membrane.
   a) Adsorption b) Covalent bonding
   c) Cross linking d) Encapsulation

5) In natural polymer activation of hydroxyl group is carried by _____
   a) CNBr b) Al_2O_3
   c) Cellulose d) Methanol

P.T.O.

6) _____ type of chemical bond is catalyzed by DNA ligase.
   a) Glycosidic b) Hydrogen
   c) Phosphodiester d) Ester

7) _____ is the purpose of formalized codes of ethics in the health care professions.
   a) To increase the competence and standard of care within the profession
   b) To revoke the licenses of unethical practitioners
   c) To provide a consistent guide of protocol
   d) To relieve the law making bodies of some of their legal responsibilities

8) Bioethics is concerned with _____
   a) Healthcare law
   b) Etiquette in medical facilities
   c) The ethical implications of biological research methods and results
   d) None of the above

9) The first medical code of ethics was written by _____
   a) Hammurabi b) Hippocrate
   c) Percival d) Kevorkian

10) Site-directed mutagenesis _____
   a) Is a technique to produce specific mutants
   b) Can be used to alter gene function in specific ways
   c) Can create mutant genes to be studied in living organisms
   d) All of these

2. Answer **any five** of the following : **10**

i) Describe the routes of toxicants in human body.

ii) Define bioremediation and give its types.

iii) Applications of metabolic engineering.

iv) Which method is suitable for whole cell immobilization ?

v) What is carrier ? Give the characteristics of carriers used in immobilization.

vi) Write a note on human genome project.

vii) Give note on transport of toxicants in ecosystem.

3. A) Answer **any two** of the following : **6**

   i) Industrial applications of enzyme engineering.

   ii) Define toxicity. Explain the mechanism of detoxification in human body.

   iii) Covalent bonding method of enzyme engineering.

   B) Define bioethics. Give the ethical issues of human cloning. **4**

4. Answer **any two** of the following : **10**

   i) Describe organs and mechanisms of detoxification in human body.

   ii) Explain in detail enzyme immobilization with example.

   iii) Describe role of different mutagenesis in enzyme engineering.

5. Answer **any two** of the following : **10**

   i) What is phytoremediation ? Describe various plant species involved in phytoremediation.

   ii) Explain in detail ethical issues of stem cell research.

   iii) Explain in detail industrial applications of immobilized enzymes.
