





- 8) Batch manufacturing record shall maintain as per schedule \_\_\_\_\_  
for each batch of drug produced.
- a) H                      b) U                      c) M                      d) G
- 9) In \_\_\_\_\_ type of suspension, particle, exist as separate entities.
- a) Flocculated                      b) Deflocculated  
c) Both a) and b)                      d) None of above
- 10) Low alcoholic elixirs, consists of \_\_\_\_\_ % of alcohol.
- a) 8-10                      b) 75-80  
c) Above 80                      d) None of above
- 11) \_\_\_\_\_ is determined by angle of repose in preformulation.
- a) Bulk density                      b) Flow properties  
c) Particle size                      d) None of above
- 12) First edition of USP was published in \_\_\_\_\_
- a) Latin                      b) English  
c) Both a) and b)                      d) None of above
- 13) Lozenges are \_\_\_\_\_ dosage forms meant for slow dissolution  
in the mouth.
- a) Liquid                      b) Solid  
c) Semisolid                      d) None of the above
- 14) \_\_\_\_\_ are sterile dosage forms.
- a) Eye drops                      b) Implants  
c) Both a) and b)                      d) Ear drop
- 15) One Quart = \_\_\_\_\_ ml.
- a) 500                      b) 1000  
c) 160                      d) 20



2. Answer **any five** : **(5×5=25)**
- a) Define glycerites and explain method of preparation of any official glycerites.
  - b) Discuss principles of homoeopathy.
  - c) Give classification, advantages, disadvantages of a liquid dosage form.
  - d) Explain different method of preparation of aromatic water with examples.
  - e) Give definition, storage condition, container, labelling requirements of liniment.
  - f) Write importance of hygroscopicity and crystallinity study of preformulation.
3. Answer **any three** : **(10×3=30)**
- a) Discuss scope of pharmaceuticals.
  - b) Write a note on salient features of first, second, third, fourth edition of I.P.
  - c) Explain the following factors as per GMP.
    - i) Factory premises
    - ii) Working space and storage area
    - iii) Equipments
    - iv) Health, clothing and sanitation of workers
    - v) Batch manufacturing record.
  - d) Write a note on branches of Ayurveda and concepts of Ayurveda.
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Seat No.	
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**B.Pharmacy (Semester – II) Examination, 2015  
ANATOMY, PHYSIOLOGY AND HEALTH EDUCATION – II  
(New CGPA Pattern)**

Day and Date : Friday, 15-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 70

1. Choose the correct options :

(1×15=15)

- 1) Each kidney is surrounded by a delicate covering called as \_\_\_\_\_  
A) Pyramids      B) Medulla      C) Cortex      D) Capsule
- 2) Myofibril lies between two successive 'Z' discs is called a \_\_\_\_\_  
A) Sarcolemma    B) Sarcomere    C) Sarcoplasm    D) None of the above
- 3) The cerebro spinal fluid is slightly \_\_\_\_\_ in nature.  
A) Strongly Alkaline                      B) Weak Alkaline  
C) Weak acidic                              D) Strongly acidic
- 4) Hypo secretion of thyroid gland causes \_\_\_\_\_ before puberty.  
A) Gigantism      B) Goitre      C) Cretinism      D) Myxoedema
- 5) \_\_\_\_\_ is outer covering of testes.  
A) Tunica vaginalis                      B) Tunica albuginea  
C) Tunica vasculosa                      D) Skin
- 6) \_\_\_\_\_ is not a sign of physical health.  
A) Bright eyes                              B) Regular activity of bowel  
C) Sweet breath                              D) Crippling of the limbs
- 7) \_\_\_\_\_ is the latest and sophisticated method of family planning used in female.  
A) Laproscopy    B) Oral pills    C) Tubectomy    D) IUD
- 8) Kala azar is caused by \_\_\_\_\_  
A) Female anopheles mosquito    B) Female culex mosquito  
C) Female phledotomine sandfly    D) Other than A), B) and C)



- 9) Condition in which blood sugar level is less than normal concentration is called as \_\_\_\_\_  
A) Hyperglycemia                      B) Hypoglycemia  
C) Glycosuria                              D) Diabetes
- 10) \_\_\_\_\_ is second generation Intra Uterine Device.  
A) Loops                      B) Copper-T                      C) Spirals                      D) Coils
- 11) Urine colour shows pale yellow or clear and amber in colour because of \_\_\_\_\_  
A) Haemoglobin    B) Protein                      C) Urobilin                      D) Amino acids
- 12) The \_\_\_\_\_ ions initiate attractive forces between the actin and myosin filaments causing them slide alongside each other.  
A) Sodium                      B) Potassium                      C) Calcium                      D) Magnesium
- 13) \_\_\_\_\_ type of cells in the pancreatic islets secretes somatostatin.  
A)  $\alpha$ -cells                      B)  $\beta$ -cells                      C)  $\gamma$ -cells                      D)  $\delta$ -cells
- 14) The action potential is caused by diffusion of \_\_\_\_\_  
A)  $\text{Na}^+$  ions                              B)  $\text{K}^+$  ions  
C) Both  $\text{Na}^+$  and  $\text{K}^+$  ions                      D)  $\text{Cl}^-$  ions
- 15) \_\_\_\_\_ is a largest protein molecule in the body.  
A) Actin                      B) Myosin                      C) Titin                      D) Filamentous
2. Answer **any five** : **(5×5=25)**
- 1) Explain renin-angiotensin-aldosterone system.
  - 2) Write a note on sports physiology and the muscles in exercise.
  - 3) Classify nervous system. Enlist the functions of CSF.
  - 4) Describe the physiology of auditory sensation.
  - 5) Describe anatomical features and functions of adrenal gland.
  - 6) What are objectives of health education ? Add a note on mental health.
3. Answer **any three** : **(10×3=30)**
- 1) Mention the causative organism, symptoms, mode of transmission, preventive measures and treatment of influenza. Add a note on diabetes mellitus.
  - 2) Draw the name the parts of integral genitalia of female reproductive system. Describe ovary in short.
  - 3) Describe thyroid and parathyroid gland hormones and their functions.
  - 4) Discuss the differences between sympathetic and parasympathetic nervous system.
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**B.Pharmacy (Semester – III) Examination, 2015  
PHYSICAL PHARMACY – I**

Day and Date : Tuesday, 5-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

I. Multiple choice questions :

(1×16=16)

- 1) In gall stone, which type of liquid crystal is involved  
a) Nematic                      b) Smectic                      c) Cholesteric                      d) None
- 2) The equation  $E = MC^2$  represent the equation for  
a) First law of thermodynamics                      b) Second law of thermodynamics  
c) Third law of thermodynamics                      d) None
- 3) Which of the following gas is liquefied by claudes method ?  
a) Carbondioxide                      b) Chlorine                      c) Helium                      d) All
- 4) Is the example of extensive property  
a) Volume                      b) Enthalpy                      c) Entropy                      d) All
- 5) Is the multipoint viscometer  
a) Cup and bob                      b) Cone and plate                      c) All                      d) Brookfield
- 6) In \_\_\_\_ process,  $dE = 0$  and  $dH = 0$ .  
a) Adiabatic                      b) Cyclic                      c) Isobaric                      d) Isochoric
- 7) As the pressure increases, solubility of gas in liquid is  
a) Increases                      b) Decreases                      c) Stops                      d) Remain constant
- 8) Isobaric process takes place at constant  
a) Temperature                      b) Pressure                      c) Volume                      d) Concentration
- 9) Solubility of gases in solvent is reduced by addition of electrolytes and non-electrolytes, this is called as  
a) Co-solvency                      b) Hydrotrophy                      c) Salting out                      d) Solubilization
- 10) Phase rule was first discovered by  
a) Nernst                      b) Chatelier                      c) Arrhenius                      d) Gibbs
- 11) Blood is isotonic with  
a) 0.16 Nacl solution                      b) 0.31 Nacl solution  
c) 0.40 Nacl solution                      d) 0.80 Nacl solution
- 12) \_\_\_\_\_ is not a state function.  
a) Concentration                      b) Internal energy                      c) Enthalpy                      d) Entropy
- 13) Plug flow is not observed in cone and plate viscometer. The reason is  
a) Cleaning and filling of sample is easy                      b) Rate of shear is independent of radius  
c) Shear can be uniformly maintained                      d) Temperature can be maintained uniformly

P.T.O.



- 14) At a triple point  
a) Both temperature and pressure are fixed  
b) Only temperature is fixed  
c) Sometime temperature and sometime pressure is fixed  
d) Only pressure is fixed
- 15) Hypertonic solution is the one which has \_\_\_\_\_ pressure than the other.  
a) Equal                      b) Higher                      c) Lower                      d) None
- 16) Debye Huckel theory is also called as  
a) Oldest theory of strong electrolyte                      b) Theory of gases  
c) Modern theory of strong electrolyte                      d) Theory of solids

## SECTION – I

II. Answer **any four** : 16

- 1) Explain exothermic and endothermic reaction with example.
- 2) Write a short note on liquid crystals.
- 3) Discuss about second law of thermodynamics.
- 4) What do you mean by eutectic mixture ?
- 5) Explain in brief about types of solutions with examples.
- 6) What is reverse osmosis ? Explain with examples.

III. Answer **any two** of the following : 16

- 1) Describe various methods of liquefaction of gases.
- 2) Describe working and principle of various multipion viscometer.
- 3) What is osmotic pressure ? Give the mechanism of osmosis through semi-permeable membrane.

## SECTION – II

IV. Solve **any four** of the following : 16

- 1) State and explain Henry's law.
- 2) Write a short note on cone and plate viscometer.
- 3) Explain in detail co-solvency with suitable example.
- 4) Explain partition-coefficient.
- 5) What are the various factors affected on viscosin ?
- 6) Explain thixotropy and negative thixotropy.

V. Solve **any two** of the following : 16

- 1) Describe the factors influencing on solubility of solids in liquids.
  - 2) Write a note on Arrhenius and Debye-Huckel theory of electrolyte.
  - 3) Explain Non-Newtonian type of flow with rheograms, mechanism and examples.
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**SLR-X – 12**

<b>Seat No.</b>	
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**B.Pharmacy (Semester – III) Examination, 2015  
PHARMACEUTICAL ENGINEERING**

Day and Date : Thursday, 7-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

**SECTION – A**

1. Multiple choice questions :

**(1×16=16)**

- 1) Multiple Effect Evaporator (MEE) is used for \_\_\_\_\_ operation.
  - a) Batch
  - b) Continuous
  - c) Both a) and b)
  - d) None of the above
- 2) The rate of evaporation is inversely proportional to the
  - a) Viscosity
  - b) Concentration
  - c) Temperature
  - d) Both a) and b)
- 3) Which distillation is used for the separation of miscible liquids ?
  - a) Fractional
  - b) Simple
  - c) Steam
  - d) None of the above
- 4) \_\_\_\_\_ is an excellent material for the construction of kettle.
  - a) Iron
  - b) Copper
  - c) Stainless steel
  - d) Aluminium
- 5) \_\_\_\_\_ pump is example of reciprocating pump.
  - a) Piston
  - b) Centrifugal
  - c) Gear
  - d) Peristaltic
- 6) In the turbulent flow
  - a) There is mixing of particles
  - b) Fluid particle move in layers
  - c) One layer sliding over other
  - d) Both b) and c)
- 7) Liquid boils when its vapour pressure is
  - a) Less than atmospheric pressure
  - b) Equal to atmospheric pressure
  - c) More than atmospheric pressure
  - d) None of these

**P.T.O.**





- 8) Which heating mechanism used in steam jacketed kettle ?  
a) Conduction  
b) Convection  
c) Both a) and b)  
d) None of the above
- 9) \_\_\_\_\_ solution distills unchanged at constant temperature.  
a) Azeotropic  
b) Zeotropic  
c) Both a) and b)  
d) None of the above
- 10) Dryer of laboratory size may contain a minimum of \_\_\_\_\_ tray.  
a) Five  
b) Two  
c) More than 20  
d) Three
- 11) \_\_\_\_\_ pumps are used for corrosive and toxic liquids.  
a) Piston  
b) Diaphragm  
c) Plunger  
d) Rotary
- 12) Fractional distillation is also known as  
a) Rectification  
b) Differential  
c) Dry  
d) Equilibrium
- 13) Which method is conducted at its boiling point ?  
a) Evaporation  
b) Distillation  
c) Drying  
d) All of above
- 14) In which evaporator the preheated feed enters ?  
a) Evaporating pan  
b) Falling film  
c) Rising film  
d) Horizontal tube
- 15) The energy possessed by the body by virtue of its position is known as  
a) Pressure energy  
b) Potential energy  
c) Kinetic energy  
d) None of the above
- 16) Which dryer is used for sticky material ?  
a) Freeze  
b) Fluid bed dryer  
c) Tray  
d) None of the above

### SECTION – B

#### 2. Answer **any four** :

**(4×4=16)**

- 1) Explain in brief principle, construction and working of Rotameter.
- 2) Enlist the different dryer used in pharmaceutical industry. Explain any one dryer.
- 3) Describe in brief construction and working of Plunger pump.
- 4) Give the construction and working of Climbing film evaporators.
- 5) Describe in brief Blowers and Compressor.
- 6) Define Pharmaceutical Engineering. Explain in detail unit operation and unit process.



3. Answer the following : **(8×2=16)**

- 1) Differentiate between evaporation and distillation. Discuss in detail Mc. Cabe Thiele method.
- 2) Enlist the different flow meter used for measurement of rate of flow of fluid. Describe one such flow meter.

OR

- 2) Explain the theory behind drying. Give the principle, construction and working of Freeze dryer with a neat labelled diagram.

SECTION – C

4. Answer **any four** : **(4×4=16)**

- 1) How will you carry out conveying of solid ?
- 2) Give the principle, construction and working of Horizontal tube evaporator.
- 3) Give an exhaustive account of Volute pump.
- 4) Draw a neat labelled diagram of multiple effect evaporator.
- 5) Give principle, construction and application of steam distillation.
- 6) Define and classify evaporation. Describe in detail factor affecting evaporation.

5. Answer the following : **(8×2=16)**

- 1) Describe in detail Bernoulli's theorem. Derive an expression for Bernoulli's theorem.
- 2) Give the principle involved in Fractional distillation. Describe construction and working of Fractional distillation with neat labelled diagram.

OR

- 2) Describe in detail Reynold's experiments.
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**B.Pharm. (Semester – III) Examination, 2015**  
**ORGANIC CHEMISTRY – II**

Day and Date : Saturday, 9-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

I. Multiple Choice Questions :

16

- Dows process is
  - Alkylation of phenols
  - Hydrolysis of phenols
  - Hydrolysis of aryl halides
  - Alkylation of aryl halides
- Phenols are commercially synthesized by oxidation of
  - Alcohol
  - Cumene
  - Benzene
  - All of the above
- Tertiary amine when treated with acid chloride gives
  - N, N, N Tri alkyl amide
  - N, N di alkyl amide
  - No reaction
  - N alkyl amide
- \_\_\_\_\_ carbon in nitrobenzene have partial positive charge.
  - Para
  - Meta
  - Ortho
  - Ortho-para
- Ketone reacts with Grignard reagent to form an addition product which on hydrolysis gives a
  - Primary alcohol
  - Tertiary alcohol
  - Secondary alcohol
  - Ketal
- How many  $\pi$  electrons are there in antiaromatic compounds ?
  - $4n + 2$
  - $4n$
  - $2n + 2$
  - $4n + 4$
- In Reformatsky reaction \_\_\_\_\_ acts as an catalyst.
  - Zn
  - $K_2Cr_2O_7$
  - $K_2Cr_2O_4$
  - None of these
- According to Huckel's rule which one is not aromatic
  - Benzene
  - Pyridine
  - Cyclohexane
  - Naphthalene
- In Cannizaro reaction product obtained is
  - Mixture of carboxylic acid and alcohol
  - Only carboxylic acid
  - Only alcohol
  - None of these

P.T.O.



- 10) Mannich reaction is
- Acid catalysed
  - Base catalysed
  - Carried out in alkaline medium
  - All of these
- 11) Intramolecular acetyl shifting occurs in \_\_\_\_\_ reaction mechanism.
- Perkin condensation
  - Cannizarro
  - Aldol condensation
  - Hoffman
- 12) Use of benzene sulphonyl chloride for distinguishing between different amines is called as
- |                     |                      |
|---------------------|----------------------|
| a) Hinsberg reagent | b) Beckmanns reagent |
| c) Fries reagent    | d) Huckels reagent   |
- 13) In a pyrrole attack of electrophile is most preferred at
- |                |                |                |                |
|----------------|----------------|----------------|----------------|
| a) C1 position | b) C5 position | c) C2 position | d) C3 position |
|----------------|----------------|----------------|----------------|
- 14) \_\_\_\_\_ is not a o-p director.
- |        |        |        |       |
|--------|--------|--------|-------|
| a) -Cl | b) -Br | c) -CN | d) -F |
|--------|--------|--------|-------|
- 15) Phenol is more acidic than
- |                    |                      |
|--------------------|----------------------|
| a) Carboxylic acid | b) Alcohol           |
| c) Both a) and b)  | d) Hydrochloric acid |
- 16) Reverse reaction of MPV reduction is
- |                       |                       |
|-----------------------|-----------------------|
| a) Oppenaur oxidation | b) Aldol condensation |
| c) Perkin reaction    | d) Mannich reaction   |

## SECTION – I

II. Solve **any four** :**(4×4=16)**

- Give preparation methods of phenols.
- Explain the use of diazonium salts in synthesis of amines.
- Give the reaction and mechanism of Friedel-Craft's reaction.
- Give the reaction and mechanism of MPV reduction.
- Write the reactions of pyrrole and thiophene.
- What are heterocyclic compounds ? Give the rules for nomenclature of heterocyclic compounds.



III. Solve the following : **(8×2=16)**

- 1) Explain general methods of preparation of Aldehydes and ketones. Explain reaction and mechanism of Oppenauer oxidation.
- 2) Give the structures of naphthalene and add note on structural elucidation of naphthalene.

OR

- 2) Explain the reaction and mechanism of the following reactions.
  - a) Mannich reaction
  - b) Haloform reaction

SECTION – II

IV. Solve **any four** : **(4×4=16)**

- 1) Explain the preparation methods of carboxylic acid.
- 2) Write preparation methods of anthracene.
- 3) Write any two method of preparation of amine.
- 4) Write preparation of Quinoline and isoquinoline.
- 5) Write preparation methods for esters and amides.
- 6) Describe the mechanism of Kolbe's reaction.

V. Solve the following : **(8×2=16)**

- 1) Explain Huckel rule with example and add a note on resonance in benzene.
- 2) Give reactions of primary, secondary and tertiary amines with nitrous acid and explain in detail the Hinsberg method of separation.

OR

- 2) Explain the reaction and mechanism of the following reactions.
    - a) Aldol Condensation
    - b) Knoevenagel reaction.
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**B.Pharm. (Semester – III) Examination, 2015  
PHARMACEUTICAL ANALYSIS – I**

Day and Date : Tuesday, 12-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. Multiple choice questions :

**(16×1=16)**

- 1) \_\_\_\_\_ act as both oxidizing agent and reducing agent.  
A) Nitric acid    B) Nitrous acid  
C) Nitrogen dioxide                                      D) Ammonia
- 2) \_\_\_\_\_ is also called as back titration method.  
A) Mohr’s method    B) Volhard’s method  
C) Adsorption indicator method                      D) Turbidity method
- 3) Assay of Ascorbic acid is based on \_\_\_\_\_ titrations.  
A) Iodimetric    B) Iodometric  
C) Permanganometric                                      D) Cerimetric
- 4) One of the following is not aqueous indicator.  
A) Starch    B) Methyl red  
C) Crystal violet    D) Phenolphthalein
- 5) The assay of aspirin is based on \_\_\_\_\_ type of titration.  
A) Aqueous    B) Non-aqueous  
C) Precipitation    D) Redox
- 6) Determinate error also called as \_\_\_\_\_ error.  
A) Random    B) Systemic  
C) Operational    D) None of above
- 7) Indicators are \_\_\_\_\_  
A) Strong acid and weak base                              B) Strong bases and weak acid  
C) Weak acid and weak base                                      D) Strong acid and Strong acid
- 8) Reduction involves \_\_\_\_\_  
A) Gain of  $e^-$     B) Loss of  $e^-$   
C) Gain of oxygen    D) Removal of hydrogen



- 9) Primary standards are generally dried at \_\_\_\_\_ °C.  
A) 55  
B) 85  
C) 105  
D) 1005
- 10) The atomic no. of Ce is \_\_\_\_\_  
A) 78  
B) 68  
C) 48  
D) 58
- 11) Indeterminate error is also called as \_\_\_\_\_  
A) Accidental  
B) Random  
C) Asymmetric  
D) All of above
- 12) No. of moles of solute present in one Kg of solvent is \_\_\_\_\_  
A) Normality  
B) Molarity  
C) Molality  
D) Formality
- 13) For standardization of  $H_2SO_4$ , \_\_\_\_\_ is used as primary standard.  
A) Ammonia  
B) Sodium carbonate  
C) Silver nitrate  
D) Hydrochloric acid
- 14) pH of strong acid – strong base salt solution is \_\_\_\_\_  
A) Less than 7  
B) More than 7  
C) 7  
D) None
- 15) \_\_\_\_\_ is a type of analysis.  
A) Trace  
B) Complete  
C) Partial  
D) All of above
- 16) Degree of dissociation is denoted by \_\_\_\_\_  
A)  $\alpha$   
B)  $\beta$   
C)  $\gamma$   
D)  $\delta$

2. Answer **any four** of the following questions :

**(4×4=16)**

- 1) Define accuracy, precision, error and indicator.
- 2) Give the standardization of HCl along with its principle.
- 3) Explain in detail back type of titration with example.
- 4) Write a note on turbidity method.
- 5) Describe iodometry and iodimetry.



3. Answer **any two** from the following questions : **(2×8=16)**
- 1) Explain in detail classification of pharmaceutical analysis.
  - 2) Discuss the cerriometry.
  - 3) Give an complete account of Volhard's method.
4. Answer **any four** of the following questions : **(4×4=16)**
- 1) Give the advantages of precipitation titrations.
  - 2) Explain classification of error.
  - 3) Give the end point detection in redox titrations.
  - 4) Explain the assay of ascorbic acid.
  - 5) Write a note on primary and secondary standard.
5. Answer **any two** of the following questions : **(2×8=16)**
- 1) Explain in detail how we can minimize the errors in analysis.
  - 2) Give an complete account of permangnometry.
  - 3) Explain in detail Mohr's method.
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**B. Pharmacy. (Semester – III) Examination, 2015  
PATHOPHYSIOLOGY AND CLINICAL BIOCHEMISTRY – I**

Day and Date : Thursday, 14-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. MCQ :

(1×16=16)

- 1) Which of the following type of ulcer is turn into malignancy ?
  - a) Gastric ulcer
  - b) Duodenal ulcer
  - c) Mouth ulcer
  - d) None of above
- 2) The enlarge uterus of pregnant women is an example of which adaptive behaviour ?
  - a) Dysplasia
  - b) Metaplasia
  - c) Hypertrophy
  - d) Atrophy
- 3) The most common mechanism in pathogenesis of chronic pyelonephritis is
  - a) Ascending infection
  - b) Reflex nephropathy
  - c) Haematogenous infection
  - d) Nephrolithiasis
- 4) Which form of diabetes is characterized by the inability of pancreas to produce insulin ?
  - a) Type I
  - b) Type II
  - c) Gestational
  - d) Intestinal
- 5) Cirrhosis is condition involving \_\_\_\_\_
  - a) Degeneration of liver
  - b) Inflammation of small intestine
  - c) Constriction of esophagus with tumor
  - d) Difficulty in swallowing



- 6) The most characteristic feature of rapidly progressive glomerulonephritis is
- a) Crescent formation                      b) Wire loop lesion  
c) Thickened capillary loop              d) Hyaline nodules
- 7) Most frequent affected joint in acute gouty arthritis in the beginning is
- a) Knee                      b) Elbow                      c) Shoulder                      d) Great toe
- 8) In hyperplasia the cell are \_\_\_\_\_
- a) Increase no. of cell                      b) Increase size of cell  
c) Shrunken cell                              d) Dead cell
- 9) Which of the following hepatitis virus is not RNA virus ?
- a) Hepatitis A virus                              b) Hepatitis B virus  
c) Hepatitis C virus                              d) Hepatitis G virus
- 10) Complication of ulcerative colitis include all except \_\_\_\_\_
- a) Intestinal tuberculosis  
b) Neoplasia  
c) Toxic megacolon  
d) Primary sclerosing cholangitis
- 11) The following form ionizing radiation exposure is associated with highest risk of cancer
- a)  $\alpha$ -rays                      b)  $\beta$ -rays                      c)  $\gamma$ -rays                      d) X-rays
- 12) Increase serum sodium level is called as
- a) Hyperkalemia                                      b) Hypercalcaemia  
c) Hyponatremia                                      d) Hypervolaemia
- 13) The following type of gall stone are generally unassociated with change in gall bladder wall
- a) Cholesterol                      b) Mixed                      c) Combined                      d) Pigment



- 14) The following pair of organ play major role in maintenance of pH of blood and body tissue
- a) Liver and Gall bladder
  - b) Stomach and Intestine
  - c) Lung and Kidney
  - d) Brain and Muscle
- 15) The most common cause of acute pancreatitis is
- a) Alcoholism
  - b) Cholelithiasis
  - c) Both of above
  - d) None of above
- 16) Which of the following is accurately define Achalasia ?
- a) Cardiac sphincter fails to relax during swallowing
  - b) Protrusion of part of stomach
  - c) Vascular lesion of esophagus
  - d) None of above

2. Solve **any four** : **(4×4=16)**

- 1) Define peptic ulcer, give difference between gastric ulcer and duodenal ulcer.
- 2) Write note on Acute Pancreatitis.
- 3) Explain pathogenesis of irreversible cell injury.
- 4) Give mechanism by which kidney maintain acid-base balance.
- 5) Write note on Ulcerative colitis.
- 6) Define Cellular Apoptosis, write cause and pathogenesis.

3. Solve **any two** : **(2×8=16)**

- 1) Explain in detail pathogenesis of Neoplasia.
- 2) Define and classify UTI. Explain Cystitis and Urethritis.

OR

- 2) Describe in detail account on Osteoarthritis.

4. Solve **any four** : **(4×4=16)**

- 1) Write note on Acute renal failure.
- 2) Explain Metabolic acidosis.



- 3) Define Hyperuricemia, write note on chronic gout.
- 4) Explain briefly Diffuse spasm of esophagus.
- 5) Write note on acute tubular necrosis.
- 6) Explain different water compartment and electrolyte distribution in body.

5. Solve **any two** :

**(2×8=16)**

- 1) Define Hepatitis. Give it's classification and explain in detail viral hepatitis.
- 2) Explain in detail account on Cholelithiasis.

OR

2) Write short note :

- a) Dehydration
  - b) Hypercalcemia
  - c) Hypokalemia
  - d) Hybernatriemia.
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Seat No.	
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**B. Pharma. (Semester – III) Examination, 2015  
ELEMENTS OF CALCULUS AND BIostatISTICS**

Day and Date : Saturday, 16-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

- Instructions :** I) **All** questions are **compulsory**.  
II) Figures to the right indicate full marks.  
III) **Use** of log table, non-programmable calculator is **allowed**.

**MCQ**

I. Select the correct alternative.

16

- 1) If A is square matrix, then  $A-A^t$  is \_\_\_\_\_ matrix.  
a) Symmetric                      b) Scalar                      c) Identity                      d) Skew-symmetric
- 2) The differential equation  $\sqrt{\frac{d^2y}{dx^2}} = 5xy^2$  has order \_\_\_\_\_ and degree \_\_\_\_\_  
a) 1,2                      b) 2,1                      c) 2,2                      d) 1,1
- 3) If  $A = \begin{pmatrix} a & b \\ b & a \end{pmatrix}$  and  $A^2 = \begin{pmatrix} \alpha & \beta \\ \beta & \alpha \end{pmatrix}$  then  
a)  $\alpha = a^2 + b^2, \beta = ab$                       b)  $\alpha = a^2 + b^2, \beta = 2ab$   
c)  $\alpha = a^2 + b^2, \beta = a^2 - b^2$                       d)  $\alpha = 2ab, \beta = a^2 + b^2$
- 4) A homogenous system  $AX = 0$  with more unknown than the number of equations has \_\_\_\_\_  
a) Infinity many solutions                      b) No solutions  
c) Unique solution                      d) None of these
- 5) Solution of the differential equation  $\frac{d^2y}{dx^2} - y = 0$ .  
a)  $y = A \cos x + B \sin x$                       b)  $y = Ae^x + Be^{-x}$   
c)  $y = Ae^x + B \sin x$                       d)  $A \cos^{-1} x + B \sin^{-1} x$
- 6) Series expansion of  $\cos x$  is  
a)  $x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$                       b)  $1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$   
c)  $1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^4}{6!} + \dots$                       d) None of these

P.T.O.



7) The partial fraction of the fraction  $f(x) = \frac{2x^{2-1}}{(x^2 + 4)(x^2 - 5)}$  is

a)  $\frac{A}{x^2 + 4} + \frac{B}{x^2 - 5}$

b)  $\frac{2A}{x^2 + 4} + \frac{B}{x^2 - 5}$

c)  $\frac{A}{x^2 + 4} + \frac{Bx + C}{x^2 - 5}$

d) None of these

8) Rank of matrix  $A = \begin{pmatrix} 1 & 0 & 1 \\ 0 & 2 & 2 \\ 2 & 3 & 4 \end{pmatrix}$  is

a) 2

b) 3

c) 4

d) None

9) If the correlation coefficient between two variables  $x$  and  $y$  is 0.4 then the correlation coefficient between  $-2x$  and  $2y$  is

a) 0.4

b) -0.4

c) 0.8

d) None of these

10) Let  $A$  and  $B$  be any two events on a sample space  $S$  such that  $P(A) = 0.3$ ,  $P(B) = 0.4$  and  $P(A \cap B) = 0.1$  then  $P(A \cup B)$  is

a) 0.7

b) 0.12

c) 0.8

d) None of these

11) The histogram is useful for finding the value of \_\_\_\_\_

a) Median

b) Mode

c) Mean

d) None of these

12) Let  $x$  be a binomial random variable with parameter  $\eta$  and  $p$  if  $n = 10$  and mean  $E(x) = 6$  then  $p =$

a)  $\frac{3}{5}$

b)  $\frac{2}{5}$

c)  $\frac{12}{5}$

d) None

13) The blood glucose level (mg/dl) of same age is 108, 109, 104, 102, 106, 121 then the value of median is \_\_\_\_\_

a) 107

b) 106

c) 18

d) 103

14) For a negative skewed distribution the mean median and mode are such that

a) Mean < median < mode

b) Mean = median = mode

c) Mean > median > mode

d) None of these

15) The mean and standard deviation of humidity of a place during a given period is 70 and 14 respectively then the value of coefficient variation is

a) 50

b) 14

c) 20

d) None of these

16) Any two events  $A$  and  $B$  on a sample space  $S$  are said to be mutually exclusive if

a)  $A \cap B = S$

b)  $A \cap B = \phi$

c)  $A \cup B = S$

d) None of these



SECTION – I

II. Solve **any four** : **(4×4=16)**

- 1) State Roll's Theorem and Verify for  $f(x) = x^3 - 4x$  on  $[-2, 2]$ .
- 2) Find  $n^{\text{th}}$  differential coefficient of  $\frac{x}{(x-1)(x-2)}$ .
- 3) Expand  $\log(1+x)$  by Maclaurine's theorem.
- 4) Find the value of  $c$  in the conclusion of Lagrange's MVT for the function.  
 $F(x) = (x-1)(x-2)(x-3)$  on  $[0, 4]$ .
- 5) Evaluate  $\int_0^\pi x \cos x \, dx$ .
- 6) Solve the differential equation  $y - x \frac{dy}{dx} = y^2 + \frac{dy}{dx}$  when  $x = 1, y = 2$ .

III. Solve the following. **(8+8=16)**

- 1) Obtain the solution of the following homogenous systems  
 $X + 2y - z = 0$   
 $3x + 8y - 3z = 0$   
 $2x + 4y - 2z = 0$
- 2) State Euler's theorem and Verify for  $u = \sqrt{x} + \sqrt{y} + \sqrt{z}$

OR

2)  $\int x^3 e^x dx$ .

SECTION – II

IV. Attempt **any four**. **(4×4=16)**

- 1) A sample of 90 leaves was collected from a garden and the length was measured. It gave the following frequency table. Compute the median length of leaves.

<b>Length</b>	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	35 - 40
<b>No. of leaves</b>	5	20	25	13	9	7

- 2) Calculate three quartiles , for the following data :

<b>x</b>	16	18	14	26	7
<b>f</b>	16	24	26	14	3





- 3) From the following information , Calculate the regression equation of x on y and y on x :

$$\Sigma x = 30, \Sigma x^2 = 220, \Sigma y = 40, \Sigma y^2 = 340, \Sigma xy = 214, n = 5.$$

- 4) A committee of three is to be chosen from a group consisting of 4 men and 5 women. If the selection is made at random, Find the probability that

- a) all three are men  
b) two are men

- 5) Fit a second degree curve to the following data taking X as the independent variable.

X	2	3	4	5	6	7	8
Y	2.5	5.5	9.8	15.5	30.5	35.0	54.5

- 6) If for two events A and B defined on sample space S,  $P(A/B) = 0.8$ ,  $P(B) = 0.5$ ,  $P(A \cup B)$  Examine whether A and B are

- i) independent  
ii) Mutually Exclusive

V. Solve the following.

16

- 1) Calculate Karl Pearson's coefficient of skewness using mean and mode from the data recorded on the no. of pods per plant in a pulse crop.

No. of pods	10	20	30	40	50	60	70
No. of plants	1	5	12	22	17	9	4

- 2) The number of patients reporting per hr. in OPD of a hospital has a Poisson distribution with mean 8. Calculate the probability that on a particular day in randomly selected hour at least one patient is reported in OPD.

OR

- 2) Find the correlation coefficient between following variables.

X	50	62	72	25	20	60	60
Y	48	65	74	33	25	55	66



Seat No.	
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**B.Pharm. (Semester – IV) Examination, 2015**  
**PHYSICAL PHARMACY – II**

Day and Date : Wednesday, 6-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. Multiple choice questions : **(1×16=16)**

- 1) Alloys are the which type of colloidal system ?  
a) Solid sol                      b) Sol                      c) Solid foam                      d) Gel
- 2) In \_\_\_\_\_ process dispersion medium is move under influence of applied potential.  
a) Electrophoresis                      b) Electroosmosis  
c) Osmosis                      d) Electroplating
- 3) Gold number is introduced by which of the following scientist.  
a) Robert Brown                      b) Griffin  
c) Zsigmondy                      d) Albert Einstein
- 4) In a dialysis process, solution that is outside the dialysis membrane called as  
a) Dialysate                      b) All                      c) Dialyser                      d) Diffusate
- 5) Aerosol is the reverse of  
a) Emulsion                      b) Liquid foam                      c) Smoke                      d) Solid foam
- 6) Which of the following factors are utilized in formulation of suspension ?  
a) Particle size                      b) Viscosity of medium  
c) Density of medium                      d) All of these
- 7) In ring detachment method, which type of metal ring is used ?  
a) Gold                      b) Silver                      c) Platinum                      d) Nickel
- 8) As the pressure increases, surface tension  
a) Decreases                      b) Increases  
c) Remain constant                      d) None



- 9) HLB requirement for the detergency is about  
a) 1-5                      b) 13-16                      c) 9-12                      d) 5-9
- 10) Adsorption of benzene on silica gel is which type of adsorption isotherm.  
a) Type-I                      b) Type-II                      c) Type-III                      d) Type-IV
- 11) In the dispersion of sulphur in water, acacia is used as  
a) Complexing agent                      b) Deflocculating agent  
c) Detergent                      d) Wetting agent
- 12) Which of the following is hydrophilic surfactant ?  
a) Tweens                      b) Spans  
c) SLS                      d) Both a) and c)
- 13) Which method is also called as stream scanning ?  
a) Conductivity                      b) Sieving  
c) Sedimentation                      d) Optical microscopy
- 14) Which of the following is analytical method of complex ?  
a) Dilution                      b) Distribution                      c) Diffusion                      d) Dialysis
- 15) The rate of oxidation can be controlled by  
a) Halogenation                      b) Hydration                      c) Antioxidant                      d) None
- 16) Which of the following equation is used for predicting shelf life of drug product ?  
a) Hixon-Crowel                      b) Arrhenius  
c) Michaelis-Menten                      d) Henderson-Hasselbatch

2. Answer **any four** :

**(4×4=16)**

- 1) What is porosity ? Correlate it with dissolution rate of dosage form.
- 2) Comment on adsorption at liquid interface.
- 3) Write in brief about cumulative frequency distribution curve.
- 4) Define Zeata potential ? How is it different from Nernst potential.
- 5) What are complexes ? Classify with examples.
- 6) What is micromeritics ? Give advantages and disadvantages of microscopy method.



3. Answer **any two** of the following : **(8×2=16)**

- 1) Enlist various methods of particle size determination. Write in detail about conductivity method.
- 2) Describe in detail theories of emulsification.
- 3) Give the name of analytical methods for complexes. Discuss in detail about analysis of complexes.

4. Answer **any four** : **(4×4=16)**

- 1) Explain in detail about electrophoresis.
- 2) Discuss various factors which govern the rate of a chemical reaction.
- 3) Comment on 'Theory of sedimentation'.
- 4) Write a detailed note on Accelerated stability testing.
- 5) Note on Kinetic properties of sol.
- 6) Purification of sol by dialysis explain.

5. Answer **any two** of the following : **(8×2=16)**

- 1) What is shelf life and expiration dating ? How would you determine shelf life of new pharmaceutical product ?
  - 2) State and explain in detail Freundlich and Langmuir adsorption isotherm.
  - 3) Define sol. Explain in detail about methods of preparation of lyophobic sol.
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Seat No.	
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**B.Pharmacy (Semester – IV) Examination, 2015  
MICROBIOLOGY**

Day and Date : Friday, 8-5-2015

Max. Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

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

1. Multiple choice questions : **(1×16=16)**

1) Which of the following causes severe form of dysentery ?

- a) *shigela dysenteriae*                      b) *shigela flexneri*  
c) *shigela boydi*                              d) *shigela sonnei*

2) Which of the following is a transport medium for cholera stool ?

- a) Glucose broth                              b) Selenile broth  
c) Cary-Blair medium                      d) Tetrathionate broth

3) The term vaccine was first used by

- a) Jenner                      b) Pasteur                      c) Ehrlich                      d) Koch

4) Prokaryotes includes

- a) Bacteria                      b) Fungi                      c) Protozoa                      d) All the three

5) It is organ of adhesion of a bacterium

- a) Fimbriae                      b) Capsule                      c) Flagella                      d) Cell wall

6) Efficiency of Disinfectants are tested by

- a) Rideal Test                      b) Indole test                      c) Methyl Red test                      d) All of above



- 7) Transfer of portion of DNA from one bacterium to another by bacteriophage is called as
- a) Transduction
  - b) Transformation
  - c) Mutation
  - d) Conjugation
- 8) Which of the following is Cell Mediated Immunity (CMI) ?
- a) Type I hypersensitivity reaction structure non-motile
  - b) Type II hypersensitivity reaction and non spore forming
  - c) Type III hypersensitivity reaction
  - d) Type IV hypersensitivity reaction
- 9) Staphylococcus infection is spread by
- a) Hyaluronidase
  - b) Leucocidine
  - c) Haemolysin
  - d) All of three
- 10) Susceptibility of children to scarlet fever is demonstrated by
- a) Shick test
  - b) Dick test
  - c) Mantoux test
  - d) None of above
- 11) Which of the following responsible for gas gangrene ?
- a) *Cl. Tetani*
  - b) *Cl. Perfringens*
  - c) *Cl. Botulinum*
  - d) *Cl. Difficile*
- 12) Autoclave is the only method applicable to the sterilization of
- a) Oily vehicles
  - b) Syringes
  - c) Bulky cotton dressings
  - d) Silicon rubber
- 13) Following is sterilized by dry heat sterilization method
- a) Scissors
  - b) Liquid Paraffin
  - c) Dusting powder
  - d) All of above



14) Recommended temperature and duration of time for Dry heat sterilization is

- a) 121°C for 15 minutes
- b) 160°C for 45 minutes
- c) 190°C for 1.5 minutes
- d) All of above

15) Lophotrichous means

- a) Absence of flagella
- b) Tuft of flagella at one end
- c) Single flagellum
- d) Numerous flagella all around the cell

16) Gram Positive bacteria shows

- a) High peptidoglycan, teichoic acid and less lipid
- b) Low peptidoglycan, teichoic acid and more lipid
- c) High peptidoglycan, high lipid
- d) More lipid and more teichoic acid

2. Attempt **any four** question.

**(4×4=16)**

- 1) Write in various applications of Microbiology to Pharmaceuticals.
- 2) Write a short note on bacterial conjugation.
- 3) Define the terms-Virulence, Attenuation, Antigen, Exhatation.
- 4) Add a note on protozoa.
- 5) Give biochemical tests for staphylococcus.
- 6) Write a note on Humoral Immunity.

3. Attempt **any two** of the following :

**(2×8=16)**

- 1) Explain in detail virus replication.
- 2) Explain in detail walls of Gram Negative Eubacteria.
- 3) Explain principle and applications of different Microscopes used in Microbiology.





4. Attempt **any four** questions : **(4×4=16)**
- 1) Give principle and limitations of Electron Microscopy.
  - 2) Give clinical significance of Rickettsia.
  - 3) Classify micro organisms according to temperature requirement.
  - 4) Draw a well labeled diagram of HIV.
  - 5) What is contribution of Paul Ehrlich to Microbiology.
  - 6) Discuss in detail bacterial growth curve.
5. Attempt **any two** of the following : **(2×8=16)**
- 1) Give an exhaustive account of various bacterial culture media.
  - 2) Define sterilization, sanitization and disinfection. Enlist methods used for evaluation of disinfectants. Explain R. W. coefficient in detail.
  - 3) Draw a well labeled diagram of bacteria. Write composition of cell wall. Discuss functions of its organelles.
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SLR-X – 19

Seat No.	
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**B.Pharm. (Semester – IV) Examination, 2015**  
**ORGANIC CHEMISTRY – III**

Day and Date : Monday, 11-5-2015

Max. Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

1. Multiple Choice Questions :

**(16×1=16)**

- 1) \_\_\_\_\_ conformation of cyclohexane is most stable.  
A) Boat  
B) Chair  
C) Half chair  
D) Twist Boat
- 2) \_\_\_\_\_ on heating at 500°C yields olefins.  
A) Acetate esters  
B) Aldehydes  
C) Aromatic aldehydes  
D) Aldols
- 3) \_\_\_\_\_ Reagent is used for hydroxylation of alkene.  
A)  $\text{KMnO}_4$   
B)  $\text{OsO}_4$   
C)  $\text{RCOOOH}$   
D) All of the above
- 4) Which of the following nucleophilic substitution reaction involves inversion of configuration.  
A)  $\text{SN}_1$   
B)  $\text{SN}_2$   
C)  $\text{SNi}$   
D) All of the above
- 5) Three dimensional arrangement of groups around a stereocentre is called \_\_\_\_\_  
A) Conformation  
B) Configuration  
C) Stereochemistry  
D) Isomerism
- 6) \_\_\_\_\_ is an equimolar mixture of optically active substances.  
A) Racemic mixture  
B) Isosorbic mixture  
C) Metameric mixture  
D) None of the above

P.T.O.



- 7) The stereochemistry of addition of bromine to alkene is \_\_\_\_\_  
A) Anti addition                                      B) Syn addition  
C) Syn and anti addition                              D) None of these
- 8) The most stable conformation of n-butane is associated with the dihedral angle of \_\_\_\_\_  
A)  $60^\circ$                               B)  $90^\circ$                               C)  $120^\circ$                               D)  $180^\circ$
- 9) \_\_\_\_\_ trans 1, 2-dimethyl cyclohexane is more stable than aa trans 1, 2-dimethyl cyclohexane.  
A) ae                              B) ea                              C) ee                              D) ae and ea
- 10) \_\_\_\_\_ reagent is used in fries rearrangement reaction.  
A)  $H_2SO_4$                               B)  $HNO_3$                               C) HCl                              D)  $AlCl_3$
- 11) Willgerodt rearrangement reaction is an example of \_\_\_\_\_ rearrangement.  
A) Nucleophilic                                      B) Electrophilic  
C) Aromatic                                      D) Free radical
- 12) Baeyer villiger reaction is \_\_\_\_\_ rearrangement.  
A) Intermolecular                                      B) Free radical  
C) Intramolecular                                      D) None of these
- 13) The conversion of acyl derivatives of hydroxamic acid into amine in presence of base is a \_\_\_\_\_ rearrangement.  
A) Schmidt                              B) Neber                              C) Lossen                              D) Fries
- 14) Neber rearrangement reaction involves conversion of \_\_\_\_\_ to ketone.  
A) Alpha amino ketone                                      B) Beta amino ketone  
C) Ketoxime tosylate                                      D) All of the above
- 15) \_\_\_\_\_ rearrangement reaction is a carbocation rearrangement involving change in carbon skeleton.  
A) Wagner-Meerwein                                      B) Pinacol  
C) Wolf                                      D) Beckmann
- 16) Isocyanate product is formed in \_\_\_\_\_ rearrangement reaction.  
A) Lossen                              B) Curtius                              C) Schmidt                              D) All of these



2. Answer **any four** of the following questions : **(4×4=16)**
- 1) Define the terms with suitable examples enantiomer and diastereomer.
  - 2) Define and classify isomerism.
  - 3) Write on wolf rearrangement reaction.
  - 4) Write on free radical rearrangement reaction.
  - 5) Write in brief on sigmatropic rearrangement reaction.
3. Answer **any four** of the following questions : **(4×4=16)**
- 1) Explain with suitable examples stereoselectivity.
  - 2) Write on hydroboration of alkene.
  - 3) Explain conformations of ethane molecule.
  - 4) Explain with suitable example Dakin oxidation reaction.
  - 5) Write on E1 reaction.
4. Answer **any two** of the following questions : **(2×8=16)**
- 1) Enlist different methods of resolution of racemic mixtures. Explain any four methods of it.
  - 2) Explain in detail on  $SN_1$  and  $SN_2$  reaction.
  - 3) Write on conformations and stability of 1-methyl cyclohexane. Write a note on Chugaeve elimination reaction.
5. Answer **any two** of the following questions : **(2×8=16)**
- 1) Explain Favourskii rearrangement with its stereochemistry.
  - 2) Write on any two aromatic rearrangement reaction.
  - 3) Describe with suitable examples R and S nomenclature system for chiral compounds. Write on curtius rearrangement reaction.
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**SLR-X – 2**

<b>Seat No.</b>	
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**B.Pharm. (Semester – I) Examination, 2015  
PHARMACEUTICAL INORGANIC CHEMISTRY (CGPA Pattern)**

Day and Date : Thursday, 7-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

1. Multiple choice questions :

**(15×1=15)**

- 1) A Supplement to the I.P. 1955 was published in \_\_\_\_\_  
A) 1960                      B) 1965                      C) 1970                      D) 1959
- 2) The synonym of sodium bicarbonate is  
A) Epsom salt                      B) French chalk  
C) Baking soda                      D) None of above
- 3) A chemical present in toothpaste is  
A)  $\text{CaCO}_3$                       B)  $\text{Ca}_3(\text{PO}_4)$   
C) Stannous fluoride                      D) Strontium chloride
- 4) The shoulder of cylinder of  $\text{N}_2\text{O}$  is painted with  
A) Red                      B) Black  
C) Blue                      D) White
- 5) Low serum sodium level is called  
A) Hyponatraemia                      B) Hypokalemia  
C) Hypernatraemia                      D) Hyperkalemia
- 6) Change in crystal size and form agglomeration and caking of suspended particles of drug is  
A) Chemical change                      B) Physiochemical change  
C) Physical change                      D) None of above

P.T.O.



- 7) The element present in sea weed is
- A) Iodine    B) Calcium  
 C) Zinc    D) Potassium
- 8) Sodium nitrite used in poison due to
- A) CO    B) Barbiturates  
 C) Cyanide                                        D) Alkaloidal
- 9) The indicator used in complexometric titration is
- A) Methyl orange                                B) Phenolphthalein  
 C) Mordant black II                            D) Phenol red
- 10) Molecular formula for tribasic calcium phosphate is
- A)  $\text{CaPO}_4$                                         B)  $\text{CaCO}_3$   
 C)  $\text{Ca}_3(\text{PO}_4)_2$                                 D) None
- 11) \_\_\_\_\_ helps in preventing dental carries.
- A) Fluoride                                        B) Chloride  
 C) Magnesium                                    D) None of above
- 12)  $\text{CO}_2$  is used as \_\_\_\_\_ stimulant.
- A) Cardiovascular                                B) Parenteral  
 C) Absorbing                                      D) Respiratory
- 13) Alum is \_\_\_\_\_
- A) Potassium alumina                            B) Potassium sulphate  
 C) Potassium aluminium sulphate        D) All of above
- 14) Nutritional deficiency of calcium leads to \_\_\_\_\_
- A) Hypocalcemia                                 B) Hypocalcemia  
 C) Hyponatrimia                                 D) Hypercalcaemia
- 15) Mechanical antidote preventing
- A) Distribution                                    B) Absorption  
 C) Excretion                                      D) Metabolism



2. Answer **any five** of following questions : **(5×5=25)**
- 1) Write principle and reaction involved in Limit test for heavy metals.
  - 2) How will you maintain acid base balance in the body ?
  - 3) What are antacids ? Explain in detail aluminum containing antacid.
  - 4) How the iron get absorb from diet ?
  - 5) Write a note on oxygen used as official gas.
  - 6) How will you control contamination in pharmaceuticals ?
3. Answer **any three** of following questions : **(10×3=30)**
- 1) Write the principle and reaction involved in Limit test for iron and why ammonia and citric acid is added in limit test for iron ?
  - 2) Write assay of
    - 1) NaCl
    - 2) MgSO<sub>4</sub>
    - 3) NaHCO<sub>3</sub>.
  - 3) Write properties and reaction of
    - 1) NaHCO<sub>3</sub>
    - 2) Iodine
    - 3) Sodium thiosulphate.
  - 4) Discuss in details of official monograph with example.
-



SLR-X – 20

Seat No.	
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**B.Pharm. (Semester – IV) Examination, 2015**  
**PHARMACEUTICAL ANALYSIS – II**

Day and Date : Wednesday, 13-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. Multiple Choice Questions :

(16×1=16)

- 1) The determination of halogen is done by  
A) Gravimetry  
B) Oxygen flask combustion  
C) Both a and b  
D) None of above
- 2) Excess of precipitating agent generally \_\_\_\_\_ the solubility.  
A) Increases  
B) Decreases  
C) Slightly affects  
D) Does not affects
- 3) Paracetamol is  
A) 1-hydroxy acetic amine  
B) 1-hydroxy amino acetate  
C) 4-hydroxy acetanamine  
D) 4-hydroxy acetamide
- 4) \_\_\_\_\_ is protogenic solvent.  
A) H<sub>2</sub>SO<sub>4</sub>  
B) Acetic acid  
C) Pyridine  
D) Water
- 5) 1°, 2° & 3° amines are titrated with  
A) Sodium nitrate  
B) Perchloric acid  
C) Acetic acid  
D) None of above
- 6) Triethanolamine is used to mask  
A) K  
B) Na  
C) Al  
D) None of above
- 7) Ostwald ripening is occurring while  
A) Filtration  
B) Precipitation  
C) Dissolution  
D) Digestion
- 8) \_\_\_\_\_ containers are most suitable for storage of sample.  
A) Glass  
B) Iron  
C) Polyethylene  
D) Metal
- 9) \_\_\_\_\_ is used for end point detection in nitrite titration.  
A) Starch solution  
B) Starch-iodine solution  
C) Starch paper  
D) Starch-iodide paper
- 10) In Kjeldahl's method \_\_\_\_\_ is not used.  
A) Potassium sulphate  
B) Copper sulphate  
C) Sodium sulphate  
D) None of above

P.T.O.





- 11) For standardization of perchloric acid \_\_\_\_\_ is used.  
A) Oxalic acid      B) PHT      C)  $\text{Na}_2\text{CO}_3$       D)  $\text{NaHCO}_3$
- 12) The particle size of precipitate is controlled by  
A) Solubility of precipitate in medium  
B) Concentration of reactant  
C) Temperature  
D) All of above
- 13) The sulpha drugs are titrated with  
A) Sodium sulphate      B) Sodium nitrate  
C) Sodium nitrite      D) None of above
- 14) Mordant black shows \_\_\_\_\_ color at pH 10.  
A) Pink      B) Blue      C) Red      D) Yellow
- 15) For chlorine absorbing liquid is  
A) Sodium hydroxide      B)  $\text{H}_2\text{SO}_4$   
C) Bromine      D) Silver nitrate
- 16) Eudiometer is used for analysis of  
A) Gas      B) Solid      C) Liquid      D) None of above

## SECTION – I

2. Answer **any four** of the following questions. **(4×4=16)**
- 1) Explain in detail assay of salbutamol sulphate and mebendazole.
  - 2) Explain in detail preparation and standardization of 0.1 M  $\text{NaNO}_2$ .
  - 3) What is masking and demasking ? Explain with example.
  - 4) Explain the solvents used in non-aqueous titrations.
  - 5) Give complete account of indicators used in complexometric titrations.
  - 6) Write a note on theory behind gravimetry.
3. Answer the following questions. **(2×8=16)**
- 1) Enlist steps involved in gravimetry. Explain in detail filtration and precipitation in gravimetry.
  - 2) Give the advantages of disodium EDTA. Give its standardization. Explain assay of Magnesium sulphate.
- OR
- 3) How will you determine the % purity of sulphanilamide ? Give preparation and standardization of titrant used in the same.



SECTION – II

4. Answer **any four** of the following questions. **(4×4=16)**

- 1) Draw a neat labeled diagram of K.F. apparatus.
- 2) Define : Sub-sample, sampling, random sampling and nonrandom sampling.
- 3) How the separation and analysis of gaseous mixture is done ? Explain in detail.
- 4) Explain in detail ELISA.
- 5) Give complete account of Kjeldahl's method.
- 6) Explain in detail raw material analysis of paracetamol.

5. Answer the following questions. **(2×8=16)**

- 1) Explain in detail Oxygen flask combustion method.
- 2) Explain in detail RIA.

OR

- 3) Explain in detail sampling of solid.
-





Seat No.	
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**B.Pharm. (Semester – IV) Examination, 2015**  
**PATHOPHYSIOLOGY AND CLINICAL BIOCHEMISTRY – II**

Day and Date : Friday, 15-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. Choose the correct answer : 16

- 1) The specific enzyme known to increase in liver damage is
  - a) LDH
  - b) SGPT
  - c) SGOT
  - d) Amylase
- 2) The most common cause of death in patient with untreated hypertension is
  - a) Congestive heart failure
  - b) Intracerebral hemorrhage
  - c) Malignant nephrosclerosis
  - d) Pulmonary embolism
- 3) A disease that cause lung become inflamed that can either bacterial or viral is
  - a) Asthama
  - b) Pneumonia
  - c) Shipping fever
  - d) Kennel cough
- 4) The confirmatory test used in diagnosis of AIDS is
  - a) ELIZA
  - b) Western blot
  - c) ESR
  - d) Southern blot
- 5) HIV virus has protein coat and genetic material which is
  - a) Double stranded DNA
  - b) Single stranded RNA
  - c) Double stranded RNA
  - d) Single Stranded DNA
- 6) An old man complaint pain in chest, which is paroxymal substernal and occur while at rest, which of following is cause of pain
  - a) Heart burn
  - b) Hypertension
  - c) Angina pectoris
  - d) Asthma
- 7) Blood clot when in pulmonary circulation are known as \_\_\_\_\_ which create mechanical obstruction.
  - a) Emboli
  - b) Obstruction
  - c) Foreign bodies
  - d) None of above



- 8) The major neurotransmitter hypothesis states that there is hyperactivity of dopaminergic system.
- |                  |              |
|------------------|--------------|
| a) Hysteria      | b) Anxiety   |
| c) Schizophrenia | d) Obsession |
- 9) Which of the following is the symptom of Alzheimer’s disease ?
- |                  |  |
|------------------|--|
| a) Hyperactivity | b) Disorientation                          |
| c) Hallucination | d) Difficulty in remembering event of past |
- 10) Which category of hypersensitivity is IgE mediated ?
- |             |            |
|-------------|------------|
| a) Type I   | b) Type II |
| c) Type III | d) Type IV |
- 11) Which form of diabetes is characterized by inability of pancreas to produce insulin ?
- |            |                |
|------------|----------------|
| a) Type I  | b) Intestinal  |
| c) Type II | d) Gestational |
- 12) Chronic ischemic heart disease is most often due to
- |                                    |                                  |
|------------------------------------|----------------------------------|
| a) Coronary atherosclerosis        | b) Repetitive coronary vasospasm |
| c) Embolisation to coronary branch | d) Stenosis of coronary ostia    |
- 13) Bronchogenic carcinoma has increased incidence in the following pneumoconiosis.
- |                |                |
|----------------|----------------|
| a) Coal worker | b) Silicosis   |
| c) Asbestosis  | d) Berylliosis |
- 14) The following complication is almost exclusive for type I diabetic mellitus (IDDM).
- |                                 |                          |
|---------------------------------|--------------------------|
| a) Hyperosmolar nonketotic coma | b) Diabetic ketoacidosis |
| c) Atherosclerosis              | d) Diabetic nephropathy  |
- 15) The major chemical messenger involved in hypersensitivity is
- |                |              |
|----------------|--------------|
| a) Interleukin | b) Histamine |
| c) Interferon  | d) Endotoxin |
- 16) Shock is a life-threatening syndrome characterized by
- |                  |                  |
|------------------|------------------|
| a) Hypotension   | b) Hypoperfusion |
| c) Both of above | d) None of above |



2. Solve **any four** : **(4×4=16)**

- 1) Define hypertension, give type and management of same.
- 2) Explain briefly Parkinson's disease.
- 3) Write a note on hyperthyroidism.
- 4) Define angina pectoris, give causes and type.
- 5) Write note on delayed type of hypersensitive reaction.
- 6) Explain briefly etiopathogenesis of heart attack.

3. Solve **any two** : **(8×2=16)**

- 1) Define CHF, explain pathogenesis, etiology, clinical manifestation and management of CHF.
- 2) Define epilepsy, describe type of seizure, pathogenesis and management of epilepsy.

OR

- 2) Define diabetic mellitus, describe type, etiopathogenesis, clinical feature and complication of DM.

4. Solve **any four** : **(4×4=16)**

- 1) Explain briefly respiratory failure.
- 2) What is ischemic heart disease, write consequence of coronary ischemia.
- 3) Write use of interpretation of biochemical data.
- 4) Define myasthenia gravis, give its etiopathogenesis and management.
- 5) Describe briefly psychosis.
- 6) Describe pathogenesis of AIDS.

5. Solve **any two** : **(8×2=16)**

- 1) Describe in detail renal function test.
- 2) Define hypersensitive reaction, give its type, explain in detail anaphylactic reaction.

OR

- 2) Explain in detail account on asthma.
-



Seat No.	
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**B.Pharm. (Semester – V) Examination, 2015**  
**SOLID DOSAGE FORM**

Day and Date : Tuesday, 5-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 80

1. MCQ.

(16×1=16)

- 1) Size 'O' capsule has a fill volume of \_\_\_\_\_ ml.  
a) 0.13                      b) 0.20                      c) 0.67                      d) 1.36
- 2) Sublingual tablet does not disintegrate but slowly dissolve in  
a) 1 hr.                      b) 2 hrs.                      c) 3 hrs.                      d) 15-30 mins.
- 3) Perforated pan is used for  
a) sugar coating                      b) film coating  
c) both a) and b)                      d) none of the above
- 4) Which machine is designed for filling of pellets ?  
a) Rotofil                      b) Rotosort  
c) Rotoweigh                      d) None of the above
- 5) \_\_\_\_\_ microencapsulation techniques is suitable for coating of only solids.  
a) Air suspension                      b) Pan coating  
c) Solvent evaporation                      d) Both a) and b)
- 6) Bloom strength varies from  
a) 100-150 gms                      b) 500-700 gms  
c) above 1000 gms                      d) none of the above
- 7) \_\_\_\_\_ used as lubricants in tablet formulation.  
a) Stearic acid                      b) Sodium lauryl sulphate  
c) Mineral oil                      d) All of above
- 8) Enteric coated tablet disintegrate in  
a) stomach                      b) intestine                      c) mouth                      d) liver
- 9) Disintegration time for sugar coated tablet is \_\_\_\_\_ according to I.p.  
a) 0-30 min                      b) 0-60 min  
c) 0-5 min                      d) 2 hour

P.T.O.



- 10) \_\_\_\_\_ is trade name of croscarmellose sodium which is used as superdisintegrant.  
a) Ac-di-sol            b) Primogel            c) Polyplasdone    d) Explotab
- 11) Capsule shell has moisture content in the range of  
a) 60%                b) 12-15%            c) 70%                d) Above 80%
- 12) Subcoating is done for  
a) Rounding of tablet edges            b) Building up the core weight  
c) Both a) and b)                        d) None of the above
- 13) Plating of punch faces is done by  
a) chromium            b) zinc                c) iron                d) all of the above
- 14) Type B gelatins are usually derived from  
a) Animal bones                        b) Animal skin  
c) Both a) and b)                        d) None of the above
- 15) Millard's reaction is related to  
a) Lactose                b) Dextrose            c) Sorbitol            d) Both a) and b)
- 16) \_\_\_\_\_ is mechanical process of microencapsulation.  
a) Polymerisation                        b) Multi orificecentrifugal process  
c) Both a) and b)                        d) None of the above

2. Answer **any four** of the following questions : **(4×4=16)**

- 1) Enlist different hardness tester and draw neat labeled diagram of Pfizer hardness tester.
- 2) Explain different reasons for microencapsulation with suitable examples.
- 3) Give materials used in manufacturing of empty gelatin capsule shells.
- 4) Write the reasons and suitable remedies for capping and lamination.
- 5) Discuss in short objectives of coating and ideal features of film coating material.
- 6) Discuss in short characterization and evaluation of granules.

3. Answer the following questions : **(8×2=16)**

- 1) Discuss in detail manufacturing process of gelatin.

OR

Write short note on microencapsulation.

- 2) Discuss in short QC test for capsule and explain weight variation test in detail.





4. Answer **any four** of the following questions : **(4×4=16)**

- 1) Explain different capsule filling methods.
- 2) Draw neat labeled diagram of Hi coater and Glatt immersion sword system.
- 3) Enlist the merits and demerits of film coating.
- 4) Describe disintegration test for sugar and enteric coated tablets.
- 5) Write advantages and disadvantages of tablets.
- 6) Write working and construction of single punch tablet press.

5. Answer the following questions : **(8×2=16)**

- 1) Give detail account on additives used in formulation of hard gelatin capsules.

OR

Explain formulation of soft gelatin capsule.

- 2) Discuss in short excipients used in formulation of the tablets.
-



Seat No.	
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**B.Pharm. (Semester – V) Examination, 2015**  
**BIOPHARMACEUTICS**

Day and Date : Thursday, 7-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 80

1. MCQ :

- 1) The process which causes termination of pharmacological action of drug is  
A) Absorption      B) Dissolution      C) Distribution      D) Excretion
- 2) Pore transport is also known as  
A) Convective transport                      B) Bulk flow  
C) Filtration                                      D) All of the above
- 3) In placental barrier, maternal and fetal blood vessels are separated by tissues made of  
A) Mesoblast basement membrane  
B) Glial cells and astrocytes  
C) Trophoblast basement membrane  
D) Sertoli-Sertoli cell junction
- 4) Which of the following reaction is a Phase II biotransformation process ?  
A) Oxidation      B) Reduction      C) Hydrolysis      D) Conjugation
- 5) Binding Site III on Albumin is also known as  
A) Warfarin Binding Site                      B) Digitoxin Binding Site  
C) Diazepam Binding Site                      D) Tamoxifen Binding Site
- 6) When the bioavailability of a drug is compared with its i.v. administration is known as  
A) Systemic availability                      B) Absolute bioavailability  
C) Relative bioavailability                      D) Bioavailable fraction
- 7) Non-linearity in pharmacokinetics is explained by  
A) Michaelis Menten equation                      B) Handerson-Hesselbach equation  
C) Polynomial equation                              D) First-order equation
- 8) Problems leading to poor bioavailability include  
A) Poor aqueous solubility                      B) Poor stability in GIT  
C) Poor permeability                              D) All of the above

P.T.O.



- 9) Which of the following dosage form does show comparatively more dissolution rate ?  
A) Tablets                      B) Capsule                      C) Granules                      D) Suspension
- 10) Which of the following is not a highly perfused organ ?  
A) Liver                      B) Muscle                      C) Heart                      D) Brain
- 11) Limited salvation theory of dissolution is also known as  
A) Diffusion model                      B) Film theory  
C) Double barrier theory                      D) Surface renewal theory
- 12)  $Cl_R$  of the drugs which are filtered and reabsorbed completely in renal tubule is  
A) 0 ml/min                      B) <130 ml/min                      C) 130 ml/min                      D) >130 ml/min
- 13) Pharmacokinetic models are useful in  
A) Prediction of drug distribution  
B) Prediction of multiple dose concentration  
C) Explaining drug interactions  
D) All of the above
- 14)  $t_{max}$  is considered as indication of  
A) Rate of absorption                      B) Rate of distribution  
C) Rate of metabolism                      D) Rate of excretion
- 15) The core of cell membrane is  
A) Hydrophilic                      B) Amphiphilic  
C) Lipophilic                      D) None of the above
- 16) Which of the following increases the rate of passive diffusion across a biological membrane ?  
A) Increase in hydrophilicity  
B) Increase in molecular weight more than 400  
C) Increase in  $K_{w/m}$   
D) Decrease in the thickness of membrane

## SECTION – I

2. Answer **any 4** :

**(4×4=16)**

- 1) Write a note on Biopharmaceutical Classification System.
- 2) Define – absorption, distribution, metabolism and excretion.
- 3) Discuss the effect of plasma protein binding and tissue protein binding on  $T_{1/2}$  and  $V_d$ .



- 4) Write a note on entero-hepatic cycling.
- 5) Draw a typical plasma drug concentration vs. time profile after oral administration. Label different pharmacokinetic and pharmacodynamic parameters.
- 6) Explain the ionic diffusion and ion pair drug transport.

3. Answer the following : **(8×2=16)**

- 1) Enlist the factors affecting drug absorption. Discuss about dosage form related factors.
- 2) Write a note on factors affecting renal clearance of drug.

OR

- 2) Write a note on ICH guidelines for conduction of bioequivalence studies.

### SECTION – II

4. Answer **any 4** : **(4×4=16)**

- 1) Define solubility and dissolution rate. Explain surface renewal theory of dissolution.
- 2) Enlist various routes of drug absorption. Write a note on pulmonary administration.
- 3) Define enzyme induction. Give its effect on plasma half life, pharmacological effects and dose adjustment of drug.
- 4) Write a note on process of drug development process.
- 5) Discuss the design of single dose bioequivalence study.
- 6) Write a note on causes of non-linearity in pharmacokinetics.

5. Answer the following : **(8×2=16)**

- 1) Give a full account of physicochemical factors affecting drug distribution.
- 2) Define compartmental modeling. Describe one compartment open model-I.V. bolus.

OR

- 2) Write a detailed note on pH-partition hypothesis. Discuss its limitations.
-



Seat No.	
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**B.Pharm. (Semester – V) Examination, 2015**  
**MEDICINAL CHEMISTRY – I**

Day and Date : Saturday, 9-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 80

1. Multiple choice questions : **(16×1=16)**

- 1) The heterocyclic ring in furosemide is  
a) Pyrole                      b) Indole                      c) Furan                      d) Thiophene
- 2) Amoebic infection is caused by an organism \_\_\_\_\_  
a) Mycobacterium tuberculoe                      b) M. Laprae  
c) Entamoeba histolytica                      d) None of above
- 3) Metformin belongs to the class  
a) Biguanides                      b) Sulphonyl urea  
c) Benzoic acid                      d) Thiazolidinediones
- 4) Niclosamide is used in the treatment of  
a) Cestode disease                      b) Nematode  
c) Trematode                      d) All of the above
- 5) Drug with functional group such as alkenes and aromatic ring can interact with receptor binding sites by means of  
a) Vanderwaals interaction                      b) Hydrogen bonding  
c) Co-valent bonding                      d) Ionic bonding
- 6) Concentration of complexing agent increases, solubility \_\_\_\_\_  
a) increases                      b) decreases                      c) no change                      d) same
- 7) Main site of drug metabolism is  
a) Intestine                      b) Blood                      c) Liver                      d) Plasma
- 8) Which diuretics is osmotic diuretics  
a) Mannitol                      b) Furosemide                      c) Acetazolamide                      d) Triamterine



- 9) \_\_\_\_\_ is the starting material for the synthesis of Tolbutamide.
- a) Aniline
  - b) Sulphonamide
  - c) Toluene
  - d) Methyl aniline
- 10) The ring present in lincomycin
- a) Pyrrolidine
  - b) Thiazolidine
  - c) Pyrazine
  - d) Pyridazine
- 11) The heterocyclic ring present in albendazole is
- a) Benzthiazole
  - b) Benzimidazole
  - c) Oxazole
  - d) Purine
- 12) Metronidazole can be synthesized from
- a) 2-methylimidazole
  - b) 4-nitroimidazole
  - c) 3-methyl pyrazole
  - d) 5-nitropyrazole
- 13) Penicillin V is
- a) Benzyl penicillin
  - b) n-heptyl penicillin
  - c) Phenoxymethyl penicillin
  - d) Phenoxy propyl penicillin
- 14) \_\_\_\_\_ enzyme is the type of non-microsomal enzyme.
- a) Cyt-p-450
  - b) Mono-oxygenase
  - c) Esterase
  - d) Glucuronyl transferase
- 15) Penicilline in alkaline media it gives
- a) Penillic acid
  - b) Penicilloic acid
  - c) Both
  - d) None of above
- 16) Primary site of action thiazide diuretics in the nephron is
- a) Proximal tubule
  - b) Loop of Henle
  - c) Distal tubule
  - d) Convulated tubule



SECTION – I

2. Answer **any four** of the following questions : **(4×4=16)**

- 1) Write a note on Protein binding.
- 2) What are the Thiazide Diuretics ?
- 3) Draw the structure of Diloxanide furoate, Acetohexamide.
- 4) Write a note on Benzimidazole derivative as anthelmintics.
- 5) Write the synthesis of Mebendazole, Metronidazole.
- 6) Write a note on receptor and biological response.

3. Answer the following questions : **(2×8=16)**

- 1) Write the MOA, SAR of Cephalosporine.
- 2) Write the different forces involved in drug receptor interaction.

OR

- 3) What is relation between solubility and biological activity ?

SECTION – II

4. Answer **any four** of the following questions : **(4×4=16)**

- 1) Write a note on drug receptor interaction.
- 2) Write the MOA of Acetazolamide.
- 3) What is the factor affecting the Drug Metabolism ?
- 4) Write the SAR of Tetracycline.
- 5) Classify Oral Hypoglycemic agent with e.g.
- 6) Write a note on bio-isosterism.

5. Answer the following questions : **(2×8=16)**

- 1) Write in detail about Phase II reaction metabolism with e.g.
- 2) Write any three synthesis of Niclosamide, Furesamide, Tolbutamide.

OR

- 3) Write a note on Potassium sparing diuretics.
-



Seat No.	
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**B. Pharm. (Semester – V) Examination, 2015  
PHARMACEUTICAL ANALYSIS – III**

Day and Date : Tuesday, 12-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 80

1. Multiple choice questions.

16

- 1) The far vacuum ultraviolet region of electromagnetic spectrum ranges from
  - a) 10-200  $\mu\text{m}$
  - b) 10-300  $\mu\text{m}$
  - c) 50-150  $\mu\text{m}$
  - d) None of these
- 2) The shift of absorption maxima to a higher wavelength is known as
  - a) Bathochromic shift
  - b) Hyperchromic shift
  - c) Hypsochromic shift
  - d) Hypochromic shift
- 3) The most commonly used source for UV radiation is
  - a) Tungsten filament incandescent
  - b) Deuterium/hydrogen discharge lamp
  - c) Tungsten-iodine lamp
  - d) Quartz-iodine lamp
- 4) The commonly used detector in the UV Spectrophotometer is
  - a) Photomultiplier tube
  - b) Thermocouple
  - c) Bolometer
  - d) Littrow prisms
- 5) Which of the following element is most easily detected by flame photometry ?
  - a) Lithium
  - b) Beryllium
  - c) Calcium
  - d) Sodium
- 6) Fluorescence can be detected by
  - a) Barrier layer cell
  - b) Photocell
  - c) Photomultiplier tube
  - d) None of the above





- 7) EMR travels with the
- Different velocity
  - Velocity decreased by decreasing temperature
  - Same velocity
  - Low velocity
- 8) Which of the following is an EMR ?
- Heat
  - Current
  - Sound
  - Radio waves
- 9) A mixture of the following gases can be used in flame photometry to get a temperature of 2045 °C
- Hydrogen and nitrous oxide
  - Acetylene and oxygen
  - Hydrogen and air
  - Hydrogen and oxygen
- 10) The analyte is used in the form of a solution in flame photometry because it should undergo
- Evaporation
  - Condensation
  - Nebullization
  - Precipitation
- 11) Which of the following devices is most commonly used for the formation of an atomic vapour in atomic absorption ?
- Flame atomization
  - Electric arc and sparks
  - Sputtering devices
  - Ovens
- 12) The temperature of flame obtained by burning acetylene in nitrous oxide is about
- 1000 °C
  - 2000 °C
  - 3000 °C
  - 1500 °C
- 13) In flame photometry with 4 outer electrons, the element is expected to show
- Singlet
  - Triplets
  - Quintets
  - All
- 14) Which of the following compounds exhibits fluorescence ?
- Quinolones
  - Isoquinoline
  - Indole
  - All
- 15) Which of the following groups tends to decrease the fluorescence of a molecule ?
- NO<sub>2</sub>
  - COOH
  - Br
  - All
- 16) Examples of fluorescent behavior can be found in
- Gaseous state
  - Liquid state
  - Solid state
  - All states



SECTION – I

2. Attempt **any four** : 16
- 1) Write short note on detectors of UV-Visible spectroscopy.
  - 2) Write short note on properties of electromagnetic radiation.
  - 3) Discuss factors affecting fluorescent intensity.
  - 4) What are different applications of atomic absorption spectroscopy ?
  - 5) Describe instrumentation of flame photometry ?
  - 6) Give the difference between AAS and FES.

3. Answer the following : 16
- 1) Write origin and theory of UV spectra and application of UV spectrophotometer. 8
  - 2) Explain in detail interferences in flame photometry. Add a note on application of flame photometry. 8

OR

- 2) Explain in detail about instrumentation of fluorescence spectroscopy and its application.

SECTION – II

4. Answer **any four** : 16
- 1) What do you mean by molecular spectra ?
  - 2) What are the limitations of AAS ?
  - 3) What are the different applications of spectrofluorimeters and photofluorimeters ?
  - 4) Write note on fluorimetric reagents.
  - 5) Define wavelength, wave number, frequency and atomic spectra.
  - 6) Draw the optical diagram of UV – Visible double beam spectrophotometer.

5. Answer the following : 16
- 1) Explain in detail Beers-Lamberts law and its application. 8
  - 2) Explain the principle in atomic absorption spectrophotometry. What are the differences between absorption spectroscopy and flame emission spectroscopy ? 8

OR

- 2) Illustrate Woodward Feiser rule with suitable example.
-



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Seat No.	
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**B.Pharmacy (Semester – V) Examination, 2015**  
**PHARMACOLOGY – I**

Day and Date : Thursday, 14-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 80

1. Choose the most appropriate alternative for following multiple choice questions : **(1×16=16)**
- 1) \_\_\_\_\_ of the following is a drug obtained from plant source.
    - a) Lanolin
    - b) Pyrethrin
    - c) Penicillin
    - d) Insulin
  - 2) Bioavailability of an administered dose of a drug is 100% with \_\_\_\_\_ route.
    - a) Oral
    - b) Topical
    - c) Subcutaneous
    - d) Intravenous
  - 3) Which of the following drugs remain more unionized in acidic environment of stomach ?
    - a) Quinine
    - b) Ethanol
    - c) Streptomycin
    - d) Aspirin
  - 4) Phase-I intermediate of paracetamol oxidation in liver is highly \_\_\_\_\_.
    - a) Nephrotoxic
    - b) Hepatotoxic
    - c) Ototoxic
    - d) Myelotoxic
  - 5) Which of the following drug acts by virtue of its Osmotic activity ?
    - a) Magnesium sulfate
    - b) Mannitol
    - c) Lactulose
    - d) All of these
  - 6) GPCRs are composed of transmembrane  $\alpha$ -helices which traverse the membrane \_\_\_\_\_ times.
    - a) 4
    - b) 5
    - c) 6
    - d) 7

P.T.O.



- 7) Stimulation of Gq type G-Protein when an agonist binds at its GPCR, results in \_\_\_\_\_
- a) Increased Phospholipase C activity, raised  $IP_3$ , DAG and intracellular  $Ca^{2+}$  levels
  - b) Increased Adenylyl Cyclase activity, raised intracellular cAMP levels
  - c) Decreased Adenylyl Cyclase activity, reduced intracellular cAMP levels
  - d) Inactivation of  $Ca^{2+}$  Channels
- 8) Affinity is defined as \_\_\_\_\_
- a) Ability of a drug molecule to occupy or bind with the receptors
  - b) Capacity of the drug to induce conformational change in the receptor protein and activate it
  - c) Both a and b
  - d) None of the above
- 9) A partial agonist possesses \_\_\_\_\_ for the receptor.
- a) Affinity and maximal intrinsic activity
  - b) Affinity but no intrinsic activity
  - c) Affinity but submaximal intrinsic activity
  - d) Affinity and opposite intrinsic activity
- 10) When two concurrently used drugs produce their effects in the same direction and total effect produced is summation of effects of individual drugs, it is termed as \_\_\_\_\_
- a) Additive effect
  - b) Synergism
  - c) Tachyphylaxis
  - d) Antagonism
- 11) Which of the following beta blocker can worsen COPD and precipitates severe asthmatic attack ?
- a) Atenolol
  - b) Metoprolol
  - c) Propranolol
  - d) All of these
- 12) Which among the following is a competitive Ganglionic blocker ?
- a) Pentolinium
  - b) Mecamylamine
  - c) Trimethaphan
  - d) All of these



13) Commonly present nasal decongestant in OTC anti-cold preparations is

- \_\_\_\_\_
- a) Chlorpheniramine
  - b) Phenyl Propanolamine
  - c) Cetirizine
  - d) None of these

14) Identify an  $\alpha_2$ - selective adrenergic blocker

- a) Reserpine
- b) Phentolamine
- c) Prazosin
- d) Yohimbine

15) Which of the following is a cardioselective beta blocker ?

- a) Atenolol
- b) Propranolol
- c) Labetolol
- d) All of these

16) Which pair represents physiological antagonism ?

- a) Activated Charcoal and Alkaloidal Drugs
- b) Chelating Agents and Heavy Metals
- c) Acetylcholine and Noradrenaline
- d) Acetylcholine and Atropine.

2. Answer **any four** of the following : **(4×4=16)**

- a) Describe advantages and disadvantages of Oral Route of Drug Administration.
- b) What are essential drugs ? Write a brief note.
- c) Describe structure of biological membranes with illustrative diagram.
- d) Describe Simple Diffusion and Active Transport.
- e) Write a brief note on Plasma Protein Binding of Drugs.

3. Answer **any four** of the following : **(4×4=16)**

- a) Explain various routes of drug elimination.
- b) Classify Ganglion Stimulants and Ganglionic Blockers.



- c) Describe role of Acetylcholine Esterase inhibitors in treatment of Myasthenia Gravis.
- d) Enumerate Skeletal Muscle relaxants with examples.
- e) Briefly write second messenger systems for GPCRs.

4. Answer **any two** of the following : **(2×8=16)**

- a) What are Anticholinergic Drugs ? Classify with examples. Write mechanism of action, adverse effects and uses of atropine.
- b) Describe factors affecting drug absorption in detail.
- c) Enumerate different classes of beta blockers. Brief the pharmacology of propranolol.

5. Answer **any two** of the following : **(2×8=16)**

- a) Classify adrenergic drugs with examples. Add a note on pharmacological actions of adrenaline.
  - b) Describe factors modifying drug action in detail.
  - c) What is drug Biotransformation ? Describe phase-I and Phase-II reactions briefly.
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Seat No.	
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**B.Pharm. (Semester – V) Examination, 2015  
BIOTECHNOLOGY**

Day and Date : Saturday, 16-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 80

1. Multiple choice questions :

(16×1=16)

- 1) Which is the central element present in the porphyrin ring in Vitamin B<sub>12</sub> ?  
A) Boron                                      B) Cobalt  
C) Copper                                      D) Cadmium
- 2) Plant cell from which cell wall has been removed are called  
A) Chloroplast                                B) Chromoplast  
C) Protoplast                                 D) Bromoplast
- 3) \_\_\_\_\_ is an example of cytokinin.  
A) NAA                                         B) Kinetin  
C) Zeatin                                        D) Both B) and C)
- 4) BCG vaccine is effective against \_\_\_\_\_  
A) Malaria                                      B) Swine flue  
C) Tuberculosis                                D) Leprosy
- 5) Benzylpenicillin is converted into 6-APA and phenyl acetic acid in presence of *Penicillin acylase*. Identify the type of bioconversion reaction.  
A) Isomerization                             B) Desertification  
C) Decarboxylation                           D) Hydrolysis
- 6) The pBR322 is the first artificial vector developed from \_\_\_\_\_  
A) *B. subtilis*                                  B) *C. simplex*  
C) *S. griseus*                                  D) None of above
- 7) Identify an enzyme obtained from microbial source.  
A) Asparaginase                                B) Glucose oxidase  
C) Streptokinase                              D) All of above
- 8) All of the following are surface immobilization techniques except.  
A) Covalent bonding                         B) Adsorption  
C) Chelation                                    D) Encapsulation

P.T.O.



- 9) \_\_\_\_\_ is the suitable chemo fusion used in the protoplast fusion.
- |                           |                  |
|---------------------------|------------------|
| A) PEG                    | B) Dextrose      |
| C) Vitamin B <sub>6</sub> | D) None of above |
- 10) DPA reagent shows \_\_\_\_\_ colour with DNA.
- |           |           |
|-----------|-----------|
| A) Blue   | B) Green  |
| C) Yellow | D) Orange |
- 11) The most suitable pH for the production of penicillin is \_\_\_\_\_
- |            |              |
|------------|--------------|
| A) 6.2-6.8 | B) 9.2-10.2  |
| C) 3.2-3.8 | D) 12.2-12.8 |
- 12) Identify the blotting technique useful for the confirmation of specific DNA.
- |                   |             |
|-------------------|-------------|
| A) Northern       | B) Western  |
| C) Both A) and B) | D) Southern |
- 13) Aeration is to be provided for the production of following products except.
- |               |                 |
|---------------|-----------------|
| A) Penicillin | B) Dextran      |
| C) Cobalamine | D) Streptomycin |
- 14) Total number of codons are present in the man are \_\_\_\_\_
- |       |        |
|-------|--------|
| A) 16 | B) 32  |
| C) 64 | D) 128 |
- 15) Identify the proteolytic enzyme.
- |                      |                 |
|----------------------|-----------------|
| A) Papain            | B) Bromelain    |
| C) Serratiopeptidase | D) All of these |
- 16) Which of the following hormone is generally responsible for the shoot formation ?
- |        |                  |
|--------|------------------|
| A) IAA | B) Abscicic acid |
| C) GA  | D) Kinetin       |

2. Answer **any four** of the following questions : **(4×4=16)**

- 1) Discuss future scope of biotechnology with examples.
- 2) Write a note on cosmid as a vector.
- 3) Enlist the various instruments, glassware's and tools required in setting the PTC laboratory.
- 4) Describe gene machine.
- 5) Write the applications of :
 

a) Streptomycin	b) Cobalamine
c) Dextran	d) Penicillin.





3. Answer **any two** of the following questions : **(2×8=16)**
- 1) What do you mean by suspension culture ? Discuss the technique and applications of suspension culture.
  - 2) Explain DSP in detail.
  - 3) Write a note on :
    - a) Gene therapy
    - b) DNA hybridization.
4. Answer **any four** of the following questions : **(4×4=16)**
- 1) Write a note on cryopreservation technique.
  - 2) Give general method of preparation of viral vaccine.
  - 3) Write in brief polyacrylamide gel electrophoresis.
  - 4) Write the applications of PCR.
  - 5) Draw a neat labeled diagram of conventional Fermentor.
5. Answer **any two** of the following questions : **(2×8=16)**
- 1) Explain the different media used in the animal cell culture.
  - 2) Describe the general method of production of enzymes.
  - 3) Discuss the production of Cobalamine by fermentation technology.
-



Seat No.	
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**B.Pharm. (Semester – VI) Examination, 2015  
SEMISOLID DOSAGE FORM**

Day and Date : Wednesday, 6-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 80

1. MCQ :

(1×16=16)

- 1) Generally which pH of bases are preferred for ointment ?
  - a) Acidic
  - b) Neutral
  - c) Basic
  - d) None
- 2) Wool fat is also called as \_\_\_\_\_
  - a) Anhydrous lanolin
  - b) Lanolin
  - c) Petrolatum
  - d) None
- 3) On the view of rheology, cream show which type of flow ?
  - a) Plastic
  - b) Dilatant
  - c) Pseudoplastic
  - d) Newtonian
- 4) Consistency of semisolid dosage form measured by using which of the following equipment ?
  - a) Consistometer
  - b) Penetrometer
  - c) Viscometer
  - d) pH meter
- 5) Mascara is applied on which part of the eye ?
  - a) Eyelids
  - b) Eye brow
  - c) Eye lashes
  - d) All of these
- 6) Mascara preparation is available in \_\_\_\_\_ form.
  - a) Liquid
  - b) Cream
  - c) Cake
  - d) All the above



- 7) What is the use of stearic acid in vanishing cream ?
- a) Increase consistency
  - b) Increase transparency
  - c) Increase white shining
  - d) Maintain Stiffness
- 8) Which of the following is related to compound benzoic acid ointment BPC ?
- a) Whitefield's ointment
  - b) Antifungal ointment
  - c) Keratolytic
  - d) All of these
- 9) Beeswax Borax cream is the synonym of \_\_\_\_\_
- a) Cold cream
  - b) Vanishing cream
  - c) Cetrimide cream
  - d) All purpose cream
- 10) Vanishing cream is an ointment but may be classified as
- a) Water soluble base
  - b) Oleaginous base
  - c) Absorption base
  - d) Emulsion base
- 11) Cold cream phase containing long chain alcohol or easter or acid while ointment containing
- a) Aromatic compound
  - b) Hydrocarbon
  - c) Resin
  - d) Fat
- 12) Xerogels are \_\_\_\_\_
- a) Solid gel with high solvent concentration
  - b) Solid gel with low solvent concentration
  - c) Solid gel with less cross linking
  - d) Gel without solvent
- 13) Coal tar ointment is which type of ointment ?
- a) Keratolytic
  - b) Parasiticide
  - c) Antifungal
  - d) Keratoplastic



- 14) How much % of concentration of Borax should be used for cold cream ?
- a) 1% of total formula
  - b) 0.5% of total formula
  - c) 2% of total formula
  - d) 2.5% of total formula
- 15) Which vegetable oil is mostly useful in lipstick ?
- a) Caster oil
  - b) Liquid paraffin
  - c) Almond oil
  - d) Peanut oil
- 16) Consistency of semisolid dosage form measured by using which of the following equipment ?
- a) Consistometer
  - b) Penetrometer
  - c) Viscometer
  - d) pH meter

SECTION – I

2. Solve **any four** : **(4×4=16)**

- 1) Define Paste. Classify it and give detail formulation of unna's paste.
- 2) What is the procedure and principle behind vanishing cream ?
- 3) Discuss in brief problems arises during manufacturing of lipstick.
- 4) Classify creams, note on cold cream.
- 5) Define Gel, add note on rheology of gel.
- 6) Classify cosmetic with their examples.

3. Solve **any two** : **(8×2=16)**

- 1) Define and classify lipstick. Explain in detail its various quality control test.
- 2) Write Formula, procedure, principle for any antifungal ointment preparation.

OR

- 2) What are the characteristic of ideal ointment base ? Discuss properties of the drug and the base governing drug release from Ointment.



## SECTION – II

4. Solve **any four** : **(4×4=16)**

- 1) Comment on instability of cream.
- 2) Distinguish between ointment, paste, cream.
- 3) Write a note on cosmetics and write advantage and disadvantage.
- 4) Who to perform stability test for gellies ?
- 5) Describe in detail Sensitivity Test and Irritation test for Cosmetics preparation.
- 6) Define and classify mascara. Give its ideal characteristics.

5. Solve **any two** : **(8×2=16)**

- 1) Define and enlist ingredients of gellies. Explain in detail about evaluation test of gellies.
- 2) Define cream write their advantage, disadvantage and evaluation parameter of creams.

OR

- 2) Define ointment, write in detail about packaging and evaluation of ointment.
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<b>Seat No.</b>	
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**B.Pharm. (Semester – VI) Examination, 2015  
MEDICINAL CHEMISTRY – II**

Day and Date : Friday, 8-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 80

1. Multiple Choice Questions :

**(16×1=16)**

- 1) Chloroquine is a derivatives of
  - A) 3-aminoquinoline
  - B) 4-aminoquinoline
  - C) 2-aminoquinoline
  - D) 5-aminoquinoline
- 2) Mechanism of action of Nevirapine is
  - A) Uncoating inhibitor
  - B) Adsorption inhibitor
  - C) R. T. Inhibitor
  - D) Protease inhibitor
- 3) Nalidixic acid is used in treatment of
  - A) UT infection
  - B) Respiratory infection
  - C) Skin infection
  - D) Eye infection
- 4) Name pyrazine containing drug used in treatment of T.B.
  - A) Pyrazinamide
  - B) Ethionamide
  - C) Praziquantel
  - D) Ethambutol
- 5) Which of the antineoplastic agent is metabolized by xanthine oxidase
  - A) 6-mercaptopurine
  - B) vincristine
  - C) chlorambucil
  - D) 6-thioguanine
- 6) Which of the following drug is used in candidiasis
  - A) Griseofulvin
  - B) Tolnaftate
  - C) Tolbutamide
  - D) Thioacetazone
- 7) Clotrimazole is a combination of
  - A) Sulphadiazine and Trimethoprim
  - B) Sulphamethoxazole and Trimethoprim
  - C) Sulphamethoxazole and sulphadiazine
  - D) Sulphamethoxazole and Pyrimethamine

P.T.O.



- 8) HIV infection can be clinically controlled by \_\_\_\_\_
- |               |               |
|---------------|---------------|
| A) Cytarabine | B) Acyclovir  |
| C) zidovudine | D) Amantadine |
- 9) One of the following drug is an alkylating agent \_\_\_\_\_
- |                     |                 |
|---------------------|-----------------|
| A) Allopurinol      | B) Methotrexate |
| C) Cyclophosphamide | D) Busulphan    |
- 10) The long acting sulphonamide is \_\_\_\_\_
- |                            |                   |
|----------------------------|-------------------|
| A) Sulphamethoxypyridazine | B) Sulphapyridine |
| C) Sulphacetamide          | D) Sulphasalazine |
- 11) The sugar that is inherent in nucleic acid RNA and DNA is \_\_\_\_\_
- |            |               |
|------------|---------------|
| A) Glucose | B) Digitoxose |
| C) Ribose  | D) Sucrose    |
- 12) Drug classified as antimetabolite include \_\_\_\_\_
- |                   |               |
|-------------------|---------------|
| A) 5-fluorouracil | B) Primaquine |
| C) zidovudine     | D) Aspirin    |
- 13) Zudovuidine triphosphate competitively inhibit \_\_\_\_\_
- |                          |                  |
|--------------------------|------------------|
| A) Reverse transcriptase | B) Transferase   |
| C) Ligase                | D) None of above |
- 14) Chloroquine is synthesized from \_\_\_\_\_
- |                    |                    |
|--------------------|--------------------|
| A) m-chloroaniline | B) o-chloroaniline |
| C) p-chloroaniline | D) none of above   |
- 15) 5-Flurouracil showing major antineoplastic activity due to presence of \_\_\_\_\_ group.
- |            |                  |
|------------|------------------|
| A) 2-Fluro | B) 5-Fluro       |
| C) 3-Fluro | D) None of above |
- 16) Isoniazide is generally synthesized by using \_\_\_\_\_
- |                      |                      |
|----------------------|----------------------|
| A) 2-methyl pyridine | B) 3-methyl pyridine |
| C) 4-methyl pyridine | D) None of above     |



2. Answer **any four** of the following questions : **(4×4=16)**
- 1) Write MOA of RTI and classify with e.g.
  - 2) Write in details of life cycle of cancer.
  - 3) Write a note on Azole derivatives as an antifungal agent with e.g.
  - 4) Draw the structure and chemical name of 5-flurouracil, Norfloaxacin.
  - 5) Give structure, chemical name and synthesis of Chloroquine.
  - 6) Give structure, chemical name and uses of Nalidixic acid.
3. Answer **any two** of the following questions. **(2×8=16)**
- 1) Discuss various steps involved in viral replication and name the drugs acting at different steps.
  - 2) Outline the synthesis and mention the specific uses of following Ethionamide, Methotrexate, Chloroquine, Para-amino salicylic acid.
  - 3) Classify anti-TB drug and explain MOA, SAR, Adverse effect and synthesis of INH.
4. Answer **any four** of the following questions. **(4×4=16)**
- 1) Write MOA and uses of 6-mercaptopurine.
  - 2) Write a note on combination therapy.
  - 3) Write a note on 4-aminoquinoline with e.g.
  - 4) Write structure, MOA and uses of Dapsone.
  - 5) Write a note on Co-trimoxazole.
  - 6) Write a note on Natural drug as a antineoplastic agent.
5. Answer **any two** of the following question : **(2×8=16)**
- 1) Draw general structure of Quinoline derivative as an antibacterial agent show minimum pharmacophore needed and its role for exhibiting antibacterial activity.
  - 2) Explain the life cycle of malaria parasite classify antimaleria with eg.
  - 3) Explain MOA and SAR of sulphonamide.
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**SLR-X – 3**

<b>Seat No.</b>	
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**B.Pharm. (Semester – I) Examination, 2015  
BIOCHEMISTRY – I (CGPA Pattern)**

Day and Date : Saturday, 9-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

1. 1) Barfoed solution is not reduced by  
a) Glucose                      b) Mannose                      c) Sucrose                      d) Ribose
- 2) These are called as digestive tract of the cell  
a) Lysosomes                      b) Mitochondria                      c) Peroxisomes                      d) Cytosol
- 3) The carbon atoms involved in osazone formation  
a) 1 and 2                      b) 2 and 3                      c) 3 and 4                      d) 5 and 6
- 4) One of the following is not an aldose  
a) Glucose                      b) Mannose                      c) Galactose                      d) Fructose
- 5) Which of following enzymes in glycolysis catalyses an irreversible reaction ?  
a) Hexokinase                      b) Phosphofructokinase  
c) Pyruvatekinase                      d) All of them
- 6) The glycosaminoglycan that serves as an anticoagulant  
a) Heparin                      b) Hyaluronic acid  
c) Chondroitin sulphate                      d) Dermatan sulphate
- 7) The simultaneous transport of two different molecules in the opposite direction is called as  
a) Uniport                      b) Antiport                      c) Symport                      d) Cotransport
- 8) The no. of ATP produced when a molecule of acetyl-CoA is oxidized through TCA cycle.  
a) 12                      b) 24                      c) 15                      d) 38
- 9) Normal fasting blood level of glucose is  
a) 70-100 mg/l                      b) 70-100 mg/dl  
c) 100-120 mg/dl                      d) 90-120 mg/dl
- 10) Essential fatty acid  
a) Linoleic acid                      b) Linolenic acid  
c) Arachidonic acid                      d) All these

**P.T.O.**



- 11) The fatty acid present in cerebrosides is  
a) Lignoceric acid                      b) Valeric acid  
c) Caprylic acid                      d) Behenic acid
- 12) The enzymes of  $\beta$ -oxidation are found in  
a) Mitochondria                      b) Cytosol  
c) Golgi apparatus                      d) Nucleus
- 13) The highest phospholipids content is found in  
a) Chylomicrons    b) VLDL              c) LDL              d) HDL
- 14) The nitrogenous base in lecithin is  
a) Ethanolamine    b) Choline              c) Serine              d) Betaine
- 15)  $\Delta^9$  indicates a double bond between carbon atoms of the fatty acids  
a) 8 and 9              b) 9 and 10              c) 9 and 11              d) 9 and 12

2. Answer **any five** of the following questions : **(5×5=25)**

- 1) What are epimers and anomers ? Write note on matorotation.
- 2) Explain structure and properties of sucrose and lactose.
- 3) Explain structure and biosynthesis of cholesterol.
- 4) Write in detail about active, facilitated and passive transport of molecule across the membrane.
- 5) Write note on fatty acids. Give details of EFA.
- 6) Explain in detail about suicidal bag and endoplasmic reticulum.

3. Answer **any three** following questions : **(3×10=30)**

- 1) Explain in detail TCA cycle with energetics. Add note on its amphibolic nature.
  - 2) Explain in detail about lipoproteins and glycolipids.
  - 3) Describe hexose monophosphate shunt and its significance.
  - 4) Describe  $\beta$ -oxidation of stearic acid. Calculate net ATP yield.
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Seat No.	
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**B.Pharm. (Semester – VI) Examination, 2015  
PHARMACEUTICAL ANALYSIS – IV**

Day and Date : Monday, 11-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 80

- I. 1) The curve obtained from polarography is known as \_\_\_\_\_ **16**  
a) Polaro curve      b) Polarograph      c) Polarogram      d) Isothermo curve
- 2) The Polarogram curve is \_\_\_\_\_  
a) Optical activity – Conc.      b) Current – voltate  
c) Potential diff. – Conc.      d) None of above
- 3) DME is consist of \_\_\_\_\_  
a) Tungsten reservoir      b) Silver  
c) Mercury      d) None of these
- 4) The potentiometer is used to measure \_\_\_\_\_  
a) Cone      b) EMF      c) Current      d) Temp.
- 5) DSC is \_\_\_\_\_  
a) Differential Scanning Calorimetry      b) Distributed Scanning Colorimetry  
c) Differential Scanning Coulimetry      d) Different Scanning Colourimetry
- 6) Solvent that cannot used in IR is \_\_\_\_\_  
a)  $\text{CHCl}_3$       b)  $\text{CCl}_4$       c)  $\text{CS}_2$       d)  $\text{H}_2\text{O}$
- 7) For a non-linear molecule like  $\text{H}_2\text{O}$ , the numbers of vibrational modes are \_\_\_\_\_  
a) 3      b) 4      c) 5      d) 6
- 8) Globar unit consists of \_\_\_\_\_  
a) Silicon Sulphide      b) Tungsten  
c) Silicon Carbide      d) All of these



- 9) The index of refraction of substance decreasing with increasing \_\_\_\_\_  
a) Solute conc.      b) Temp.      c) Wave length      d) All
- 10) Unit of conductance is \_\_\_\_\_  
a) Ohm      b) Ampere      c) Mhos      d) None of these
- 11) Conductometer is calibrated using \_\_\_\_\_  
a) 0.1 M NaCl      b) 0.1 M KCl      c) 0.1 M HCl      d) 0.1 M NaOH
- 12) Hot junction and cold junction are present in \_\_\_\_\_  
a) Bolometer      b) Thermo couple  
c) Thermistor      d) Galoyster
- 13) SHE stands for \_\_\_\_\_  
a) Standard Hydrogen Electrode      b) Standard Helium Electrode  
c) Saturated Helium Electrode      d) Saturated Hydrogen Electrode
- 14) Ohms law says that \_\_\_\_\_  
a)  $I = V/R$       b)  $R = I/V$       c)  $RV = I$       d) None
- 15) In IR transitions are \_\_\_\_\_  
a) Electronic      b) Vibrational  
c) Both a) and b)      d) None
- 16) Dextrose injection is easily assayed by \_\_\_\_\_  
a) Polarimetry      b) Polarography  
c) Pulse polarography      d) Potentiometry

II. Answer **any four** of the following questions :

**(4×4=16)**

- 1) Define different types of TG. What are the advantages of TG 750 over other balances.
- 2) Give modes of vibrations in IR.
- 3) Discuss in detail measurement of refractive index.
- 4) How will you determine solubility of sparingly soluble salt by conductometry ?
- 5) What is amperometry ? Explain dead stop end point in amperometric titration.



III. Answer **any two** of the following questions : **(2×8=16)**

- 1) Explain the theory and instrumentation of IR spectrometer.
- 2) Discuss each part of polarogram. Write a note on differential pulse polarography.
- 3) What are reference and indicator electrode ? Explain working of saturated calomel electrode and glass electrode with diagram.

IV. Answer **any four** of the following questions : **(4×4=16)**

- 1) Write a note on light sources used in IR spectroscopy.
- 2) Discuss briefly applications of refractometry.
- 3) What information is obtained from TG curve ?
- 4) How do you calibrate conductometer and pH meter ?
- 5) Explain construction and working of dropping mercury electrode.

V. Answer **any two** of the following questions : **(2×8=16)**

- 1) Discuss in detail optical rotator dispersion and circular dichroism. Add a note on applications of circular dichroism.
  - 2) Explain the instrumentation of polarimeter and add a note on factor affecting polarization.
  - 3) Define the terms conductance, specific conductance, specific resistance, equivalent conductance. Explain various applications of conductometry.
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**SLR-X – 31**

Seat No.	
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**B.Pharmacy (Semester – VI) Examination, 2015  
PHARMACOLOGY – II**

Day and Date : Wednesday, 13-5-2015  
Time : 10.30 a.m. to 1.30 p.m

Max. Marks : 80

1. Multiple Choice Questions : **(1×16=16)**

- 1) Spironolactone belongs to \_\_\_\_\_ class.
  - a) High efficacy diuretics
  - b) Medium efficacy diuretics
  - c) Adjunctive diuretics
  - d) Other than a), b) and c)
- 2) Digoxin absorption reduced by
  - a) Metoclopramide
  - b) Tetracycline
  - c) Omeprazole
  - d) Erythromycin
- 3) Important non pharmacological measures in the treatment of congestive heart failure is
  - a) arrest of disease progression
  - b) relief of low output symptoms
  - c) rest and salt restriction
  - d) reversal of disease progression
- 4) \_\_\_\_\_ is a quick and short acting B<sub>1</sub> blocker.
  - a) Esmolol
  - b) Sotalol
  - c) Propranolol
  - d) Atropine
- 5) Dose of nitroglycerine (GTN) is
  - a) 5 – 15 mg oral
  - b) 0.5 mg sublingual
  - c) 5 – 10 mg sublingual
  - d) 10 – 40 mg oral
- 6) \_\_\_\_\_ can be safely given to patients with obstructive lung disease and peripheral vascular disease.
  - a) B – blockers
  - b) Ca<sup>2+</sup> blockers
  - c) K<sup>+</sup> blockers
  - d) B – blockers + long acting nitrate
- 7) Which of the following is Arteriolar + Venous vasodilators ?
  - a) Hydralazine
  - b) Minoxidil
  - c) Diozoxide
  - d) Sodium nitropruside

P.T.O.



- 8) \_\_\_\_\_ is the Anti – H.pylori drug.
- a) Amoxicillin    b) Cimetidine  
c) Sodium bicarbonate                                      d) Magaldrate
- 9) All anti motion sickness drugs act better when taken \_\_\_\_\_ hour before commencing journey.
- a) 0 hour                      b)  $\frac{1}{2}$  – 1 hour                      c) 2 hour                      d) 3 hour
- 10) Liquid paraffin is \_\_\_\_\_ type of drug.
- a) Bulk forming    b) Stool softener  
c) Stimulant purgative                                      d) Osmotic purgatives
- 11) All purgatives increase the water content of faeces by
- a) hydrophilic action    b) intestinal transit is enhancing  
c) increasing propulsive activity                                      d) all above three
- 12) Which drug belongs to mucolytics ?
- a) Ambroxol                      b) Codeine                      c) Terbutalin                      d) Vasaka
- 13) Dose of salbutamol is
- a) 20 mg oral    b) 10 – 20 mg oral  
c) 5 mg oral    d) 2 – 4 mg oral
- 14) \_\_\_\_\_ is the D<sub>2</sub> blockers used to prevent vomiting.
- a) Chlorpromazine    b) Benzodiazepines  
c) Promethazine    d) Doxylamine
- 15) Name the drug and Adrenergic blockers
- a) Hydralazine    b) Irbesartan  
c) Prazosin    d) Furosemide
- 16) \_\_\_\_\_ is having high natriuretic efficacy.
- a) Mannitol    b) Amiloride  
c) Spironolactone    d) Thiazide



SECTION – I

2. Answer **any four** from the following : **(4×4=16)**
- 1) Give classification of anti arrhythmic drugs and mention adverse effects of quinidine.
  - 2) Write in brief the mechanism of action of calcium channel blockers as antianginal.
  - 3) Discuss hemostatic agents.
  - 4) Write a note on angiotensins.
  - 5) Classify drugs that produce vomiting and give therapeutic uses of ipecacuanha.
  - 6) Explain shock and give clinically classification of shock.
3. Answer the following : **(8×2=16)**
- A) Classify antihypertensive drugs. Discuss the mechanism of action, pharmacokinetics and adverse effects of clonidine.
  - B) Define cough. Classify antitussives . Explain pharmacology of central cough suppressants with minimum two examples.

OR

- B) What is peptic ulcer ? Discuss in detail the management of peptic ulcer

SECTION – II

4. Answer **any four** from the following : **(4×4=16)**
- 1) Give the pharmacological actions of prostaglandins.
  - 2) Write therapeutic usefulness of digoxin and give possible drug interaction of digoxin.
  - 3) Name different class of drugs with examples used in the treatment of constipation and extent comment on lactulose.
  - 4) Give the mechanism of action, adverse reaction and uses of spironolactone.
  - 5) Mention four parenteral antihypertensive drugs with dose.
  - 6) Explain pharmacological actions of histamine.
5. Answer the following : **(8×2=16)**
- A) Classify Antiplatelet agents. Discuss thrombolytic agents with examples.
  - B) What is heavy metal poisoning ? Discuss heavy metal antagonists.

OR

- B) Discuss in detail drug therapy of ulcerative colitis and Crohn's disease.
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**SLR-X – 32**

<b>Seat No.</b>	
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**B.Pharmacy (Semester – VI) Examination, 2015  
CLINICAL PHARMACOLOGY**

Day and Date : Friday, 15-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 80

1. Choose the most appropriate alternative for following Multiple Choice Questions :

**(1×16=16)**

- 1) A new drug is regarded as \_\_\_\_\_ drug when it has no additional advantages over existing.  
a) Orphan drug    b) Me-too    c) Ordinary    d) Extraordinary
- 2) In \_\_\_\_\_ design in which the subjects are randomly allocated to one of the four possible combinations of treatments A and B. These are : A alone, B alone, A + B, neither A nor B (Placebo).  
a) Factorial    b) Parallel group    c) Cross over    d) Non factorial
- 3) In this design, each subject is randomized to a sequence of two or more treatments and hence acts as his/her own control for treatment comparisons.  
a) Parallel group    b) Factorial    c) Cross over    d) Non factorial
- 4) No foreign company that invented a new drug abroad is allowed to carry out \_\_\_\_\_ clinical trials in India.  
a) Phase – I    b) Phase – II    c) Phase – III    d) Phase – IV
- 5) \_\_\_\_\_ refers to harmful or seriously unpleasant effects occurring at therapeutic doses.  
a) Side effects    b) Adverse reactions  
c) Toxic effects    d) Intolerance
- 6) \_\_\_\_\_ is example of vulnerable population.  
a) Illiterate patients    b) Pregnant women  
c) Students    d) All of these

**P.T.O.**



- 7) Late Phase – II studies are performed in strictly controlled \_\_\_\_\_ manner in large number of patients.
- a) Double blind
  - b) Randomized
  - c) Matching of patient
  - d) Crossover
- 8) Type – I hypersensitivity reaction develops within minutes and \_\_\_\_\_ antibodies are involved.
- a) IgA
  - b) IgG
  - c) IgM
  - d) IgE
- 9) AIDS patients have \_\_\_\_\_ rate of incidence of adverse drug reactions compared to normal.
- a) Lower
  - b) Higher
  - c) Equal
  - d) None of the above
- 10) \_\_\_\_\_ is the safest oral drug in pregnancy to reduce blood pressure in case of emergency.
- a) Methyldopa
  - b) Hydralazine
  - c) Labetolol
  - d) Clonidine
- 11) Which of the following is an enzyme inhibitor ?
- a) Phenobarbital
  - b) Cimetidine
  - c) Aspirin
  - d) Ibuprofen
- 12) Which of the following is true ?
- a) Blood pressure is determined by sphygmomanometer
  - b) Blood pressure is determined by the peripheral resistance and cardiac output
  - c) Blood pressure is a very common disease in India
  - d) Blood pressure is not a common disease in India
- 13) Idiosyncrasy is
- a) Qualitative intolerance not mediated through immune reactions
  - b) Quantitative intolerance not mediated through immune reaction
  - c) Qualitative intolerance mediated through immune reaction
  - d) Quantitative intolerance mediated through immune reaction
- 14) Which of the following drugs are contraindicated in asthma patients ?
- a) Selective M3 blockers
  - b) Nonselective beta2 blockers
  - c) Selective beta2 agonists
  - d) Nonselective beta2 agonists
- 15) The principal method of collecting data on adverse reactions is nothing but
- a) Pharmacogenomics
  - b) Pharmacoeconomics
  - c) Pharmacovigilance
  - d) None of the above
- 16) \_\_\_\_\_ shall be the possible triggers of Asthma.
- a) Animal danders
  - b) Pollens
  - c) Dust mites
  - d) All of these



2. Answer **any four** of the following : **(4×4=16)**
- 1) Define clinical pharmacology and give its objectives.
  - 2) Describe dosage adjustments in patients with renal failure.
  - 3) Write a note on experimental therapeutics.
  - 4) Write notes on the withdrawal symptoms due to withdrawal of medication.
  - 5) Write notes on Institutional Ethics Committee.
3. Answer **any two** of the following : **(2×8=16)**
- 1) Discuss drug therapy in pregnancy and neonates.
  - 2) Describe in detail chronic pharmacology.
  - 3) Describe in detail various phases of clinical trials.
4. Answer **any four** of the following : **(4×4=16)**
- 1) Write notes on enzyme inducers and inhibitors giving one example each.
  - 2) Write notes on “Case Control Study”.
  - 3) Discuss the drug interactions outside the body.
  - 4) Write notes on ‘Ethics in Research’.
  - 5) Explain role of clinical pharmacologist.
5. Answer **any two** of the following : **(2×8=16)**
- 1) Discuss the mechanisms of drug interactions and the use of drug interaction information.
  - 2) Describe individualization of drug therapy.
  - 3) Present one Case Study each for “Bronchial Asthma” and “Acute myocardial infarction”.
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<b>Seat No.</b>	
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**B.Pharmacy (Semester – VI) Examination, 2015  
PHARMACOGNOSY – II**

Day and Date : Monday, 18-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 80

I. M.C.Q./Objective type questions : **(1×16=16)**

- 1) Select the drug, which is not belonging to tannin class ?  
a) Myrobalam      b) Pale catechu      c) Ashoka      d) Peppermint
- 2) Tannins give colour with iron compound  
a) Pale yellow      b) Blue black      c) Light pink      d) Orange
- 3) Oil is showing laxative property  
a) Arachis oil      b) Sesame oil      c) Castor oil      d) Corn oil
- 4) Which is not an example of acid resins ?  
a) Benzoin      b) Colophony      c) Sandrac      d) Myrrh
- 5) Oleo gum resins are mixture of  
a) Volatile oil + Gum + Resins      b) Fixed oil + Gum + Resin  
c) Fats + Gum + Resin      d) Gum + resins
- 6) Curcuma longa should not contain volatile oil less than  
a) Curcuminoid      b) Capsanthin      c) Thiamine      d) Ascorbic acid
- 7) Resins are insoluble in  
a) Alcohol      b) Water      c) Volatile oil      d) Fixed oil
- 8) The major terpenoid in clove oil  
a) Eugenol      b) Santalol      c) Anethol      d) Menthol
- 9) Cardamom belongs to family  
a) Liliaceae      b) Loganaceae      c) Apocyanaceae      d) Zingiberaceae
- 10) Which variety of fennel contains least percentage of volatile oil content ?  
a) Indian      b) Saxony      c) French sweet      d) Japanese
- 11) Fennel contains percentage of volatile oil  
a) 10 to 20%      b) 20 to 30%      c) 30 to 40%      d) 65 to 70%
- 12) Gambir fluorescin test is used for drug  
a) Arjuna      b) Ashoka      c) Pale catechu      d) Black catechu



- 13) Composition of Molisch reagent is  
a) Alpha naphthol + sulphuric acid  
b) Beta naphthol + sulphuric acid  
c) Naphthylamine + sulphuric acid  
d) Phenol + sulphuric acid
- 14) When Indian gum is treated with ruthenium red' it shows  
a) Pink colour  
b) Red colour  
c) Blue  
d) No colour change
- 15) Ager is used as  
a) Binder  
b) Disintegrant  
c) Emulsifying agent  
d) Preservative
- 16) The test, which is not used for identification of carbohydrates  
a) Molisch test  
b) Osazone formation test  
c) Ninhydrin test  
d) Resorcinol test

## SECTION – I

II. Answer **any four** :**(4×4=16)**

- 1) What are Volatile oils ? Classify with examples.
- 2) Write a note on Cassia Bark.
- 3) Define Carbohydrates. Explain how they identify chemically.
- 4) Define Leaf constants and give merits of stomatal index.
- 5) Note on natural fibers.
- 6) Define :  
a) Iodine value                      b) Acetyl value      c) Ester value                      d) Acid value

## III. Answer the following :

**(8×2=16)**

- 1) What are natural pesticides ? Write detail Pharmacognostic account of Tobacco.
- 2) Note on Biosynthesis of amino acids by shikimic acid pathway.

OR

- 2) Write biological source, family, chemical constituents and pharmacological uses of following.  
a) Ginger                      b) Acacia                      c) Myrobalan                      d) Clove



SECTION – II

IV. Answer **any four** : **(4×4=16)**

- 1) Classify Tannins with examples.
- 2) Explain Lycopodium spore method.
- 3) Draw the structure of the following constituents.  
a) Vitamin A      b) Eugenol      c) Catechin and      d) Cholecalciferol
- 4) Give the pharmacognostic account of Curcuma.
- 5) Write a note on preparation of starch.
- 6) Write biological source, family, chemical constituents and uses of Benzoin.

V. Answer the following : **(8×2=16)**

- 1) Describe pale catechu Pharmacognostically.
- 2) Define and classify resins with examples. Write note on Cannabis.

OR

- 2) Explain quantitative microscopy with reference to leaf constants.
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Seat No.	
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**B.Pharmacy (Semester – VII) Examination, 2015**  
**STERILE DOSAGE FORM**

Day and Date : Tuesday, 5-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

**MCQ/Objective Type Questions**

I. Choose the correct alternative : **(1×16=16)**

- 1) Water attack test is used to identify the alkalinity in
  - a) Type I Glass
  - b) Type II Glass
  - c) Type III Glass
  - d) All the three types
- 2) LAL test is an in vitro test and it is used in parenteral products to detect
  - a) Antigen
  - b) Microorganisms
  - c) Antimicrobials
  - d) Pyrogens
- 3) An isotonic solution is one which
  - a) Has a freezing point less than that of plasma
  - b) Has same salt composition of plasma
  - c) Does not cause crenulation
  - d) Does not cause hemolysis
- 4) pH of human tear is
  - a) 7.2
  - b) 7.6
  - c) 8.0
  - d) 4.6
- 5) Chemically pyrogens are
  - a) Lipopolysaccharides
  - b) Carbohydrates
  - c) Terpenoids
  - d) All of the above
- 6) Which type of bacteria produces toxic pyrogens ?
  - a) Gram +ve
  - b) Gram –ve
  - c) a) and b)
  - d) None of the above
- 7) For aseptic processing which of the following is used ?
  - a) Class 100 room
  - b) Class 1000 room
  - c) Class 10000 room
  - d) None of these
- 8) RGP contact lenses means
  - a) Rapid Gas Partition
  - b) Rigid Glass Partition
  - c) Rigid Gas Permeable
  - d) Right Gas Permeable
- 9) DOP test used to checking the efficiency of
  - a) HEPA filters
  - b) Membrane filters
  - c) Centrifuge
  - d) None



- 10) Which animal is used for LAL test ?
  - a) Guinea pig
  - b) Rabbit
  - c) Mice
  - d) None of these
- 11) In Class – II area \_\_\_\_\_ particles of size  $0.5\mu$ /sq.ft. are allowed.
  - a) NMT 650
  - b) NMT 65
  - c) NMT 700
  - d) NMT 10000
- 12) Calculation of Isotonicity is carried out by using \_\_\_\_\_ method.
  - a) Freezing point method
  - b) Molar concentration method
  - c) Ficks law
  - d) Both a) and b)
- 13) Plastic are normally sterilized by
  - a) Steam under pressure
  - b) Dry Heat
  - c) Ethylene Oxide
  - d) None of these
- 14) The efficiency of HEPA filters is
  - a) 99.97%
  - b) 80.89%
  - c) 98.997%
  - d) None of these
- 15) Which route should be used for depot injection administration ?
  - a) I.M.
  - b) I.V.
  - c) S.C.
  - d) None of these
- 16) Soft contact lenses contain \_\_\_\_\_ of Water.
  - a) 10-20%
  - b) 30-80%
  - c) 90%
  - d) 1-2%

II. Answer **any four** :**(4×4=16)**

- 1) Write a note on LAL test with its advantages and dis-advantages.
- 2) Write a note on ophthalmic suspensions.
- 3) Write SUPAC guideline for Pilot plant Scale up.
- 4) Draw layout for Parenteral Department with explanation.
- 5) Define sterilization and explain in brief dry heat sterilization.

III. Answer **any four** :**(4×4=16)**

- 1) Describe in detail soft contact lense.
- 2) Write a short note on Master Document File.
- 3) Write a note on occuserts.
- 4) Write a note on artificial tears.
- 5) Write a note on total parenteral nutritions.

IV. Answer **any two** :**(8×2=16)**

- 1) Describe the essential characteristics of parenteral products.
- 2) Explain in detail the formulation aspects of ophthalmic solutions.
- 3) What is the need of pilot plant scale up techniques ? Give the examples of scaling up.

V. Answer **any two** :**(8×2=16)**

- 1) Discuss the quality control test for parenteral preparation.
  - 2) Discuss the environmental control facility needed in parenteral production.
  - 3) What containers are used for parenterals ~~products~~ ? Give the ideal properties of the containers.
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<b>Seat No.</b>	
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**B.Pharmacy (Semester – VII) Examination, 2015  
PHARMACEUTICAL JURISPRUDENCE**

Day and Date : Thursday, 7-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

MCQ/Objective Type Questions : **(1×16=16)**

I. Choose the correct alternative :

- 1) Schedule K related to
  - a) Antimalarial drugs
  - b) Anticancer drugs
  - c) Both
  - d) None
- 2) Prevention of food adulteration act in the year
  - a) 1954
  - b) 1955
  - c) 1956
  - d) All the above
- 3) List of drug which can be marketed under generic names only is given in schedule
  - a) X
  - b) W
  - c) O
  - d) T
- 4) The chairman of DTAB is
  - a) President PCI
  - b) Drug controller of India
  - c) Union Health Minister
  - d) Director general of Health Services
- 5) The name of the Pharmacist may be removed from the register of pharmacists, if it has been entered due to
  - a) Error
  - b) Misrepresentation
  - c) Both a) and b)
  - d) None of above
- 6) Schedule FF contains the list of following
  - a) Drugs marketed under generic name
  - b) Drugs which are habit forming
  - c) Standards for ophthalmic preparation
  - d) None of above



- 7) Spurious drugs means
- a) Imitations
  - b) Substitutes
  - c) Similar drugs
  - d) All of the above
- 8) Government Analyst is appointed by Central or State Government under Section
- a) 19
  - b) 20
  - c) 21
  - d) 22
- 9) Talisman, Mantras and Kavachas come under
- a) Misbranded drugs
  - b) Poisonous drugs
  - c) Magic remedies
  - d) Psychotropic drugs
- 10) Coca, opium and hemp come under
- a) Poisons Act
  - b) Cosmetics Act
  - c) Insecticide Act
  - d) Dangerous Drugs Act
- 11) Major amendment in Drugs and Cosmetic Act was made in \_\_\_\_\_
- a) 1975
  - b) 1982
  - c) 1985
  - d) 1986
- 12) The requirements with which the premises licensed for the manufacture of drugs should conform, are mentioned in
- a) Schedule H
  - b) Schedule M
  - c) Schedule O
  - d) Schedule P
- 13) The chairman of D.T.A.B. is
- a) President, PCI
  - b) Drug controller of India
  - c) Registered Pharmacist
  - d) Director, General Health Services
- 14) VDRL antigen is to be tested by
- a) Drug inspectors
  - b) Excise Commissioner
  - c) Serologists
  - d) Drug Controller of India
- 15) Premises licensed for sale of drugs are inspected at least
- a) Once in a year
  - b) Twice in a year
  - c) Thrice in a year
  - d) Every months
- 16) Pharmacy act came into force in
- a) March 1948
  - b) April 1948
  - c) June 1948
  - d) None of above



II. Answer **any four** : **(4×4=16)**

- 1) Write the constitution and functions of State Pharmacy Council as per Pharmacy Act.
- 2) What is DTAB ? How is it constituted ?
- 3) Write a note on the qualifications, duties of Drug Inspectors.
- 4) Enlist the offences and penalties under the Pharmacy Act.
- 5) Explain the salient features of Drugs Prices Control Order.

III. Answer **any four** : **(4×4=16)**

- 1) Define coca derivatives and psychotropic substances as per Narcotic Drugs and Psychotropic Substances Act.
- 2) Describe in detail the procedure for obtaining license and facilities to be provided for running a pharmacy effectively.
- 3) Define Adulterated Drugs and explain what classes of drugs are prohibited to be imported.
- 4) Write the constitution and function of Central Committee for Food Standards.
- 5) Write short notes on Schedule M.

IV. Answer **any two** : **(8×2=16)**

- 1) Write the types and classes of advertisements that are prohibited under the Drugs and Magic Remedies Act, 1955. Discuss the classes of advertisements that are exempted from its provisions.
- 2) Give the objectives of prevention of Food Adulteration Act, 1954 and explain qualifications, power and duties of food inspectors.
- 3) What are the objectives of Drugs Price Control Order ? How the maximum price of bulk drugs and formulations is calculated.

V. Answer **any two** : **(8×2=16)**

- 1) Mention the requirement for the labeling and packing of drugs with a brief note on labeling procedure for ophthalmic preparations.
  - 2) Discuss briefly the objectives of the Narcotic Drugs and Psychotropic Substances Act, 1985 and explain in detail Illicit Traffic.
  - 3) Give an account of import of different classes of drugs as per the D and C Act.
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Seat No.	
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**B. Pharmacy (Semester – VII) Examination, 2015**  
**MEDICINAL CHEMISTRY – III**

Day and Date : Saturday, 9-5-2015

Total Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

1. Multiple choice question. **(16×1=16 Marks)**

- 1) Morphine and heroin differ from each other in respect of \_\_\_\_\_
  - a) Methyl group on nitrogen
  - b) Absence of double bond between C4 and C6
  - c) Acetyl group at C3 and C6
  - d) Absence of D ring
- 2) Some adrenocorticoids are referred to as  $\Delta$  – corticoids because of \_\_\_\_\_
  - a) Saturation of double bond in ring system
  - b) Additional double bond in ring
  - c) Absence of double bond in ring system
  - d) Absence of double bond in ring A
- 3) \_\_\_\_\_ substituent on the nitrogen of morphine shows  $\mu$  antagonist activity.
  - a)  $-\text{CH}_2-\text{CH}=\text{CH}_2$
  - b)  $-\text{CH}_2-\text{CH}_2-\text{Ph}$
  - c)  $-\text{CH}_3$
  - d) All
- 4) \_\_\_\_\_ is antiemetic drug.
  - a) domperidone
  - b) cimetidine
  - c) cetirizine
  - d) none
- 5) Which of the following is an anxiolytic drug ?
  - a) imipramine
  - b) chlorpromazine
  - c) nalorphine
  - d) diazepam



- 6) \_\_\_\_\_ is a selective serotonin reuptake inhibitor.  
a) fluoxetine      b) imipramine      c) aspirin      d) carbamazepine
- 7) amobarbital is a \_\_\_\_\_  
a) Long acting barbiturate      b) Short acting barbiturate  
c) Intermediate acting barbiturate      d) Ultra Short acting barbiturate
- 8) Which of the following drug is progestational agent ?  
a) oestrone      b) dimethisterone  
c) cortisol      d) testosterone
- 9) Barbiturate derivatives are synthesized from \_\_\_\_\_ starting material.  
a) Urea and diethyl malonate      b) Urea and ethyl acetoacetate  
c) Ethyl alcohol and urea      d) Urea and ethyl cyanoacetate
- 10) The chemical behavior of morphine alkaloid is \_\_\_\_\_  
a) Acidic      b) Neutral      c) Basic      d) Amphoteric
- 11) Proton pump inhibitors like omeprazole and lansoprazole contain following ring system.  
a) pyrimidine      b) benzothiazole      c) benzimidazole      d) oxindole
- 12) One of the following is a arylacetic acid derivative of NSAID's.  
a) aspirin      b) naproxen      c) mefenamic acid      d) all of above
- 13) Which of the following steroid shows predominant mineralocorticoid action.  
a) Hydrocortisone      b) Dexamethasone  
c) Spiranolactone      d) Fludrocortisone
- 14) \_\_\_\_\_ molecule contain benzodiazepine nucleus.  
a) imipramine      b) cimetidine      c) nortriptyline      d) none of above
- 15) Which one of the following is selective cox-2 inhibitor.  
a) rofecoxib      b) diclofenac sodium  
c) acetaminophen      d) aspirin
- 16) Estrogen contain \_\_\_\_\_ carbon in steroidal nucleus.  
a) 19      b) 21      c) 18      d) 27



2. Answer **any four** of the following questions. **(4×4=16 Marks)**
- 1) Explain SAR of male sex hormones with examples.
  - 2) Write a note on MAO inhibitor.
  - 3) Classify NSAID drug with examples.
  - 4) Explain SAR of proton pump inhibitors.
  - 5) Write synthesis of a) phenytoin b) diazepam.
3. Answer **any four** of the following questions. **(4×4=16 Marks)**
- 1) Classify antihistaminic drugs.
  - 2) Explain the drug used in Gout disease.
  - 3) Explain SAR of benzodiazepine.
  - 4) Explain SAR of aryl acetic acid derivative.
  - 5) Write a note on methylxanthine class of CNS stimulants.
4. Answer **any two** of the following questions. **(2×8= 16 Marks)**
- 1) Explain MOA of steroids. Write on nomenclature and stereochemistry of steroids.
  - 2) Define and classify hypnotic and sedative agents. Explain SAR of barbiturates.
  - 3) Write a note on opioid receptor. Explain MOA and structural features required for narcotic analgesic.
5. Answer **any two** of the following questions. **(2×8= 16 Marks)**
- 1) Write in detail on antipsychotic agents.
  - 2) Explain MOA and SAR of ranitidine as H<sub>2</sub> antagonistic drugs.
  - 3) Classify anticonvulsant drugs. Discuss SAR and MOA of hydantoin.
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**B.Pharm. (Semester – VII) Examination, 2015**  
**PHARMACEUTICAL ANALYSIS – V**

Day and Date : Tuesday, 12-5-2015

Max. Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

I. Multiple choice questions : **(1×16=16)**

- 1) GLC employs a \_\_\_\_\_ mobile phase and a \_\_\_\_\_ stationary phase.  
a) Liquid and solid                                      b) Liquid and gas  
c) Gas and liquid                                        d) Gas and solid
- 2) All of the following are used as separating columns in Gas chromatography except  
a) WCOT    b) SCOT  
c) Capillary columns                                    d) GCOT
- 3) The commonly used binder in TLC is  
a) Calcium carbonate                                  b) Calcium sulphate  
c) Calcium hydroxide                                 d) Calcium bisulphate
- 4) Coating of glass plate with adsorbent layer in TLC is achieved by  
a) Spreading                      b) Spraying                      c) Pouring                      d) All of the above
- 5) Household RO water purifier is based on \_\_\_\_\_ chromatography.  
a) Gel                                      b) HPLC                                      c) Ion exchange                      d) GLC
- 6) Pumps used in HPLC are  
a) Reciprocating                      b) Pneumatic                      c) Both a) and b)                      d) Peristaltic
- 7) Carrier gas that can be used in GC is  
a) Helium                                      b) Nitrogen                                      c) Hydrogen                                      d) All of the above
- 8) Flame ionisation detector in GC cannot detect  
a) Oxygen                                      b) Nitrogen  
c) Both Nitrogen and Oxygen                      d) Carbon
- 9) In HPLC \_\_\_\_\_ gas is used for sparging the mobile phase.  
a) Helium                                      b) Carbon dioxide  
c) Hydrogen                                      d) Oxygen
- 10) Following are detectors used in GC except  
a) UV-Visible                      b) TID                                      c) FID                                      d) Kathorometer
- 11) Iodine vapours are used for visualizing generally \_\_\_\_\_ samples on TLC plates.  
a) Organic                                      b) Inorganic                                      c) Both a) and b)                      d) Volatile

P.T.O.



- 12) Paper chromatography is a \_\_\_\_\_ type of chromatography.  
a) Adsorption      b) Liquid-Liquid      c) Planar      d) Both b) and c)
- 13) In TLC tailing may be observed due to  
a) Dilute samples      b) Sample overloading  
c) Impurities      d) Both sample overloading and impurities
- 14) \_\_\_\_\_ is used for quantitative analysis of spots in TLC.  
a) Densitometry      b) Fluorimetry  
c) Radiotracer analysis      d) All of the above
- 15) In two dimensional paper chromatography \_\_\_\_\_ paper is used.  
a) Square      b) Circular      c) Cylindrical      d) All of the above
- 16) In HPLC \_\_\_\_\_ columns can be used.  
a) C 18      b) Ion exchange      c) C 8      d) All of the above

II. Answer **any four** of the following questions : (4×4=16)

- 1) Write on S.P. used in TLC.
- 2) Draw a neat labelled diagram of GC. Give it's limitations.
- 3) Write on factors affecting R<sub>f</sub> value.
- 4) Give applications of HPLC.
- 5) Write a note on Gas solid chromatography.

III. Answer **any four** of the following questions : (4×4=16)

- 1) Explain Van deemter equation.
- 2) Define the terms Reverse phase chromatography. Gradient elution, Retention time and retention factor.
- 3) Write on ion exchange resins used in ion exchange chromatography.
- 4) Explain how sample spot on TLC is visualized ?
- 5) Give principle of adsorption column chromatography.

IV. Answer **any two** of the following questions : (2×8=16)

- 1) Enlist various components of HPLC system. Explain columns and sample injection system of HPLC.
- 2) Explain S.P. used in gel chromatography. Give applications of gel chromatography.
- 3) Explain with suitable diagram electron capture detector and atomic emission detector used in GC.

V. Answer **any two** of the following questions : (2×8=16)

- 1) Give a account on paper chromatography.
  - 2) Explain in detail on HPTLC.
  - 3) Explain with suitable diagram any two detectors used in HPLC.
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**B.Pharmacy (Semester – VII) Examination, 2015  
PHARMACOLOGY – III**

Day and Date : Thursday, 14-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. Choose the most appropriate alternative for following Multiple Choice Questions :  
**(1×16=16)**

- 1) Ethanol is clinically used for the following except
  - a) Methanol poisoning
  - b) Balanced anaesthesia
  - c) Bedsores
  - d) All of these
- 2) Action of Thiopental is terminated within few minutes due to
  - a) Rapid redistribution
  - b) Rapid elimination
  - c) Rapid metabolism
  - d) All of these
- 3) Which of the following is a long acting barbiturate used as Anticonvulsant ?
  - a) Thiopentone
  - b) Methohexitone
  - c) Butobarbitone
  - d) Phenobarbitone
- 4) Which anti-epileptic below is a cyclic GABA analogue ?
  - a) Phenobarbital
  - b) Gabapentin
  - c) Tiagabin
  - d) Clonazepam
- 5) Which of the following is a specific and commonest adverse effect of phenytoin ?
  - a) Hepatotoxicity
  - b) Gum hypertrophy
  - c) Hemorrhages
  - d) None of these
- 6) Chlorpromazine like antipsychotics act by
  - a) D<sub>2</sub> Blockade
  - b) β<sub>2</sub> Blockade
  - c) H<sub>2</sub> Blockade
  - d) All of these
- 7) Tricyclic Antidepressants inhibit reuptake of
  - a) Noradrenaline
  - b) 5-hydroxy tryptamine
  - c) Both a) and b)
  - d) None of these
- 8) Which one of the following is not a central stimulant action of morphine ?
  - a) Nausea and vomiting
  - b) Vagal Bradycardia
  - c) Miosis
  - d) Constipation



- 9) Which of the following CNS stimulants is a convulsant drug ?
- a) Strychnine                              b) Picrotoxin  
c) Pentylene tetrazole                      d) All of these
- 10) Most common adverse effect of Aspirin at analgesic doses is
- a) Hematemesis                              b) Salicylism  
c) Urticaria                                      d) Gastric Mucosal Damage
- 11) Most commonly used antipyretic drug is
- a) Nimesulide                                  b) Ibuprofen  
c) Paracetamol                                  d) Diclofenac
- 12) \_\_\_\_\_ of the following is a second generation sulfonylurea.
- a) Tolbutamide                                  b) Acetohexamide  
c) Tolazamide                                      d) Glibenclamide
- 13) The Lente insulin is a \_\_\_\_\_ combination of Ultralente and Semilente Insulin.
- a) 1 : 1                                      b) 10 : 6                                      c) 5 : 2                                      d) 7 : 3
- 14) Which one of the following is a teratogenic drug now re-introduced as immunostimulant ?
- a) Levamisole                                      b) Thalidomide  
c) Interferons                                      d) None of these
- 15) Which of the following is a oral vaccine ?
- a) Sabine type polio                              b) Rabies  
c) Typhoid    d) Plague
- 16) Which of the following non-hormone anti-estrogen drug is used in the treatment of infertility ?
- a) Human Chorionic Gonadotrophin  
b) Estradiol  
c) Clomiphene citrate  
d) None of these

2. Answer **any four** of the following :

**(4×4=16)**

- a) Write clinical uses of ethanol.
- b) Briefly write about immunostimulants.
- c) Explain why Levodopa is used in combination with carbidopa.
- d) Classify non-steroidal anti-inflammatory drugs with examples.
- e) Write a note on Thyroid Hormone Synthesis Inhibitors.



3. Answer **any four** of the following : **(4×4=16)**
- a) Write mechanism of action and adverse effects of Sulfonylureas.
  - b) What are vaccines ? Enlist types of vaccines with examples.
  - c) Write briefly about radioactive Iodine Therapy in Thyrotoxicosis.
  - d) List out advantages and disadvantages of Nitrous oxide as a General Anaesthetic.
  - e) Write role of Immunosuppressants in prevention of Organ Transplant Rejection.
4. Answer **any two** of the following : **(2×8=16)**
- a) Briefly describe actions of insulin. Add a note on various insulin preparations.
  - b) Enumerate Anti-epileptic drugs with examples. Briefly describe pharmacology of phenytoin.
  - c) What are opioid analgesics ? Elaborate mechanism of action, adverse effects and clinical uses of morphine.
5. Answer **any two** of the following : **(2×8=16)**
- a) Enlist antidepressant drugs with examples. Write an account of pharmacology of Tricyclic antidepressants.
  - b) Write Biosynthesis, actions and clinical uses of thyroid hormones.
  - c) Write an extensive account of pharmacology of Aspirin.
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**B. Pharmacy. (Semester – VII) Examination, 2015  
PHARMACOGNOSY – III**

Day and Date : Saturday, 16-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 80

1. Multiple Choice Questions (MCQ)/Objective Type Questions. **(1×16=16)**

- 1) Ergot alkaloids are identified by
  - a) Murexide
  - b) Thalleoquin
  - c) Van – Urk's
  - d) Borntrager's
- 2) '*Andrographispaniculata*' is the botanical source of
  - a) Kalmegh
  - b) Chirata
  - c) Vasaka
  - d) Ergot
- 3) 1 –  $\alpha$  – D – arabinofuronosylcystosine is chemical name of
  - a) Aplysistatin
  - b) Ara – C
  - c) Napthea
  - d) Crassin acetate
- 4) Enzyme Papain is used as
  - a) Anti – inflammatory
  - b) Viricidal
  - c) Lyses of blood clotting
  - d) Clarification of beverages
- 5) Name the drug which belongs to the family Theaceae
  - a) Bitter Almond
  - b) Ginkgo leaves
  - c) Green tea
  - d) Rauwolfia root
- 6) Alkaloidal amines are present in
  - a) Ergot
  - b) Catharanthus
  - c) Ephedra
  - d) Cinchona
- 7) Modified Borntrger's test is used for detecting
  - a) C – glycoside
  - b) S – glycoside
  - c) O – glycoside
  - d) N – glycoside



- 8) Following are the anticancer marine drugs except
  - a) Ara – C
  - b) Crassin acetate
  - c) Xenia
  - d) Manolide
  
- 9) Which one among the following enzyme which is produced by the fermentation technology by using non-pathogenic enterobacteria species from larvae of silk moth ?
  - a) Serratiopeptidase
  - b) Urokinase
  - c) Streptokinase
  - d) Papain
  
- 10) '*Glycine max*' belongs to the family
  - a) Liliaceae
  - b) Leguminosae
  - c) Erythroxyllaceae
  - d) Rutaceae
  
- 11) Datura leaf belongs to the chemical class of alkaloid
  - a) Quinoline
  - b) Tropane
  - c) Isoquinoline
  - d) Indole
  
- 12) The substitute for Aloe
  - a) Cape Aloe
  - b) Socotrine Aloe
  - c) Curacao Aloe
  - d) Natal Aloe
  
- 13) In Klung's isobarbaloin test, Curacao aloes shows colour
  - a) Yellow
  - b) Blue
  - c) Wine red
  - d) Green
  
- 14) Urokinase enzyme is produced by
  - a) Livers
  - b) Lungs
  - c) Kidney
  - d) Heart
  
- 15) Which one of the following is identified by Vitali's Test ?
  - a) Atropine
  - b) Quinine
  - c) Morphine
  - d) Nicotine
  
- 16) Synonym of drug Ginkgo
  - a) Kew tree
  - b) Yam
  - c) Ninja
  - d) Marian thistle

2. Answer **any four** :

(4×4=16)

- a) Give the example of quinazoline alkaloid which you have studied and write source and chemical constituents of it.
- b) Write a note on Bitter Almond.
- c) Give the source and pharmacological activity of newer Anti-inflammatory agents from Marine origin.



- d) Explain any two chemical tests for Cardiac glycosides.
- e) Give biological source and uses of :
  - i) Lobelia
  - ii) Catharanthus.

3. Answer **any four** : **(4×4=16)**

- a) Explain chemical test for Aloe.
- b) What are biological amines ? Give example.
- c) Write a note on general methods of extraction of alkaloids.
- d) What are isothiocyanate glycosides ? Give source, chemical constituents and uses of crude drug containing Sinigrin.
- e) Write a short note on anticancer agents from Marine origin.

4. Answer **any two** : **(8×2=16)**

- a) What are Bitter glycosides ? Give biological source, family, chemical constituents and uses of :
  - i) Kalmegh and
  - ii) Chirata.
- b) Give the method of preparation and uses of :
  - i) Urokinase
  - ii) Bromelin.
- c) Name the drug containing Ergot alkaloid and describe its pharmacognosy.

5. Answer **any two** : **(8×2=16)**

- a) What are steroidal alkaloids ? Give example. Write biological source, family, chemical constituents and uses of Withania.
  - b) What are Anthroquinine ? Classify and write pharmacognosy of Senna.
  - c) Write a short note on :
    - i) Ipecac
    - ii) Saoponin.
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**B. Pharmacy, (Semester – I) Examination, 2015**  
**ANATOMY, PHYSIOLOGY AND HEALTH EDUCATION – I**  
**(CGPA Pattern)**

Day and Date : Tuesday, 12-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

1. MCQ : **(1×15=15)**

- 1) \_\_\_\_\_ is an abnormally large number of erythrocytes in the blood.
  - a) Anaemia
  - b) Polycythaemia
  - c) Leukaemia
  - d) Thrombocytopenia
- 2) Blood is \_\_\_\_\_ connective tissue.
  - a) liquid
  - b) loose
  - c) fibrous
  - d) hardest
- 3) \_\_\_\_\_ is not a function of lymphatic system.
  - a) Tissue drainage
  - b) Immunity
  - c) Acts as filters
  - d) Regulates P<sup>H</sup>
- 4) Lymphatic system consists of \_\_\_\_\_.
  - a) Lymph
  - b) Lymph vessels
  - c) Lymph nodes
  - d) All of above
- 5) P<sup>H</sup> of blood is \_\_\_\_\_.
  - a) 3.2
  - b) 5.2
  - c) 7.2
  - d) 8.2
- 6) The left atrio-ventricular opening is guarded by \_\_\_\_\_ valve.
  - a) Tricuspid
  - b) Mitral
  - c) Pulmonary semilunar
  - d) Aortic semilunar
- 7) \_\_\_\_\_ is increase in the heart beats above the normal range 60 to 80 beats per minute.
  - a) Tachycardia
  - b) Bradycardia
  - c) Atrial flutter
  - d) Hypertension
- 8) Sound producing vocal cord located in \_\_\_\_\_.
  - a) Nasal cavities
  - b) Pharynx
  - c) Larynx
  - d) Trachea
- 9) \_\_\_\_\_ is the maximum volume of air remaining in the lungs after forceful exhalation.
  - a) RV
  - b) ERV
  - c) FRC
  - d) VC
- 10) During breathing \_\_\_\_\_ is stating that a gas's volume is inversely proportional to its pressure.
  - a) Henry's law
  - b) Dalton's law
  - c) Charle's law
  - d) Boyle's law
- 11) \_\_\_\_\_ is not an accessory organ.
  - a) Salivary glands
  - b) Liver
  - c) Pancreas
  - d) Appendix
- 12) Saliva is composed of the \_\_\_\_\_ pairs of salivary glands.
  - a) 3
  - b) 4
  - c) 5
  - d) 6
- 13) Enzyme \_\_\_\_\_ acts on cooked starches and convert them into disaccharide.
  - a) Maltase
  - b) Lactase
  - c) Sucrase
  - d) Ptyalin



- 14) \_\_\_\_\_ forms the lower part of the J and leads to the pylorus, a canal muscle which separates the stomach from the duodenum.
- |                   |                    |
|-------------------|--------------------|
| a) Fundus         | b) Body            |
| c) Pyloric antrum | d) Pyloric orifice |
- 15) Secreting glands located in \_\_\_\_\_
- |               |                      |
|---------------|----------------------|
| a) Peritoneum | b) Muscularis mucosa |
| c) Submucosa  | d) Epithelial coat   |

2. Answer **any five**.

**(5×5=25)**

- A) Write the composition and functions of lymph.
- B) Explain different types of anaemia.
- C) Give classification of leukocytes. Draw diagram of each type of white blood cells.
- D) Define Inhalation, Vital capacity, Anatomic dead space, Respiratory compliance and Tidal volume.
- E) Give histology of myocardium.
- F) Write a note on exocrine pancreas.

3. Answer **any three**.

**(10×3=30)**

- A) List out the various composition of blood. Discuss in detail the coagulation of blood.
  - B) Discuss the internal structure of heart and blood circulation through the heart.
  - C) Discuss anatomy and functions of lungs in detail.
  - D) Give the anatomy of digestive system. Discuss intestine in detail.
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**B.Pharmacy (Semester – VII) Examination, 2015  
PHARMACOGNOSY AND PHYTOCHEMISTRY – II**

Day and Date : Tuesday, 19-5-2015

Total Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

1. Multiple Choice Questions (MCQ) / Objective type questions : **(1×16=16)**

- 1) Black catechu when treated with vanillin and hydrochloric acid produces pink colour due to presence of  
a) Quercitrin                      b) Catechin                      c) Catechu red                      d) Quercetin
- 2) Ergosimine and ergosine alkaloids of ergot belong to the group  
a) Ergometrinine                      b) Ergotamine                      c) Ergotoxin                      d) Ergoconine
- 3) How do you confirm the presence of Cuprea bark in Cinchona bark by microscopy ?  
a) Presence of stone cells  
b) Presence of medullary rays  
c) Presence of starch grains  
d) Presence of calcium oxalate crystals
- 4) Manolide is \_\_\_\_\_ Anti-inflammatory compound obtained from sponge Cuffariella.  
a) Steroid    b) Non steroid  
c) Selective steroid    d) Selective non steroid
- 5) Select the drug, which is not belonging to tannin class  
a) Myrobalam                      b) Pale catechu                      c) Ashoka                      d) Peppermint
- 6) Which one of the following anticancer marine drug obtained from the Sea hare ?  
a) Dolastatin                      b) Aplidine                      c) Xenia                      d) Napthea
- 7) Which of the following phytoconstituents is extracted by Non polar solvent ?  
a) Polar    b) Non polar  
c) Both (a) and (b)    d) None of the above
- 8) Cardamom belongs to family  
a) Liliaceae                      b) Loganaceae                      c) Apocyanaceae                      d) Zingiberaceae
- 9) *Ricinus communis* is the botanical source of  
a) Olive oil    b) Castor oil  
c) Clove flower bud    d) Bahera



- 10) Which one of the following is not Ayurvedic liquid dosage form ?  
a) Asava                      b) Arista                      c) Grhita                      d) Gutica
- 11) Which variety of fennel contains least percentage of volatile oil content ?  
a) Indian                      b) Saxony                      c) French sweet                      d) Japanese
- 12) Nuxvomica seed contains type of trichomes  
a) Bulbaceous lignified                      b) Multicellular  
c) Unicellular                      d) Non lignified
- 13) Rhizomes which are cylindrical, tortuous, external surface broadly annulated and brown coloured are obtained from  
a) *Withania somnifera*                      b) *Glycyrrhiza glabra*  
c) *Calotropis gigantea*                      d) *Cephaelis ipecacuanba*
- 14) Which drug belongs to the class of Indole alkaloids ?  
a) Rauwolfia                      b) Ipecac                      c) Opium                      d) Ephedra
- 15) Mrgolone is the chemical constituent present in  
a) Neem                      b) Pyrethrum                      c) Tobacco                      d) Clove
- 16) Ephedrine is useful in the treatment of  
a) Asthma                      b) Cough                      c) Cataract                      d) Inflammation

## SECTION – I

1. Answer **any four** : **(4×4=16)**
- a) Explain method of preparation of Shark liver oil.
- b) How marine drugs act as potential source of natural drugs.
- c) Write a note on plant allergens.
- d) Define Tannins. Write their general properties.
- e) Give two examples of cytotoxic marine drugs along with uses.
- f) Give the Biological source, family, chemical constituents and uses of Pyrethrum.
2. Answer **any two** : **(8×2=16)**
- a) Give the pharmacognostic scheme of clove.
- b) Explain life cycle of Ergot.
- OR
- b) Explain Biosynthesis of Morphine.



SECTION – II

1. Answer **any four** : **(4×4=16)**

- a) Explain phytochemical screening of crude drugs.
- b) What are plant growth regulators ? Explain in brief.
- c) Give the biological source, chemical constituents of :
  - i) Gaduchi
  - ii) Garlic
- d) What are tropane alkaloids ? Give examples.
- e) Write a note on molds causing allergy.
- f) Write note on safety of Herbal food.

2. Answer **any two** : **(8×2=16)**

- a) Write Biosynthesis of Terpenes.
- b) Compare and contrast Pale catechu and Black catechu.

OR

- b) Write short notes on :
    - i) Nicotine
    - ii) Parameters for Standardization of Gutica.
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**B.Pharmacy (Semester – VIII) Examination, 2015  
NOVEL DRUG DELIVERY SYSTEMS**

Day and Date : Wednesday, 6-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

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

- I. Choose the appropriate answer from the following choices : **(1×16=16)**
- 1) In encapsulated formulations, the membrane typically contains  
a) Stabilizer                      b) Plasticizer                      c) Flux enhancer                      d) All of above
  - 2) The numerical designation for propellant Octafluorocyclobutane is  
a) C318                      b) 142b                      c) 152a                      d) 142
  - 3) Poor drug absorption from colon is due to  
a) less surface area                      b) more viscous luminal contents  
c) lower water content                      d) all of these
  - 4) Mucoadhesive drug delivery is an example of  
a) Delayed transit and continuous release  
b) Slow and continuous release  
c) Delayed release  
d) Conventional release
  - 5) Drug absorption under the influence of ultrasound is called as  
a) Tonophoresis                      b) Iontophoresis  
c) Chlorophoresis                      d) Sonophoresis
  - 6) Implantable drug delivery system should be  
a) isobaric                      b) sterile                      c) both a and b                      d) none of these
  - 7) When \_\_\_\_\_ are used in aerosols, there is no propellant reservoir in the container.  
a) compressed gases                      b) hydrocarbons  
c) chloroflorocarbons                      d) hydrofloroalkanes
  - 8) Matrix dissolution systems can be prepared by  
a) encapsulation                      b) binding  
c) congealing                      d) none of these



- 9) Density based drug delivery systems are designed to release the drug in
- a) oral cavity
  - b) colon
  - c) small intestine
  - d) stomach
- 10) BCS class-II drugs possess
- a) low solubility and low permeability
  - b) high solubility and low permeability
  - c) low solubility and high permeability
  - d) high solubility and high permeability
- 11) The membrane materials that can be added for osmotic devices are
- a) flux enhancer
  - b) dispersants
  - c) both a and b
  - d) none of these
- 12) Drug release from dissolution controlled tablets is explained by \_\_\_\_\_ equation.
- a) Ishikawa
  - b) Toshiba
  - c) Higuchi
  - d) Noyes-Whitney
- 13) \_\_\_\_\_ is used as useful tool to analyze solvent characteristics of liquefied propellant.
- a) vapour pressure
  - b) kauri-butanol value
  - c) colour
  - d) none of these
- 14)  $P_{sig} =$  \_\_\_\_\_
- a)  $P_{sia} - 17.4$
  - b)  $P_{sia} + 17.4$
  - c)  $17.4 - P_{sia}$
  - d) None of these
- 15) The principle of drug release in Methyl cellulose embedded matrix tablets is
- a) dissolution
  - b) diffusion
  - c) osmosis
  - d) ion-exchange
- 16) The release rate from a coated formulation depends upon
- a) Polymer ratio
  - b) Membrane porosity
  - c) Thickness of coat
  - d) All of these





II. Answer **any four** : **16**

- 1) Give principle of drug release from OROS.
- 2) Describe the barrier type of aerosol systems.
- 3) How is the total dose of an oral CRDDS calculated ?
- 4) Write a note on foam aerosols.
- 5) What is the effect of porosity and tortuosity on drug release of an oral CR tablet ? Explain the same.

III. Answer **any two** : **16**

- 1) How are pharmaceutical aerosols filled ? Explain any one method in detail.
- 2) Describe the different techniques to achieve modified release in design of oral CRDDS.
- 3) Describe different propellants used in pharmaceutical aerosols.

IV. Answer **any four** : **16**

- 1) Describe the design of intra-uterine devices giving suitable examples.
- 2) Write a note on three phase aerosols systems.
- 3) Discuss the rational design of a bioadhesive system.
- 4) Enlist the advantages of oral CRDDS.
- 5) Explain the role of polymers in dissolution - and diffusion-controlled systems.

V. Answer **any two** : **16**

- 1) Describe the types and methods of preparation of matrix systems.
  - 2) Give the principle and schematic presentation of a metering valve.
  - 3) Explain how modified release is evaluated by dissolution tests.
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Seat No.	
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**B.Pharm. (Semester – VIII) Examination, 2015  
PHARMACEUTICAL BUSINESS MANAGEMENT**

Day and Date : Friday, 8-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

I. MCQ :

16

- 1) \_\_\_\_\_ can raise huge financial resources.  
A) Joint Stock Company                      B) Sole Proprietor  
C) Joint Hindu Family firm                  D) None of the above
- 2) \_\_\_\_\_ are the persons who provide a link between the manufacturers and the consumers.  
A) Retailers                                      B) Wholesalers  
C) Superstockists                              D) All of the above
- 3) Delegation is the assignment of work to a \_\_\_\_\_.  
A) Subordinate                                  B) Superior  
C) Both A) and B)                              D) None of the above
- 4) The liability of the \_\_\_\_\_ is unlimited.  
A) Co-operative organization              B) Joint stock company  
C) Sole proprietor                              D) None of the above
- 5) A partnership is a form of business organization in which a minimum of \_\_\_\_\_ persons join together to undertake some form of business activity.  
A) 20                      B) 2                      C) 30                      D) None of the above
- 6) A partner below the age of 18 years is called as a \_\_\_\_\_ partner.  
A) Minor                      B) Active                      C) Nominal                      D) None of the above
- 7) A minimum of \_\_\_\_\_ persons are required to form a public limited company.  
A) 2                      B) 7                      C) 10                      D) None of the above

P.T.O.



- 8) An ultimate consumer is one who \_\_\_\_\_
- A) Buys products from a retailer for personal use
  - B) Buys products to sell to others
  - C) Sells products to retail sellers
  - D) None of the above
- 9) \_\_\_\_\_ is the process of checking whether the proper progress is made or not to fulfill the objectives and goals of the organisation.
- A) Planning
  - B) Organising
  - C) Controlling
  - D) None of the above
- 10) \_\_\_\_\_ organization is the simplest form of business organization.
- A) Line
  - B) Functional
  - C) Line and staff
  - D) None of the above
- 11) \_\_\_\_\_ concept of marketing believes that “customer is the king” of the market.
- A) Traditional
  - B) Modern
  - C) Classical
  - D) None of the above
- 12) \_\_\_\_\_ is the process of dividing the market into distinct groups of buyers having similar needs or wants.
- A) Market segmentation
  - B) Market analysis
  - C) Market research
  - D) None of the above
- 13) \_\_\_\_\_ is the first stage of product life cycle.
- A) Introduction
  - B) Growth
  - C) Decline
  - D) None of the above
- 14) In joint Hindu family firm, the right to manage the firm vests in \_\_\_\_\_ alone.
- A) Daughter
  - B) Karta
  - C) Both A) and B)
  - D) None of the above
- 15) The aim of advertising a product is to \_\_\_\_\_
- A) Attract customers
  - B) Retain customers
  - C) Both A) and B)
  - D) None of the above
- 16) \_\_\_\_\_ stage of the product life cycle is the period of rapid market acceptance and substantial profit improvement.
- A) Introduction
  - B) Growth
  - C) Decline
  - D) None of the above



II. Answer **any four** : **(4×4=16)**

- 1) What is meant by the term “forecasting” ? Explain the methods of forecasting.
- 2) Enlist the advantages and limitations of planning.
- 3) Explain in brief the salient features of Line and staff organization.
- 4) Define the terms authority and responsibility. Add a note on sources of authority.
- 5) Define and explain the term motivation.

III. Answer **any four** : **(4×4=16)**

- 1) Discuss joint Hindu family as a form of business organization.
- 2) Give reasons for branding of drugs. Add a note on brand extension.
- 3) How does the marketing of pharmaceutical formulation differ from the general goods marketing ?
- 4) Explain the pricing of products in monopoly and perfect competition.
- 5) Highlight the role of professional sales representative in marketing of drugs.

IV. Answer **any two** : **(8×2=16)**

- 1) Define the term “delegation of authority”. Explain the rules or principles of delegation.
- 2) Explain the barriers to communication. How can they be overcome ?
- 3) Explain the Joint Stock Company or company as a form of business organization.

V. Answer **any two** : **(8×2=16)**

- 1) Discuss the various channels of distribution.
  - 2) Discuss the steps in planning. Enlist its advantages and disadvantages.
  - 3) Highlight the stages of product life cycle.
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**B.Pharm. (Semester – VIII) Examination, 2015  
MEDICINAL CHEMISTRY – IV**

Day and Date : Monday, 11-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

**Note :** 1) **All questions are compulsory.**  
2) **Figures on the right side indicate marks.**

I. Choose the appropriate option : **(1×16=16)**

- 1) Digoxigenin is present in lanatoside  
a) A                      b) B                      c) C                      d) D
- 2) Vanillylmandelic acid is the major end product of the metabolism of  
a) Catecholamine    b) Acetyl choline    c) Nifedipine            d) None of these
- 3) Metyrosine affects the biosynthesis of  
a) Catecholamine                      b) Non-catecholamine  
c) Acetylcholine                      d) None of these
- 4) D tubocurarine is \_\_\_\_\_ agent.  
a) Neuromuscular blocking            b) Ganglionic blocking agent  
c) Catecholamine inhibitor            d) None of these
- 5) Isosorbide dinitrate is used as  
a) Antianginal and vasodilator            b) Antiarrhythmic agent  
c) Antihypertensive agent            d) Antihyperlipidemic agent
- 6) All are calcium channel blockers except  
a) Diltiazem            b) Nifedipine            c) Verapamil            d) Quinidine
- 7) Catecholamine storage and release is affected by  
a) Reserpine            b) Metyrosine            c) Epinephrine            d) None of these
- 8) \_\_\_\_\_ is quinazoline alpha 1 blocker.  
a) Prazosin            b) Propranolol            c) Captopril            d) None of these
- 9) Benzothiazepin nucleus is present in  
a) Diltiazem            b) Verapamil            c) Amlodipine            d) None of these



- 10) The following is not HMG Co A reductase inhibitors
- a) Pravastatin
  - b) Simvastatin
  - c) Lovastatin
  - d) None of these
- 11) Quaternary amine, carbamates and organophosphates compounds are examples of
- a) Anticholinesterase
  - b) Positive inotropic drugs
  - c) Adrenergic receptor antagonist
  - d) None of these
- 12) Mecamylamine is an example of
- a) Ganglionic blocking agents
  - b) Neuromuscular blocking agents
  - c) Adrenergic receptor antagonist
  - d) None of these
- 13) MOA of nitrovasodilatoris
- a) Stimulation of guanylate cyclase
  - b) Beta blocker
  - c) Calcium channel blocker
  - d) None of these
- 14) The cardiac glycosides elicit their effects through
- a) Inhibition of Na<sup>+</sup>/K<sup>+</sup> ATPase pump
  - b) Inhibition of phosphodiesterase
  - c) Increase in amount of NO in blood
  - d) None of these
- 15) Minoxidil contain \_\_\_\_\_ nucleus in it.
- a) Piperidino pyrimidine
  - b) Purine
  - c) Xanthine
  - d) None of these
- 16) 5-[(3, 4 di methoxy phenyl ethyl) methyl amino]-2 – (3,4 d methoxy phenyl) – 2 isopropyl Valero nitrile is
- a) Verapamil
  - b) Diltiazem
  - c) Nifedipine
  - d) None of these

II. Answer **any four** of the following :

**(4×4=16)**

- 1) Write the SAR of anticholinergic agents.
- 2) Write the biosynthesis of catecholamine.
- 3) Write synthesis nomenclature and use of procainamide.
- 4) Classify antihyperlipidemic agents and give the MOA of cholestyramine.
- 5) Add a note on prodrugs.



III. Answer **any two** of the following : **(2×8=16)**

- 1) Write the metabolism of catecholamines with structures and enzymes involved in the metabolism.
- 2) Add a note on anticholinergic agents and write the synthesis of cyclopentolate.
- 3) Classify antihypertensive agents with suitable examples and write structure and MOA of losartan.

IV. Answer **any four** of the following : **(4×4=16)**

- 1) Add a note on antiarrhythmic drugs.
- 2) Discuss the chemistry of cardiac glycosides. Give the structure of lanatoside A.
- 3) Give the goals of QSAR studies in drug design.
- 4) Write the synthesis, chemical name and use of propranolol.
- 5) Add a note on ganglionic blocking agents.

V. Answer **any two** of the following : **(2×8=16)**

- 1) Classify antianginal agents discuss the chemistry, MOA and uses of organic nitrates.
  - 2) Write the SAR of adrenergic phenylethyl amine agonists.
  - 3) Add a note on calcium antagonist. Write synthesis and nomenclature of nifedipine.
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**B. Pharm. (Semester – VIII) Examination, 2015**  
**PHARMACEUTICAL ANALYSIS – VI**

Day and Date : Wednesday, 13-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. Multiple choice questions :

16

- 1) Repeatability and reproducibility are measures of \_\_\_\_\_ a method.
  - a) Accuracy
  - b) Precision
  - c) Sensitivity
  - d) Linearity
- 2) The molecular mass of a compound can be predicted by \_\_\_\_\_ peak of its MS spectra.
  - a) Parent ion
  - b) Base peak
  - c) Metastable peak
  - d) Most relatively abundant ion
- 3) Standard deviation is a measure of \_\_\_\_\_ a data.
  - a) Central tendency
  - b) Range
  - c) Scattering
  - d) All of the above
- 4) \_\_\_\_\_ is used as a standard in NMR spectroscopy.
  - a) Tetra methyl sulphur
  - b) Tetra methyl selenium
  - c) Tetra methyl silane
  - d) Tetra methyl sodium
- 5) Test used for measuring ageing of paper is \_\_\_\_\_ test.
  - a) Grammage
  - b) Folding endurance
  - c) Tensile strength
  - d) WVTR
- 6) Chemical shift is usually expressed in
  - a)  $\text{mm}^{-1}$
  - b)  $\text{m/s}^2$
  - c)  $\text{cm}^{-1}$
  - d) ppm





- 7) The base peak in MS is
- Most intense peak
  - Peak with highest  $m/e$  ratio
  - Peak of most relatively abundant ion
  - Both a) and c)
- 8) Which of the following chemical is not used in reducing substances test for plastic ?
- Potassium iodine
  - Potassium permanganate
  - Sodium thiosulphate
  - Phenolphthalein
- 9) According to ICH guidelines a minimum of \_\_\_\_\_ determinations are required to determine accuracy of an analytical method.
- three
  - six
  - eighteen
  - nine
- 10) Tropylium ion consists a characteristic \_\_\_\_\_ membered ring.
- seven
  - five
  - six
  - eight
- 11) The most frequently appearing value in a data set is called as
- Mode
  - Median
  - Mean
  - None of the above
- 12) \_\_\_\_\_ is a quality control test for plastic.
- Acidity and Alkalinity
  - Reducing substances
  - Light absorption
  - All of the above
- 13) In NMR spectroscopy \_\_\_\_\_ is used for varying the strength of magnetic field.
- Frequency sweep
  - Field sweep generator
  - Transducer
  - None of the above
- 14) \_\_\_\_\_ detector used in mass spectrometry.
- Faraday cup
  - Photographic plate
  - Both a) and b)
  - Ion trap
- 15) Number of signals for proton NMR of ethyl bromide molecule is
- 2
  - 4
  - 3
  - 1
- 16) \_\_\_\_\_ is used as a solvent in NMR spectroscopy.
- $D_2O$
  - $CS_2$
  - $CCl_4$
  - All of the above



- II. Answer **any four** : **(4×4=16)**
- 1) Explain in detail hydrolytic resistance test for glass.
  - 2) Give the different types of ions formed in mass spectrometry.
  - 3) Explain Folding endurance test and grammage of packaging material.
  - 4) Define the terms-mean, median, mode, normal distribution.
  - 5) Write in short about i-test.
- III. Answer **any four** : **(4×4=16)**
- 1) Explain Statistical Quality Control Charts.
  - 2) Write a note on fragmentation patterns in mass spectrometry.
  - 3) Define the following terms :  
a) Accuracy      b) Precision      c) Specificity      d) Linearity
  - 4) Write in detail about spin spin coupling.
  - 5) Why TMS is used as internal standard in NMR ?
- IV. Answer **any two** : **(8×2=16)**
- 1) Explain in detail quality management.
  - 2) Explain with suitable diagram magnetic field mass analyser.
  - 3) Write the principle and applications of mass spectrometry.
- V. Answer **any two** : **(8×2=16)**
- 1) Explain with a neat labeled diagram instrumentation of NMR.
  - 2) Explain with a neat labeled diagram MALDI and FAB as ion sources in mass spectrometry.
  - 3) Explain factors affecting chemical shift.
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**SLR-X – 45**

Seat No.	
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**B. Pharmacy (Semester – VIII) Examination, 2015  
PHARMACOLOGY – IV**

Day and Date : Friday, 15-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. Choose the most appropriate alternative for following Multiple Choice Questions :  
**(1×16=16)**

- 1) Which of the following is a topically used Sulfonamide ?
  - a) Silver Sulfadiazine
  - b) Sulfamethoxazole
  - c) Sulfapyridine
  - d) None of these
- 2) Which of the following Fluoroquinolones shows highest potential for Phototoxicity ?
  - a) Sparfloxacin
  - b) Ciprofloxacin
  - c) Levofloxacin
  - d) Norfloxacin
- 3) Which of the following is not extended spectrum penicillin ?
  - a) Amoxicillin
  - b) Carbenicillin
  - c) Methicillin
  - d) None of the above
- 4) When test drug response is taken first and doses of standard drugs are given till response similar to test drug is obtained, it is termed as \_\_\_\_\_ method of Bioassays.
  - a) Bracketing
  - b) Matching
  - c) Interpolation
  - d) None of these
- 5) Which of the following antibiotics act by inhibiting bacterial protein synthesis ?
  - a) Tetracyclins
  - b) Cephalosporins
  - c) Fluoroquinolones
  - d) Sulfonamides
- 6) Gray Baby Syndrome occurs with
  - a) Nitrofurantoin
  - b) Penicillins
  - c) Chloramphenicol
  - d) Ciprofloxacin

P.T.O.



- 7) Which anti-tubercular drug given below is used as a second line drug ?
- a) Ethambutol  
b) Rifampin  
c) Ethionamide  
d) Rifabutin
- 8) A drug of Phenazine Derivative class used as Leprostatic is
- a) Dapsone  
b) Ethionamide  
c) Clofazimine  
d) Linezolid
- 9) Most important long term toxicity of Amphotericin-B is
- a) Peptic Ulceration  
b) Nephrotoxicity  
c) Ototoxicity  
d) None of these
- 10) \_\_\_\_\_ is an example of a sesquiterpene lactone used as an antimalarial ?
- a) Halofantrine  
b) Pyrimethamine  
c) Atovaquone  
d) Artesunate
- 11) Ethylenimine type Alkylating agent is
- a) Thio-TEPA  
b) Cisplatin  
c) Lomustine  
d) Carmustine
- 12) Which of the following Antibiotic is used topically in treatment of Acne ?
- a) Clindamycin  
b) Erythromycin  
c) Both a) and b)  
d) None of these
- 13) Identify the keratolytic agent useful in treatment of Psoriasis from the drugs given below
- a) Salicylic acid  
b) Calcipotriol  
c) Etretinate  
d) Coal Tar
- 14) A nonselective Beta Blocker used topically in the treatment of Glaucoma is
- a) Propranolol  
b) Labetolol  
c) Nebivolol  
d) Timolol
- 15) Which of the following is used in bioassay of Heparin ?
- a) Goat Trachea  
b) Frog Rectus Muscle  
c) Sheep Plasma  
d) Frog Heart
- 16) An antihypertensive agent useful in treatment of Alopecia when applied topically is
- a) Chlordiazepoxide  
b) Nitroglycerine  
c) Minoxidil  
d) Nifedipine



2. Answer **any four** of the following : **(4×4=16)**
- a) What is Bacterial Resistance to Antibiotics ? Briefly describe the mechanisms of such resistance.
  - b) Write rationale for combining Trimethoprim and Sulfamethoxazole.
  - c) Describe common properties of Aminoglycosides.
  - d) Describe pharmacotherapy of Glaucoma.
  - e) Describe mechanism of action and adverse effects of tetracyclines.
3. Answer **any four** of the following : **(4×4=16)**
- a) Classify cephalosporins with examples.
  - b) Write a note on drug therapy of alopecia.
  - c) Describe bioassay of heparin briefly.
  - d) What are the drugs used in the treatment of Allergic Rhinitis and Otitis Media.
  - e) Enumerate different classes of antifungal drugs with examples.
4. Answer **any two** of the following : **(2×8=16)**
- a) What are Beta Lactam Antibiotics ? Classify penicillins with examples. Write mechanism of action, antibacterial spectrum, adverse effects and uses of Penicillin G.
  - b) Classify antimalarial drugs with examples. Add a note on pharmacology of chloroquine.
  - c) Classify antineoplastic drugs with examples. Add a note on antimetabolites.
5. Answer **any two** of the following : **(2×8=16)**
- a) Define bioassays. Describe types and principles of bioassays. Add a note on bioassay of acetylcholine.
  - b) Classify anti-tubercular drugs with examples. Add a note on combination therapy of tuberculosis.
  - c) Enumerate anti-retroviral drugs with examples. Write a note on drug therapy of AIDS.
-



**SLR-X – 46**

Seat No.	
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**B.Pharmacy (Semester – VIII) Examination, 2015  
HERBAL TECHNOLOGY**

Day and Date : Monday, 18-5-2015  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 80

1. Multiple choice questions (MCQ)/Objective Type Questions. **(1×16=16)**

- 1) Total sugar and Reducing sugar determinations are the parameters in the quality control of  
a) Vati                      b) Bhasma                      c) Avaleha                      d) Taila
- 2) Which is not the desired property of Hair dye ?  
a) Change the natural color of hair  
b) Color the grey hair  
c) Change the color of hair temporarily for particular reasons  
d) Not change the natural color of hair
- 3) Bullet shaped pellets of powdered herbs in cocoa butter base designed for rectal absorption are known as  
a) Suppositories      b) Liniments                      c) Salves                      d) Fomentations
- 4) The ideal solvent for a certain pharmacologically active constituent should  
a) Be highly selective for the compound to be extracted  
b) Have a high capacity for extraction in terms of coefficient of saturation of the compound in the medium  
c) Both a) and b)  
d) None
- 5) Semi-solid preparations of drugs prepared by addition of sugar, jaggery or sugar candy and boiled with prescribed drug juice or decoction are called  
a) Arka                      b) Arista                      c) Avaleha                      d) Asava

P.T.O.



- 6) Which is not an ideal property of Hair colorants ?
- a) Should give desirable color
  - b) It should be non-injurious to the hair shaft
  - c) It should possess no systemic toxic effect or irritation when applied to the hair
  - d) It should have no affinity for hair keratin
- 7) Uni-directional action and No synergistic action are the demerits of
- a) Monoherbal preparation
  - b) Polyherbal preparation
  - c) Both Mono and Polyherbal preparation
  - d) None
- 8) In the process of *Bhasma* preparation the toxic raw metals or minerals are converted into safe and absorbable forms by
- a) Shodhana
  - b) Marana
  - c) Both a) and c)
  - d) None
- 9) The status of a drug that is determined by identity, purity, content and other chemical, physical or biological properties is defined as
- a) Quality
  - b) Safety
  - c) Efficacy
  - d) None
- 10) Herbal medicines historically used in a local community or region and very well known through long usage by the local population in terms of its composition, treatment and dosage are categorized as
- a) Indigenous herbal medicines
  - b) Herbal medicines in systems
  - c) Modified herbal medicines
  - d) Imported products with a herbal medicine base
- 11) Water based infusion designed to achieve herbal therapy through immersion/ osmosis are called as
- a) Herbal Baths
  - b) Poultice
  - c) Liniments
  - d) Salves
- 12) Viscosity, Iodine value, Saponification value, Acid value etc are the parameters in Quality control of
- a) Hair colorants
  - b) Hair conditioners
  - c) Hair oils
  - d) None



- 13) Which of the following tools are used for testing the efficacy of drug ?
- a) Randomized clinical trials
  - b) Case reports
  - c) Case series
  - d) All the above
- 14) Cosmetic preparations used for removal of facial make up, surface grime, oil, water and oil soluble soil efficiently from the face and throat are known as
- a) Cleansing creams
  - b) Vanishing creams
  - c) Night creams
  - d) Foundation creams
- 15) The process of simply soaking a drug in water for a specified time are called
- a) Infusion
  - b) Percolation
  - c) Digestion
  - d) None of the above
- 16) Liquid preparation obtained by distillation of certain liquids or crude – drugs soaked in water are called
- a) Arka
  - b) Arista
  - c) Avaleha
  - d) Asava

2. Answer **any four**. **(4×4=16)**

- 1) Describe the classification of herbal drugs under 4 categories.
- 2) Define and classify Herbal formulations with examples.
- 3) Write a short note on Importance of Herbal Medicine.
- 4) What are Hair conditioners ? Name 4 herbal drugs used as conditioners.
- 5) Define the following with suitable examples  
Nutraceuticals  
Healthfoods.

3. Answer **any four**. **(4×4=16)**

- 1) Define the following :
  - a) Herbal medicines
  - b) Phytopharmaceuticals.
- 2) How do you prepare and standardize Taila.
- 3) Define any 4 semisolid herbal dosage forms and their use.
- 4) Write a note on Quality control of Cosmetics.
- 5) Write short note on Processing Methods for Herbal drugs.





4. Answer **any two**. **(8×2=16)**

- 1) Describe the methods in Quality Assessment of Herbal drugs as per guidelines recommended by WHO.
- 2) Describe the method of preparation and standardization of Avaleha.
- 3) Write note on :
  - a) Polyherbal formulations
  - b) Safety considerations for Herbal drugs.

5. Answer **any two**. **(8×2=16)**

- 1) Describe the method of preparation of Arista with suitable example and how do you standardize Arista.
  - 2) Classify herbal skin care cosmetics and Describe the Methods for Quality control of Herbal creams.
  - 3) Write note on :
    - a) Packaging and storage of Herbal Drugs
    - b) Import and Export of Herbal Drugs.
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Seat No.	
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**B.Pharm. (Semester – I) (CGPA Pattern) Examination, 2015**  
**PHARMACOGNOSY – I**

Day and Date : Thursday, 14-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

1. Multiple choice questions :

(1×15=15)

- 1) Foam test is used for the detection of  
A) Alkaloids  
B) Carbohydrates  
C) Steroids  
D) Saponin Glycosides
- 2) Which of the following is not Dosha ?  
A) Vata  
B) Kapha  
C) Vipaka  
D) Pitta
- 3) \_\_\_\_\_ belongs to family Plantaginaceae.  
A) Isabgol  
B) Tulsi  
C) Linseed  
D) Sandalwood
- 4) \_\_\_\_\_ is an exogenous factor useful for cultivation of medicinal plants.  
A) Soil  
B) Altitude  
C) Soil fertility  
D) None of above
- 5) Senna contains \_\_\_\_\_ type of stomata.  
A) Anomocytic  
B) Anisocytic  
C) Dicytic  
D) Paracytic
- 6) Identify the crude drug not to be used in the preparation of cosmetic products  
A) Sandalwood  
B) Turmeric  
C) Cannabis  
D) Aloe
- 7) \_\_\_\_\_ constitute fruit part of the plant.  
A) Rasna  
B) Fennel  
C) Podophyllum  
D) All of above
- 8) Identify the crude drug having anti-malarial action.  
A) Cinchona  
B) Artemisia  
C) Both a and b  
D) Podophyllum
- 9) Who is regarded as First Pharmacist of the World ?  
a) Aristotle  
B) Hippocratis  
C) Galen  
D) Fosse
- 10) The vascular bundle in which xylem and phloem are present on same radius is called \_\_\_\_\_ vascular bundle.  
A) Conjoint  
B) Radial  
C) Concave  
D) Colateral
- 11) Determination of anti-diabetic activity of crude drug is \_\_\_\_\_ method of evaluation.  
A) Organoleptic  
B) Biological  
C) Physical  
D) Chemical
- 12) Identify the crude drug obtained from animal origin  
A) Musk  
B) Hemp  
C) Basil  
D) Flax seed
- 13) The soil which contains more than 20% of lime is called \_\_\_\_\_ soil.  
A) Loamy  
B) Sandy  
C) Sandy loamy  
D) Calcarious
- 14) Identify the crude drug obtained from mineral origin  
A) Talc  
B) Calamine  
C) Shilajit  
D) All of above
- 15) When many more flowers come together and form the fruits, then it is called \_\_\_\_\_ fruits.  
A) Aggregate  
B) Average  
C) Simple  
D) Compound

P.T.O.

## SLR-X – 5



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

**(5×5=25)**

- 1) Discuss current and future scope of pharmacognosy with suitable examples.
- 2) Write merits and demerits of cultivation over the wild sources.
- 3) Explain Unani system of medicine in detail.
- 4) Describe chemical method of classification with examples.
- 5) Explain different types of adulteration with suitable examples.
- 6) Write a note on :
  - a) Parenchyma
  - b) Sclerenchyma.

3. Answer **any three** of the following questions :

**(3×10=30)**

- 1) Discuss the different stages involved in the processing of crude drugs with its significance.
  - 2) Enlist different parameters studied under physical method of evaluation. Explain any five parameters with examples.
  - 3) Enlist different systems of classification of DONO. Add a note on pharmacological method of classification.
  - 4) Write a note on :
    - a) Types of stomata
    - b) Sexual method of propagation
    - c) Polyploidy
    - d) Chemodemes.
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**B. Pharm. Examination, 2015  
ENVIRONMENTAL STUDIES**

Day and Date : Saturday, 16-5-2015  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

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

1. Multiple choice questions : 10
- I) The term environment means \_\_\_\_\_  
A) Region                      B) Surrounding      C) Land                      D) Area
- II) A lion depends on other animals for food, hence it is called as a \_\_\_\_\_  
A) Producer                      B) Consumer      C) Destroyer      D) Decomposer
- III) The Parliament of India passed the “Environment Protection Act” in \_\_\_\_\_ year.  
A) 1974                      B) 1976                      C) 1980                      D) 1986
- IV) Acid rain is a result of \_\_\_\_\_ pollution.  
A) Land                      B) Noise                      C) Air                      D) Water
- V) \_\_\_\_\_ is an non renewable source of energy.  
A) Sun                      B) Water                      C) Crude oil                      D) Wind
- VI) Largest part of the world water is used for \_\_\_\_\_  
A) Domestic                      B) Agriculture  
C) Industries                      D) None of these
- VII) In Uttar Pradesh the “Chipko Movement” was introduced by \_\_\_\_\_  
A) Medha Patkar                      B) Mohan Dharia  
C) Sundarlal Bahuguna                      D) Baba Amte
- VIII) The richest and the most threatened reservoirs of plant and animals life on earth are \_\_\_\_\_  
A) Host spots                      B) Hot spots  
C) Green spots                      D) National Parks



- IX) The main source of air pollution in India is \_\_\_\_\_
- A) Automobiles
  - B) Forest Fire
  - C) Nuclear explosion
  - D) Industrilization
- X) \_\_\_\_\_ gas is responsible for global warming.
- A) CO<sub>2</sub>
  - B) SO<sub>2</sub>
  - C) O<sub>2</sub>
  - D) CFC

2. Write short answer (**any four** out of six) :s **8**
- a) What is Environment ?
  - b) What is soil erosion ?
  - c) What is ecosystem ?
  - d) What is biodiversity ?
  - e) What is noise pollution ?
  - f) What is global warming ?
3. Write short notes (**any four** out of six) : **12**
- a) Importance of environmental studies.
  - b) Genetic diversity.
  - c) Strategies conservation of biodiversity.
  - d) Causes of water pollution.
  - e) Energy flow in the ecosystem.
  - f) Nuclear hazards.
4. a) Explain the causes and effects of global warming. **10**
- OR
- b) In brief explain major Environmental Movement in India.
5. What is pollution ? Discuss the problem of Air Pollution in India. **10**
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**B. Pharmacy (Semester – II) Examination, 2015  
PHARMACEUTICS – II (New - CGPA Pattern)**

Day and Date : Wednesday, 6-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

1. Multiple choice question.

**(15×1=15)**

- 1) \_\_\_\_\_ is the category for piperazine citrate elixir.  
a) Astringent      b) Anthelmintic      c) Demulcent      d) Decongestant
- 2) Sutures are used for  
a) Sewing tissue together      b) Tying blood vessels  
c) Both a and b      d) None of the above
- 3) Surfactant having HLB value 15-18 used solubilizing agent  
a) Emulsifying agent      b) Wetting agent  
c) Foaming agent      d) Solubilizing agent
- 4) \_\_\_\_\_ used for mixing of semisolid.  
a) Triple roller mill      b) Planetary mixer  
c) Colloidal mill      d) All of the above
- 5) Sweetland filter is variant of  
a) Filter leaf      b) Drum filter  
c) Filter press      d) None of the above
- 6) When two immiscible liquids are mixed it forms \_\_\_\_\_ type of mixture.  
a) Positive      b) Negative  
c) Both a and b      d) None of the above
- 7) In \_\_\_\_\_ separator, the centrifugal force is used to separate solids from liquid.  
a) Cyclone      b) Air  
c) Both a and b      d) None of the above
- 8) Cutter mill is based on principle of  
a) Cutting      b) Impact      c) Attrition      d) Compression
- 9) Moh's scale used to express  
a) Hardness      b) Toughness  
c) Abrasiveness      d) None of the above



- 10) \_\_\_\_\_ is mechanism of liquid mixing.
- a) Laminar mixing                                  b) Turbulent mixing  
 c) Bulk transport                                    d) All of the above
- 11) \_\_\_\_\_ is ability to give velvety finish to skin.
- a) Covering power                                    b) Slip  
 c) Adhesiveness                                    d) Bloom
- 12) \_\_\_\_\_ is type IV glass.
- a) Borosilicate glass                                    b) Treated soda lime  
 c) Regular soda lime                                    d) Non-parenteral
- 13) Clarification is the process of separation of solids from liquid, where in solids are not more than \_\_\_\_\_ while, filtrate is elegant.
- a) 15%                                  b) 1%                                  c) 60%                                  d) 10%
- 14) Hydro extractor used for
- a) Filtration    b) Size reduction  
 c) Mixing    d) None of the above
- 15) \_\_\_\_\_ used as filter aid.
- a) Charcoal                                  b) Asbestos                                  c) Talc                                  d) All of the above

2. Answer **any five**. **(5×5=25)**

- 1) Discuss in short organoleptic additives.
- 2) Draw neat labeled diagram of filter leaf and fluid energy mill.
- 3) Write a note on aeration and vortex formation.
- 4) Give principle and formulation of tooth powder and oral rehydration salts.
- 5) Define size separation and explain method of determination of particle size.
- 6) Write in brief about materials used in closure and types of closures.

3. Answer **any three**. **(10×3=30)**

- 1) Explain method of manufacturing of cat gut and quality control tests for it.
  - 2) Write principle, working, construction, advantages, disadvantages of planetary mixer.
  - 3) Explain in short different methods of granulation. Add note on effervescent granules.
  - 4) Explain factors influencing filtration rate. And draw neat labeled diagram of Rotary drum filter.
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**B.Pharmacy (Semester – II) (New CGPA Pattern) Examination, 2015  
MODERN DISPENSING AND HOSPITAL PHARMACY**

Day and Date : Friday, 8-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

1. Multiple choice questions :

**(1×15=15)**

- 1) A list of drug is known as  
a) Pharmacopeia    b) Dispensatory    c) Formulary    d) All of the above
- 2) The colour code for Oxygen cylinder is  
a) Black body grey top    b) Black body white top  
c) White body black top    d) Blue
- 3) \_\_\_\_\_ is an example of physical incompatibility.  
a) Immiscibility    b) Precipitation    c) Insolubility    d) All of these
- 4) The number of pharmacist required for a hospital having 100 beds is  
a) 5    b) 3    c) 10    d) 8
- 5) An extraordinary response to a drug which is different from its characteristic pharmacological action is called as  
a) Accumulation    b) Additive effect    c) Tachyphylaxis    d) Idiosyncrasy
- 6) "Inscription" is the body of the prescription it contains  
a) Name of ingredients    b) Direction  
c) Patient name    d) All of the above
- 7) \_\_\_\_\_ deals with study of dose.  
a) Psychology    b) Physiology    c) Neurology    d) Posology
- 8) Meaning of term "Inter Cibos" is  
a) Before meals    b) After meals    c) Between meals    d) All of the above
- 9) Who is chairman of pharmacy and therapeutics committee ?  
a) Physican    b) Nurse    c) Pharmacist    d) All of the above
- 10) Eligibility to become hospital pharmacist is  
a) D. Pharm    b) B. Pharm    c) M. Pharm    d) All of the above
- 11) CSS stands for  
a) Community Science Services    b) Company Staff Secretary  
c) Central Sterile Supply    d) None of the above
- 12) Eye preparation must be  
a) Isotonic    b) Hypotonic    c) Hypertonic    d) All of these
- 13) Young's formula is based on  
a) Age    b) Weight    c) Sex    d) Surface area





- 14) EOQ stands for
- a) Economic Old Quantity
  - b) Economic Odd Quantity
  - c) Economic Order Quantity
  - d) None of the above
- 15) Proof spirit contains \_\_\_\_\_ % v/v ethyl alcohol.
- a) 57.2%
  - b) 57.1%
  - c) 57.3%
  - d) None of the above

2. Answer **any five** : **(5×5=25)**

- a) Define the prescription. Explain the sources of errors in prescription.
- b) Describe in brief surgical instruments used in hospital.
- c) Enumerate the function of Central Sterile Supply Unit. Write a note on selection of staff for Central Sterile Supply Unit.
- d) Write a note on isotonic solution. Find the concentration of sodium chloride required to make a 1.5 percent solution of cocaine hydrochloride iso-osmotic with blood plasma.  
(Given : The freezing point of 1% w/v solution of cocaine hydrochloride is = 0.09°C, the freezing point of 1% w/v solution of sodium chloride is = 0.576°C)
- e) Give the purpose, organization and function of pharmacy and therapeutic committee.
- f) Explain the maintenance of record and issue of the narcotic drug.

3. Answer **any three** : **(10×3=30)**

- a) Write a note on dispensing of the injectables, eye drops, insulin injection, inhalers and transdermal drug delivery system with emphasis on patient counselling.
- b) Explain in brief chemical incompatibility with examples. How will you dispense following prescription, mention the type of incompatibility and method of their correction present in the following prescription.

R<sub>x</sub>

Sodium salicylate 3g

Syrup of lemon 15 ml

Water 60 ml

- c) Give the importance of inventory control of drug in hospital. Explain purchasing procedure of drug in hospital.
  - d) Give the organization of hospital. Highlight the function of Hospital. Classify hospital based on specialization.
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**B. Pharmacy (Semester – II) Examination, 2015**  
**ORGANIC CHEMISTRY – I**  
**(New CGPA Pattern)**

Day and Date : Monday, 11-5-2015  
Time : 10.30 a.m. to 1.30 p.m

Total Marks : 70

1. Multiple Choice Questions/Objective Type Questions : (15×1=15)

- 1) In the electromeric effect involves \_\_\_\_\_ electron.  
a)  $\pi$                       b)  $\sigma$                       c) n                      d) none of the above
- 2) \_\_\_\_\_ theory is not able to explain acidic and basic property of a substance in non-aqueous solvents.  
a) Bronsted-Lowry                      b) Lewis  
c) Arrhenious                      d) All of the above
- 3) The Homolytic fission of covalent bond between carbon atoms will produce  
a) Two carbons Ions                      b) Carbanion Ions  
c) Carbonium Ions                      d) Free radical
- 4) The migration of an atom or group of atom from one site to another between two molecules called as  
a) Intramolecular rearrangement                      b) Intermolecular rearrangement  
c) Substitution reaction                      d) Elimination reaction
- 5) The 1, 2 dibromoethane is formed by the reaction between  
a) Ethylene with  $\text{Br}_2$                       b) Acetylene with excess of HBr  
c) Ethylene with excess of HBr                      d) 1, 2 dichloroethane with  $\text{Br}_2$
- 6) Which of the following compounds would react most rapidly in an  $\text{SN}_2$  reaction ?  
a)  $\text{CH}_3\text{CH}_2\text{I}$                       b)  $\text{CH}_2 = \text{CHI}$                       c)  $(\text{CH}_3)_2\text{CHI}$                       d)  $(\text{CH}_3)_3\text{CL}$
- 7) Lucas reagents is  
a)  $\text{HCl}/\text{NaNO}_2$                       b)  $\text{H}_2/\text{Pd}$   
c)  $\text{HCl}/\text{ZnCl}_2$                       d)  $\text{H}_2/\text{Pd}/\text{BaSO}_4$
- 8) In Victor Meyer test primary alcohol produce \_\_\_\_\_ colour.  
a) Blue colour                      b) Red blood colour  
c) Green colour                      d) Colourless



- 9) The symmetrical ethers are prepared by \_\_\_\_\_ methods.
- a) Hydration of alcohol                      b) Esters react with carboxylic acid  
c) Hydrolysis of alkyl halide                d) Dehydration of alcohol
- 10) According to antimarkovnikov rule when propylene react with HBr in the presence of peroxide product is
- a) n-propyl bromide                              b) Isopropyl bromide  
c) Butyl bromide                                 d) Isobutyl bromide
- 11) In Diels alder reaction of Dienes 1, 3 butadiene react with \_\_\_\_\_ at 100° to form tetrahydrobenzaldehyde.
- a) Napthalene    b) acrolein                      c) acetylene                      d) formic acid
- 12) The higher reactivity of alkyne as compared to alkane is due to
- a) Pi bond    b) Sigma bond  
c) Hydrogen bond                                  d) None of the above
- 13) In dienes undergoes addition of HBr gives 1, 2 addition product at
- a) Low temperature                              b) High temperature  
c) Moderate temperature                        d) None of the above
- 14) The formation of carbocation is a Intermediate in \_\_\_\_\_ reaction.
- a) SN<sub>1</sub>                              b) SN<sub>2</sub>                              c) E<sub>1</sub>                              d) Both a) and c)
- 15) What is the IUPAC name for given structure CH<sub>3</sub>CH = CH CH<sub>2</sub>OH ?
- a) 2-buten-1-ol    b) 2-buten-4-ol                      c) 2-buten-2-ol                      d) 2-butan-4-ol

2. Answer **any five** : **(5×5=25)**

- 1) Explain Inductive effect and Steric effect.
- 2) Define Diene. Classify with example.
- 3) Write method of preparation and reaction of ethers.
- 4) Write generation, reaction, stability and structure of carbocation.
- 5) Note on Bond cleavage and Classes of reagent.
- 6) Explain the theories of Acids and Bases.

3. Answer **any three** : **(3×10=30)**

- 1) Explain Markovnikov and antimarkovnikov rule with example.
  - 2) Explain SN<sub>2</sub> reaction Mechanism and write down factor affecting SN<sub>1</sub> and SN<sub>2</sub> reaction.
  - 3) Write method of preparation and reaction of 1, 3 butadiene and explain Diels-alder reaction.
  - 4) Explain the Qualitative test for alcohol.
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**B.Pharm. (Semester – II) Examination, 2015  
BIOCHEMISTRY – II (New – CGPA Pattern)**

Day and Date : Wednesday, 13-5-2015  
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 70

1. Answer the following questions. **(15×1=15)**

- 1) Sakaguchi reaction is specific for \_\_\_\_\_  
a) argenine      b) proline      c) tyrosine      d) valine
- 2) The protein present in hair is \_\_\_\_\_  
a) keratin      b) elastin      c) collagen      d) myosin
- 3) Non essential and essential amino acids are also known as \_\_\_\_\_  
a) non dietary, dilatory      b) indispensable, dispensable  
c) dispensable, indispensable      d) all of above
- 4) Amino acids formed from glucose are called \_\_\_\_\_ amino acids.  
a) Gluconates      b) Glucolate      c) Glucogenic      d) Gluconeogenic
- 5) The optically inactive amino acid is \_\_\_\_\_  
a) Glycine      b) Serine      c) Threonine      d) Valine
- 6) Distance traveled per turn of  $\alpha$ -helix in nm is \_\_\_\_\_  
a) 0.53      b) 0.54      c) 0.44      d) 0.48
- 7) Biuret reaction is specific for \_\_\_\_\_  
a) –CONH-linkages      b) –CSNH<sub>2</sub> group  
c) –(NH)NH<sub>2</sub> group      d) All of these
- 8) Million reaction is specific for the amino acid  
a) Tryptophan      b) Tyrosine  
c) Phenylalanine      d) Arginine
- 9) Flexability of active site region is seen in \_\_\_\_\_ theory.  
a) Lock and key      b) Induced fit  
c) Fischer      d) Preshaped



- 10) Lineweaver – Burk double reciprocal plot is related to  
a) substrate conc.                      b) enzyme activity  
c) both a) and b)                      d) temperature
- 11) Free ammonia is released during  
a) Oxidative deamination              b) Purine catabolism  
c) Pyrimidine catabolism              d) All of these
- 12) The major site of urea synthesis is  
a) brain                      b) liver                      c) kidneys                      d) muscles
- 13) Combination of base, sugar and phosphate is called \_\_\_\_\_  
a) Nucleotide                      b) Nucleo protein  
c) Nucleoside                      d) Nuclease
- 14) Small fragments of DNA produced during replication are called \_\_\_\_\_  
a) DNA fragments                      b) DNA primer  
c) Okazaki fragments                      d) DNA replicates
- 15) Translation results in a product known as \_\_\_\_\_  
a) Protein                      b) tRNA                      c) mRNA                      d) rRNA

2. Answer **any five** of the following questions : **(5×5=25)**

- 1) What are purines and pyrimidine bases ? Describe Watson and Crick model of DNA structure.
- 2) Discuss Sanger's reaction and Edman's reaction.
- 3) Add note on enzyme specificity.
- 4) Explain Zwitter ions and isoelectric precipitation.
- 5) Explain urea cycle in detail.
- 6) Explain reversible, irreversible inhibition of enzymes.

3. Answer **any three** following questions : **(3×10=30)**

- 1) Add note on protein biosynthesis.
  - 2) Explain the term biological oxidation. Explain in detail respiration chain.
  - 3) Give in brief factors affecting enzymatic reaction.
  - 4) What are the different levels at which proteins structure is studied ?
-