Roll No. | | | | | | | | | | |

Total No. of Pages: 02

Total No. of Questions : 13

B.Pharmacy (Sem.-1)

HUMAN ANATOMY AND PHYSIOLOGY-I

Subject Code : BP-101T

M.Code : 74644

Date of Examination : 14-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Answer briefly :**

   a) Explain term homeostasis.

   b) Write location and name of flat bone in human body.

   c) Write two functions of WBCs.

   d) What is myopia?

   e) Define lymph. Which lymphatic organ has largest number of lymphatic tissue?

   f) Write function of medulla oblongata.

   g) Define blood pressure and cardiac output.

   h) Mention two types of cartilage.

   i) Write the name of vomiting center in brain,

   j) List two functions of bile juices.

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SECTION-B

2. What is erythropoiesis? Describe the stages of erythropoiesis and write the factors influencing the same.

3. What is skeletal system? Write the function of axial bones. Give physiology of muscle contraction.

4. Define cell and cell junction. What is cell division? Write mitosis and meiosis cell division in detail with the help of a diagram.

SECTION-C

5. Write origin, insertion and anatomy of deltoid muscles.

6. Describe conductivity system of heart.

7. Mention physiological factors affecting blood pressure.

8. Draw the structure of ear and write function of middle and inner ear.

9. Write a detail note on basic life process.

10. What are the general principles of cell communication?

11. Write a note on transportation of carbon dioxide and oxygen.

12. Define pulse. Write about ECG in detail.

13. Describe different layers of skin and their functions.

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Roll No. ☐☐☐☐☐☐☐☐☐☐ Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.–1)

PHARMACEUTICAL INORGANIC CHEMISTRY

Subject Code : BP-104T

M.Code : 74647

Date of Examination:29-12-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.**

SECTION-A

1. **Write in brief about the following :**

   a) Which apparatus and chemical reaction is involved in limit test for iron?

   b) Write formula and medicinal uses of chlorinated lime and boric acid.

   c) What is buffer capacity and isotonicity?

   d) What are poisons? What is antidote for cyanide poisoning?

   e) What are the medicinal uses of aluminum hydroxide gel and calcium carbonate?

   f) What is kaolin and Attapulgite?

   g) Give the composition and method of preparation of Iodine tincture.

   h) Write composition and uses of Oral Rehydration Salt (ORS).

   i) Define the purpose of limit test in pharmaceuticals.

   j) Give the precautionary measure required to handle radioactive substances.

Dec-2023

SECTION-B

2. Explain the principle, apparatus and procedure involved in the limit test of arsenic.
3. Write a detailed note on Zinc eugenol cement and role of fluoride in dentifrices.
4. Discuss medicinal uses and mechanism action of antimicrobials and expectorants.

SECTION-C

5. Write the construction, working principle of the Geiger-muller counter.
6. Explain the method of preparation and assay of Ammonium chloride.
7. Classify antacids with examples. Add a note on combination antacid therapy.
8. Write a note on acidifiers and activated charcoal.
9. Discuss principle and chemical reaction involved in limit test for sulphate.
10. Describe the physiological mechanism of acid-base balance in the body.
11. What are Heamatinics? Write the preparation and assay of ferrous sulphate.
12. Classify cathartics. Write in detail about sodium orthophosphate.
13. Give the principle and reaction involved in the assay of Calcium gluconate.

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.–1)

PHARMACEUTICAL ANALYSIS-I

Subject Code : BP-102T

M.Code : 74645

Date of Examination:21-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. Answer briefly :

a) What are systematic errors and random errors?

b) Which parameter is used to compare strengths of two acids?

c) Write the equation involved in the titration of iodine and sodium thiosulphate solutions.

d) Write the conditions for the process of digestion in Gravimetry.

e) Which indicator will you prefer for titration of acetic acid against sodium hydroxide?

f) Give one example each for indicator electrode and reference electrode.

g) Draw the conductometric titration curve for strong acid with a weak base.

h) Write the principle and applications of Polarographic analysis.

i) What are the precautions to be taken while preparing perchloric acid as titrant?

j) Write the structure of EDTA.

SECTION-B

2. Explain the rationale for gravimetry and outline the steps for barium sulphate estimation?
3. Explain non-aqueous titrations and how is Ephedrine Hydrochloride estimated using it?
4. Explain the fundamental principle, methods and applications of diazotization titration.

SECTION-C

5. Describe the various methods to minimize the errors.
6. Explain the Quinonoid theory of indicators with example.
7. Write the principle and instrumentation of conductometry.
8. Describe Volhard method in precipitation titrations.
9. Explain the principle and procedure involved in the estimation of Calcium Gluconate.
10. Differentiate between iodimetry and iodometry.
11. Explain what is co-precipitation and post-precipitation with examples.
12. Give note on construction and working of reference electrodes used in potentiometry.
13. What is polarography? Explain the terms

a) Limiting current

b) Polarographic maxima.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-2)

HUMAN ANATOMY AND PHYSIOLOGY-II

Subject Code : BP-201T

M.Code : 74967

Date of Examinaton : 09-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Answer briefly :**

   a) What is total lung capacity?

   b) How do you define a neurotransmitter? Give two examples.

   c) Define hormone with examples.

   d) What are accessory organs of digestive system?

   e) What are afferent & efferent nerves?

   f) What is Cushing syndrome?

   g) What is CSF? Highlight its functions.

   h) What is spermatogenesis?

   i) Highlight functions of spleen.

   j) Enlist various organs of urinary system.

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SECTION-B

2. Discuss in detail about mechanism of respiration and regulation of respiration.

3. What are Endocrine glands? Explain why pituitary gland is called as master of all glands, discuss its secretions and their functions.

4. What is nervous system? Classify it and explain distribution and functions of each division.

SECTION-C

5. Write a note on reflex action and its significance.

6. Write a brief note on hormones of adrenal gland.

7. Discuss role of RAS in kidneys.

8. Write a note on protein synthesis.

9. Write a note on functions of liver.

10. Discuss regulation of acid base balance by kidneys.

11. Add a note on structure of DNA with diagram.

12. Write a note on physiology of menstruation.

13. Draw a neat and labelled diagram of nephron.

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.-2)

PATHOPHYSIOLOGY

Subject Code : BP-204T

M.Code : 74970

Date of Examination: 16-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. Answer briefly :

a) Differentiate between COPD and Asthma.

b) What is the role of serotonin in Depression?

c) Write down clinical symptoms of Meningitis.

d) Explain the terms Hypoxia and Ischemia.

e) What is Schizophrenia and its symptoms?

f) What do you mean by opportunistic infection in AIDS?

g) Write down about various inflammatory mediators involved in inflammation.

h) Difference between atherosclerosis and arteriosclerosis.

i) What is etiology of Haemophilia and Thalasemia?

j) Explain inflammatory bowel diseases.

Dec-2023

SECTION-B

2. Explain role of RAAS in pathophysiology of Hypertension. Write down in brief about its symptoms, diagnoses and treatment.

3. What is Epilepsy and its different types? Discuss about the pathophysiology of epilepsy and its symptoms.

4. What do you mean by Inflammation? Write down its types and discuss mechanism involved in Inflammation in detail.

SECTION-C

5. What are ischemic heart diseases and their pathophysiology? Differentiate between Angina and Myocardial infarction.

6. Discuss Pathogenesis of Cancer.

7. What is cell injury? Write down various causes of cell injury.

8. Write down pathophysiology of Alzheimer's disease.

9. Write a short note on different types of Hepatitis.

10. What is the pathophysiology of gout and its clinical symptoms?

11. What is the etiology of tuberculosis? Discuss its pathology and symptoms.

12. Write the etiology, pathogenesis and different stages of AIDS.

13. What do you mean by Iron deficiency anemia? Discuss its pathology.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-2)

BIOCHEMISTRY

Subject Code : BP-203T

M.Code : 74969

Date of Examination: 02-01-2024

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Briefly explain the following:**

   a) Anomerism in monosaccharide

   b) Phosphatidic acid

   c) Essential amino acids

   d) High energy bond in ATP

   e) Reducing equivalents

   f) Glucose -6-phosphate dehydrogenase

   g) Ketoacidosis

   h) Pathophysiology of phenylketonuria

   i) Atherosclerosis

   j) Allosteric enzyme regulation.

SECTION-B

2. Explain Michael is-Menten and Lineweaver-Burk plots of enzyme kinetics.
3. Describe the complete metabolism of palmitic acid.
4. Describe the metabolism of DNA.

SECTION-C

5. Classify amino acids on the basis of R groups.
6. Describe structure and biological significance of ATP.
7. Compare glycolysis with pentose phosphate pathway.
8. Explain mechanism of oxidative phosphorylation.
9. Describe the biosynthesis of ketone bodies.
10. Describe synthesis and biological significance of Dopamine.
11. Explain the mechanism of detoxification of body from ammonia.
12. Briefly describe the steps of translation process.
13. Discuss the diagnostic applications of transaminases.

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.–3)

PHARMACEUTICAL ORGANIC CHEMISTRY-II

Subject Code : BP-301T

M.Code : 93323

Date of Examination : 08-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.

SECTION-A

1. **Answer briefly :**

   a) How many number of isomers are possible for disubstituted benzene?

   b) Which theory explains the stability of larger rings?

   c) Give the structure and uses of Resorcinol.

   d) Comment upon the stability of Aryl diazonium salts.

   e) Define Acid value.

   f) What is the product formed when phenol is reacted with concentrated Nitric acid?

   g) Write any two methods for the synthesis of Tritane.

   h) Give two reactions of cyclopropane.

   i) Write any one method for the synthesis of aniline.

   j) Define Rancidity.

SECTION-B

2. Write a detailed note on the various methods of synthesis and reactions of Benzoic acid. Compare its acidity with aliphatic acids.

3. Explain the analytical, synthetic and other evidences in the derivation of structure of benzene.

4. **Comment upon :**

   a) Haworth synthesis

   b) Bayer's strain theory.

SECTION-C

5. Comment upon the oxidation reactions of Anthracene.

6. Give the mechanism of sulphonation of benzene.

7. What is Fries rearrangement? Give its mechanism.

8. Explain different methods for the synthesis of cycloalkanes.

9. Give the structure and uses of DDT and Chloramine.

10. Give the reactions of diazonium salts involving evolution of nitrogen.

11. What are polynuclear hydrocarbons? Classify them.Give examples of each class.

12. Give significance and principle involved in the determination of Saponification value.

13. Write down the mechanism of electrophillic substitution reactions of benzene.

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.–3)

PHYSICAL PHARMACEUTICS-I

Subject Code : BP-302T

M.Code : 75106

Date of Examination : 11-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Define briefly :**

   a. What is meant by contact angle and how is it related to wetting of solids?

   b. What are polar and semi-polar solvents? Give two examples each.

   c. What is meant by salting out?

   d. What is meant by internal pressure?

   e. What is spreading coefficient?

   f. Define 'freezing point depression'.

   g. What is self-association?

   h. What is an isotonic solution?

   i. What are eutectic mixtures?

   j. What are clathrates? Give two examples.

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SECTION-B

2. Explain the phase diagram for water at moderate pressures and discuss the occurrence of "triple point".

3. Discuss ideal solutions and explain complete and partial miscibility.

4. Classify complexes with examples. Discuss one method to determine the stoichiometry of complexes.

SECTION-C

5. Write a note on influence of buffer capacity and pH on tissues.

6. Discuss the solubility method for determining complex formation.

7. Write a note on ampholytes with examples.

8. Explain hydrophobic interaction and its significance.

9. Write a note on distribution coefficient.

10. What is dissociation constant? Write a note on it and explain its significance.

11. What are liquid crystals and what are their applications?

12. Summarize the application of diffusion in drug absorption.

13. Differentiate between amorphous and crystalline solids with respect to solubility and dissolution of drug molecules.

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Total No. of Questions : 13

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B.Pharma (Sem–3)

PHYSICAL PHARMACEUTICS-I

Subject Code : BP-302T

M.Code : 93324

Date of Examination : 11-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Define briefly :**

   a) Distinguish between solvation and association giving one example each.

   b) What are eutectic mixtures?

   c) What is dielectric constant and its significance?

   d) Define HLB value and its scale.

   e) What are clathrates? Give two examples.

   f) Define 'sodium chloride equivalent'.

   g) What is interfacial tension?

   h) What are polar and semi-polar solvents? Give two examples each.

   i) Define 'freezing point depression'.

   j) Mention the important properties of an amorphous solid.

SECTION-B

2. What is an 'ideal solution'? Differentiate between complete miscibility and partial miscibility phenomena taking suitable examples.

3. Discuss adsorbent - adsorbate interaction at solid-gas interface and explain the adsorption isotherms.

4. Discuss the distribution method for determination of stoichiometric ratio in a complex.

SECTION-C

5. Write a note on influence of buffer capacity and pH on tissues.

6. Summarize the application of diffusion in drug absorption.

7. What are amorphous and crystalline solids? Give examples of polymorphism and highlight the advantages and disadvantages of polymorphic behavior of solids.

8. Write a note on surfactants and their applications in formulation design.

9. How much sodium chloride should be added to 100 ml of a solution containing 1% w/v of apomorphine hydrochloride to be rendered isotonic with serum? (Given : Freezing point depression of 1% w/v solution of apomorphine hydrochloride is 0.08).

10. What are aerosols? Give an account of propellants and their properties desired for use in aerosol dosage forms.

11. Explain hydrophobic interaction and its significance.

12. What is spreading coefficient? Explain the phenomena of spreading at liquid-liquid interface on the basis of work of adhesion and cohesion.

13. Write a note on dissociation constant and its significance.

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B.Pharmacy (Sem.–3)

PHARMACEUTICAL MICROBIOLOGY

Subject Code : BP-303T

M.Code : 75107

Date of Examination : 13-12-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Answer briefly :**

   a. Prokaryote

   b. Disinfectants

   c. Gene expression

   d. Sterilization

   e. Sterility testing

   f. Differentiate between Virus and Bacteria

   g. Give significance of D value.

   h. How following materials tested for sterility:

   5% w/v, 500ml Dextrose injection

   i. Why it is necessary to wrap brown paper before autoclaving?

   j. What are the precautions to be taken while autoclaving petriplates?

SECTION-B

2. Explain sterilization techniques with examples.

3. **Write short note on :**

   a. Microbiological assay

   b. Method of standardization of vitamins.

4. Highlight construction, working, validation, advantages and disadvantages of laminar air flow device.

SECTION-C

5. Give principle and procedure for staining techniques.

6. Give different methods for the evaluation of disinfectants and explain any two.

7. Explain the sterility testing methods with examples.

8. Explain morphological classification of bacteria.

9. What are the components of culture media for the growth of bacteria and fungi?

10. How efficiency of sterilization method is determined?

11. What is aseptic area? Enumerate different sources of contamination in an aseptic area.

12. What are preservatives? Explain the microbial stability of formulation.

13. Write short note on Cell culture technology.

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Total No. of Questions : 13

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B.Pharmacy (Sem.-3)

PHARMACEUTICAL ENGINEERING

Subject Code : BP-304T

M.Code : 93326

Date of Examination: 15-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Answer Briefly :**

   a) Define coarse and fine powder.

   b) How evaporation is different from drying?

   c) Write about propellers.

   d) What are filter aids? Give its examples.

   e) Mention the applications of Bernoulli's theorem.

   f) Differentiate between orifice meter and venturimeter.

   g) Give Fourier's law.

   h) What is the working principle of drum dryer?

   i) Define steam distillation.

   j) Why there is a need of centrifugation?

SECTION-B

2. Discuss in detail about working mechanism, construction, working, merits and demerits of freeze dryer.

3. What is principle of ball mill? Explain the construction, working, uses, merits and demerits of ball mill.

4. Define corrosion. Discuss the types of corrosion. How it can be prevented?

SECTION-C

5. Briefly explain construction, working and uses of Rotometer.

6. Write an informative note on heat interchangers.

7. Define evaporation. Discuss in detail applications and factors influencing evaporation.

8. What is drying? Explain about rate of drying curve

9. Write a note on double cone blender.

10. What are the properties of the glass? What are its applications as a material of construction?

11. Describe the working principle of filter leaf. Give construction and working of filter leaf.

12. Give in detail different laws governing size reduction.

13. What is centrifugation? Discuss in detail working and uses of non-perforated basket centrifuge along with neat and clean diagram.

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Total No. of Questions : 13

B.Pharmacy (Sem.–3)

PHARMACEUTICAL ENGINEERING

Subject Code : BP-304T

M.Code : 75103

Date of Examination : 30-12-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Explain briefly :**

   a) Belt conveyors

   b) Glass as a material of plant construction

   c) Darcy's Law

   d) Elutriation

   e) Positive mixtures

   f) Azeotropic distillation

   g) Attrition as a method of size reduction

   h) Units of Reynolds Number

   i) Loss on Drying

   j) Centrifugation.

SECTION-B

2. Write an explanatory note on principle and working of planetary mixers. Describe its applications.

3. Explain in detail various types of corrosion and their methods of prevention.

4. Describe in detail the principle behind multiple evaporation. Highlight its applications.

SECTION-C

5. Highlight the importance of Bernoulli's theorem.

6. Describe the construction of hammer mill.

7. Write a note on tubular heaters.

8. Describe the construction and working of orifice meter.

9. Describe the principle behind solid-solid mixing.

10. Write a note on perforated basket centrifuge .

11. Describe the factors affecting size reduction .

12. Describe the principle behind steam distillation.

13. What do you mean by sieve number? Highlight its importance.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐ Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.–3)

PHARMACEUTICAL ORGANIC CHEMISTRY-II

Subject Code : BP-301T

M.Code : 75105

Date of Examination : 04-01-2024

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.

SECTION-A

1. **Answer briefly :**

   a) Define Huckel Rule.

   b) What will be the product obtained when i) chorobenzene is nitrated and ii) Toluene is chlorinated.

   c) Give the structure and uses of naphthol.

   d) Comment upon the stability of Aryl diazonium salts.

   e) Define RM value.

   f) Which theory explains the stability of cyclopropane?

   g) Write any two methods for the synthesis of Triphenylmethane.

   h) Define Saponification Value.

   i) Give acidity order of formic acid, acetic acid and benzoic acid.

   j) Compare the basicity of aliphatic amine with aromatic amine.

SECTION-B

2. Write a detailed note on the various reactions of Fatty acids. Comment upon hydrolysis and rancidity of oils.

3. Give methods of preparation of Benzoic acid. Explain in detail the acidity of variedly substituted Benzoic acid derivatives.

4. Discuss in detail the effect of substituent on reactivity and orientation of monosubstituted benzene compounds towards electrophillic substitution reactions.

SECTION-C

5. Give various methods of synthesis and reactions of cyclobutane.

6. Give the mechanism of Friedel craft reactions of benzene.

7. Write down mechanism of Reimer Tiemann and Kolbe reactions.

8. Explain Bayers strain theory. Give its limitations.

9. Give the structure and uses of resorcinol and BHC.

10. Give the reactions of diazonium salts involving evolution of nitrogen.

11. What are isolated polynuclear hydrocarbons? Give various methods for their synthesis.

12. Give the significance and principle involved in the determination of acid value of fatty acids.

13. Comment upon complete chemistry of phenantharene.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-4)

MEDICINAL CHEMISTRY-I

Subject Code : BP-402T

M.Code : 75844

Date of Examination : 12-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1) Answer briefly :

a) Define bioisosterism.

b) Briefly explain role of hydrogen bonding in drug action with an example.

c) Comment on hydrolytic degradation of acetylcholine.

d) Give typical structural features of a compound to be narcotic analgesic.

e) What are selective COX-2 inhibitors?

f) Give an outline for arachidonic acid pathway by citing the target site of NSAIDs.

g) What are ultra short acting barbiturates?

h) Comment on tissue distribution of adrenergic receptors.

i) Define glucuronidation of drug.

j) What are direct acting sympathomimetic agents?

SECTION-B

2) Explain SAR of sympathomimetic agents. Give mechanism of action and synthesis of Phenylephrine.

3) Explain SAR of benzodiazepine class of sedative hypnotics. Give synthesis of Diazepam.

4) Explain SAR of Morphine analogues. Give synthesis and mechanism of Methadone hydrochloride.

SECTION-C

5) Explain the effect of chelation and partition coefficient on drug action.

6) Discuss the importance of phase II reactions of drug metabolism.

7) Discuss the SAR of beta blockers.

8) Write a short note on synthetic cholinergic blocking agents.

9) Discuss SAR of barbiturates.

10) Describe various classes of NSAIDs with one structural example of each class.

11) Give synthesis and mechanism of Fentanyl hydrochloride.

12) Write a short note on narcotic antagonist.

13) Describe structures and functions of adrenergic neurotransmitters.

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Roll No. [ ]

Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.-4)

PHYSICAL PHARMACEUTICS-II

Subject Code : BP-403T

M.Code : 75845

Date of Examination : 14-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Write short notes on :**

   a) Molecular dispersions

   b) Amphiphilic colloids

   c) Rheology

   d) Fluidity

   e) Bulk density

   f) Stokes diameter

   g) Wettability

   h) Sedimentation volume

   i) Molecularity

   j) Shelf life.

SECTION-B

2. Discuss in detail the non-Newtonian systems with examples.

3. Write an explanatory note on the various theories of emulsions. Highlight the importance of preservation of emulsions .

4. Discuss in detail the physical and chemical factors influencing the degradation of pharmaceutical products.

SECTION-C

5. Describe the kinetic properties of colloids.

6. Write a note on pharmaceutical applications of colloids.

7. Highlight the importance of selection of viscometer for determination of rheologic properties.

8. Write a note on interfacial properties of suspended particles.

9. Write a note on the methods for determining particle size .

10. Highlight the importance of determination of density of particle in pharmaceutical industry.

11. Describe the factors that influence the solid-state chemical kinetics .

12. What do you understand by plastic and elastic deformation.

13. Highlight the significance of HLB in emulsion formation.

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Roll No. [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.-4)

PHARMACOLOGY-I

Subject Code : BP-404T

M.Code : 75846

Date of Examination : 16-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Answer briefly :**

   a) What is facilitated diffusion?

   b) Define agonist and antagonist in terms of affinity and efficacy.

   c) What is atropine?

   d) Define with example ion channel receptors.

   e) What is preclinical evaluation of drugs?

   f) What is pharmacovigilance?

   g) What is GABA?

   h) Define with suitable example drug tolerance?

   i) What is mania? Name two drugs for this condition.

   j) What is absence seizure? What is drug of choice for this condition?

2. Mention various routes of drug administration and discuss critically about parenteral route of administration highlighting merits and demerits of each.

3. What are sympatholytics? Classify them and discuss about beta-blockers.

4. Classify anti-anxiety drugs and discuss pharmacology of benzodiazepines.

SECTION-C

5. Write a brief note on G-protein coupled receptors.

6. Write a note on pre-anesthetic medication and its significance.

7. Write a note on factors modifying drug actions.

8. Give an account of mechanism of action and adverse effects of Phenytoin as anti-epileptic agent.

9. Add a short note on opioid analgesics.

10. Describe various phases of clinical trials.

11. Write a brief note on anti-Parkinsonian drugs.

12. Write a note on selective serotonin reuptake inhibitors as antidepressants.

13. Write a note on drug dependence and drug abuse.

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Total No. of Questions : 13

B.Pharmacy (Sem.–4)

PHARMACOGNOSY AND PHYTOCHEMISTRY-I

Subject Code : BP-405 T

M.Code : 75847

Date of Examination: 19-12-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.

SECTION-A

1 **Write short notes on :**

a) Define Pharmacognosy.

b) What are auxins? Give its applications.

c) Write the complete biological source of Castor oil.

d) Differentiate between organised and unorganized drugs.

e) What are flavonoids? Mention any two properties of flavonoids.

f) Define adulteration.

g) What are resins?

h) What is the advantage and drawback of morphological classification of drugs?

i) Define Micropropagation.

j) What is Polyploidy? Give the example of natural polyploidy causing agent.

SECTION-B

2. Discuss in detail various factors influencing cultivation of medicinal plants.

3. What are alkaloids? How can you classify them? Give the identification tests for alkaloids.

4. How does quality control play significant role in crude drug analysis? Describe the physical method of evaluation of herbal drugs.

SECTION-C

5. Describe the applications of plant tissue culture.

6. Give the biological source, chemical constituents and uses of Honey.

7. What is volatile oil? Discuss its properties and uses.

8. Define hybridization. Explain it with reference to medicinal plants.

9. Discuss in detail about the marine drugs with suitable examples.

10. Why conservation of medicinal plants is important? Discuss *in-situ* and *ex-situ* conservation of plants.

11. Write about edible vaccines. Give its advantages and disadvantages.

12. Write a note on Ayurvedic system of medicine.

13. Explain in detail about classification of drugs.

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Roll No. | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.-4)

PHARMACEUTICAL ORGANIC CHEMISTRY-III

Subject Code : BP-401T

M.Code : 75843

Date of Examination : 02-01-2024

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write short notes on :**

   a) What is the key difference between a stereoisomer and a structural isomer?

   b) Define enantiomerism in the context of stereochemistry.

   c) How does a chiral molecule differ from an achiral molecule?

   d) What is meant by the term "racemic modification" in stereochemistry?

   e) Differentiate between the terms "cis" and "trans" when used to describe geometrical isomers.

   f) Describe the conformational isomerism in ethane and explain how it arises.

   g) What are the key differences between pyrazole and pyridine in terms of their ring structure?

   h) What is a key structural feature of azepines and how does it influence their reactivity?

   i) In the Birch reduction, what type of compounds are typically reduced to yield dienes?

   j) What is the product of a Clemmensen reduction of a carbonyl compound?

SECTION-B

2. Describe the DL system of nomenclature for optical isomers. What are its limitations?

3. Describe the Oppenauer oxidation and Dakin reaction, including its mechanism.

4. Explain the concept of aromaticity and describe the relative aromaticity of pyrrole, furan and thiophene.

SECTION-C

5. Discuss the role of elements of symmetry in determining whether a molecule is chiral or achiral.

6. Discuss the conditions under which biphenyl compounds exhibit optical activity.

7. Explain the differences between stereospecific and stereoselective reactions.

8. Discuss the basicity of pyridine, explaining why it is a weaker base compared to typical amines.

9. Compare and contrast the structural features and reactivity of indole, quinoline and isoquinoline.

10. Elaborate on the Wolff-Kishner reduction and its utility in converting carbonyl compounds.

11. Compare and contrast the mechanisms of metal hydride reductions using $NaBH_4$ and $LiAlH_4$.

12. What are the chair and boat conformations in cyclohexane? Why is the chair conformation more stable?

13. Explain the concept of asymmetric synthesis in the context of chiral molecules.

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.-5)

INDUSTRIAL PHARMACY-I (THEORY)

Subject Code : BP-502T

M.Code : 76787

Date of Examination : 21-11-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Write briefly :**

   a) Give two examples each of water and oil-soluble preservatives used in liquid dosage forms.

   b) What is meant by Partition coefficient?

   c) Give examples of directly compressible diluents.

   d) What is racemization and give an example?

   e) Enlist the defect in coating of tablet.

   f) What is elixir and give its example?

   g) What is the size of capsules?

   h) What is isotonicity and its importance in formulation development?

   i) Enlist the test for parenteral products.

   j) Write the composition of vanishing cream.

SECTION-B

2. Give a detailed account of tablet film coating process. Highlight the advancements made in this process. Give examples of enteric and non-enteric coating polymers.

3. Discuss the process and quality control tests performed on hard gelatin capsules.

4. What are aerosols? Discuss the parts of an aerosol system and indicate the function of each part.

SECTION-C

5. Differentiate between the formulations of cold and vanishing creams.

6. Enumerate liquid filing equipment and describe the operation of any one.

7. Mention the defects encountered in coated tablets and mention the remedies for them.

8. Give a brief account of tablet tooling and their care.

9. Describe the procedure for conducting friability test and mention the acceptable range.

10. Discuss the stability indicating parameters for emulsions.

11. Enumerate different types of valves used in aerosol products and mention their functions.

12. Give a brief account on dry granulation processes. Also mention the reasons for adopting dry granulation method.

13. Briefly discuss the problems encountered while formulating hard gelatin capsules.

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Roll No. [ ] Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.-5)

MEDICINAL CHEMISTRY II- THEORY

Subject Code : BP-501T

M.Code : 76786

Date of Examination : 17-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Draw structure give IUPAC name and uses of following drugs :**

   a. Chlorpheniramine maleate

   b. Chlorambucil

   c. Nimodipine

   d. Minoxidil

   e. Lidocaine

   f. Sildenafil

   g. Prednisolone

   h. Glimepiride

   i. Mepivacaine

   j. Digitoxin.

SECTION-B

2. Classify anticancer drugs. Give chemistry of mechanism of alkylating agents.

3. Classify anti-arrhythmic drugs with structure of any one from each class. Give synthesis and uses of disopyramide phosphate.

4. Write a note on antidiabetic agents. Give detail about sulfonyl ureas class and synthesis of tolbutamide.

SECTION-C

5. Write short note on proton pump inhibitors with structure of any one drug.

6. Classify anti-anginal drugs. Give synthesis and specific uses of nitroglycerin.

7. What are loop diuretics? Give synthesis and uses of furosemide.

8. Differentiate between coagulant and anticoagulant. Give synthesis and uses of warfarin.

9. Discuss stereochemistry and nomenclature of steroids.

10. Give structures and therapeutic importance of drugs used in erectile dysfunction.

11. What are local anaesthetics? Give synthesis and uses of dibucaine.

12. Write a note on antibiotics used in cancer therapy.

13. Write a short note on drugs used in congestive heart failure along with structures.

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Total No. of Questions : 13

B.Pharma (Sem.-5)

PHARMACOLOGY II-THEORY

Subject Code : BP-503T

M.Code : 76788

Date of Examination : 23-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

   a) What are inotropic agents? Give two examples.

   b) What are class-I anti-arrhythmic drugs?

   c) What is clopidogrel?

   d) What are low molecular heparins? Give two examples.

   e) What is SERM? Give two examples.

   f) What is bio-assay? Highlight significance of bioassay.

   g) What are autacoids? Give examples of amine derived autacoids.

   h) What are quantal and graded bio-assays?

   i) What are Tocolytics? Give two examples.

   j) What is sequential regimen of oral contraceptive pill?

SECTION-B

2. Classify anti-anginal drugs and discuss pharmacology of nitrates.
3. Discuss pharmacology of anti-gout drugs.
4. Give a detailed account on pharmacology of anti-thyroid drugs.

SECTION-C

5. Write a note on ACE inhibitors as antihypertensive agents.
6. Add a note on HMG-CoA reductase inhibitors as anti-hyperlipidemic agents.
7. Write a note on mechanism of action and adverse effects of digitalis.
8. Discuss clinical uses and side effects of diuretics.
9. Add a note on prostaglandins.
10. Write a brief note on pharmacology of uterine relaxants.
11. Add a brief note on hematinics.
12. Write a note on sulphonyl ureas as oral hypoglycemic agents.
13. Add a note on bioassay of Insulin.

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Total No. of Questions : 13

B.Pharma (Sem.-5)

PHARMACOGNOSY AND PHYTOCHEMISTRY II-THEORY

Subject Code : BP504T

M.Code : 76789

Date of Examination : 28-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Answer briefly :**

   a. Name the pathway for the biosynthesis of steroidal glycosides.

   b. What is the principle of Gas chromatography?

   c. What are true and pseudo alkaloids?

   d. Give complete biological sources of 2 plants that contain volatile oils.

   e. Which method will you use for extraction of alkaloids from plants?

   f. What information can you get from NMR spectra of a phytoconstituent?

   g. Give the source and structure of an antioxidant phytoconstituent.

   h. What are true tannins?

   i. Give the complete biological source and uses of a plant that contains Indole Alkaloids.

   j. Give the basic structure of phytoconstituents present in Senna.

SECTION-B

2. Describe the biosynthesis of Flavonoid Glycosides.

3. Chromatographic techniques have made the study of natural products easier. Justify this statement by describing applications and advantages of different chromatographic techniques.

4. Give a detailed account on types, sources, tests, therapeutic uses and industrial production of cardiac glycosides.

SECTION-C

5. Give the principle and applications of IR Spectroscopy in study of crude drugs.

6. Compare HPLC and HPTLC.

7. Write a note on plants containing resins and resin combinations.

8. Give the classification, tests and uses of Saponins.

9. Describe the industrial production, estimation and utilization of Taxol.

10. What are the different techniques used for investigating biosynthetic pathways?

11. Write a note on modern methods of extraction.

12. Write a detailed note on Gel electrophoresis.

13. Describe the properties and classification of alkaloids.

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.-5)

PHARMACEUTICAL JURISPRUDENCE-THEORY

Subject Code : BP-505T

M.Code : 76790

Date of Examination : 30-11-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Define the following :**

   a) Schedule Y

   b) Who could be registered in first register?

   c) Differentiate between adulterated and spurious drugs

   d) Mention the ex officio members of PCI

   e) Registered pharmacist

   f) Manufactured drug

   g) SOP

   h) Rectified spirit

   i) Illicit traffic

   j) Excise officer.

SECTION-B

2. Discuss the functions and composition of State and Joint pharmacy councils.

3. Discuss the manufacture, sale and export of opium under Narcotics and controlled substances Act.

4. What conditions are to be satisfied for obtaining loan licenses and repackaging license? What is the duration of such licenses? Mention the class of drugs for which such license cannot be issued.

SECTION-C

5. What are the main objectives of Pharmacy Act, 1948?

6. Write a short note on stocking of animals.

7. Compare the conditions precedent and subsequent to the manufacturing license of drugs specified in Schedule X and drugs other than specified in Schedule X.

8. Give a brief account of labelling of patent and proprietary medicines.

9. "*Inspite of enactment of Narcotics and Psychotropic substances Act and Rules, contraband drugs are a serious threat to public health.*" Comment on this statement.

10. What is the purpose of code of ethics? How it helps the profession?

11. Write a brief note on Hathi Committee.

12. What class of advertisements are exempted conditionally? Mention their conditions.

13. What is MAPE? How it is calculated? How the prices of category 1 and category 2 formulations are revised?

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Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐ Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.-6)

PHARMACOLOGY-III-THEORY

Subject Code : BP-602T

M.Code : 77987

Date of Examination : 22-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.

SECTION-A

1. **Answer the following :**

   a) Write special types of asthma.

   b) Differentiate between expectorants and anti tussive agents.

   c) What is CTZ? Where it is located and what is the action of CTZ?

   d) Where H1 and H2 receptors are located?

   e) Define TB. Write about DOT.

   f) Give examples of beta lactam antibiotics.

   g) Explain acute, sub acute and chronic toxicity.

   h) Define biological clock and circadian rhythm.

   i) What are immunomodulators? Give examples.

   j) Drug of choice for UTI.

SECTION-B

2. Classify anti cancer drugs and explain in detail mechanism of action, therapeutic uses and adverse effects of alkylating agents.

3. Define poisoning. Write clinical symptoms and treatment of morphine, organophosphate and lead poisoning.

4. Classify anti fungal drugs. Discuss anti fungal spectrum, mechanism of action and uses of triazoles.

SECTION-C

5. Write mechanism and uses of carminatives.

6. Give name of antacid drugs with their therapeutic uses and side effects.

7. Write common causative agents of sexually transmitted disease and drugs of choice for STD.

8. Write a detail note on appetite stimulants including their therapeutic uses and side effects.

9. Write mechanism of action and side effects of tetracyclines.

10. Classify anti amoebic drugs.

11. Explain the treatment and parasites causing UTI.

12. Give note on mechanism of action and adverse effects of streptomycin.

13. Outline steps involved in elimination of orally ingested poison.

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Total No. of Questions : 13

B.Pharmacy (Sem.-6)

MEDICINAL CHEMISTRY III-THEORY

Subject Code : BP-601T

M.Code : 77986

Date of Examination : 20-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.

SECTION-A

1. **Answer briefly :**

   a) Give the mechanism of action and structure of ciprofloxacin.

   b) Write down various steps involved in the synthesis of metronidazole.

   c) Give the mechanism of action and uses of kanamycin.

   d) What is the significance of CADD in medicinal chemistry?

   e) What is Prodrug? Give example.

   f) Name the drugs used as first line therapy against tuberculosis.

   g) Give any two examples of NRTIs.

   h) Draw structure. Give IUPAC name and use of Chloramphenicol.

   i) Write down the structure of any two beta lactamase antibiotics.

   j) Write any two limitations of QSAR approach.

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SECTION-B

2. Write down the steps involved in the synthesis of following drugs :

   a) Chloramphenicol

   b) Isoniazid

   c) Nitrofurantoin

   d) Chloroquine.

3. Explain in detail various physicochemical features used in Quantitative structure activity relationships.

4. Write about the historical development, chemistry, classification and SAR of sulphonamides.

SECTION-C

5. Write a short note on Quinoline antibiotics.

6. Write a note on etiology of malaria.

7. Write a note on Aminoglycosides as antibiotic agents.

8. Write a short note on Beta lactamase inhibitors.

9. Discuss about metabolism of cephalosporins.

10. Comment upon the moa, structure and synthesis of Acyclovir.

11. Write a short note on Antiprotozoal agents.

12. Write a detailed note on folate reductase inhibitors.

13. Write the detailed SAR of Quinolones.

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B.Pharmacy (Sem.-6)

HERBAL DRUG TECHNOLOGY-THEORY

Subject Code : BP-603T

M.Code : 77988

Date of Examination: 24-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.

SECTION-A

1. **Answer briefly :**

   a) What are crude drugs and herbal drugs?

   b) Give an example of a biopesticides. Give one advantage and one limitation of using biopesticides.

   c) What is the difference between aristha and asava?

   d) Mention 2 nutraceuticals that will be beneficial for diabetic patients.

   e) Mention the uses, side effects and possible interactions of Ginseng.

   f) Give complete source and major constituents of two natural sweeteners.

   g) What is the Schedule Z of Drugs and Cosmetics Act?

   h) Give the conditions for accelerated stability testing of herbal formulations.

   i) Give two examples of Indian herbal drug industries. Give one advantage and one limitation of using herbal drugs.

   j) What is the full form of ASU and AYUSH?

SECTION-B

2. Discuss the need for and the steps involved in GACP of medicinal and aromatic plants. Illustrate your answer with cultivation practices necessary for a medicinal plant.

3. Describe the regulatory requirements for traditional medicines and natural products in India.

4. Describe the present status and future prospects of the Indian herbal drugs and cosmetics industry.

SECTION-C

5. What are the objectives and components of Schedule T of Drugs and Cosmetics Act of India?

6. Describe what can be patented and what cannot be patented in terms of natural products?

7. Write a detailed note on Natural Excipients.

8. Write a note on plants used in skin care cosmetics.

9. Compare WHO and ICH guidelines for assessment of herbal drugs.

10. What are nutraceuticals? How are they classified?

11. What are the basic principles of Ayurveda and Unani medicine?

12. How will you identify and process plant material for preparing a liquid formulation?

13. How are Bhasmas and Churnas prepared and standardized?

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Roll No. ____________ Total No. of Pages : 02

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B.Pharmacy (Sem.-6)

HERBAL DRUG TECHNOLOGY-THEORY

Subject Code : BP-603T

M.Code : 77988

Date of Examination: 24-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.

SECTION-A

1. **Answer briefly :**

a) What are crude drugs and herbal drugs?

b) Give an example of a biopesticides. Give one advantage and one limitation of using biopesticides.

c) What is the difference between aristha and asava?

d) Mention 2 nutraceuticals that will be beneficial for diabetic patients.

e) Mention the uses, side effects and possible interactions of Ginseng.

f) Give complete source and major constituents of two natural sweeteners.

g) What is the Schedule Z of Drugs and Cosmetics Act?

h) Give the conditions for accelerated stability testing of herbal formulations.

i) Give two examples of Indian herbal drug industries. Give one advantage and one limitation of using herbal drugs.

j) What is the full form of ASU and AYUSH?

SECTION-B

2. Discuss the need for and the steps involved in GACP of medicinal and aromatic plants. Illustrate your answer with cultivation practices necessary for a medicinal plant.

3. Describe the regulatory requirements for traditional medicines and natural products in India.

4. Describe the present status and future prospects of the Indian herbal drugs and cosmetics industry.

SECTION-C

5. What are the objectives and components of Schedule T of Drugs and Cosmetics Act of India?

6. Describe what can be patented and what cannot be patented in terms of natural products?

7. Write a detailed note on Natural Excipients.

8. Write a note on plants used in skin care cosmetics.

9. Compare WHO and ICH guidelines for assessment of herbal drugs.

10. What are nutraceuticals? How are they classified?

11. What are the basic principles of Ayurveda and Unani medicine?

12. How will you identify and process plant material for preparing a liquid formulation?

13. How are Bhasmas and Churnas prepared and standardized?

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B.Pharma (Sem.-6)

BIOPHARMACEUTICS AND PHARMACOKINETICS-THEORY

Subject Code : BP604T

M.Code : 77989

Date of Examination : 29-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.

SECTION-A

1. **Answer briefly :**

a) Define the properties of drugs belonging to BCS Class I & II.

b) Differentiate between relative and absolute bioavailability.

c) Enumerate the parameters indicative of rate of drug absorption and elimination.

d) Mention the advantages of IV administration of drugs.

e) Mention two examples where particle size is known to influence drug absorption.

f) Name the phases observed in a two compartment model.

g) What are bioequivalent products?

h) What is pinocytosis?

i) What is renal clearance and how is it calculated?

j) Why volume of distribution is called "apparent" and what is the unit of V_d?

SECTION-B

2. What is Non-Linear pharmacokinetics? Enumerate the reasons for non-linear pharmacokinetics and discuss its implications.

3. What is Sigma-Minus method? Explain the method of calculating elimination rate constant by this method with the help of suitable equations.

4. IV bolus dose (4 mg / kg) was administered to a patient of 75 kg weight. Following equation represented the drug kinetics: $C_p = 78\ e^{-0.46t}$

   Calculate: (a) $t_{1/2}$; (b) V_d; (c) Plasma concentration after 4 hr.

SECTION - C

5. Discuss the Complete Cross Over and Latin square designs with respect to bioequivalence trials.

6. Write a note on the approaches used for enhancing solubility and dissolution rates of poorly water soluble drugs.

7. Enumerate physiological factors influencing drug absorption and discuss any two in detail.

8. If the $t_{1/2}$ of a drug is 12 hr, how long would it take for 150 mg dose to get 30% eliminated?

9. Considering an IV bolus dose and simultaneous IV infusion, prove that for instantaneously achieving steady state, a loading dose of R/K (infusion rate/elimination half-life) is necessary.

10. Discuss the phase -I reactions for drug metabolism.

11. Comment on liver extraction ratio and explain its role in drug pharmacokinetics.

12. Write briefly about facilitated and active transport of drugs.

13. Comment on factors affecting renal clearance of drugs.

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Total No. of Questions : 13

B.Pharmacy (Sem.-6)

PHARMACEUTICAL BIOTECHNOLOGY-THEORY

Subject Code : BP-605T

M.Code : 77990

Date of Examination : 1-12-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
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3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **i) Define with examples :**

   a. Biotechnology

   b. Transduction

   c. Enzymes

   d. Culture

   e. Fermenter

   f. Biotransformation

   g. Antigen

   ii) Distinguish between

   h. Batch Culture and Continuous Culture

   i. Active and Passive Immunity

   j. Toxin and Toxoid.

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SECTION-B

2. Explain methods of enzyme immobilization with examples.
3. Give construction and working including controlling of parameters of a large scale production fermenter.
4. **Highlight the general method of production of**

   a. Bacterial Vaccine

   b. Toxoid.

SECTION-C

5. Explain the principles of biosensors.
6. How protease and lipase are producted?
7. Give application of genetic engineering in medicine.
8. What is PCR?
9. Explain hybridoma technology.
10. What is ELISA and western blotting?
11. Give production of glutamic acid.
12. Explain collection and processing of dried human plasma.
13. Explain different types of mutation.

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Total No. of Questions : 13

B. Pharmacy (Sem.-6)

QUALITY ASSURANCE-THEORY

Subject Code : BP-606T

M.Code : 77991

Date of Examination : 04-12-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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3. **SECTION-C contains NINE questions carrying FIVE marks each and students have to attempt any SEVEN questions.**

SECTION-A

1. **Define briefly :**

   a) SOP

   b) Quality by Design

   c) Quality Audit

   d) Validation

   e) Differentiate between QA and QC.

   f) Performance Qualification (PQ)

   g) Calibration

   h) Triple role concept

   i) OOT

   j) Differentiate between test and control articles.

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SECTION-B

2. What is ICH? Discuss the significance of ICH guidelines. Mention various categories of ICH guidelines. Discuss the ICH guidelines related to stability testing.

3. Define Good Laboratory Practices (GLP). What is the importance of GLP? Explain various provisions of GLP with respect Organization and Personnel, Facilities and Equipments.

4. Explain various types of validation. Discuss the significance of validation in pharma industry.

SECTION-C

5. Differentiate between batch formula record and master formula record.

6. Write a note on complaint handling.

7. What is GMP and cGMP? Discuss the advantages of GMP in pharmaceuticals.

8. Discuss the calibration of pH meter.

9. What are different types of audits, discuss.

10. What is product recall? Explain procedure of product recall.

11. Write a note on disqualification of testing facility.

12. Discuss good warehousing practices.

13. Enlist various quality control tests on containers. Explain tests to be conducted for rubber closures.

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B.Pharmacy (Sem.-7)

INSTRUMENTAL METHODS OF ANALYSIS-THEORY

Subject Code : BP-701T

M.Code : 78387

Date of Examination : 20-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Write briefly :**

a) Define auxochrome. Give two examples.

b) How does particle size of stationary phase correlate to resolution?

c) What is electrophoretic mobility? How does it affect the migration rate of an analyte?

d) Define overtone band.

e) What is Rf value? Give an example.

f) How fluorescence differs from phosphorescence?

g) Why two monochromators are used in a spectrofluorimeter?

h) Differentiate between normal phase and reverse phase chromatography.

i) What are the different methods of excitation in atomic spectroscopy?

j) What is a mulling agent?

SECTION-B

2. What is the principle of spectrofluorimetry? Discuss various factors affecting fluorescence intensity with examples.

3. Write a detailed account on principle, theoretical considerations, instrumentation, application and limitations of gas chromatography.

4. What are different modes of vibrations in an organic molecule? Describe various factors affecting vibrational frequencies in a molecule with examples.

SECTION-C

5. How does polarity of solvent affect the absorption maxima of an enone type compound? Support your answer with relevant examples.

6. Explain the working of a dispersive IR spectrophotometer with the help of a neat well labelled flow diagram.

7. What is the principle of turbidometry? How does a nephelometer differ from a turbidometer?

8. Discuss various sources of interferences in atomic emission spectroscopy.

9. Describe the principle and instrumentation of gel electrophoresis.

10. Explain the ion-exchange mechanism. Discuss about various factors affecting ion-exchange.

11. Write a note on various solute property detectors used in HPLC.

12. Give a comparative account of specific applications and limitations of paper, thin-layer and gel chromatographic techniques.

13. Describe the theoretical concepts behind affinity chromatography. Give its specific applications.

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Total No. of Questions : 13

B.Pharma. (Sem.-7)

INDUSTRIAL PHARMACY – II (THEORY)

Subject Code : BP702T

M.Code : 78388

Date of Examination : 22-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Write briefly :**

   a) Expand COPP.

   b) Expand CDSCO.

   c) Expand OOS.

   d) Expand QbD.

   e) Expand NDA.

   f) Expand GLP.

   g) Explain Validation.

   h) Explain Quality risk management.

   i) Explain New drug.

   j) Explain Quality control.

SECTION-B

2. Explain pilot plant scale up requirements for liquid oral and semi solids formulations.

3. Explain the documentation, validation, quality control and analytical methods necessary for technology transfer from R & D to production.

4. Write short note on:

   a) Clinical research protocols

   b) Bioequivalence studies

SECTION-C

5. Highlight IUPAC guidelines.

6. What are the approved regulatory agencies for technology transfer?

7. What is IS014000 series of quality system standards?

8. Highlight GLP. What is its significance?

9. Explain the approval procedures for new drug.

10. Explain the organization and responsibilities of state licensing authorities.

11. Write short note on

    a) QbD

    b) COPP

12. Explain the role and responsibilities of regulatory affairs department.

13. Highlight the Platform Technology.

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B.Pharmacy (Sem.-7)

PHARMACY PRACTICE - THEORY

Subject Code : BP-703T

M.Code : 78389

Date of Examination : 24-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Answer briefly :**

   a) Define hospital as per WHO.

   b) Write about the Staff requirement for hospital Pharmacy.

   c) Differentiate between community Pharmacy and Clinical pharmacy.

   d) Define hospital formulary and write its importance in a hospital.

   e) Define economic order quantity and reorder quantity level.

   f) Write a note on drug basket system in a hospital.

   g) Define adverse drug reactions and its types.

   h) Define prescribed medication order.

   i) Define automatic stop order for medications and its significance.

   j) Enlist various normal and abnormal components in urine analysis.

SECTION-B

2. Discuss in detail about location, layout and staff requirements in hospital pharmacy.

3. Discuss about organization, functions and policies of pharmacy and therapeutic committee.

4. Define patient counselling. Discuss about various steps involved in patient counselling and special cases that require pharmacist.

SECTION-C

5. Write about the various clinical services in a hospital.

6. Discuss about types of drug distribution systems in a hospital for in-patients.

7. Define therapeutic drug monitoring. Discuss about need and factors to be considered for therapeutic drug monitoring.

8. Write the functions and importance of ward round participation. Discuss about drug and poison information centre and various sources of drug information.

9. Write about causes of medication non-adherence. Discuss about role of pharmacist in medication adherence and monitoring of medication adherence.

10. Discuss about principles and procedures of purchase and inventory control in drug store.

11. Discuss about rational use of OTC drugs.

12. Discuss about ABC analysis with its advantages and disadvantages.

13. Discuss about prescribed medication order, its interpretation and legal requirements.

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Total No. of Questions : 13

B. Pharmacy (Sem.-7)

NOVEL DRUG DELIVERY SYSTEM-THEORY

Subject Code : BP704T

M.Code : 78390

Date of Examination : 29-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
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SECTION-A

1. **Answer briefly :**

   a. Swellable polymers

   b. Matrix type CRDDS

   c. Applications of intranasal delivery

   d. Advantages of GRDDS

   e. Wetting theory of bioadhesion.

   f. Microcapsules

   g. Advantages of liposomes.

   h. Principle of osmotic pump

   i. Dissolution controlled CRDDS

   j. Blood retinal barrier.

SECTION-B

2. Discuss the various approaches used in the formulation of gastroadhesive drug delivery systems and the applications of GRDDS.

3. Describe in detail the advantages, application of microspheres and various methods of microencapsulation.

4. Write an explanatory note on targeted DDS. Write a note on applications of vesicular DDS.

SECTION-C

5. Discuss the biological properties of drugs influencing the formulation of CRDDS

6. Highlight the importance and applications of DPIs.

7. Describe the critical barriers in the formulation of ocular drug delivery system.

8. Describe the principle and working of osmotic pump.

9. Discuss the approaches used for formulation of pulmonary DDS.

10. Write a note on formulation of implants.

11. Highlight the critical properties of polymers in formulation of drug delivery systems.

12. Write a note on transmucosal permeability.

13. Describe the applications of monoclonal antibodies .

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Total No. of Questions : 13

B.Pharmacy (Sem-8)

SOCIAL AND PREVENTIVE PHARMACY

Subject Code : BP-802-T

M.Code : 79765

Date of Examination : 21-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

   a) Define balanced diet.

   b) Write sources and harmful effects of tobacco.

   c) Define Lymphatic filariasis and its causes.

   d) Define hygiene and health.

   e) Write the functions of primary health centres.

   f) Define universal immunization programme.

   g) Differentiate between malaria and chicken guinea.

   h) Write salient features of National programme for prevention and control of deafness.

   i) Write salient features of health promotion and education in schools.

   j) Define Pneumonia and its symptoms.

SECTION-B

2. Explain about national Tuberculosis health programme.

3. Explain in detail about malnutrition and its prevention. Discuss about balanced diet.

4. Explain the concept of prevention and control of disease and social causes of diseases.

SECTION-C

5. Discuss about various types of personal hygiene, health care and avoidable habits.

6. Discuss about concepts and evaluation of public health.

7. Describe the general principles of prevention and control of acute respiratory infections and influenza.

8. Describe the general principles of prevention and control of Malaria and Dengue.

9. Discuss about National leprosy control programme.

10. Discuss about National programme for control of blindness.

11. Discuss about National health intervention programme for mother and child.

12. Discuss about different types of vitamin deficiency disorders and their prevention.

13. Discuss about functioning of PHC and improvement of rural sanitation.

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B.Pharma (Sem-8)

BIOSTATISTICS AND RESEARCH METHODOLOGY

Subject Code : BP-801T

M.Code : 79764

Date of Examination : 17-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
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SECTION-A

1. Answer Briefly :

   a) What are different types of Frequency Distribution?

   b) Distinguish between Correlation and Regression Analysis.

   c) What is the main difference between Simple Regression and Multiple Regression?

   d) What are 'Level of Significance' and 'Degree of Freedom' in Statistics?

   e) What are Statistical Errors?

   f) What is the need for Research?

   g) What are the properties of 'Contour Plot Graph'?

   h) What are key features of SPSS?

   i) What are advantages of a Factorial Design?

   j) Distinguish between Observational and Experimental Studies.

SECTION-B

2. Given the bivariate distribution shown in Table, in which both X and Y are random variables.

   a) Compute the correlation coefficient;

   b) Test the sample correlation coefficient for statistical significance;

   c) If r is statistically significant, estimate the upper and lower limits of p and state your conclusion concerning the variability in X that is associated with the variability in Y.

X	55	49	30	69	50	52	50	60	41	50
Y	18	21	20	21	18	23	19	18	21	20

3. a) The data in Table are a sample of cholesterol levels taken from 12 hospital employees who were on a standard American diet and who agreed to adopt a vegetarian diet for 1 month. Serum-cholesterol measurements were made before adopting the diet and 1 month after. Compute the mean change in cholesterol.

   Serum-cholesterol levels (mg/dL) before and after adopting a vegetarian diet

Subject	Before	After
1	169	182
2	158	127
3	151	149
4	197	178
5	180	161
6	222	187
7	168	176
8	168	145
9	167	154
10	161	153
11	178	137
12	137	125

   b) Describe Hypothesis testing in Multiple Regression Models.

4. Describe various Graphical methods of Data Presentation.

SECTION-C

5. Write a detailed note on'Measures of Dispersion'.

6. Compare Binomial and Poisson's Distribution.

7. A study was conducted to test the question as to whether cigarette smoking is associated with reduced serum-testosterone levels in men aged 35 to 45. The study involved four

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B.Pharmacy (Sem.-8)

PHARMACOVIGILANCE

Subject Code : BP805ET

M.Code : 79768

Date of Examination : 30-11-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
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SECTION-A

1. **Answer briefly :**

   a) Define EudraVigilance and Haemovigilance.

   b) What does schedule Y signify?

   c) Define spontaneous case report and case series.

   d) Define 'daily defined doses'.

   e) Define periodic safety update reports.

   f) Define Good Pharmacovigilance Practice.

   g) Define Adverse Drug Reaction.

   h) Enlist various primary and secondary sources of drug information with suitable examples.

   i) Define Adverse Drug Event.

   j) Define Pharmacogenomics and Pharmacokinetics.

SECTION-B

2. Describe the requirements for ADR reporting and monitoring as per Pharmacovigilance Program of India.

3. Describe the methods of causality, severity and predictability assessment of adverse drug reactions.

4. Classify adverse events following immunization and describe various active and passive methods for vaccine safety surveillance.

SECTION-C

5. Describe the historical development of pharmacovigilance.

6. Describe the role of CROs in pharmacovigilance programme.

7. Briefly overview about WHO drug dictionary.

8. Describe the role of genetics in development of ADRs with suitable examples.

9. Describe the methods of surveillance in observational studies.

10. Describe specialized information resources for ADRs.

11. Describe the clinical phase of drug safety evaluation.

12. Describe ICH guidelines for post-approval expedited reporting.

13. Describe the concept of drug safety evaluation in pregnant patients.

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B.Pharmacy (Sem.-8)

ADVANCED INSTRUMENTATION TECHNIQUES

Subject Code : BP811ET

M.Code : 79774

Date of Examination : 14-12-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
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SECTION-A

1. **Write briefly :**

   a) A $-CH_3$ group is detected as a sharp signal but a $-NH_2$ group is detected as a broad signal in H-NMR spectrum of a compound. Why?

   b) What is a metastable ion?

   c) What is the principal difference between DTA and DSC?

   d) What are Bremsstrahlung interactions?

   e) Name the standards used for calibration of IR and UV-VIS spectrophotometers.

   f) Give any two elements used in Radioimmuno assays with their specific applications.

   g) Define partition coefficient.

   h) What is tandem mass spectrometry?

   i) What are the characteristic signals for a $-OCH_2CH_3$ group in H-NMR spectrum?

   j) What do you understand by Index of Hydrogen Deficiency (IHD). Give an example.

SECTION-B

2. What is the importance of extraction process in pharmaceuticals? Give a detailed account on solid phase extraction.

3. Define the term Chemical shift. What is its advantage over the frequency scale? Describe various factors affecting chemical shift of protons with examples.

4. What is the principle of X-ray spectroscopy? Write a detailed description of various X-ray crystallographic methods.

SECTION-C

5. What are various ionization techniques used in mass spectrometry? Write a detailed account on any one such technique.

6. Differentiate between o-Nitrophenol and *p*-Nitrophenol on the basis of NMR spectra.

7. Predict the mass spectrum of ethyl benzoate in EI mode.

8. What is the principle of TGA? Discuss its application taking the example of Calcium.

9. Write an account on ICH guidelines for method validation.

10. Elaborate on different methods of RIA.

11. What is the principle of LC-MS/MS. Give a descriptive diagram of a LC-MS/MS instrument.

12. Give an explanatory note on variables responsible for accuracy and precision of DTA.

13. Give a step-by-step procedure for calibration of Flame photometer.

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B.Pharmacy (Sem-8)

PHARMACEUTICAL PRODUCT DEVELOPMENT

Subject Code : BP813 ET

M.Code : 79776

Date of Examination : 19-12-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
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SECTION-A

1. **Write short notes on :**

   a) Cyclodextrins as solubilizing agents

   b) Types of suspending agents

   c) Hydrophilic polymers

   d) Examples of directly compressible agents

   e) Optimization techniques

   f) Half factorial designs

   g) Preformulation studies

   h) Objectives of pharmaceutical product development

   i) Extractables and leachables testing

   j) Quality control tests of packaging material.

SECTION-B

2. Explain the concept of factorial design in the context of pharmaceutical research. How does it help in studying multiple variables simultaneously?

3. Discuss the primary factors that influence the selection of packaging materials for different types of pharmaceutical products, such as solid oral dosage forms, sterile injectables or biologics?

4. Highlight the role of nonionic surfactants in pharmaceutical formulations and discuss their advantages over other types of surfactants.

SECTION-C

5. Explain the key stages involved in pharmaceutical product development from concept to commercialization.

6. How does stability studies help ensure the safety and efficacy of pharmaceutical products over their shelf life?

7. How do regulatory guidelines, such as Good Manufacturing Practices (GMP), impact the quality control testing of pharmaceutical dosage forms?

8. What are the primary functions of solvents in pharmaceutical formulations and how do they influence drug solubility and stability?

9. Describe the main components of aerosol formulations, and how do these excipients help in the production of aerosolized medications for inhalation?

10. Describe the role of excipients in the formulation of NDDS.

11. Highlight the role of excipients in ensuring the sterility and stability of parenteral formulations.

12. How do formulation scientists address issues related to drug solubility, stability and bioavailability during the formulation development stage?

13. What are some common response variables or quality attributes in pharmaceutical product development that can be optimized using factorial designs?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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