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 : 02-01-2026

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 carryingTEN 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 axial and appendicular skeletal system.

b) Define neuroreceptor with two examples.

c) What is the difference between smooth muscle and skeletal muscle?

d) Define cardiac output.

e) What is Rh Factor and its significance?

f) Why mitochondria is referred to as power house of the cell?

g) What are true and false ribs?

h) What is anaemia? Indicate different types of anaemia.

i) What is angina pectoris?

j) Highlight functions of the skin.

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SECTION - B

2. What is blood? Mention various components of the blood and discuss in detail about RBCs.

3. With the help of neat diagram explain internal structure of human heart.

4. Classify various tissues and discuss in detail about epithelial tissue.

SECTION - C

5. Write a note on transport across cell membrane.

6. Write a note on blood coagulation.

7. What is the difference between sympathetic and parasympathetic nervous system?

8. Add a note on physiology of muscle contraction.

9. Add a note on synovial joint.

10. Describe internal structure of ear.

11. Add a brief note on regulation of blood pressure.

12. Discuss briefly about anatomy and physiology of Lymph node.

13. Write a note on ECG.

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Total No. of Questions : 13

B.Pharmacy (Sem.–1)

PHARMACEUTICAL ANALYSIS-I

Subject Code :BP-102T

M.Code :74645

Date of Examination : 10-01-2026

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) What are Equivalence and End points?

   b) What is the pH of a 0.1 N solution of NH_4OH (pKb 4.75)?

   c) *"Mohr's method is carried out at pH 6.5 to 8.0"*. Why?

   d) What is the role of mercuric acetate in non-aqueous titration of ephedrine HCl?

   e) What is a primary standard? Give two examples.

   f) What is a co-precipitation? Give an example.

   g) Give the principle of limit test for iron.

   h) Give chemical name and formula of calomel.

   i) What is limiting current?

   j) Give balanced chemical equations for titration of sulfanilamide with $NaNO_2$.

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SECTION - B

2. Plot the titration curve for titration between 0.1 M HCl and 0.1 M NH_4OH by calculating pH at various 0, 50, 75, 90, 99, 99.9,100,100.1,101 and 110 percent neutralization. Suggest the most suitable indicator for this titration.

3. Write a detailed account on principle and various steps involved in gravimetric analysis. Describe thegravimetric estimation of Barium as barium sulphate.

4. What is the principle of potentiometry? Write a detailed account on various reference electrodes used in it.

SECTION – C

5. Describe the construction and working of dropping mercury electrode.

6. A 50 ml sample of aqueous solution of oxalic acid requires 20.0 ml of 0.1 N solution of NaOH. Calculate the strength (in % w/v) of oxalic acid in the sample.

7. Define and classify errors. Write a note on different methods to minimize errors.

8. Give method of preparation and standardization of 0.1 M solution of $KMnO_4$. Give balancedchemical equations and general calculations involved in the method.

9. What is the principle of complexometric titrations? Describe the method for estimation of calcium gluconate.

10. Write a detailed account on Fajan's method.

11. Describe the application of conductometric titrations in different types of neutralization titrations.

12. Write a descriptive note on bromatometry.

13. Define the terms Common ion effect and Digestion with example.

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.–1)

PHARMACEUTICS-I (THEORY)

Subject Code : BP-103T

M.Code : 74646

Date of Examination: 06-01-2026

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 the contents of Inscript in a prescription?

   b) Mention the formulae used for calculating dose for children on the basis of age.

   c) What are effervescent granules and what are the advantages associated with them?

   d) What are efflorescent materials? Give two examples.

   e) Differentiate between Retention and Evacuant enemas and mention their uses.

   f) What are isotonic solutions? Explain the need for isotonicity of eye drops.

   g) Explain the use of alcohol in liniments and iodine tincture.

   h) What is Invert syrup? Mention the advantages and disadvantages of invert syrup.

   i) What is meant by displacement value of a base?

   j) What are mouthwashes? Mention their ingredients.

SECTION - B

2. Distinguish flocculated from deflocculated suspensions and discuss their characteristics. Briefly describe the tests used for evaluating their stability.

3. Define emulsions and mention the types of emulsions. Describe the tests used for identifying the type of emulsion.

4. What are the physiological and physico-chemical advantages of delivering drugs from suppositories? Write briefly about evaluation of suppositories.

SECTION-C

5. Define a prescription and mention its various parts. Explain the content of each part.

6. Adult dose of a drug is 1.5 g per day. The drug is to be given two times a day to a child of 15 months. Calculate each dose to be administered to the child.

7. What are eutectic substances? Give examples of such substances and outline the procedure to prepare powders containing them.

8. A pharmacist wants to mix solutions containing 5%, 20%, 60% and 80% w/v concentrations of a drug. In what proportions should each of these solutions be mixed so as to obtain 230 ml of a solution containing 40% w/v concentration of the drug.

9. The following prescription has to be dispensed as eye drop:

   Dexamethasone sodium phosphate - 0.1%; Sterile Water qs - 30 ml

   Calculate the quantity of sodium chloride needed to be added to make the solution isotonic with lacrimal fluid. The 'D' value of dexamethasone sodium phosphate is 0.05° / 0.5%.

10. 10 suppositories each containing weighing 5.0 gram and each containing 4% drug have to be prepared using a suppository base. The displacement value of the drug is 2.5. Calculate the quantity of base required to make these supppsitories.

11. Give examples of melting suppository bases, Discuss the problems associated with the use of Theobroma oil as suppository base.

12. Differentiate between tolerated and adjusted incompatibility giving examples.

13. Write a note on primary and auxiliary emulsifiers.

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Total No. of Questions : 13

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B.Pharmacy (Sem.–1)

PHARMACEUTICAL INORGANIC CHEMISTRY

Subject Code : BP-104T

M.Code : 74647

Date of Examination : 08-01-2026

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 acid is used in the limit test for chloride and why?

   b) Define cyanide poisoning and mention two common sources.

   c) Write the chemical formula and uses of Potash Alum.

   d) Why are isotonic buffers important in ophthalmic and injectable preparations?

   e) Mention two pharmaceutical uses of sodium potassium tartrate.

   f) What is the difference between osmotic and stimulant cathartics?

   g) Give one example each of diagnostic and therapeutic radiopharmaceutical.

   h) What are protective and adsorbents?

   i) What are hematinics? Give two examples.

   j) Give one example each of mechanical, chemical and physiological antidote.

SECTION - B

2. Describe the characteristics and properties of alpha, beta, and gamma radiations.

3. Write a detailed note on the role of fluoride in the prevention and treatment of dental diseases.

4. Write in detailed note on limit test for lead and arsenic.

SECTION – C

5. Write about Iodine and its preparations.

6. Define antidotes and antacids and classify them with suitable examples.

7. Compare organic, inorganic, and residual solvent impurities with examples.

8. Discuss the importance of tonicity adjustment in ophthalmic solutions.

9. What are acidifiers? How to carry out official assay of ammonium chloride?

10. Discuss apparatus, reaction and method involved in limit test for iron.

11. Discuss the role ofpotassium chloride in replacement therapy.

12. Explain the mechanism of action of antimicrobials using examples.

13. Write a detailed note on expectorants.

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B.Pharmacy (Sem.-2)

HUMAN ANATOMY AND PHYSIOLOGY-II

Subject Code BP-201T

M.Code : 74967

Date of Examination: 17-12-2025

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 with examples "Exocrine glands" and "endocrine glands".

b) Name the hormones of anterior pituitary gland.

c) What is a synapse and ganglia?

d) What is total lung capacity?

e) How do you define processes of "Digestion" & "Absorption"?

f) What is Cretinism and Myxedema?

g) What is gastric juice? Highlight composition of gastric juice.

h) What is brain stem?

i) What is gametogenesis?

j) What is cerebrospinal fluid? Highlight its functions.

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SECTION-B

2. Enlist the various organs of urinary system and discuss physiology of urine formation in detail.

3. Discuss critically about physiology of female reproductive system.

4. Discuss in detail about cranial nerves.

SECTION-C

5. Add a note on lungs and its function.

6. Write a note on posterior pituitary hormones.

7. Write a note on pancreas and its various functions.

8. Describe the various functions of liver.

9. Write a note on regulation of respiration.

10. Write a note on spinal cord.

11. Write a brief note on sex hormones and their functions.

12. Describe formation and role of ATP.

13. Write a note on chromosomes and their role in genetic information.

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Total No. of Questions : 13

B.Pharmacy (Sem.-2)

PHARMACEUTICAL ORGANIC CHEMISTRY-I

Subject Code : BP-202T

M.Code : 74968

Date of Examination : 15-12-2025

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 write about thefollowing:**

   a) What is electromeric effect?

   b) Write two reactions of alkyl halides.

   c) Differentiate between El and E2 reactions.

   d) Write the tautomer of ethyl asetoacetate and functional isomer of butanone.

   e) What is the hybridisation and geometry of ethene?

   f) Give chemical test to distinguish between an acid and an ester.

   g) Explain role of inductive effect in explaining acidity of carboxylic acids.

   h) Give any two methods of preparation of alkenes.

   i) Give the structure and uses of vanillin.

   j) What is Walden inversion?

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SECTION-B

2. Explain in detail the kinetics involved, order of reactivity of alkyl halides and rearrangements of carbocations involved in E1 and E2 reactions.

3. Give the various methods of preparation and reactions of carboxylic acids.

4. **Account for the following**:

   a) Basicity of amines

   b) Qualitative tests to differentiate between various types of amines.

SECTION-C

5. Name the various therapeutically used alcohols. Give their structures and uses.

6. Comment upon the stability of conjugated dienes. Give any two reactions of 1,3- butadiene.

7. Write a.comparati.ve note on Aldol and Crossed aldol condensation reactions.

8. Comment upon the various factors affecting SN1 and SN2 reactions.

9. Discuss IUPAC system of nomenclature of open chain organic compounds upto 10 carbon atoms.

10. Write down the various methods of preparation of various carbonyl compounds.

11. Give an account of halogenation of alkanes.

12. Comment upon hybridisation in alkanes.

13. Explain the various tests carried out to detect the presence of carboxylic acids and carboxamides?

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

Total No. of Questions : 13

B.Pharmacy (Sem.-2)

BIOCHEMISTRY

Subject Code : BP-203T

M.Code : 74969

Date of Examination : 19-12-2025

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 the following :**

a. Define free energy and redox potential.

b. What are energy-rich compounds? Give two examples.

c. Write two glycogen storage diseases.

d. Differentiate between gluconeogenesis and glycolysis.

e. Define uncouplers of oxidative phosphorylation.

f. Mention two disorders of lipid metabolism.

g. Write the role of the urea cycle in nitrogen metabolism.

h. Give two examples of neurotransmitters derived from amino acids.

i. What is semi-conservative replication of DNA?

j. Define isoenzymes with one example.

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SECTION - B

2. Describe the citric acid cycle with energetics and significance.

3. Discuss the *de novo* synthesis of fatty acids and their regulation.

4. Explain enzyme kinetics with the Michaelis-Menten and Lineweaver-Burk plots.

SECTION - C

5. Explain glycogen metabolism and its regulation.

6. Discuss oxidative phosphorylation and substrate-level phosphorylation.

7. Write a note on ketone bodies and their role in ketoacidosis.

8. Explain the catabolism of tyrosine and related metabolic disorders.

9. Discuss the genetic code and inhibitors of protein synthesis.

10. Explain the regulation of enzyme activity (allosteric enzymes with examples).

11. Write a note on the HMP shunt and its significance.

12. Explain the electron transport chain with its mechanism.

13. Write a note on transcription and RNA synthesis.

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

Total No. of Questions : 13

B.Pharmacy (Sem.-2)

PATHOPHYSIOLOGY

Subject Code : BP-204T

M.Code : 74970

Date of Examination: 22-12-2025

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) Highlight the causes of cell injury.

b) What is proliferative inflammation?

c) What are intracellular accumulatibns?

d) What is angina? Indicate the various types of angina.

e) What is metastasis?

f) What is depression? Indicate the various of depression.

g) What is COPD?

h) What is hypertrophy and hyperplasia?

i) What is hyperthyroidism?

j) What is tuberculosis?

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SECTION-B

2. What is diabetes mellitus? Indicate the various types of diabetes mellitus and describe pathophysiology of DM.

3. Discuss in detail about the various vascular and cellular events of acute inflammation.

4. What is Alzheimer's disease? Discuss pathophysiology of AD in detail.

SECTION-C

5. Write a note on wound healing.

6. Write a note on epilepsy.

7. Explain the key differences between apoptosis and necrosis.

8. Add note on pathophysiology of Hypertension.

9. Write an exhaustive note on pathophysiology of depression.

10. Write a note on acute renal failure.

11. Explain the key differences between Benign and Malignant tumor.

12. Describe pathophysiology of peptic ulcer.

13. Write a brief note on sexually transmitted diseases.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.–3)

PHARMACEUTICAL ORGANIC CHEMISTRY-II

Subject Code : BP-301T

M.Code :75105

Date of Examination : 02-12-2025

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) Who proposed resonance structure of benzene? What is its bond length?

b) Name catalyst used in the nitration of benzene and Friedel craft alkylation.

c) What is saponification?

d) Give one derivative of phenanthrene used in medicine.

e) Why is aniline less basic than ethylamine?

f) Give the structure of o-cresol and one use.

g) Why is benzoic acid soluble in NaOH?

h) What is the difference between Hydrogenation and hydrolysis of oils?

i) What is the ideal bond angle for strain-free rings?

j) What happens when cyclobutane is treated with bromine?

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SECTION-B

2. Discuss in detail the stability of cycloalkanes with reference to Baeyer's strain theory, Sachse-Mohr's theory and angle and torsional strain.

3. Explain the mechanism of nitration, sulphonation and halogenation of benzene.

4. Discuss the synthesis, chemical reactions and medicinal uses of any two polynuclear hydrocarbons.

SECTION-C

5. Define basicity. Compare the basicity of aliphatic and aromatic amines.

6. Explain the significance of acid value, iodine value, and saponification value.

7. Describe the structure and medicinal/chemical uses of DDT, BHC and Chloramine.

8. Discuss structure and reactivity of diphenylmethane and triphenylmethane.

9. Discuss the acidity of phenols in detail. How do different substituents affect it?

10. Describe the synthetic uses of aryl diazonium salts.

11. Write the mechanism of Friedel-Crafts alkylation of benzene. Mention its limitations.

12. Describe the reactivity of cyclopropane and cyclobutane with examples.

13. Explain the synthesis and reactions of naphthalene.

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Total No. of Questions : 13

B.Pharmacy(Sem.–3)

PHYSICAL PHARMACEUTICS-I

Subject Code :BP-302T

M.Code :75106

Date of Examination: 04-12-2025

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. **Definebriefly:**

   a) Distinguish between solvation andassociation by giving oneexample of each.

   b) State Raoult's Law and its applications.

   c) What is meant by diffusion?

   d) What is a liquid crystal? Give an example and mention its applications.

   e) What is dipole moment?

   f) Mention the important properties of an amorphous solid.

   g) What is interfacial tension?

   h) Define HLB value and its scale?

   i) What are chelates? Give two examples.

   j) What is buffer capacity?

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SECTION - B

2. Discuss the factors influencing the solubility of drugs. Write a note on approaches used for enhancing drug solubility.

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

4. Differentiate between surface tension and interfacial tension. With the help of suitable equations explain spreading of one liquid on another liquid.

SECTION - C

5. Discuss the relationship between vapour pressure and critical point.

6. The following eye drop has to be prepared: Naphazoline HCI (0.02%), Zinc sulphate (0.25%), P. water qs 30 ml. How much sodium chloride should be added to make the preparation isotonic with tears. (Given 'E' value of Naphiazoline HCI is 0.27 and that of Zinc sulphate is 0.15).

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

8. Explain aerosols and their ingredients.

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

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

11. Comment on glassy state of a solid with respect to its advantages in dosage form performance.

12. Give a brief description of buffers and their application.

13. Briefly discuss isotonicity and the methodsused for preparing isotonic solutions.

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Total No. of Questions : 13

B.Pharmacy(Sem.–3)

PHARMACEUTICAL MICROBIOLOGY

Subject Code : BP-303T

M.Code :75107

Date of Examinaiton: 06-12-2025

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. Antiseptic

   b. Disinfectants

   c. Grams Staining

   d. Sterilization

   e. Sterilitytesting

   Differentiate between :

   f. Disinfectant and Antiseptic.

   g. Gram positive and Gram negative bacteria.

   How following materials tested for sterility :

   h. Insoluble powders and oily preparations.

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

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j. What are the precautions to be taken while autoclaving empty test tubes or petriplates?

SECTION - B

2. Explain methods for sterilization of pharmaceutical products.
3. What is sterility testing? How sterility testing is conducted as per IP?
4. **Write short note on :**

   a. Bacterial enzymes

   b. BCG vaccine

SECTION - C

5. Explain the principle and procedure for staining techniques.
6. Explain different methods for the evaluation of disinfectants.
7. Explain electron microscopy. What are its applications?
8. Highlight microbial assay. Give method for the assay of vitamins.
9. Enumerate the different Diagnostic preparations.
10. Brief the structure of Bacterial cell with diagram.
11. What are the factors effecting microbial spoilage in pharmaceutical products?
12. Highlight cell culture. Give general procedure for the growth of cell cultures.
13. Explain the construction working principle of equipment used for the large scale sterilization of pharmaceuticals.

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B.Pharmacy (Sem.–3)

PHARMACEUTICAL ENGINEERING

Subject Code : BP-304T

M.Code : 75108

Date of Examination:09-12-2025

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. Write any two objectives of filtration.

   b. What are the applications of centrifugation?

   c. Define size reduction.

   d. Name any two laws governing size reduction.

   e. What is the function of paddles in mixing?

   f. Name two types of heat exchangers.

   g. Mention two types of distillation.

   h. What is meant by molecular distillation?

   i. Give two examples of non-metallic materials used in plant construction.

   j. Write two factors influencing evaporation.

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SECTION-B

2. Explain the working principle, construction, uses, merits and demerits of tray dryer and spray dryer.

3. Describe Bernoulli's theorem and its pharmaceutical applications. How are orifice meters and venturimeters used for flow measurement?

4. Explain the various mechanisms of heat transfer. Discuss Fourier's law and its importance in pharmaceutical engineering.

SECTION - C

5. Describe any two methods of size separation.

6. What are the factors affecting mixing of solids?

7. Write a note on the working principle of Sigma blade mixer.

8. Differentiate between flash distillation and steam distillation.

9. Explain the principle and working of centrifugal filters.

10. Describe the applications of fluidized bed dryer.

11. Discuss the types of corrosion in pharmaceutical plants.

12. What is the significance of manometers in flow measurement?

13. Describe the construction and working of filter leaf.

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B.Pharma (Sem.-4)

PHARMACEUTICAL ORGANIC CHEMISTRY-III

Subject Code : BP-401 T

M Code : 75843

Date of Examination : 18-12-2025

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 *Syn* and *anti* system of nomenclature?

   b) What is a meso compound? Give any example.

   c) Draw the structure of azete, imidazole, Isoxazole and quinoline.

   d) What is Clemmenson Reduction?

   e) Define Atropisomerism. Give examples.

   f) Differentiate between D and L configuration.

   g) Give any two reactions of Furan.

   h) Write down the structure and medicinal use of azepine.

   i) Define absolute asymmetric synthesis.

   j) Write down the steps involved in synthesis of indole.

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SECTION - B

2. Discuss in detail about the various methods of synthesis and chemical reactions of furan.

3. What is the requirement of optical activity? Give reasons. Comment in detail upon the various elements of symmetry.

4. **Comment upon synthesis of following heteronuclear compounds :**

   a) Pyrimidine

   b) Imidazole

   c) Pyrrole

   d) Isoquinoline.

SECTION - C

5. Write a detailed note on Dakin reaction and Wolf Kischner reduction reactions.

6. Give the comparative note on aromaticity of pyrrole, furan and thiophene.

7. What is conformational isomerism? Comment upon the isomerism present in n-butane.

8. Explain the concept and nomenclature of geometrical isomerism with the help of examples.

9. Write a detailed note on stereospecific reactions.

10. Comment upon the reactions and medicinal uses of Imidazole and Thiazole.

11. What are CIP rules? Explain in detail.

12. Write down the various reactions of Pyridine.

13. Write a detailed note on the reactions of chiral compounds.

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

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharma (Sem.-4)

MEDICINAL CHEMISTRY-I

Subject Code : BP-402T

M.Code : 75844

Date of Examination : 13-12-2025

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 the Terms :**

   a) Differentiate between classical and non-classical bioisostere.

   b) How is epinephrine synthesized from norepinephrine?

   c) Write chemical synthesis of Barbital.

   d) Give chemical structure and uses of Methyldopa.

   e) Draw chemical structures of Triclofos sodium and Zolpidem.

   f) Give the structure and specific medicinal use of Clozapine.

   g) What are dissociative anaesthetics? Give examples.

   h) What are the medicinal uses of Valproic acid and Acetaminophen?

   i) Give structure and medicinal uses of Diclofenac,

   j) Write chemical synthesis of Ethosuximide.

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SECTION - B

2. What are beta adrenergic blockers? Write SARof beta blockers. Write synthesis of propranolol.

3. Discuss ring analogues of Phenothiazine's and Fluorbutyrophenones as antipsychotics.

4. Classify sedative and hypnotics. Write in detail SAR benzodiazepines as sedative hypnotics.

SECTION - C

5. Give an account on SAR of morphine analogues.

6. Discuss biosynthesis and catabolism of acetylcholine

7. Write a brief note on cholinesterase inhibitors.

8. Classify anticonvulsants Discuss hydantoins as anticonvulsant drugs.

9. Discuss heteroarylacetic acid derivatives as anti-inflammatory agents.

10. Discuss in detail medicinal chemistry of ultrashort acting barbiturates.

11. Discuss in detail adrenergic receptors and their distribution.

12. Comment upon the role of chelation and partition coefficient on biological activity.

13. Comment on Phase I metabolic reactions in drug metabolism.

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

Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.-4)

PHYSICAL PHARMACEUTICS-II

Subject Code : BP-403T

M.Code : 75845

Date of Examination : 16-12-2025

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 Oxidation.

   b) Define Coacervation.

   c) Write importance of HLB in emulsions.

   d) Define Strain.

   e) Define Thixotropy.

   f) Define Suspension with examples.

   g) Define Adsorption.

   h) Define Porosity.

   i) Define Dielectric Constant.

   j) What do you mean by Order of reaction?

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SECTION-B

2. Explain with graphs and equations the influence of temperature on degradation of Pharmaceutical dosage form.

3. What are colloids? Give its types. Discuss the optical properties of colloids.

4. Define Viscosity. Discuss the determination of viscosity in detail.

SECTION-C

5. Write a note on rheological properties of emulsions.

6. Describe Pseudo plastic flow behavior.

7. Briefly discuss particle size determination.

8. Outline salient features of suspensions.

9. Give an account of acid base catalysis.

10. Mention the classification of colloids and discuss briefly its general characteristics.

11. Discuss properties of powders.

12. Write a note on micro emulsions.

13. Discuss briefly about accelerated stability testing.

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Total No. of Questions : 13

Total No. of Pages :02

B.Pharmacy (Sem.-4)

PHARMACOLOGY-I

Subject Code : BP-404T

M.Code : 75846

Date of Examination: 23-12-2025

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. **Differentiate between :**

   a) Active and Passive transport.

   b) Sedatives and Hypnotics.

   c) Bioavailability &Bioequivalence.

   d) Pharmacokinetics & Pharmacodynamics.

   e) Competitive and Non-competitive receptor antagonists.

   f) Local and General anesthetics.

   g) Excitatory and Inhibitory neurotransmitters.

   h) Enzyme induction and Enzyme inhibition.

   i) Classical and Atypical antidepressants.

   j) Grandmal and Petitmal epilepsy.

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SECTION - B

2. Classify the various routes of drug administration and discuss in detail about parenteral route.

3. Discuss pharmacology of beta-blockers as sympatholytic agents.

4. Write a critical note on pharmacology of Anti-Parkinsonian drugs.

SECTION - C

5. Add a note on factors affecting drug action.

6. Classify drug receptors and describe G-Protein coupled receptors.

7. Classify general anesthetic agents and add a note on gaseous anesthesia.

8. Write a note on pre-anesthetic medication.

9. Write a short note on pharmacology of selective Cox-2 inhibitors.

10. Write a brief note on selective serotonin reuptake inhibitors as anti-depressants.

11. Add a brief note on benzodiazepine as anti-anxiety agents.

12. Write a note on drug dependence.

13. Add a brief note on pharmacology of Morphine.

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

Total No. of Questions : 13

B.Pharma (Sem.-4)

PHARMACOGNOSY & PHYTOCHEMISTRY-I

Subject Code :BP-405T

M.Code :75847

Date of Examination : 20-12-2025

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 carryingTEN 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 the advantages and limitations of drugs of natural origin?

b) Compare primary and secondary metabolites.

c) Classify crude drugs on the basis of morphological characters.

d) What is polyploidy? How can polyploidy be induced in medicinal plants?

e) What is in-situ and ex-situ conservation of medicinal plants?

f) What are the differences between gums and mucilage?

g) Give an example of a plant which gives positive result with Borntrager's reagent. Also, mention its medicinal use.

h) What is Totipotency?

i) Give the biological source and commercial uses of a plant containing fixed oils.

j) Give the basic structure of cardiac glycosides. Give an example of a plant which contains cardiac glycosides.

SECTION - B

2. What are natural and man-made factors that affect quality of medicinal plants? How can we ensure quality of medicinal plants?

3. Describe in detail the requirements and applications of Plant Tissue Culture.

4. What is the role of pharmacognosy in modern and traditional systems of medicine? Describe the principles of Unani system of medicine.

SECTION - C

5. What are the different sources of drugs studied in Pharmacognosy? Give examples of each source.

6. Describe the techniques used for quality control of medicinal plants.

7. What are Alkaloids? How are they classified?

8. What are transgenic plants? What are the applications of transgenic plants?

9. What is the medicinal and commercial importance of volatile oils? Give the biological source, constituents and uses of Fennel or clove.

10. Write a descriptive note on the importance and limitations of marine drugs.

11. What are flavonoids? How are flavonoids extracted from plants?

12. Describe the Chemotaxonomical classification of plants.

13. Give the sources and uses of any one natural gum and wax.

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

Total No. of Questions : 12

Pharm.D. (Sem.–4)

CLINICAL TOXICOLOGY

Subject Code :PD406T-19

M. Code :93765

Date of Examination :15-12-2025

Time : 3 Hrs. Max. Marks :70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks each.
2. SECTION-B contains EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contains THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

SECTION-A

1. **Write briefly :**

   a. What is the function of activated charcoal in gut decontamination?

   b. Mention two symptoms of opioid overdose.

   c. Define chelation therapy with an example.

   d. What is whole bowel irrigation?

   e. List two radiological features seen in iron poisoning.

   f. State two delayed complications of radiation poisoning.

   g. Name two NSAIDs commonly implicated in overdose.

SECTION - B

2. Outline the management of antidepressant overdose.

3. Describe the toxic effects and treatment of mercury poisoning.

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4. Explain the clinical significance of toxicokinetics in poison management.

5. Discuss decontamination techniques used in hydrocarbon ingestion.

6. Describe the use of specific antidotes in methanol and opioid poisoning.

7. Write a short note on barbiturate poisoning.

8. Explain the mechanism of toxicity and management of NSAID overdose.

9. Compare the clinical features of acute *vs.* chronic lead poisoning.

SECTION - C

10. Discuss in detail the management of radiation poisoning, including supportive care.

11. Explain general principles in the management of acute poisoning with focus on airway, breathing and circulation.

12. Describe the clinical features, complications and treatment of copper and iron toxicity.

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Total No. of Questions : 13

B.Pharmacy(Sem.-5)

MEDICINAL CHEMISTRY II-THEORY

Subject Code : BP501T

M.Code : 76786

Date of Examination : 21-11-2025

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 carryingTEN 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) Why does Cetirizine cause fewer CNS side effects compared to Diphenhydramine?

   b) Which proton pump inhibitor is considered the most acid-stable?

   c) Differentiate in one line: Alkylating agents *vs.* Antimetabolites.

   d) Write one difference between Isosorbide dinitrate and Nitroglycerin.

   e) Write structural difference between Amlodipine and Nifedipine.

   f) Give structure of one loop diuretic and one thiazide diuretic.

   g) Write structure and therapeutic use of Quinidine sulphate.

   h) Mention one therapeutic use of Clofibrate.

   i) Give structures of any two oral contraceptives.

   j) Describe physiological importance of Thyroid hormones.

SECTION - B

2. Describe the characteristic features of different classes of steroidal hormones, citing one naturally occurring compound for each class.

3. a) Classify anti-diabetic drugs with special emphasis on thiazolidinediones (Glitazones).

   b) Give the synthesis and mechanism of action of Glitazones.

4. a) Classify local anaesthetics on the basis of their basic chemical structure.

   b) Explain the structure-activity relationship (SAR) of local anaesthetics.

SECTION-C

5. Discuss the synthesis and pharmacological importance of Diphenhydraminehydrochloride.

6. Write a short note on anthracycline antibiotics.

7. Explain the mechanism of action and clinical uses of Enalapril and Lisinopril.

8. Give synthesis and mechanism of action of Methyldopa.

9. Explain the differences between class IB and IC anti-arrhythmic drugs.

10. Explain the stereochemical importance of the A/B ring junction in steroids and its effect on biological activity.

11. Discuss the advantages and disadvantages of combined oral contraceptives.

12. Explain the therapeutic use of L-thyroxine and L-triiodothyronine in hypothyroidism, including differences in onset and duration of action.

13. Discuss the structure of insulin.

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Total No. of Questions : 13

Total No. of Pages :03

B.Pharmacy (Sem.-5)

INDUSTRIAL PHARMACY-I (THEORY)

Subject Code BP502T

M.Code : 76787

Date of Examination: 19-11-2025

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 carryingTEN 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. **Multiple Choice Questions :**

a) One of the following cannot be used for enteric coating and why:

i) Shellac
ii) HPMC phthalate
iii) CAP
iv) Gelatin

b) Grossing is employed in sugar coating for:

i) Water proofing
ii) Rounding of shape
iii) Modifying Dissolution
iv) Weight building and smoothing rough surfaces

c) Cracking of emulsions is due to all but one of the following:

i) Temporary and can be reversed by shaking
ii) Due to inadequate emulsifier
iii) Due to fungal contamination
iv) Insolubility or migration of emulsifier

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d) All but one is not a plasticizer:

i) Polyethylene glycol
ii) Propylene glycol
iii)Glycerol
iv) Soft paraffin

e) A suspension with hard cake at the bottom is more likely to be:

i) Flocculated
ii) Deflocculated
iii) Contains very low solid content
iv) Contains high concentration of viscosifier

f) If an IV solution is hypotonic, it will:

i) Cannot be sterilized by steam
ii) Cause shrinking of blood cells
iii) Ideal for transfusion
iv) Cause blood cells to burst

g) UV radiation can be used to sterilize:

i) Culture media filled containers
ii) Glass wares
iii) Surfaces
iv) None of the above

h) Metered dose inhalers are meant to:

i) Best for topical use only
ii) Deliver Fixed dosel on actuation
iii) Not meant for adults
iv) Deliver dose as required by patient

i) Vanishing creams are:

i) W/0 emulsions
ii) O/W emulsions
iii)O/W/O emulsions
iv) Can be mixed with oil before application

j) Disposable syringes and IV catheters can be sterilized by :

i) Gamma radiation
ii) Ethylene oxide
iii) Both (A) &(B)
iv) UV-B

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 in-process and quality control tests performed on hard gelatin capsules.

4. Discuss the quality control tests conducted on aerosol products.

SECTION - C

5. Give a brief account of dry granulation process(es). Also, mention the reasons for adopting dry granulation method.

6. Mention the defects in in coated tablets and their remedies.

7. Discuss the stability testing parameters for suspensions.

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

9. Discuss the quality control tests conducted on soft gelatin capsules.

10. Comment on the additives used in parenteral products.

11. Discuss the critical factors that influence the selection of containers for IV infusion formulations.

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

13. Give an account of hair dyes and their formulations.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharma (Sem.-5)

PHARMACOLOGY II-THEORY

Subject Code : BP503T

M.Code : 76788

Date of Examination : 26-11-2025

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 carryingTEN 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 class-I anti-arrhythmic agents? Give two examples.

   b) How aspirin exerts its anti-platelet action?

   c) Highlight serious adverse effects of oral contraceptives.

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

   e) What is Telmisartan? Highlight its uses.

   f) What are leukotrienes? Give examples.

   g) What are anabolic steroids? Give two examples.

   h) What is bio-assay? List out the various types of bioassays.

   i) What are corticosteroids? Give one example of glucocorticoids and mineralocorticoids each.

   j) What are SERM? Give examples.

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SECTION - B

2. Write an exhaustive note on pharmacology of oral hypoglycemic agents

3. Classify diuretics and discuss in detail about mechanism of action, adverse effects and therapeutic uses of high ceiling diuretics.

4. Discuss pharmacology of anti-gout drugs.

SECTION - C

5. Write a note on selective Cox-2inhibitors.

6. Discuss mechanism of action and adverse effects of digitalis in heart failure.

7. Write a note on calcium channel blockers.

8. Explain mechanism of action and adverse effects of nitrates as anti-anginal drugs.

9. Add a note on Prostaglandins.

10 Write a brief note on anti-thyroid drugs.

11 Write a brief note on plasma volume expanders.

12. Describe the principle and applications of bio-assay.

13. Write a note on uterine stimulants.

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

Total No. of Questions : 13

B.Pharmacy (Sem.-5)

PHARMACOGNOSY AND PHYTOCHEMISTRY II-THEORY

Subject Code : BP504T

M.Code :76789

Date of Examination: 01-12-2025

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 carryingTEN 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 primary and secondary metabolites?

   b) Which biosynthetic pathways are responsible for the biosynthesis of Cardiac glycosides?

   c) Give the biological source, active constituents and uses of a plant containing Anthraquinone glycosides.

   d) Give the biological source and uses of 2 plants containing volatile oils.

   e) Compare the structure of Atropine and Hyoscine.

   f) What is the advantage and limitation of Ultrasound assisted extraction?

   g) What information do we get from the IR spectra of a phytoconstituent?

   h) What are Resins? Give an example of a plant which contains resins.

   i) If a plant extract gives negative test with Mayer's reagent and a positive Murexide reaction - give the structure of the phytoconstituent present in it.

   j) How are saponins classified?

SECTION - B

2. Describe in detail the biosynthesis of Flavonoid glycosides.

3. What are alkaloids? How are alkaloids classified? What is the medicinal importance of Opium alkaloids?

4. What is the importance and applications of chromatographic techniques in Pharmacognosy?

SECTION - C

5. How are carotenoids biosynthesised?

6. What are the different methods used in the investigation of biosynthetic pathways?

7. Write a detailed note on medicinal and commercial uses of Digitalis.

8. What are the advantages and challenges of using Artemisia or Taxol?

9. What is electrophoresis? What are its applications?

10. Describe the industrial production and utilization of Diosgenin.

11. Write a note on the importance of 'Green methods' of extraction.

12. What are tannins? How are they classified? What are the medicinal and commercial uses oftannins?

13. Describe the methods used in isolation and identification of Rutin **or** glycyrrhetinic acid. Give the biological source and uses also.

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Total No. of Questions : 13

B.Pharmacy (Sem.-5)

PHARMACEUTICAL JURISPRUDENCE-THEORY

Subject Code : BP505T

M.Code : 76790

Date of Examination:28-11-2025

Time : 3 Hrs. **Max. Marks : 75**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TWENTY questions carrying ONE marks each.**
2. **SECTION-B contains THREE questions carryingTEN 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. **Multiple choice questions :**

a. Under the Drugs and Cosmetics Act, Schedule M relates to:

i) Clinical trials ii) Good manufacturing practices

iii) Labeling requirements iv) Drug import rules

b. DPCO stands for:

i) Drugs Price Control Order ii) Drug Prescription Control Order

iii) Drug Production Control Order iv) Drug Packaging Control Order

c. Which schedule deals with life Saving drags requiring special storage conditions?

i) Schedule P ii) Schedule H

iii) Schedule X iv) Schedule N

d. The authority responsible for regulating clinical trials in India is:

i) Central Drugs Laboratory

ii) Drug Controller General of India (DCGI)

iii) Pharmacy Council of India

iv) National Pharmaceutical PricingAuthority

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e. Narcotic Drugs and Psychotropic Substances Act was passed in:

i) 1948 ii) 1955

iii) 1960 iv) 1985

f. Which committee recommended self-sufficiency in drug manufacturing in India?

i) Hathi Committee ii) Mudaliar Committee

iii) Bhore Committee iv) Drugs Enquiry Committee

g. Schedule X drugs are:

i) Homeopathic drugs ii) Psychotropic drugs

iii) Prescription-only antibiotics iv) Cosmetics

h. Part XII B of Drugs and Cosmetics Rules deals with:

i) Manufacture of Ayurvedic drugs ii) Medical devices

iii) Approval of new drugs iv) Clinical trial regulations

i. Pharmacy Act was enacted in:

i) 1935 ii) 1940

iii) 1948 iv) 1955

j. Which schedule specifies the standards for cosmetics?

i) Schedule S ii) Schedule T

iii) Schedule F iv) Schedule V

k. Government drug analysts are appointed under:

i) Drugs and Cosmetics Act ii) NDPS Act

iii) Pharmacy Act iv) Drugs and Magic Remedies Act

l. Theoath taken by pharmacists is called:

i) Pharmacist's Pledge ii) Pharmacist's Oath

iii) Pharmacist's Code iv) Pharmacist's Declaration

m. Themedical termination of pregnancy is legally permitted up to how many weeks?

i) 12 weeks ii) 16 weeks

iii) 20 weeks iv) 24 weeks

n. Which act deals with prohibition of misleading advertisements of drugs?

i) DPCO ii) Drugs and Magic Remedies Act

iii) Pharmacy Act iv) NDPS Act

o. Which schedule is related to Ayurvedic, Siddha, and Unani drugs?

i) Schedule T ii) Schedule U

iii) Schedule N iv) Schedule M

p. Import of narcotic drugs in India requires:

i) Loan license

ii) Import certificate from licensing authority

iii) NOC from pharmacy council iv) Schedule approval

q. Institutional Animal Ethics Committee functions under:

i) Pharmacy Act ii) Drugs and Cosmetics Act

iii) CPCSEA iv) NDPS Act

r. Which authority fixes the ceiling price of scheduled formulations?

i) PCI ii) DCGI

iii) NPPA iv) DCC

s. "Misbranded drug"is defined under:

i) NDPS Act ii) Drugs and Cosmetics Act

iii) DPCO iv) Pharmacy Act

t. Schedule Y deals with:

i) Labeling of drugs ii) Import of drugs

iii) Clinical trials requirements iv) Sale of prescription drugs

SECTION-B

2. Explain in detail the procedure and conditions for the grant of manufacturing license underthe Drugs and Cosmetics Act, 1940.

3. Discuss-the objectives, constitution, and functions of the Pharmacy Council of India under the Pharmacy Act, 1948.

4. Explain the objectives and scope of the Medicinal and Toilet Preparations (Excise Duties) Act, 1955. Discuss in detail the provisions related to licensing of manufacture (in-bond and outside-bond).

SECTION-C

5. Define and explain Schedule G and Schedule H drugs with examples.

6. Write short notes on Loan license and Repacking license.

7. Explain the role and functions of the Drugs Consultative Committee.

8. What are the general labeling requirements for drugs and cosmetics?

9. Write a note on the objectives and functions of the Narcotic Drugs and Psychotropic Substances Consultative Committee.

10. Explain the powers and responsibilities of Drugs Inspectors.

11. Write a note on CPCSEA guidelines for breeding and stocking of animals.

12. What is the National Pharmaceutical Pricing Authority (NPPA) and its role in drug price regulation?

13. Explain the code of pharmaceutical ethics in relation to trade and medical profession.

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

Total No. of Questions : 13

B.Pharmacy (Sem.-6)

MEDICINAL CHEMISTRY-III-THEORY

Subject Code : BP-601T

M.Code : 77986

Date of Examination:13-12-2025

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 carryingTEN 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 the structure and uses of Ampicillin.

b) Give synthesis of mebendazole.

c) Give the structure and uses of any one antiviral agent.

d) Define Hansch analysis and mention its significance in drug design.

e) State any two advantages of designing prodrugs.

f) Mention the mechanism of action of Isoniazid.

g) Write the structure and uses of Miconazole.

h) Draw the basic structure of tetracycline and mention any two derivatives.

i) Mention the steric parameters used in QSAR.

j) Write the SAR of 4-aminoquinolines with respect to antimalarial activity.

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SECTION-B

2. What are beta lactam antibiotics? Give the degradation products of penicillins and cephalosporins. Write a note on beta lactamase inhibitors.

3. What are antimalarial agents? Classify them with example. Give the MOA and synthesis of quinolones and Primaquine.

4. What are antifungal agents? Classify them with examples and write in detail about polyene antifungal agents.

SECTION-C

5. Write the synthesis and MOA of Chloramphenicol.

6. What areanti-TB drugs? Enlist the problems associated with the treatment. Give the synthesis of INH.

7. Discuss miscellaneous UTIs. Outline the synthesis of ciprofloxacin.

8. Define prodrugs. Describe any two examples highlighting the rationale behind their design.

9. Explain the concept of QSAR. Discuss the role of physicochemical parameters such as partition coefficient and electronic effects in drug design.

10. Describe the chemistry, classification and SAR of sulfonamides. Mention at least three examples with their therapeutic uses.

11. Classify antiviral agents based on their mechanism of action and write a short note on Acyclovir.

12. Discuss the Structure Activity Relationship (SAR) of Penicillin and explain how β-lactam ring modification affects its activity.

13. Write the structure and uses of Clindamycin and Ciprofloxacin.

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Total No. of Pages :02

Total No. of Questions : 13

B.Pharmacy(Sem.-6)

PHARMACOLOGY III-THEORY

Subject Code :BP-602T

M.Code :77987

Date of Examination:06-12-2025

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 carryingTEN 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. Define carminatives.

   b. What are anti-diarrhoea agents?

   c. Define chronopharmacology.

   d. What do you mean by acute toxicity?

   e. Define monoclonal antibodies.

   f. Give any two examples of antitussives drugs.

   g. Define the term genotoxicity.

   h. Name two mast cell stabilizers.

   i. What is superinfection?

   j. Define expectorants.

SECTION - B

2. Write a note on antitubercular agents.

3. What is Bronchial Asthma? Classify the drugs used for its treatment.

4. Define Sexually Transmitted Diseases (STDs). Discuss their mode of transmission and prevention.

SECTION - C

5. Write a short note on protein drugs.

6. Explain the management of organophosphorus poisoning.

7. Classify antifungal agents. Give examples.

8. Write a note on proton pump inhibitors.

9. Explain the mechanism of action, uses and side of effect of domperidone.

10. Write a shot note on anthelmintic drugs.

11. Write a note on cotrimoxazole.

12. Discuss the significance of biological rhythms in optimizing drug therapy.

13. Write a note on Immunostimulants.

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

Total No. of Questions : 13

B.Pharmacy (Sem.-6)

HERBAL DRUG TECHNOLOGY-THEORY

Subject Code :BP603T

M.Code :77988

Date of Examination:4-12-2025

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 carryingTEN 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) Define herbal drug preparation.

   b) Mention two examples of herbs used in nutraceuticals.

   c) What is biopiracy?

   d) List any two herbal ingredients used in oral hygiene products.

   e) Write the principle of Unani medicine.

   f) What are phytosemes?

   g) Name two common biopesticides.

   h) What is the role of Spirulina as a health food?

   i) Write two examples of herb drug interactions.

   j) State the significance of Schedule – T in GMP.

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SECTION -B

2. Describe the selection, identification, authentication and processing of herbal raw materials.

3. Explain the health benefits of nutraceuticals in cardiovascular diseases, cancer and irritable bowel syndrome.

4. What are the WHO and ICH guidelines for herbal drug assessment? Describe the stability testing of herbal drugs.

SECTION -C

5. Differentiate between Aristas and Asawas with examples.

6. Explain the scope and growth of the herbal drug industry in India.

7. Write a shortnote on herbal excipients used as colorants and binders.

8. Describe the Indian regulatory framework for the manufacture of ASU drugs.

9. Discuss the uses of Amla and Fenugreek as health food, herbs.

10. Outline the process of patenting traditional knowledge with a case study on Curcuma.

11. Explain the preparation and standardization of Lehya and Bhasma.

12. Write a note on bio-prospecting and farmer's rights.

13. List the fixed oils and waxes used in herbal skin care products.

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Total No. of Pages :02

Total No. of Questions : 13

B.Pharma (Sem.-6)

BIOPHARMACEUTICS AND PHARMACOKINETICS (THEORY)

Subject Code :BP-604T

M.Code :77989

Date of Examination: 11-12-2025

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 carryingTEN 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. **Explainbriefly:**

a) Why is Vd called 'apparent Vd" and what are its units?

b) What is tubular reabsorption?

c) What is the difference between elimination and excretion rate constants?

d) What are BCS IV drugs?

e) If the urinary pH becomes too basic, which type of drugs are expected to be retained in the body for long period of time?

f) Give two examples of therapeutic equivalents.

g) What is meant by generic substitutes? Give two examples.

h) What is the relation between total clearance, hepatic clearance and renal clearance?

i) Write the equation for drug plasma concentration at time't' following IV rapid injection.

j) How is AUC calculated?

SECTION - B

2. Describe suitable equations to explain Sigma-Minus method and discuss its advantages.

3. Discuss the pharmaceutical factors influencing drug absorption.

4. What is meant by non-linear pharmacokinetics? Discuss the methods used for verifying the non-linear pharmacokinetic behaviour of drugs.

SECTION - C

5. If the amount of drug in the body declines from 100% of the dose (IV bolus injection) to 25% of the dose in 8 hr, what is the elimination half-life of the drug?

6. Two drugs have the following pharmacokinetic parameters after a single oral dose of 500 mg.

DRUG	Ka/hr	k/hr	Vd (mL)
A	1.0	0.2	10,000
B	0.2	1.0	20,000

Both drugs follow one compartment pharmacokinetic model and are 100% bioavailable. Calculate the Tmax for each drug.

7. What is the difference between active and facilitated transport.

8. Distinguish between drug elimination and drug excretion.

9. Is Vd of a drug constant? Comment and mention the conditions under which Vd may change.

10. Briefly explain the method of calculating Ka and Ke (graphically).

11. Draw a typical plasma drug concentration *Vs* time plot and illustrate various pharmacokinetic parameters therein.

12. Discuss BCS of drugs with suitable examples.

13. Discuss with examples various classes of drugs that are exempted from bioequivalence studies.

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.-6)

PHARMACEUTICAL BIOTECHNOLOGY-THEORY

Subject Code : BP-605T

M.Code : 77990

Date of Examination : 02-12-2025

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 enzyme biotechnology.

   b) What is the function of biosensors in pharmaceutical industries?

   c) Name any two microbes used in enzyme production.

   d) What is the role of DNA ligase in rDNA technology?

   e) Mention any two therapeutic proteins produced using genetic engineering.

   f) Define vaccine with an example.

   g) What are plasma substitutes? Give one example.

   h) Expand ELISA and state one application.

   i) What are transposons?

   j) List two fermentation products of pharmaceutical importance.

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SECTION - B

2. Describe in detail the production of industrially important enzymes: amylase, lipase, and protease.

3. Discuss the application of DNA technology in the production of vaccines and insulin.

4. Write detailed notes on ELISA and Western blotting techniques.

SECTION - C

5. Write a note on biosensors and their role in drug discovery.

6. Explain the functions of MHC molecules.

7. Discuss immune stimulation and immune suppression.

8. Write short notes on antitoxins and serum-immune blood derivatives.

9. Explain conjugation in bacteria with a neat diagram.

10. Discuss microbial genetics: plasmids and their applications.

11. Describe large-scale fermenter requirements.

12. Explain the industrial production of Vitamin B12.

13. Write a note on processing and storage of dried human plasma.

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

Total No. of Questions : 13

B.Pharmacy (Sem.-6)

QUALITY ASSURANCE-THEORY

Subject Code :BP-606T

M.Code :77991

Date of Examination : 09-12-2025

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 carryingTEN 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. **Definebriefly :**
   a. Define the term personnel record.
   b. Differentiate between QA and QC.
   c. Name any two elements of TQM.
   d. Enlist the four main categories of ICH guidelines.
   e. What documents are required of NABL application?
   f. Distinguish between calibration, qualification & validation.
   g. What is the full form of GMP&GLP?
   h. What is the objective of ISO 14000?
   i. What is product recall?
   j. Define SOP.

SECTION - B

2. Define QbD. Discuss various tools used in QbD.
3. Explain the role of sanitation and environmental control procedures in preventing contamination in sterile areas.
4. Discuss general Principle and scope of validation, its types and validation master plan.

SECTION - C

5. Explain basic principles of GMP & NABL accreditation.
6. Differentiate between batch formula record & master formula record.
7. Write a note on inventory control & stock rotation methods.
8. Discuss the responsibilities of personnel in GMP.
9. What are purchase specifications?
10. What is the protocol for conduct of a nonclinical laboratory study?
11. What is the role of documentation in complaint handling?
12. Discuss quality control tests of rubber closures.
13. Briefly discuss analytical method validation.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-7)

INSTRUMENTAL METHODS OF ANALYSIS-THEORY

Subject Code : BP-701T

M.Code : 78387

Date of Examination :21-11-2025

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) How does solvent polarity affect absorption maxima?

   b) What is fluorescence quenching?

   c) What are the fundamental modes of vibration in polyatomic molecules?

   d) Give one application of flame photometry in clinical or pharmaceutical analysis.

   e) Distinguish briefly between nephelometry and turbidimetry.

   f) Differentiate between line source and continuum source in atomic absorption spectroscopy.

   g) Write any two differences between Paper Chromatography and Thin Layer Chromatography (TLC).

   h) Differentiate between adsorption and partition chromatography in terms of mechanism.

   i) Define retention time and explain its significance.

   j) Define cation-exchange resin and give an example.

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SECTION-B

2. Explain the factors affecting vibrational frequencies in IR spectroscopy. Additionally explain the working principle of Golay cell.

3. Describe the instrumentation of HPLC, including pump, injector, column, and detector.

4. Explain the principle, construction, and working of a photomultiplier tube.

SECTION-C

5. Derive the Beer-Lambert's law and explain possible deviations.

6. Explain the theory of fluorimetry and the mechanism of fluorescence.

7. Discuss the applications of flame photometry in quantitative analysis of metals and clinical samples.

8. Discuss factors affecting nepheloturbidometric measurements.

9. Discuss Rf values in TLC, their calculation, significance and factors affecting them.

10. Discuss the factors affecting electrophoretic mobility, including charge, size, shape and buffer composition, with examples.

11. Compare GC and HPLC in terms of separation mechanism and sensitivity.

12. Describe the properties of ion exchange resins, such as capacity, selectivity and physical characteristics.

13. Describe the types of ligands used in affinity chromatography and their applications.

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Total No. of Questions : 13

B.Pharmacy. (Sem.-7)

INDUSTRIAL PHARMACY – II (THEORY)

Subject Code : BP 702T

M.Code : 78388

Date of Examination : 24-11-2025

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. Pilot Plant

   b. Quality Assurance

   c. BPR

   d. What is the significance of following considerations :

   i. Liquid orals

   ii. Personnel requirement

   Expand :

   e. MoU

   f. IND

   g. GLP

   h. CDSCO

   i. NABL

   j. NDA

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SECTION-B

2. What are the pilot plant scale up requirements for semi solids formulations?

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

4. **Write short note on:**

   a. Management of Clinical studies

   b. Bioequivalence studies

SECTION-C

5. What are SUPAC guidelines?

6. Highlight the approved regulatory agencies for technology transfer.

7. Explain IS014000 series of quality system standards.

8. What is Biostatistics in pharmaceutical product development?

9. What are the steps for the approval of new drug?

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

11. **Write short note on :**

    a. QbD

    b. COPP

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

13. What is the Platform Technology?

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Total No. of Pages : 02

Total No. of Questions : 13

B.Pharmacy (Sem.-7)

PHARMACY PRACTICE - THEORY

Subject Code : BP703T

M.Code : 78389

Date of Examination : 19-11-2025

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 community and hospital pharmacy.

   b) Define lead time and safety stock.

   c) Enlist the various types of designs of drug stores.

   d) Define drug-drug interactions.

   e) Define prescription and name the various sectionsof prescription.

   f) Define OTC medications.

   g) Enlist the primary and secondary sources of drug information.

   h) Define TDM and mention four drugs for which TDM is indicated.

   i) Define and enlist components of formulary.

   j) Define and classify budget.

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SECTION-B

2. Define and classify adverse drug reactions. Discuss about adverse drug reaction reporting and management.

3. Describe the various causes and role of pharmacist in monitoring medication non-adherence.

4. Describe the various inventory control techniques.

SECTION-C

5. Describe the factors considered for therapeutic drug monitoring.

6. Describe the role of pharmacist in ward round participation.

7. Describe the various functions of drug and poison information centre.

8. Drawneathospital and hospitalpharmacy organizationchart.

9. Discuss the various records and registers to be maintained in retail and wholesale drug store.

10. Describe the normal levels, indications and importance of blood Glucolipid profile.

11. Describe the rational use of common OTC medications.

12. Describe the major policies of pharmacy and therapeutic committee.

13. Discuss the dispensing of drugs to inpatients and outpatients.

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Total No. of Pages :04

Total No. of Questions : 13

B.Pharmacy. (Sem.-7)

NOVEL DRUG DELIVERY SYSTEM-THEORY

Subject Code :BP-704T

M.Code : 78390

Date of Examination :28-11-2025

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TWENTY questions carrying ONE marks each.
2. SECTION-B contains THREE questions carryingTEN 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. Which of the following is an advantage of controlled release systems?

i) Reduced patient compliance ii) Reduced dosing frequency

iii) Increased dose dumping iv) Increased drug fluctuation

b. The diffusion mechanism in controlled release systems generally follows:

i) Fick's law ii) Boyle's law

iii) Raoult's law iv) Henry's law

c. Which polymer is commonly used in osmotic pump systems?

i) Cellulose acetate ii) Polyethylene glycol

iii) Gelatin iv) Starch

d. Bioadhesion in mucosal drug delivery is due to:

i) Hydrophobic interactions ii) Electrostatic and hydrogen bonding

iii) Only van der Waals forces iv) Crystallinity

e. Which of the following is NOT a method of microencapsulation?

i) Coacervation-phase separation ii) Spray drying

iii) Solvent evaporation iv) Granulation by slugging

f. What is the main barrier to drug permeation through skin?

i) Dermis ii) Epidermis

iii) Stratum corneum iv) Sebaceous gland

g. Floating drug delivery systems rely on:

i) Mucoadhesion ii) Low density

iii) Osmotic pressure iv) Efflux transporters

h. Dry powder inhalers are formulated mainly for: .

i) Nasal cavity ii) Pulmonary delivery

iii) Buccal absorption iv) Ocular absorption

i. Which of the following is a limitation of targeted drug delivery systems?

i) Higher patient compliance ii) Reduced toxicity

iii) Complexity of formulation iv) Site-specific action

j. Liposomes are primarily made of:

i) Proteins ii) Polysaccharides

iii) Phospholipids iv) Glycoproteins

k. Which is NOT an ocular barrier?

i) Blood-aqueous barrier ii) Corneal epithelium

iii) Retinal pigment epithelium iv) Blood-brain barrier

l. An intrauterine device (IUD) is used mainly for:

i) Local ocular therapy ii) Contraception

iii) Diabetes management iv) Pain relief

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m. Which release mechanism involves swelling followed by drug diffusion?

i) Osmotic release ii) Diffusion

iii) Dissolution-controlled release iv) Matrix swelling

n. Microspheres differ from microcapsules by:

i) Size ii) Nature of drug dispersion

iii) Manufacturing method iv) Use of polymers

o. The main permeation enhancers in TDDS act by:

i) Disrupting lipid bilayers ii) Increasing pH

iii) Increasing viscosity iv) Decreasing solubility

p. Osmotic pumps maintain drug release by:

i) Enzymatic degradation ii) Osmotic pressure gradient

iii) pH modulation iv) Ion exchange

q. Mucoadhesive polymers include:

i) Chitosan ii) Starch

iii) Sodium chloride iv) Silica

r. Nebulizers generate:

i) Dry particles ii) Aerosolized mist

iii) Crystals iv) Lipid vesicles

s. Which is a biodegradable polymer?

i) Polyethylene ii) Polylactic acid

iii) Polyvinyl chloride iv) Polystyrene

t. A key application of monoclonal antibodies in drug delivery is:

i) Passive diffusion enhancers ii) Targeted drug delivery

iii) Osmotic pump coating iv) Solubility enhancers

SECTION-B

2. Discuss the advantages, disadvantages and selection criteria of drugs for controlled release formulations.

3. Enumerate different methods of microencapsulation and explain in detail coacervation phase separation technique.

4. Write detailed notes on the formulation approaches and components of TDDS.

SECTION-C

5. Differentiate between diffusion-controlled and dissolution-controlled drug delivery systems.

6. List the properties of polymers suitable for controlled release.

7. Write anote on buccal drug delivery systems.

8. Discuss the concept of osmotic pump implants.

9. Write short notes on floating and high-density GRDDS.

10. Explain the formulation of dry powder inhalers.

11. Write a note on niosomes as drug carriers.

12. Discuss ocular barriers relevant to drug delivery.

13. Give applications of intrauterine devices in controlled release.

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Total No. of Questions : 13

B.Pharmacy (Sem.-8)

BIOSTATISTICS AND RESEARCH METHODOLOGY

Subject Code : BP-801T

M.Code : 79764

Date of Examination : 24-11-2025

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 Median.

   b) Calculate Standard deviation for the given data : 6, 8, 10, 7 and 9.

   c) Define Null hypothesis.

   d) Write any two importance's of multiple regression.

   e) Define Cohort studies.

   f) Write any two advantages of SPSS.

   g) Define degrees of freedom.

   h) Write any two assumptions for Poisson's distribution.

   i) Define Confidence interval.

   j) Define Range with example.

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SECTION - B

2. A tea company appoints four salesmen A, B, C and D and observes their sales in three seasons summer winter and monsoon. The data is given below

Seasons	Salesmen				Season's total
	A	B	C	D	
Summer	36	36	21	35	128
Winter	28	29	31	32	120
Monsoon	26	28	29	29	112
Salesmen's total	90	93	81	96	360

Perform the Two Way **ANOVA** for the above data :
(For (3, 6) d.f F0.05 = 4.76 ; For (2,6) d.f F0.05 = 5.14.)

3. Discuss in detail about designing heads of Clinical Trials With suitable examples

4. a) ***"A coin is tossed for six time"***. What is the probability of obtaining at least four heads?

   b) Describe briefly about multiple correlation.

SECTION - C

5. Write a note on various Graphs used in biostatistics to represent the data.

6. Describe the various types of sampling in Biostatistics.

7. **Perform the Kruskal wali test for the following given data :**

P :	5	7	8	10	11
Q :	10	16	12	13	12
R :	9	8	10	16	12

8. Give a note on factorial design and its advantages

9. Discuss in brief about Regression.

10. **Calculate Karl Pearson coefficient from the given data :**

S. No	1	2	3	4	5
Marks in Biostatistics	48	35	17	23	47
Marks in Product Development	45	20	40	25	45

11. Write a short note on any two software's used in Biostatistics and its importance.

12. **Calculate Mean and Mode for the following Data :**

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	4	3	9	10	2

13. Two types of drugs were used or 5 and 7 patients for reducing their weight. Drug A was imported and Drug B is from Dr. Reddys Pharma. **The Decrease in weight after using six months as follows :**

Drug A	10	12	13	11	14		
Drug B	8	9	12	14	15	10	9

Is there a significant difference in the efficacy of the two drugs? (For v=10 to.os is 2.23)

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