

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

**B. Pharma (Sem-3)
PHARMACEUTICAL ENGINEERING**

Subject Code : BP-304T

M.Code : 93326

Date of Examination : 29-05-2023

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) Reynolds Number
- b) Comminution
- c) Coarse powder
- d) Radiation as a method of heat transfer
- e) Darcy Law
- f) Volatility
- g) EMC
- h) Axial flow
- j) Passivity
- j) Conveyors.

1 | M-93326

SECTION-B

2. Describe in detail, the principle, construction, working, advantages and limitations of venturimeter.
3. Explain what is Molecular Distillation? Describe any one equipment based on molecular distillation
4. Discuss in detail, the working of washing plate and frame filter press.

SECTION-C

5. Describe the critical factors in the working of ball mill.
6. Distinguish between sedimentation and elutriation as a method of separation.
7. Write a note on single pass tubular heaters.
8. Explain how multiple effect evaporations affect the economy of evaporation?
9. Highlight the significance of drying curve.
10. Describe the working, uses, merits and limitations of Planetary Mixers.
11. Write a note on principle and applications of centrifugation.
12. What do you understand by material handling? Describe its significance.
13. Write a note on Galvanic Corrosion. Describe the methods to prevent it.

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



2 | M-93326

July-2023

Roll No.

Total No. of Questions : 13

SECTION-B

Total No. of Pages : 02

B. Pharmacy (Sem.-3)

PHARMACEUTICAL ORGANIC CHEMISTRY-II

Subject Code : BP-301T

M. Code : 93323

Date of Examination : 31-05-23

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) Write any two methods of synthesis of benzoic acid.
- b) Write down any one the reaction of diazonium salts involving retention of nitrogen.
- c) How can one identify the presence of phenol in a given mixture?
- d) What are banana bonds?
- e) Give the structure and full name of BHC.
- f) What will be the product formed upon nitration of toluene?
- g) What is acid value?
- h) What is Huckel rule?
- i) Write any one method of preparation of tritane.
- j) Write down the structure of any two medicinally important benzene derivatives.

21 M 93323

1 | Page

SECTION-C

5. Give various methods of synthesis of cycloalkanes.
6. Give the mechanism of electrophillic substitution reactions of benzene. Give two examples.
7. Write down some important reactions of phenols.
8. What is saponification and rancidity of oils?
9. Comment upon the Haworth synthesis of naphthalene.
10. Give the reactions of diazonium salts which states their synthetic applicability
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 the reactions of fatty acids.

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



SEM-301T

July-2023

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharm (Sem-3)
PHYSICAL PHARMACEUTICS-I

Subject Code : BP-302T

M.Code : 93324

Date of Examination : 03-06-2023

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) Mixtures
- b) Raoult's Law
- c) Crystalline powders
- d) Dielectric constant
- e) HLB
- f) Interfacial tension
- g) Solubilization
- h) Protein Binding
- i) Glassy state
- j) Solvation.

SECTION-B

2. Classify surfactants. Give factors effecting solubilisation. Give methods for the determination of surface tension.
3. Distinguish between :
 - a) Contact angle and Spreading coefficient
 - b) CMC and Detergency
 - c) Wetting agents and Solubilising agents
4. Write short note on :
 - a) Solubility of liquid in liquid
 - b) Distribution law and its applications.

SECTION-C

5. Explain the diffusion principles in biological systems.
6. Write short note on critical point and liquid crystals.
7. How dissociation constant and dipole moment determined?
8. Explain adsorption at liquid interface.
9. Classify complexes.
10. What is buffered isotonic solution?
11. Enumerate the thermodynamic treatment of stability constant.
12. Give application of buffers with examples of each.
13. Write short note on :
 - a) Surface free energy
 - b) Relative humidity



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.

2 | MARCH

July-2023

Roll No. _____

Total No. of Questions : 13

Total No. of Pages : 02

**B.Pharma (Sem-3)
PHARMACEUTICAL MICROBIOLOGY**

Subject Code : BP-303T
M.Code : 75107

Date of Examination : 06-06-2023

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

I. Answer briefly :

- a) What is electron microscopy?
- b) Define acid-fast staining.
- c) Define disinfectant with an example.
- d) Give a method for Indole production test in biochemical testing.
- e) Define aseptic area.
- f) What is microbial assay?
- g) What are the nutritional requirements of bacteria?
- h) Write the name and size of the smallest and largest virus?
- i) What is a membrane filter and give their types?
- j) Enlist the various sterility indicators used in sterility monitoring.

SECTION-B

2. Discuss in detail about the of gaseous and radiation method of sterilization.
3. Define disinfectant and how to evaluate it by phenol coefficient test?
4. Explain about :

- a) Counting techniques of bacteria
- b) Method of isolation of bacteria.

SECTION-C

5. Diagrammatically explain the phase of contrast microscope.
6. Write methods for sterility testing of ophthalmic formulations according to IP.
7. What are the different methods of microbial assay of antibiotics?
8. Difference between dry heat and moist heat sterilization.
9. Write down the types of microbial spoilage with examples.
10. What are the methods for the preservation of pure culture?
11. What is growth curve of bacteria?
12. Write a method for gram staining for the identification of microbes.
13. Applications of cell culture in pharmaceutical industry.



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.

(329) 2012

2 | M-75107

55917314

July-2023

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharma (Sem-3)
PHARMACEUTICAL ORGANIC CHEMISTRY-II

Subject Code : BP-301T

M.Code : 75105

Date of Examination : 08-06-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

1. Answer briefly :

- What are the characteristic features of a compound to become aromatic?
- Write the nitration reaction of benzene.
- Draw the structure of cresol and write its uses.
- Explain the acidic character of phenol with one suitable example.
- Define the 'Ester value'.
- What do you understand by Saponification of oils?
- Draw the chemical structure of Phenanthrene and write its medicinal uses.
- Write one method for the synthesis of Anthracene.
- Explain the greater stability of cyclohexane over cyclopentane according to Bayer's Strain Theory.
- What is 'Sachse Mohr's Theory'?

SECTION-B

- Why electrophilic substitution reactions are favored on benzene? Describe the sulphonation and halogenation reactions of benzene.
- Discuss the effect of substituents on acidity of benzoic acid and write any two reactions of benzoic acid.
- What are fatty acids? Describe the hydrolysis and hydrogenation of fats/oils.

SECTION-C

- Describe the resonance phenomenon in benzene and draw the structure of resonance hybrid.
- Draw the structure of Saccharin and Chloramine and write their uses.
- Describe the effect of substituents on basicity of amines with suitable example.
- Describe the structural composition of Fats and oils with suitable example.
- What is Baeyer's strain theory? Discuss the limitations of Baeyer's strain theory.
- Define Reichert Meissl (RM) value and write its significance.
- Write any two reactions of cyclobutane.
- Identify A, B and C in the following reactions :

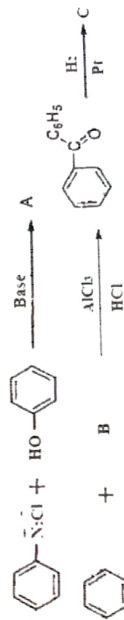


Fig.

- Describe the Friedel Craft's alkylation reaction with suitable example.



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.

2 | M 25/05

July-2023

Roll No.

Total No. of Pages : 02

Total No. of Questions : 13

**B.Pharmacy (Sem-3)
PHARMACEUTICAL ENGINEERING**

Subject Code : BP-304T

M.Code : 75108

Date of Examination : 13-06-23

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 do you mean by pharmaceutical engineering?
- b) How can we prevent environmental pollution?
- c) What do you mean by Reynolds number?
- d) What is the role of manometers?
- e) Define heat exchanger.
- f) What is size separation?
- g) Discuss the disadvantages of the ball mill.
- h) Define evaporation.
- i) What is molecular distillation?
- j) Describe the importance of filtration.

SECTION-B

2. Give a note on the Bernoulli theorem.
3. Discuss the complete note on the fluid energy mill with a proper diagram.
4. Write a comment on materials of pharmaceutical plant construction.

SECTION-C

5. Give a detailed note on the horizontal tube evaporator.
6. Discuss in detail about factors effecting size reduction.
7. What are the various parts of a cyclone separator? Discuss it with a diagram.
8. Elaborate about the tray dryer.
9. Discuss the various parts of the silverson emulsifier with a diagram.
10. Give an overview of the demerits of vacuum dryers.
11. Justify the EMC.
12. What is a cartridge filter? Give a complete description.
13. Mention about basics of material handling systems.

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.



2 | M-75118

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B. Pharmacy (Sem-3)
PHYSICAL PHARMACEUTICS-I
Subject Code : BP-302T
M.Code : 75106
Date of Examination : 12-06-2023

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 do you know about BCS classification?
 - b) How solubility plays an important role.
 - c) What is crystalline nature?
 - d) What are surfactants? give examples.
 - e) Define the liquid interface.
 - f) What is dissociation constant?
 - g) Discuss the scale used for polymers.
 - h) Define interfacial tension.
 - i) What is protein binding?
 - j) Describe the role of physical pharmaceutical studies.

SECTION-B

2. Give a note on factors affecting solubility.
3. Write complete note on the inhaler with a diagram.
4. Write a comment method to identify surface interfacial tension.

SECTION-C

5. Give a note on the eutectic mixture.
6. Discuss the diffusion principles in biological systems.
7. What are the various roles of buffers in the pharma sector?
8. Elaborate on the applications of distribution law.
9. Discuss the various necessary aspects for stability.
10. Comment on adsorption at liquid interfaces.
11. Justify the buffered equation.
12. What is Sorensen scale?
13. Mention buffer capacity.

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.



2 | A.P.75106

1 | M. 75106

July-2023

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharma (Sem.-3)

PHARMACEUTICAL ORGANIC CHEMISTRY-II

Subject Code : BP-301T

M.Code : 93323

Date of Examination : 12-01-23

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

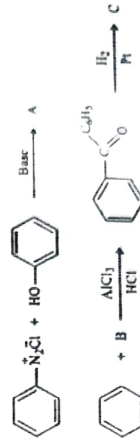
- Answer briefly :
 - Write the 'Huckel's rule of aromaticity'.
 - Write the sulphonation reaction of benzene.
 - Draw the structure of resorcinol and write its uses.
 - Explain the basic character of amine with one suitable example.
 - Define the saponification value.
 - What do you understand by Rancidity of oils?
 - Draw the chemical structure of Anthracene and write its medicinal uses.
 - Write one method for the synthesis of Naphthalene.
 - Explain the greater stability of cyclohexane over cyclopentane according to Bayer's Strain Theory.
 - Define the 'Theory of Strainless Rings'.

SECTION-B

- Why electrophilic substitution reactions are favored on benzene? Describe the nitration and halogenation reactions of benzene.
- Discuss the effect of substituents on acidity of benzoic acid and write any two reactions of benzoic acid.
- What are fatty acids? Describe the hydrolysis and hydrogenation of fats/oils.

SECTION-C

- Draw the resonance phenomenon in benzene along with resonance hybrid.
- Draw the structure of DDT and BHC and write their uses.
- Describe the effect of substituents on acidity of Phenol with suitable example.
- Describe the structural composition of Fats and oils with suitable example.
- What is Baeyer's strain theory? Discuss the limitations of Baeyer's strain theory.
- Define Reichert Meissl (RM) value and write its significance.
- Write the synthesis of benzene diazonium chloride using diazotization reaction.
- Identify A, B and C in the following reactions:



- Describe the Friedel-Craft's acylation reaction with suitable example.

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.

2 | M-93323

(529)-2304

1 | M-93323

Dec-2022

(529)-2304

Roll No.

Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma (Sem.-3)
PHARMACEUTICAL MICROBIOLOGY

Subject Code : BP-303T

M.Code : 93325

Date of Examination: 17-01-2023

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.

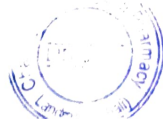
SECTION-A

1. Answer briefly :

- a. Scope of Microbiology
- b. Phase contrast microscopy
- c. Growth curve
- d. Cold sterilization
- e. Acid-fast staining
- f. Biological indicator
- g. Viruses
- h. Clean area classification
- i. Microbial spoilage
- j. Cell culture.

1 | M-93325

(529)-2525



Dec-2022

SECTION-B

2. Discuss various applications of microbiology.
3. Define gram staining and its procedure and interpretation.
4. Write various physical and chemical methods of sterilization.

SECTION-C

5. Write a note on the preservation of pharmaceutical formulation.
6. Write applications of cell culture in the pharmaceutical industry.
7. Define microbiological assay and write one method for the assay of antibiotics.
8. How to check the sterility of the ophthalmic formulation?
9. Define disinfectant and various factors affecting it.
10. Difference between dry heat and moist heat sterilization.
11. What is electron microscopy and write its types?
12. Discuss various applications of cell culturing in the pharmaceutical industry.
13. What are the aseptic area and principal of LAF?

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.

2 | M-93325

(529) 2525

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharma (Sem.-3)
PHYSICAL PHARMACEUTICS-I
Subject Code : BP-302T
M.Code : 93324

SECTION-B

2. Give a note on wettability expression.
3. Discuss the complete note on the physicochemical properties of the drug entity.
4. Write a comment on the measurement of surface and interfacial tensions.

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 do you mean by physical pharmaceuticals?
 - b) How chemical kinetics helps in stability?
 - c) What do you know about raoult law?
 - d) What is the relative humidity?
 - e) Define glassy state.
 - f) What is the refractive index.
 - g) Discuss the detergency.
 - h) Define buffer.
 - i) What is complexation?
 - j) Describe protein binding.

SECTION-C

5. Give a detailed note on the detergency with an example.
6. Discuss in detail aerosols.
7. What is the various role of buffers in the pharma sector?
8. Elaborate on the scale of HLB.
9. Discuss the various necessary aspects for stability.
10. Comment on partially miscible liquids.
11. Justify the solubility of a gas in the liquid.
12. What are optical rotations?
13. Mention for absorption at the solid interface.

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.



5/91/2407

2 | M 93324

(5/29) 2407

1 | M 93324

DEC-2022

Roll No.

Total No. of Questions : 13 Total No. of Pages : 02

B. Pharma (Sem.-3)
PHYSICAL PHARMACEUTICS-I
Subject Code : BP-302T
M.Code : 75106
Date of Examination : 14-12-22

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. Solutions
- b. Raoult's Law
- c. Amorphous
- d. Dipole moment
- e. HLB
- f. Surface tension
- g. Buffers
- h. Drug
- i. Isotonic solutions
- j. Complexation.

SECTION-B

2. a. Give methods for the determination of surface and interfacial tension.
b. Explain methods for the determination of CMC.
3. Classify complexation. Highlight methods of its analysis.
4. What are the ideal solubility parameters? Explain mechanism of solute-solvent interaction.

SECTION-C

5. Explain the quantitative approach to the factors influencing solubility of drugs.
6. Write short note on eutectic mixture and sublimation.
7. How refractive index and optical rotation determined.
8. Explain adsorption at solid interface.
9. How pH determined? Give its significance.
10. What is Buffer Capacity? Explain with example.
11. Explain the crystalline structure of complexes.
12. Explain surface active agents with examples.
13. Write short note on :
 - a) Inhalers
 - b) Critical solution temperature.



DEC-2022

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.

(529) 269

2 | M-75106

(529)-269

1 | M 75106

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

**B.Pharma(Sem.-3)
PHARMACEUTICAL MICROBIOLOGY**
Subject Code : BP-303T
M.Code : 75107

Time : 3 Hrs.

Date of Examination : 16-12-22

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. Viable count
- b. Disinfectants
- c. Grams Staining
- d. Sterilization
- e. Sterility testing

Differentiate between

- f. Prokaryotes and Eukaryotes
- g. Toxin and Toxoid

h. Phase contrast and dark field microscopy. Give method used for sterility testing of:

i. Catguts and Eye ointments.

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

1 | M-75107

(529)-516



Dec-2022

SECTION-B

2. Explain sterilization methods with examples of each.
3. Give different methods for the evaluation of disinfectants.
4. What is microbial assay? Give method for the assay of vitamins.

SECTION-C

5. Give morphological classification of bacteria? Explain nutritional requirements for the exponential growth of bacteria.
6. Explain the principle and procedure of staining techniques.
7. Enumerate efficiency of sterilization methods.
8. Write short note on
 - a. Laminar air flow
 - b. Standardization of antibiotics?
9. Explain sterility testing of insoluble solids and soluble solids.
10. Highlight factors effecting microbial spoilage.
11. Enumerate preservation of pharmaceutical products.
12. Give applications of cell cultures in pharmaceutical industry.
13. Write short note on:
 - a. Sterility indicators
 - b. Cultivation of fungi.

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.

2 | M-75107

(529)-516

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

**B. Pharma (Sem.-3)
PHARMACEUTICAL ORGANIC CHEMISTRY-II**

Subject Code : BP-301T

M. Code : 75105

Date of Examination : 12-12-22

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

I. Answer briefly :

- What is principle involved in iodine value?
- Give any two reactions of phenanthrene.
- Give the structure and uses of cresol.
- Convert-benzene to p-Nitrotoluene.
- Write any two limitations of Bayer's strain theory.
- Give the mechanism of Friedel craft alkylation reaction.
- What is coulson motif theory?
- Give the basicity order of aniline, p-nitroaniline and m-nitroaniline.
- Write any one method of preparation of tritane.
- What are drying oils?

1 | M-75105

(529) 13



2 | M-75105

SECTION-B

- What are the various analytical constants used to check the quality of Fats and Oils? Define them. Mention the significance and principle involved in their determination.
- What are Aryl-Diazonium-compounds? Justify their stability in comparison to alky diazonium salts and enumerate various synthetic uses of benzene diazonium salt.
- Comment in detail upon effect of substituent upon reactivity and orientation of monosubstituted benzene compounds.

SECTION-C

- Classify polynuclear hydrocarbons. Give the structure of the compounds belonging to each class.
- What is Reimer tiemen reaction? Write its detailed mechanism.
- Comment upon hydrolysis and hydrogenation of Fats.
- Enumerate various qualitative tests carried out for the detection of phenols.
- Explain with evidence the mechanism of electrophillic substitution reaction of benzene.
- Write down various methods for synthesis and reactions of benzoic acid.
- Give various postulates of Bayer's strain theory. Write its limitations.
- Define aromaticity. Give various conditions to be fulfilled by an organic compound to possess aromaticity.
- Write down various methods of synthesis of cyclopropane.

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.

DEC-2022

(529) 14

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

**B.Pharma (Sem.-3)
PHARMACEUTICAL ENGINEERING**

Subject Code : BP-304T

M. Code : 75108

Date of Examination : 19-12-22

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

I. Explain briefly :

- a. Impact as a method of size reduction
- b. Bernoulli's theorem
- c. Sieve number
- d. Fourier's Law
- e. Evaporation
- f. Loss on drying
- g. Centrifugal effect
- h. Filter aids
- i. Corrosion
- j. Packed columns

SECTION-B

2. Write an explanatory note on solid-solid mixing. Describe an equipment used for the solid-solid mixing with advantages, limitations and applications.
3. Describe the different theories of corrosion. Explain the various types of corrosion and the methods of prevention.
4. Describe in detail the principle behind fractional distillation. Write a note on plate columns.

SECTION-C

5. Highlight the significance of Reynold's number.
6. Describe the various laws governing size reduction.
7. Write a note on cyclonic separator.
8. Describe the various mechanisms of heat transfer.
9. Discuss the working of horizontal tube evaporator.
10. Describe a dryer based upon the principle of sublimation.
11. Write a note on rotary filters.
12. Discuss the construction and working of tubular bowl centrifuge.
13. Discuss the advantages of steel and glass as materials of plant construction.

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.



Dec-2022

Roll No.

Total No. of Pages : 02

Total No. of Questions : 22

B.Pharma (2017 & Onward) (Sem.-3)
PHARMACEUTICAL MICROBIOLOGY

Subject Code : BP-303T

M.Code : 75107

Max. Marks : 75

Time : 3 Hrs.

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

Define briefly :

1. Prokaryotes
2. Oxidase test
3. Viable cell count
4. Pharmaceutical microbiology
5. Horizontal laminar air flow unit
6. Classification of bacteria
7. Aseptic area
8. EMEM media
9. Microbiological assay
10. Gases used for sterilization

SECTION-B

11. Write notes on :
 - a) Importance of preservation of pure cultures
 - b) Gram staining
12. Describe in detail the methods employed for evaluation of disinfectants.
13. How will you carry out microbiological assay as per IP?

SECTION-C

14. Classify bacteria on the basis of their nutritional requirements.
15. Describe filtration as a method of sterilization.
16. Write a note on sterility indicators.
17. Write a note on various sources of contamination.
18. What is Microbial Spoilage? Discuss the various factors affecting spoilage.
19. Write a note on transformed cell lines.
20. Write a note on construction and classification of clean room area.
21. Describe the principle and working of phase contrast microscopy.
22. Write a note on IMViC.

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.



2 | M-75107

(S29)-889

1 | M-75107

(S29)-889

DEL-2020

Roll No. _____

Total No. of Questions : 22

Total No. of Pages : 03

**B.Pharma (2017 & Onward) (Sem.-3)
PHARMACEUTICAL ORGANIC CHEMISTRY-II**

Subject Code : BP-301T

M.Code : 75105

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

Choose the correct option in the following objective type questions :

- As per Huckel rule aromatic compounds contains _____ pi-electrons
A. $4n+2$, B. $2n-4$, C. $4n-2$, D. $2n-4$
- Benzene undergo electrophilic substitution rather than electrophilic addition because of
A. Resonance stabilization of reaction product
B. Stability of intermediate carbocations
C. Both A & B
D. None of these.

- Saccharine is _____
A. o-Benzenesulphonamide C. p-toluene sulphonyl chloride
B. p-toluene sulphonamide D. p-amino benzene sulphonic acid
- Electron withdrawing substituent _____ acidity of phenol.
A. Increases C. Does not effect on
B. Decreases D. None of these

- Electron withdrawing group _____ basicity of aniline.
A. Increases C. Does not affect
B. Decreases D. A&B both
- Hydrolysis of fats by NaOH leads to the formation of _____
A. Soap B. Glycerol C. A&B both D. Detergent
- Decalin is fully saturated _____
A. Naphthalene B. Anthracene C. Phenanthrene D. Benzene
- Ring opening reaction in cyclobutane occurs at higher temperature than that of the cyclopropane because it is _____
A. More stable B. Less stable C. Less strained D. More strained
- _____ product predominates in electrophilic substitution in naphthalene
A. α B. β C. γ D. δ
- Bulky substituent on chair form of cyclohexane is always in _____
A. Equatorial C. Quasi axial
B. Axial D. perpendicular to plane of ring

SECTION-B

- Discuss the directive effect of substituent on electrophilic substitution in monosubstituted benzene.
- Describe important name reactions of phenol.
- Describe principle and significance of various constants that are used for analysis of oils and fats.



2 | M 75105

(5/9) 791

1 | M 75105

DEL-2020

SECTION-C

14. Explain aromatic characteristic of benzene on the basis of Huckel's rule.
15. Discuss effect of electron-withdrawing and electron releasing group on acidity of phenols.
16. Describe hydrolytic and oxidative rancidification of fats and oils.
17. Describe mechanism of Haworth synthesis of anthracene.
18. Explain Bayer's strain theory.
19. Explain why cyclopentane and cyclohexane are more stable than lower cycloalkane?
20. Discuss the synthesis of Azo compounds from diazonium salt.
21. Describe important preparations of anilines.
22. Explain mechanism of Friedal-craft acylation.

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.



DEC-2020

Roll No.

Total No. of Pages : 02

B.Pharm (2017 & Onward) (Sem.-3)
PHYSICAL PHARMACEUTICS-I

Subject Code : BP-302T
M.Code : 75106

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

Define briefly :

1. Define Spreading Coefficient.
2. Define Surface Free Energy.
3. How is adsorption different from absorption?
4. What is critical micelle concentration?
5. What is meant by surface excess?
6. How are degrees of freedom calculated?
7. What do you mean by triple point of water?
8. Define Solubility.
9. Define Contact angle.
10. What are chelates?

1 | M-75106

(520)-8/44



2 | M-75106

SECTION-B

SECTION-B

11. Draw and explain Phase diagram of water?
 12. What is interfacial tension? How is it determined?
 13. Draw various adsorption isotherms and explain their behaviour?
- SECTION-C**
14. Define HLB. Explain the Griffin scale of HLB?
 15. Explain various types of metal ion complexes with suitable examples.
 16. Write a note on protein binding.
 17. Derive expression for spreading coefficient.
 18. Describe the factors which influence solubility of drugs.
 19. Explain any one method for analysis of complexation.
 20. What is critical solution temperature? What is its application?
 21. Describe the applications of buffers in pharmaceutical systems.
 22. Explain the determination of pH of a solution electrochemically.

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.

1 | M-75106

Roll No.

Total No. of Questions : 22

Total No. of Pages : 02

B.Pharma (2017 & Onwards) (Sem.-3)
PHARMACEUTICAL ENGINEERING

Subject Code : BP-304T
M.Code : 75108

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

Define :

1. Reynold's Number
2. Pitot tube
3. Manometers
4. Edge filter
5. Adiabatic saturation temperature
6. Rate of filtration

Distinguish between :

7. Conduction and Radiation
8. Filtration and centrifugation.
9. Evaporation and Drying
10. Give principle behind Azeotropic distillation

1 | M 75108

(S29)-949



2 | M 75108

Dec-2010

SECTION-B

11. a. Highlight filter press
b. Explain the working of rotary filter.
12. Explain Bernoulli's theorem and highlight how it is used to find rate of flow of a fluids a horizontal pipe?
13. Comment on the following :
 - a. Size reduction in a ball mill is by impact only.
 - b. Vortex formation is necessary in mixing liquids in cylindrical tanks.
 - c. Freeze drying materials have very good solubility.
 - d. Steam distillation occurs at 100°C

SECTION-C

14. Explain factors effecting size reduction.
15. How pressure difference across incline tube manometer could be estimated?
16. Give principle and working of cyclone separator.
17. Enumerate theories, types, prevention of corrosion.
18. Classify and Explain basket centrifuge.
19. Explain mechanism of drying process and application of EMC.
20. Give principle and working of vacuum distillation.
21. Explain merits and demerits of steam jacketed kettle.
22. Highlight heat interchangers.

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.

(S29)-949

Roll No. _____

Total No. of Pages : 02

Total No. of Questions : 22

B.Pharma (2017 & Onward) (Sem.-3)
PHYSICAL PHARMACEUTICS-I
Subject Code : BP-302T
M.Code : 75106

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

Define briefly :

1. Define Spreading Coefficient.
2. Define Surface Free Energy.
3. How is adsorption different from absorption?
4. What is critical micelle concentration?
5. What is meant by surface excess?
6. How are degrees of freedom calculated?
7. What do you mean by triple point of water?
8. Define Solubility.
9. Define Contact angle.
10. What are chelates?

M-75106



(S29)-844

2020

SECTION-B

11. Draw and explain Phase diagram of water?
12. What is interfacial tension? How is it determined?
13. Draw various adsorption isotherms and explain their behaviour?

SECTION-C

14. Define HLB. Explain the Griffin scale of HLB?
15. Explain various types of metal ion complexes with suitable examples.
16. Write a note on protein binding.
17. Derive expression for spreading coefficient.
18. Describe the factors which influence solubility of drugs.
19. Explain any one method for analysis of complexation.
20. What is critical solution temperature? What is its application?
21. Describe the applications of buffers in pharmaceutical systems.
22. Explain the determination of pH of a solution electrometrically.

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.



Roll No.

Total No. of Pages : 03

Total No. of Questions : 22

B.Pharma (2017 & Onward) (Sem.-3)

PHARMACEUTICAL ORGANIC CHEMISTRY-II

Subject Code : BP-301T

M.Code : 75105

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

Choose the correct option in the following objective type questions :

1. As per Huckel rule aromatic compounds contains _____ pi-electrons
A. $4n+2$, B. $2n+4$, C. $4n-2$, D. $2n-4$
2. Benzene undergo electrophilic substitution rather than electrophilic addition because of
A. Resonance stabilization of reaction product
B. Stability of intermediate carbocations
C. Both A & B
D. None of these.
3. Saccharine is _____
A. o-Benzenesulphonamide C. p-toluene sulphonyl chloride
B. p-toluene sulphonamide D. p-amino benzene sulphonic acid
4. Electron withdrawing substituent _____ acidity of phenol.
A. Increases C. Does not effect on
B. Decreases D. None of these

5. Electron withdrawing group _____ basicity of aniline.
A. Increases
B. Decreases
C. Does not affect
D. A&B both
6. Hydrolysis of fats by NaOH leads to the formation of _____.
A. Soap
B. Glycerol
C. A&B both
D. Detergent
7. Decalin is fully saturated _____.
A. Naphthalene
B. Anthracene
C. Phenanthrene
D. Benzene
8. Ring opening reaction in cyclobutane occurs at higher temperature than that of the cyclopropane because it is _____.
A. More stable
B. Less stable
C. Less strained
D. More strained
9. _____ product predominates in electrophilic substitution in naphthalene
A. α
B. β
C. γ
D. δ
10. Bulky substituent on chair form of cyclohexane is always in _____.
A. Equatorial
B. Axial
C. Quasi axial
D. perpendicular to plane of ring

SECTION-B

11. Discuss the directive effect of substituent on electrophilic substitution in monosubstituted benzene.
12. Describe important name reactions of phenol.
13. Describe principle and significance of various constants that are used for analysis of oils and fats.



SECTION-C

14. Explain aromatic characteristic of benzene on the basis of Huckel's rule.
15. Discuss effect of electron-withdrawing and electron releasing group on acidity of phenols.
16. Describe hydrolytic and oxidative rancidification of fats and oils.
17. Describe mechanism of Haworth synthesis of anthracene.
18. Explain Bayer's strain theory.
19. Explain why cyclopentane and cyclohexane are more stable than lower cycloalkane?
20. Discuss the synthesis of Azo compounds from diazonium salt.
21. Describe important preparations of anilines.
22. Explain mechanism of Friedal-craft acylation.

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.



Roll No. _____

Total No. of Pages : 02

Total No. of Questions : 22

B.Pharma (2017 & Onwards) (Sem.-3)
PHARMACEUTICAL ENGINEERING
Subject Code : BP-304T
M.Code : 75108

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.

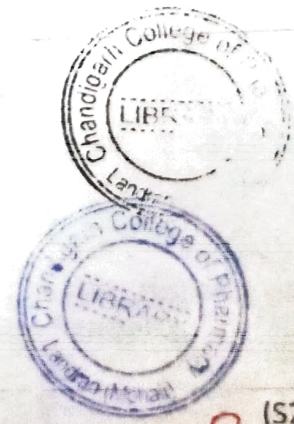
SECTION-A

Define :

1. Reynold's Number
2. Pitot tube
3. Manometers
4. Edge filter
5. Adiabatic saturation temperature
6. Rate of filtration

Distinguish between :

7. Conduction and Radiation
8. Filtration and centrifugation.
9. Evaporation and Drying
10. Give principle behind Azeotropic distillation



SECTION-B

11. a. Highlight filter press
b. Explain the working of rotary filter.
12. Explain Bernoulli's theorem and highlight how it is used to find rate of flow of a fluid in a horizontal pipe?
13. Comment on the following :
 - a. Size reduction in a ball mill is by impact only.
 - b. Vortex formation is necessary in mixing liquids in cylindrical tanks.
 - c. Freeze drying materials have very good solubility.
 - d. Steam distillation occurs at 100°C

SECTION-C

14. Explain factors effecting size reduction.
15. How pressure difference across incline tube manometer could be estimated?
16. Give principle and working of cyclone separator.
17. Enumerate theories, types, prevention of corrosion.
18. Classify and Explain basket centrifuge.
19. Explain mechanism of drying process and application of EMC.
20. Give principle and working of vacuum distillation.
21. Explain merits and demerits of steam jacketed kettle.
22. Highlight heat interchangers.



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.

B.Pharma (2012 to 2016) (Sem-3)
PHARMACEUTICAL CHEMISTRY-IV
(Organic Chemistry-II)
Subject Code : BPHM-306
M.Code : 48226

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

- Write briefly :
- Explain the acidic character of pyrole.
- Define iodine value in oil/fat. What is its significance?
- Write down one structure of any nucleoside.
- Write down the structure of Xanthine bases.
- Differentiate between monosaccharides and disaccharides.
- Write down structures of following :

i. Furan.

ii. Imidazole.

iii. Oxazole.

iv. Isosquinoline

5. Write down the structures of maltose and cellobiose.

6. Describe Gabriel's phthalimide synthesis for the preparation of amino acids.

7. Differentiate between essential and non-essential amino acids.

(5+1)-L277

Dec 19
Dec-2019

j. Explain the mutarotation.

k. Give the reaction of peptide bond formation.

l. Write two examples of coumarine.

m. Explain Michael acceptors with examples.

n. What will be product of reaction when m-chlorotoluene is reacted with sodamide?

o. Define the saponification and rancidification in oil.

SECTION-B

2. Describe the two synthetic method of each furan and imidazole.

3. Write down the Hantzsch synthesis of pyridine with mechanism.

4. How will you synthesize sodium salt of alkyl benzenesulfonic acid?

5. Write short note on Ruff degradation.

6. Write down short note on DNA.

SECTION-C

7. Write down the classification of amino acids with structures and discuss the reactions of amino groups and carboxylic groups of amino acids.

8. How will you differentiate between sugar and non-sugars? Discuss the structure determination of a non-reducing disaccharide.

9. Why does pyridine prefer electrophilic substitution at 3-position and nucleophilic substitution at 2-position?

10. Write short notes on the following :

a. Nucleophilic aromatic substitution reactions.

b. Diels-Alder reaction

2 | M-48226

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.

(5+1)-L277

Total No. of Pages : 02

Roll No

Total No. of Questions : 10

**B. Pharma (2012 to 2016) (Sem.-3)
PHARMACEUTICAL INDUSTRIAL MANAGEMENT**

Subject Code : BPHM-305

M.Code : 46225

Max. Marks : 80

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

1. Write briefly :

- a) Organizing
- b) Directing
- c) Incentives
- d) Promissory notes of hundries
- e) Liquidity ratio
- f) Law of Supply
- g) Shipping Bill
- h) Internal Trade
- i) Policy and Premium
- j) Wholesale and retail business in pharmaceutical sector
- k) Outdoor advertisement
- l) Multiple shops

m) Geodemographic analysis

n) Inventory control

o) Production Development

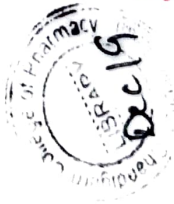
SECTION-B

2. Explain the term "planning". Discuss the salient features of planning. Describe the various steps involved in planning.
3. Explain the term 'Inventory Control'. What are its functions? Discuss the ABC analysis.
4. What are Financial Statements? Discuss the advantages and limitations of financial statements.
5. Explain the law of demand with the help of diagram. Write the assumptions of law of demand.
6. Define Insurance. Discuss in brief about the various principles of insurance.

SECTION-C

7. What do you know about "Entrepreneurship"? Discuss the characteristics of entrepreneurs. Write in brief about different types of entrepreneurs.
8. Explain the term 'Profit and Loss Account'. How is it prepared? Discuss five items which are included while preparing a Profit and Loss Account.
9. What do you know about EOQ? Discuss the various methods for determining the EOQ.
10. Define the term 'Maintenance Management'. What are its objectives and functions? Discuss different types of maintenance.

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.



Total No. of Questions : 10

Total No. of Pages : 02

**B.Pharma (2012 to 2016)
ANATOMY, PHYSIOLOGY & HEALTH EDUCATION – II**

(Sem.-3)

Subject Code : BPHM-304
M.Code : 46224

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :
1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each. **Max. Marks : 80**

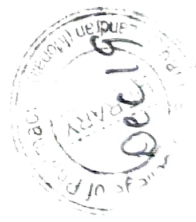
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.

3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt ANY THREE questions.

SECTION-A

1. Discuss/describe/differentiate the following with suitable examples / flow charts/diagrams :

- a. Physiology
- b. ECG
- c. Epithelial issue
- d. Carotines
- e. Joints
- f. Spine
- g. Filariasis
- h. Blood pressure
- i. RBC
- j. Cardiac output
- k. Chicken pox
- l. Pacemaker



2019
Dec-2019

- m. Platelet
- n. Diphtheria
- o. Artery versus vein

SECTION-B

- 2. Discuss the structure and functions of heart.
- 3. Draw well labeled diagram of cell. Discuss its structure and functions.
- 4. Write down causative agents, mode of transmission and prevention of poliomyelitis and malaria.
- 5. Describe various events of cardiac cycle in detail.
- 6. Elaborate the molecular mechanism of muscle contraction in detail with suitable flow charts or diagram.

SECTION-C

- 7. Describe the structure and functions of connective tissues in detail with suitable diagrams.
- 8. Discuss the following diseases in detail
 - a. AIDS
 - b. Tuberculosis
- 9. Define blood pressure. Discuss regulation of blood pressure.
- 10. Define hemostasis. Discuss extrinsic and intrinsic pathways of blood coagulation.

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

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B. Pharma (2017 & Onwards) (Sem.-3)
PHARMACEUTICAL ENGINEERING

Subject Code : BP-304T

M. Code : 75108

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. Reynold's No.
- b. Impact as a mechanism of size reduction
- c. Elutriation
- d. Fourier's Law
- e. Film evaporators
- f. Radial flow
- g. Fluidization
- h. Centrifugal effect

Volatility

Filter aids

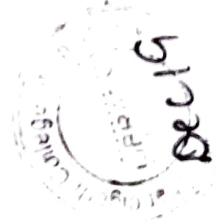
SECTION-B

2. Describe the construction and working of perforated and non perforated basket centrifuge.
3. Describe the theory behind corrosion and write a note on types of corrosion.
4. Write an explanatory note on rising film and falling film evaporators.

SECTION-C

5. Write a note on various factors affecting evaporation.
6. Discuss the construction and working of rotary drum filters.
7. Discuss the principle and construction of orifice meter.
8. Write a note on heat interchangers.
9. Describe construction and working of hammer mill.
10. Write a note on conveyors.
11. Discuss the principle of flash distillation.
12. Write a note on Silvertson mixers.
13. Describe the various factors affecting evaporation.

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.



11

2 | M-75-108

(S29)-655

(S29)-655

Dec 19
Dec-2019

B. Pharma (2012 to 2016) (Sem.-3)
PHARMACEUTICS-III (Unit Operation-I)
 Subject Code : BPHM-303
 M. Code : 46223

Time : 3 Hrs.

INSTRUCTION TO CANDIDATES :

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

Max. Marks : 80

SECTION-A

1. Answer briefly :
 - a. Define the term dimensionless equation.
 - b. What is Reynolds number? Describe its importance.
 - c. Define ultracentrifugation.
 - d. Define Black body.
 - e. Define QQ Valves.
 - f. Define crystal lattice.
 - g. Define refrigerants.
 - h. Define dehumidification process.
 - i. Define drying and its importance in dosage forms.
 - j. Mention the factors affecting constant drying rate.
 - k. Define Mier's Supersaturation theory.

- l. Define Kozeny-Carman equation.
- m. What are the applications of air conditioning?
- n. Define mechanism of mixing in solids.
- o. Define CMC.

SECTION-B

2. Describe the construction and working of screw conveyor.
3. Describe Reynolds classic experiment elucidating different types of flow patterns.
4. Describe the working of refrigerator.
5. Write construction and working of a reciprocating pump.
6. Explain industrial pollution and control.

SECTION-C

7. Define the devices used for transportation of solids. Describe pneumatic conveyors.
8. Explain principle, working and applications of venturi meter.
9. Explain principle, construction, working and applications of rotary filter.
10. Explain properties and applications of the material of construction with reference to stainless steel and glass.

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.



Roll No.

--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Questions : 13

B. Pharma (2017 & Onward) (Sem.-3)
PHARMACEUTICAL MICROBIOLOGY
Subject Code : BP-303T
M.Code : 75107

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

- Define briefly :
 - Antiseptic
 - Disinfectants
 - Grams Staining
 - Sterilization
 - Sterility testing

Differentiate between/Answer briefly :

- Disinfectant and antiseptic
- Gram positive and gram negative bacteria.
- insoluble powders and oily preparations
- Why it is necessary to wrapped brown paper before autoclaving?
- What are the precautions to be taken while autoclaving empty test tubes or petriplates?

SECTION-B

- Explain construction, working, principle and validation of horizontal Autoclave.
- Explain method for the testing of sterility.
- Write short notes on :
 - Monitoring of sterilization process
 - BCG vaccine

SECTION-C

- Classify microbes with examples.
- How disinfectants evaluated?
- Explain laminar air flow device.
- What is microbial assay? Give method for the assay of ciprofloxacin.
- Explain Aseptic processing methods.
- What is the Sensitivity of microorganisms?
- Explain the sources and type of microbial contamination.
- Highlight the applications of cell culture in pharmaceutical research.
- Give the methods for the standardization of amino acids.

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.



Roll No.

Total No. of Questions : 10

Total No. of Pages : 02

B. Pharma (2012 to 2016) (Sem.-3)
PHARMACOGNOSY-II

Subject Code : BPHM-302
M. Code : 46222

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

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

SECTION-A

I. Answer briefly :

- (a) Draw the structures of podophyllotoxin and THC.
- (b) Define Cohobation.
- (c) How many vittae and vascular bundles are present in single meoscarp of fennel?
- (d) Give one example each of PyragalloI tannin and Pholbatannin containing drug.
- (e) Explain the use salt-gelatin test. Why it is considered better than simple gelatin test?
- (f) Give the phytochemical class of the following phytoconstituents :

- (i) Kaempferol
- (ii) Morphine
- (iii) Caryophyllene
- (iv) β -Sitosterol

- (g) Give the chemical composition of Mayer's and Wagner's reagent.
- (h) A sample of tolu balsam has been adulterated with colophony. Which chemical test will you perform to detect the presence of colophony?
- (i) How will you detect the presence of flavonoids and steroids in a given sample of crude drug?
- (j) Give biological source of mint and garden mint.

- (k) Write major constituent and use of chenopodium oil.
- (l) How will you detect presence of cardenolide?
- (m) Give complete biological source of two plants used as colorants.
- (n) Give important uses of asbestos and glass wool.
- (o) Name different chromatographic methods used for purification and isolation of phytoconstituents.

SECTION-B

2. Write note on clove and jalap.
3. Write about the chemical constituents (with structures) of podophyllotoxin and asafetida.
4. Explain the mechanical methods of volatile oil extraction.
5. Discuss about preparation and applications of gelatin.
6. You are given a crude drug. How will you perform its phytochemical screening for the alkaloids, cyanogenetic glycosides and saponins?

SECTION-C

7. Write an elaborated note on benzoin. (10)
8. Discuss the chemical constituents (with structures) and uses of the following :
 - (a) Musk (3)
 - (b) Myrobalan (4)
 - (c) Lemon grass (3)
9. Elaborate on the source, types, microscopic characters, chemical composition, identification tests and uses of cotton. (10)
10. Write about source, chemical constituents (with structures) and uses of Gambir and Valerian. (5.5)

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.



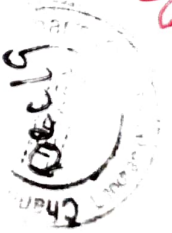
Time : 3 Hrs.

- INSTRUCTIONS TO CANDIDATES :
 Max. Marks : 75
- SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
 - SECTION-B** contains **THREE** questions carrying **TWO** marks have to attempt any **TWO** questions.
 - SECTION-C** contains **NINE** questions carrying **FIVE** marks each and students have to attempt any **SEVEN** questions.

SECTION-A

Answer briefly :

- Define aromaticity.
- Give the structure and use of BHC.
- Why phenols are acidic in nature?
- Give the basicity order of aniline, p-nitroaniline and m-nitroaniline.
- Write any two reactions of cyclobutane.
- What is Gatterman reaction?
- Define ester value.
- How many monosubstituted derivatives are possible for anthracene?
- What is Birch reduction reaction?
- Give the acidity order of benzoic acid, acetic acid and formic acid. Justify.



SECTION-B

- Elaborate on various electrophilic substitution reactions of benzene by giving the detailed mechanism of any one. Discuss in detail the effect of substituents on the reactivity of these reactions.
- Comment upon "the stability of cycloalkanes with the help of various theories".
- Comment upon "Haworth synthesis of naphthalene". Mention various types of chemical reactions of naphthalene giving example of each category.

SECTION-C

- Comment upon "the synthetic evidences utilized for the derivation of structure of benzene".
- Justify "Chlorobenzene is less reactive but ortho and para directing towards electrophilic substitution reactions".
- Enumerate various qualitative tests carried out for the detection of phenols.
- Discuss various reactions of aryl diazonium salts which involve retention of nitrogen.
- What is saponification value? Give its significance.
- Write a short note on the structure and medicinal uses of triphenylmethane.
- Write a brief note on the Bayer's strain theory and its limitations.
- Comment upon "different reactions of fatty acids".
- Give the structure and uses of resorcinol and chloramine.

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.

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharma (2017 & Onward)
PHYSICAL PHARMACEUTICS-I
(Sem.-3)

Subject Code : BP-302T
M.Code : 75106

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) 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?

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 HCl (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 Naphazoline HCl 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 applications.
13. Briefly discuss isotonicity and the methods used for preparing isotonic solutions.



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.

B Pharma (2012 to 2016) (Sem.-3)
PHARMACEUTICAL MATHEMATICS
 Subject Code : BPHM-301
 M.Code : 46221

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
- SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt ANY THREE questions.

SECTION-A

1. Solve the following :

(i) Expand $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & 7 \end{vmatrix}$

(ii) Find the value of x such that $\begin{bmatrix} 1 & 1 & x \\ 0 & 2 & 1 \\ 2 & 1 & 0 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} = [0]$

(iii) Define Matrices

(iv) Compute the sum $\begin{bmatrix} 2 & -1 \\ 3 & 5 \end{bmatrix} + \begin{bmatrix} 4 & 3 \\ 1 & -2 \end{bmatrix}$

(v) Find values of θ satisfying $\tan \theta + \cot \theta = 2, 0 \leq \theta \leq 90^\circ$.

(vi) Prove that $\frac{\cos A + \cos B}{\cos B - \cos A} = \cot \left(\frac{A+B}{2} \right) \cot \left(\frac{A-B}{2} \right)$.

(vii) Define function



h) Evaluate $\lim_{x \rightarrow 1} \frac{\sqrt{(x^2-1)} + \sqrt{(x-1)}}{\sqrt{(x^2-1)}}; x > 1$

i) Evaluate $\int x^2 \sin x^3 dx$

j) Evaluate $\int \frac{\sin 4x}{\cos 2x} dx$

k) Define Mode of a frequency distribution.

l) Following figures give the marks of students in an examination :
 12, 8, 17, 13, 15, 9, 18, 11, 6, 1.

Calculate Arithmetic Mean.

m) Write any three merits of Standard Deviation.

n) Give any two properties of Standard Deviation as a measure of Dispersion.

o) What is Poisson Distribution?

SECTION-B

2. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ then prove that $A^2 - 4A - 5I = 0$

3. Write the importance of Normal Distribution.

4. Prove that $\frac{\sin(A-B)}{\cos A \cos B} + \frac{\sin(B-C)}{\cos B \cos C} + \frac{\sin(C-A)}{\cos C \cos A} = 0$

5. Calculate the standard Deviation from the data.

Variable :	5-10	10-15	15-20	20-25	25-30	30-35
Frequency :	2	9	29	24	11	6

6. Evaluate $\int \tan^{-1} \left(\frac{\sqrt{(1+x^2)} - 1}{x} \right) dx$ by using method of integration by parts.

SECTION-C

a) $A = \begin{bmatrix} 1 & -1 \\ 2 & -1 \end{bmatrix}$ $B = \begin{bmatrix} x & 1 \\ y & -1 \end{bmatrix}$ & $(A+B)^2 = A^2 + B^2$. Find x & y

b) If $A = \begin{bmatrix} 5 & -6 & 4 \\ 7 & 4 & -3 \\ 2 & 1 & 6 \end{bmatrix}$, Find A^{-1}

8. a) Solve $x + y + z = 20$

$$2x + y - z = 23$$

$$3x + y + z = 46 \text{ by Cramer's Rule}$$

b) Prove that $\begin{vmatrix} b^2 + c^2 & ab & ac \\ ab & c^2 + a^2 & bc \\ ca & cb & a^2 + b^2 \end{vmatrix} = 4a^2 b^2 c^2$

a) Calculate Median from the following data :

Marks :	0-5	5-10	10-15	15-20	20-25	25-30	30-35
Number of students :	4	6	10	16	12	8	4

b) Compute the Quartile Deviation & its Co-efficient when :

Size :	17-19	14-16	11-13	8-10	5-7
Frequency :	4	20	38	24	14

10. a) If $y = \left(\frac{\log(x + \sqrt{1+x^2})}{\sqrt{1+x^2}} \right)$ Prove that $(x^2 + 1) \frac{dy}{dx} + xy = 1$

b) If $x = \sec \theta - \cos \theta$, $y = \sec^n \theta - \cos^n \theta$, show that $(x^2 + 4) \left(\frac{dy}{dx} \right)^2 = n^2 (y^2 + 4)$

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.

Roll No.

Total No. of Questions : 10

Total No. of Pages : 02

B. Pharma (2011 to 2016) (Sem.-3)
PHARMACOGNOSY-II
Subject Code : BPHM-302
M.Code : 46222

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

I. Answer briefly :

2×15=30

- What are Resins and Resenes?
- Write down biological source and chemical constituents of ASAFOETIDA.
- What are Tannins? Classify them.
- Write down biological source and chemical constituents of GAMBIR.
- Write down biological source and chemical constituents of CASSIA.
- Write down biological source and chemical constituents of EUCALYPTUS.
- Write down medicinal uses of VALERIAN and DILL.
- Draw structures of CITRAL and LIMONENE.
- Give chemical tests of screening of SAPONINS.
- Describe Cyanidin test.
- Give chemical test of identification of Cardiac glycosides.
- Give any two tests for identification of WOOL.
- Distinguish between absorbent and non-absorbent cotton.

- Give biological source and chemical composition of DIATOMITE.
- Give source and uses of BENTONITE.

SECTION-B

- Write down biological source, chemical constituents and uses of GALL. 5
- Describe any two methods of extraction of volatile oil. 5
- Give source, diagnostic features and uses of ASBESTOS. 5
- What are Anthraquinone glycosides? Differentiate between Borntrager and Modified Borntrager test. 5
- How will you prepare extract for phytochemical screening of Alkaloids? Give chemical tests for alkaloids. 5

SECTION-C

7. Write biological source, chemical constituents and uses of :

- MUSK 3
- CHENOPODIUM 3
- SPEARMINT 4
- Give a detailed pharmacognostic account on JALAP. 10
- Write notes on : 5
- Balsam of Peru 5
- Natural colors 10
- What are Pharmaceutical Acids? Give source, chemical composition and uses of TALC and KAOLIN. 10

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.

2 | M-6222

(S) 1-22-22

(M) 2707

May-2019

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B. Pharma (2017 Batch) (Sem.-3)
PHYSICAL PHARMACEUTICS-I
Subject Code : BP-302T
M. Code : 75106

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

- Define briefly :
 - Binary Solutions
 - Eutectic mixture
 - Critical solution temperature
 - Refractive index
 - HLB scale
 - Interfacial tension
 - Buffer capacity
 - Complexation
 - Protein binding
 - Aerosol

SECTION-B

- Discuss various factors influencing solubility
- Enumerate and discuss physicochemical properties of drug molecule.
- Define Surface tension. Enumerate different techniques that can be used to measure it. Explain any one.

SECTION-C

- Briefly discuss diffusion in biological system.
- What is the significance of critical solution temperature?
- Discuss the adsorption at solid interface with example.
- How complexation affects the action of a drug?
- Discuss the thermodynamics of stability constant.
- Discuss Raoult's Law.
- How dipole moment is determined?
- Discuss the significance of polymorphism.
- How pH is determined, discuss?



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.

(S29)-2294

2 | (M)-106

(S29)-2294

1 | (S)-7106

May - 2019

Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

**B. Pharma (2017 Batch) (Sem.-3)
PHARMACEUTICAL ORGANIC CHEMISTRY-II**
Subject Code : BP-301T
M. Code : 75105

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :

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

Max. Marks : 75

SECTION-A

- Answer briefly :
 - Define Huckel's rule with examples.
 - Give structure and uses of DDT.
 - Why phenols are acidic in nature?
 - Aromatic amines are less basic than aliphatic amines.
 - What are naphthoils?
 - What are chloramines?
 - What are drying oils?
 - Write structure and uses of Diphenylmethane.
 - Give two important reactions of cyclopropane.
 - What are Fats and oils?

SECTION-B

- Discuss the general mechanism and orientation of aromatic electrophilic substitution reaction.
- Write in detail about reactivity, orientation and limitation of Friedel-Crafts Alkylation.
- Write the synthesis, reactions and medicinal uses of naphthalene and phenanthrene.

SECTION-C

- Write in detail about basey's strain theory.
- Discuss acid value, saponification value and ester value of fats and oil.
- Give an account on triphenylmethane and their derivatives.
- Discuss mechanism of nitration of benzene.
- Discuss various synthetic uses of diazonium salts.
- Write important reactions of benzoic acid.
- Write analytical, synthetic evidences in favour of structure of benzene.
- Discuss structure and uses of phenol, cresol and resorcinol.
- Write down brief note on hydrolysis and hydrogenation of oils.



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.

2 | M/75105

(529) 2113

1 | M/75105

May-2019

(529) 2113

Roll No. _____

Total No. of Questions : 13

Total No. of Pages : 2

B.Pharm (2017 Batch) (Sem.-3)
PHYSICAL PHARMACEUTICS-I
Subject Code : BP-302T
Paper ID : [75106]

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

- I. Answer briefly :
- What is meant by intrinsic solubility?
 - State Raoult's Law and its applications.
 - What is meant by distribution coefficient?
 - What is latent heat and specific heat?
 - What is relative humidity?
 - Mention the important properties of an amorphous solid
 - What is dielectric constant and its application?
 - Define HLB value and its scale.
 - What are cationic? Give two examples
 - What is indicator constant?

SECTION-B

- What is an 'Ideal Solution'? Differentiate between complete miscibility and partial miscibility phenomena taking suitable examples
- Discuss the pH titration method for determination of stoichiometric ratio in a complex
- Differentiate between surface tension and interfacial tension. With the help of suitable equations explain spreading of one liquid on another liquid.

SECTION-C

- Discuss the calculation of buffer capacity and its significance
- A 100 ml solution of ephedrine sulphate is to be made isotonic. How much dextrose should be added for this purpose? (Given 'E' value of ephedrine sulphate is 0.23 and of dextrose is 0.16)
- What are amorphous and crystalline solids? Give examples of polymorphism and highlight the advantages and disadvantages of polymorphic behavior of solids
- Explain self-association phenomena.
- Classify surfactants and write a note on detergency.
- Write a note on dissociation constant and its significance
- What is glassy state of a solid? Explain the properties of such a solid and its significance in dosage form performance.
- Differentiate between solvation and association with examples
- Briefly discuss the factors influencing the solubility of drugs



23/11/2018
Dec 2018

Roll No. _____

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharm (2017 Batch) (Sem.-3)
PHARMACEUTICAL ENGINEERING
Subject Code : BP-304T
Paper ID : [75108]

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 Reynold's number?
 - b) What is the principle of operation of Hammer Mill?
 - c) What is meant by sieve number?
 - d) Differentiate between conduction and convection.
 - e) Mention applications of flash distillation.
 - f) What is equilibrium moisture content?
 - g) Mention four filter aids
 - h) Define specific heat and mention its units.
 - i) Differentiate between wet and dry bulb temperatures
 - j) Mention the types of glass used for packaging liquids

SECTION-B

2.
 - a) Enumerate the factors influencing energy loss during flow of fluids Explain the remedies for them.
 - b) Enumerate the principles of size reduction. Explain the operation of Ball Mill
3.
 - a) Explain the mechanisms of heat transfer. Discuss the operation of heat exchangers
 - b) Discuss the process and applications of molecular distillation process
4.
 - a) Explain the mechanism of drying with the help of a typical drying curve Describe the working of a spray dryer
 - b) Discuss the operation of a rotary drum filter

SECTION-C

5. Write a note on non-perforated basket centrifuge and its applications
6. Enumerate the types of corrosion and mention the precautions to be taken to prevent them
7. Write briefly about elutriation method.
8. What is a climbing film evaporator? Describe its operation and advantages
9. What is a Sigma Blade Mixer? Mention its applications
10. Explain plate and frame filter and mention its advantages and limitations
11. Comment on nonferrous materials used in pharmaceutical plants
12. Draw the view of a venturi meter and explain the measurement of fluid flow through it
13. Illustrate a fluidized bed dryer and explain its operation. Mention its applications in pharmaceutical industry

2 | M | 75108

BP-304

1 | M | 75108



Dec 2018

B.Pharma (2011 to 2016) (Sem.-3)
PHARMACEUTICAL CHEMISTRY-IV
 (Organic Chemistry-II)

Subject Code : BPHM-306

Paper ID : [D1127]

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION - A

1. Answer briefly :
- Give the structure and numbering of imidazole.
 - Why thiophene is more stable and more aromatic than pyrrole and furan?
 - Define and give example of non reducing sugar.
 - Name and give the structure of disaccharide.
 - Test to differentiate between aldoses and ketoses.

f. Nucleotides.

g. Difference between oil and fats.

h. Draw and number the xanthine nucleus

i. Acid value and its significance.

j. Give the structure of Quinoline and isoquinoline.

1 | M 46226

(54) 104b

k. Define and classify Lipids.

- Give the structure of mallose and discuss its structure determination
- Glycolipids.
- Give full name of DNA and its four bases.
- What are α , β unsaturated carbonyl compounds

SECTION-B

- Michael addition.
- Outline purine biosynthesis
- Explain mechanism of Killiani Fischer synthesis
- Give a detailed account on Coumarins
- Discuss Ruff degradation conversion of aldopentose to aldohexoses

SECTION-C

- Name and give the structure of two heterocyclic systems with one and two nitrogen. Explain their method of synthesis and give their reactions.
- Name and give the structure of the smallest unit of biological molecule proteins. Give a detailed account on its primary structure and biological significance of proteins.
- Discuss in detail the steps involved mechanism stereochemistry and kinetics of aromatic electrophilic addition reactions.
- Give the principle, procedure, reactions involved, formula and applications of saponification method of oil analysis.



2 | M-46226

104b

5. Evaluate $\int \frac{2x-1}{(x-1)(x+2)(x-3)} dx$.

6. The following data are the number of seeds germinating out of 10 on damp filter for 80 sets of seeds. Fit a binomial distribution to these data :

x	0	1	2	3	4	5	6	7	8	9	10	Total
f	6	20	28	12	8	6	0	0	0	0	0	80

SECTION-C

7. (a) Solve the equations $2x + 3y = 10$ and $x + 6y = 4$, using Cramer's rule.
 (b) Show that $\tan 3x \tan 2x \tan x = \tan 3x - \tan 2x - \tan x$.
8. (a) Write the properties of Normal distribution curve.
 (b) Prove that:
$$\begin{vmatrix} a+b & b+c & c+a \\ b+c & c+a & a+b \\ c+a & a+b & b+c \end{vmatrix} = 2 \begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$$
9. (a) Find the value of other trigonometric functions if $\cos x = -\frac{1}{2}$, x lies in third quadrant.
 (b) For what value of k following function is continuous at $x = 0$:

$$f(x) = \begin{cases} \frac{\sin 5x}{3x} & \text{if, } x \neq 0 \\ k & \text{if, } x = 0 \end{cases}$$

10. (a) Find $\frac{dy}{dx}$ when $x = a \frac{1-t^2}{1+t^2}$, $y = b \frac{2t}{1+t^2}$.
 (b) Evaluate the integral: $\int x \log(1+x) dx$.



Dec 2018

Roll No.

Total No. of Questions : 10

Total No. of Pages : 03

B. Pharma (2011 to 2016) (Sem.-3)
PHARMACEUTICAL MATHEMATICS
 Subject Code : BPHM-301
 Paper ID : [D1122]

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

1. Solve the following :
 - (a) Construct a 2×2 matrix $A = [a_{ij}]$ whose elements are given by $\frac{(i-j)^2}{3}$

- (b) Compute the product of the matrices A and B , where

$$A = \begin{bmatrix} 5 & 1 \\ -1 & 2 \\ 3 & 1 \end{bmatrix} \text{ and } B = \begin{bmatrix} -1 & 3 & 6 \\ -1 & 0 & 1 \end{bmatrix}$$

- (c) Find the value of $\sin 15^\circ$.
- (d) Prove that $\sin 3x = 3\sin x - 4\sin^3 x$.
- (e) Evaluate $\lim_{x \rightarrow 0} \frac{\sin 5x}{\tan 3x}$.
- (f) Find the derivative of $e^{2x} + (7 - 2x)^3$.
- (g) Calculate the median for the following :

Mid - Value	15	20	25	30	35	40	45	50	55
Frequency	2	22	19	14	3	4	6	1	1

- (h) Find the mode of the data: 52, 75, 40, 70, 43, 40, 65, 35 and 41

- (i) Find the integrals: $\int \frac{x^3 - 1}{x^2} dx$

- (j) Find the integrals: $\int x e^{2x} dx$

- (k) Find the cofactor of each element of the determinant $\begin{vmatrix} 3 & 4 \\ 9 & -7 \end{vmatrix}$

- (l) Find the determinant $\begin{vmatrix} 0 & 3 & 2 \\ 5 & 4 & 7 \\ 4 & 2 & 8 \end{vmatrix}$

- (m) A perfect cubical die is thrown a large number of times in sets of 8. The occurrence of 5 or 6 is called a success. In what proportion of the sets you expect 3 successes.

(n) Find the mode of the following distribution :

Class	0-7	7-14	14-21	21-28	28-35	35-42	42-49
Frequency	19	25	36	72	51	43	28

- (o) 6 dice are thrown 729 times. How many times do you expect atleast 3 dice to show a 5 or 6?

SECTION-B

2. Consider the following three data sets A, B and C

$A = \{9, 10, 11, 7, 13\}$, $B = \{10, 10, 10, 10, 10\}$, $C = \{1, 1, 10, 19, 19\}$

- (a) Calculate the mean of each data set.
- (b) Calculate the standard deviation of each data set.

3. Find inverse of $\begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$

4. Find the derivative of $\frac{5x}{\sqrt{1-x^2}} + \sin^2(2x+3)$



Dec 2018

B.Pharma (2017 Batch) (Sem.-3)
PHARMACEUTICAL ORGANIC CHEMISTRY-II
 Subject Code : BP-301T
 Paper ID : [75105]

Time 3 Hrs

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

1. answer briefly.

- Give one synthetic evidence in support of structure of benzene.
- Draw the structure and give one synthetic application of benzene diazonium chloride.
- Why *p*-nitrophenol is a stronger acid than phenol?
- Why *p*-hydroxy benzoic acid is weaker than benzoic acid itself?
- Give one oxidative identification of oil and fats?
- What happens when anthracene is treated with sodium and ethyl alcohol?
- Why aromatic amines are less basic than aliphatic amine?
- Explain why cyclobutane is more stable than cyclopropane.
- What is mixed acid?
- What happens when phenol is treated with neutral $FeCl_3$?

SECTION-B

- Discuss in detail various evidences to derive the structure of benzene
- Give synthesis of diazonium salt and describe synthetic uses of aryl diazonium salt
- Give detailed account of different analytical constants and their significance in the analysis of fats and oils.

SECTION-C

- Explain mechanism of sulphonation in benzene. Comment on the same as electrophilic in this reaction.
- Discuss meta direction effects of $-NO_2$ group at nitrobenzene in electrophilic substitutions on its aromatic ring
- Compare the basicity of 4-nitro aniline with 4-methyl aniline
- Compare the stability of cyclobutane with cyclohexane using Bayer's strain theory
- Explain electrophilic substitution of Phenanthrene
- Explain opening of cyclopropane ring using Coulson and Moffitt's modification.
- What is Reichert Meissl value? How is it calculated? Discuss its significance
- Discuss Sachse Molir's theory to explain the concept of strainless ring
- Discuss electrophilic substitution of anthracene with one example



Dec 2018

Roll No. _____

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2011 to 2016) (Sem.-3)

PHARMACOGNOSY-II

Subject Code : BPHM-302

Paper ID : [D1123]

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

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

SECTION-A

1. Answer briefly :

- a) Define tannins Classify them with examples
- b) Keller-Kiliani test is used to detect the presence of which class of phyto-constituents? Also write how it is performed
- c) A drug gives positive modified Borntrager's test. How will it respond to simple Borntrager's test?
- d) What are resenes? Give one example of a plant drug (with complete biological source) used for its high resene content
- e) Define pharmaceutical aid. Give two examples each of plants used as colouring and emulsifying agents
- f) Write the uses of Nylon and Asbestos
- g) Give biological source and uses of Musk
- h) Explain Sfumatrice and Enfleuraige methods of volatile extraction
- i) Why salt-gelatin test is more reliable than simple gelatin test while testing for the presence of tannins in a given extract
- j) Write source and uses of Myrobalan.
- k) Give chemical constituents and uses of Cinnamon

1 | M-46222

(54) 134

1) Draw chemical structures of podophylotoxin and THC

m) Differentiate between pathological and physiological resin Also give one example of each.

n) Explain Gold beater's skin test

o) Give biological source and chemical constituents of cassia and jalap

SECTION-B

2. Discuss about the commercial importance of lemon grass and sandalwood

3. Discuss the biological source, chemical constituents and uses of turmeric and Valerian

4. Write a note on the source, macro- and microscopic characters, uses and chemical tests for cotton fiber.

5. Discuss various methods for reparation of extract

6. Write a note on natural suspending agents

SECTION-C

7. Write detailed note on pharmacognosy of Benzoin.

8. Give a comparative profile of Indian and American podophyllum on basis of macro- microscopic characters, chemical constituents and chemical tests

9. Give biological source, chemical constituents and uses of

i. Asafoetida

ii. Catechu

iii. Clove

iv. Chenopodium

10. What are volatile oils? Elaborate on various methods used to extract them.



2 | M-46222

1 | M-46222

Dec 2018

Roll No.

--	--	--	--	--	--	--	--	--	--

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharm (2011 to 2016) (Sem.-3)
PHARMACEUTICS-III (Unit Operation-I)
Subject Code : BPHM-303
Paper ID : [D1124]

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

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

SECTION-A

1. Answer briefly :

- i Define the term unit operation.
- ii Define mass balance
- iii. What is Reynolds number? Describe its importance.
- iv Explain the term filter aids.
- v Define ultracentrifugation
- vi What are the applications of air conditioning?
- vii Define different mechanisms of filtration.
- viii Define QQ Valves
- ix Define Mier's Supersaturation theory.
- x Define the term dew point.
- xi Define Kozeny-Carman equation

1 | M-46223

(54)-269

- xii. Define crystal lattice.
- xiii. Define refrigerants.
- xiv. Define dehumidification process
- xv. Define wet bulb temperature.

SECTION-B

2. Describe the working of refrigerator
3. Describe the construction and working of perforated basket centrifuge
4. Write construction and working of a reciprocating pump
5. Describe the factors affecting caking and prevention of caking
6. Explain industrial pollution and control

SECTION-C

7. Explain the principle and working of air conditioner
8. Explain principle, working and applications of venturi meter
9. Explain principle, construction, working and applications of drum filter
10. Describe the principle, construction, working and applications of pneumatic conveyors.



2 | M-46223

Dec 2018

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

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2011 to 2016) (Sem.-3)
ANATOMY, PHYSIOLOGY & HEALTH EDUCATION - II
 Subject Code : BPHM-304
 Paper ID : [D1125]

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
- SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt ANY THREE questions.

SECTION-A

I. Discuss briefly :

- Reflex action
- Medical termination of pregnancy
- Tidal volume
- Function of olfactory and vagus nerve
- Balanced Diet
- Parturition
- Electroencephalogram
- AIDS
- Medical termination of pregnancy
- White matter
- Nutritional disorders of protein

1 | M-46224

(54)-489

- Menstruation
- Neurohumoral transmission
- Water soluble vitamins
- Third degree burn

SECTION-B

- Differentiate between sympathetic and parasympathetic nervous system.
- Explain the functions of pancreatic hormones.

- Discuss the structure of skin with the help of the diagram
- Write the enzymes involved in protein digestion and their sites from where they are released.
- Define spiogram. Explain external and internal respiration

SECTION-C

- Briefly outline the major events of each phase of the uterine cycle, and correlate them with the events of the ovarian cycle.
- Give a detailed account on parts of brain and their functions
- Discuss in detail the processes involved in formation of urine with the help of suitable diagrams.
- Describe the following :

- Emergency treatment of burns
- Measures to be taken to prevent diseases



Dec 2018

SU-15