This question paper contains 4 printed pages]

IM—30—2025

FACULTY OF SCIENCE AND TECHNOLOGY

B.Pharm. (Second Year) (Third Semester) EXAMINATION

NOVEMBER/DECEMBER, 2025

PHARMACEUTICAL ORGANIC CHEMISTRY

Paper II (BP301T)

(Tuesday, 11-11-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(2) Figures to the right indicate full marks.

(3) Draw structures wherever necessary.

1. Answer the following : 10×2=20

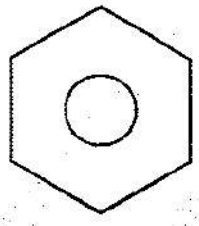
(*a*) Draw the structures of DDT and BHC.

(*b*) Define Iodine value.

(*c*) Mention uses of Cresols.

(*d*) Differentiate between Fats and Oil.

(*e*) Complete the following reaction :

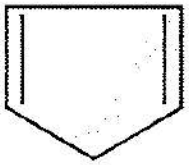


$+ CH_3COCl \xrightarrow{\text{Anhy. } AlCl_3} A + B$

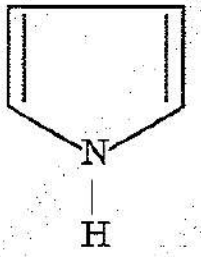
P.T.O.

(*f*) Pick out aromatic and non-aromatic from the following :

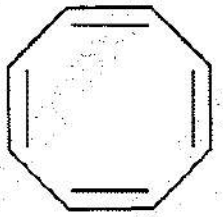
(*i*)



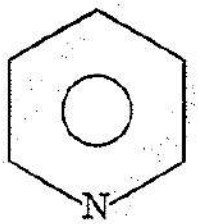
(*ii*)



(*iii*)



(*iv*)

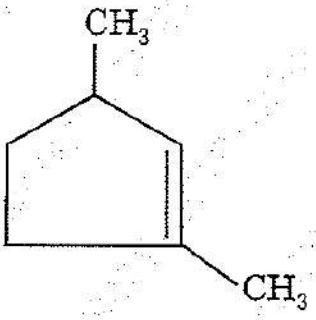


(*g*) What is Aryl diazonium salt ?

(*h*) Write down IUPAC of the following :

(*i*)

(*ii*)



(*i*) Give any synthesis of diphenyl methane.

(*j*) State True/False :

(*i*) Cycloalkane have general formula $(CH_2)_n$.

(*ii*) Cyclopropane is more stable than other cycloalkane.

2. Answer any *two* of the following : 2×10=20

(*a*) Enumerate any *two* synthesis, *four* chemical reactions and *two* applications of Naphthalene

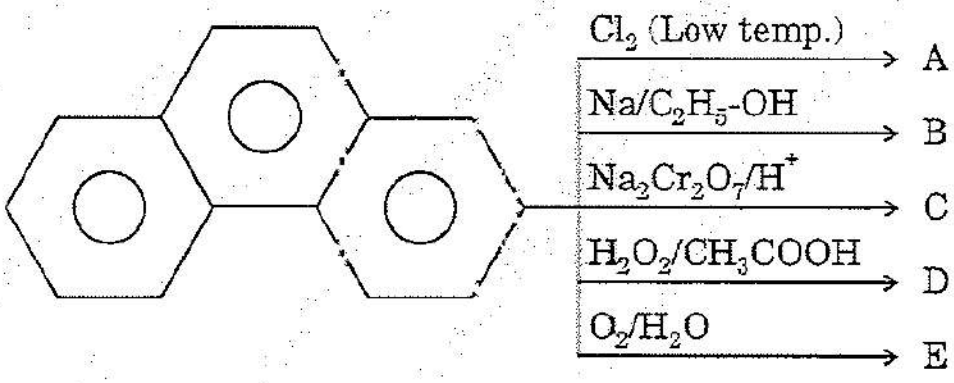
(*b*) Explain theory of orientation of mono-substituted benzene with examples.

(*c*) Discuss acidic nature of phenols with any *four* chemical reactions.

3. Answer any *seven* of the following : 7×5=35

(*a*) Write a short note on Baeyer's strain theory.

(*b*) Complete the following reactions :



(*c*) What is the action of the following in benzoic acid ?

(*i*) Sodium metal

(*ii*) Ethyl alcohol

P.T.O.

(*iii*) PCl_5

(*iv*) Ammonia

(*v*) Sodalime.

(*d*) Explain resonance structure and molecular orbital structure of benzene.

(*e*) How will you prepare aromatic amines by :

(*i*) Catalytic Hydrogenation

(*ii*) Reduction of Cyanides

(*iii*) Reduction of Amides

(*iv*) Reduction of Oximes

(*v*) Alkyl halide and ammonia.

(*f*) Describe the following terms in detail :

(*i*) Rancidification

(*ii*) Drying oils with their types.

(*g*) What is saponification value ? Enumerate principle, procedure, formula and significance of saponification value.

(*h*) Mention any *five* uses of Resorcinol and Anthracene.

(*i*) Outline Friedel-Crafts alkylation reaction of benzene with mechanism and its limitations.

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IM—34—2025

FACULTY OF SCIENCE AND TECHNOLOGY

B.Pharm. (Second Year) (Third Semester) EXAMINATION

NOVEMBER/DECEMBER, 2025

PHYSICAL PHARMACEUTICS

Paper I (BP-302T)

(Thursday, 13-11-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 Hours *Maximum Marks—75*

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

(2) Figures to the right indicate full marks.

(3) Answer to the point only.

1. Answer *all* the following questions : 10×2=20

(*a*) Define relative humidity. Give its significance.

(*b*) State Roult's law.

(*c*) What are aerosols ?

(*d*) Enlist any *two* names of surfactants.

P.T.O.

(e) Define complexation. Give its applications.

(f) What is critical solution temperature ?

(g) What do you mean by glassy state ?

(h) What is buffer capacity ? State any *two* applications of buffer.

(i) What is Refractive index ? Give any *two* applications for Refractive index.

(j) State the factors affecting solubility of the drugs.

2. Answer any *two* of the following : 2×10=20

(a) Define HLB. Draw the HLB scale and elaborate pharmaceutical applications of HLB.

(b) What is buffers ? Explain buffers in pharmaceutical and biological systems.

(c) Explain methods of determination of surface tension in detail.

3. Answer any *seven* of the following : 7×5=35

(a) Explain partial miscibility curve of phenol-water system.

(b) Explain in brief about solubilization and detergency.

(c) Justify the role of polar and non-polar solvents in the solubility of drugs.

(*d*) What is partition coefficient ? How is it determined ?

(*e*) Write a short note on surface free energy and spreading coefficient.

(*f*) Define pH. Explain electrometric method of pH determination.

(*g*) Explain determination of Refractive index using Abbe Refractometer.

(*h*) Describe in brief about solubility of gas in liquids.

(*i*) Define protein binding. Elaborate its applications.

This question paper contains 3 printed pages]

IM—38—2025

FACULTY OF PHARMACEUTICAL SCIENCE

B.Pharm. (Second Year) (Third Semester) EXAMINATION

NOVEMBER/DECEMBER, 2025

PHARMACEUTICAL MICROBIOLOGY

Paper BP303T

(Saturday, 15-11-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(2) Draw neat labelled diagrams wherever necessary.

(3) Figures to the right indicate full marks.

1. Answer the *all* questions : 10×2=20

(*a*) Draw a well labelled diagram of bacteriophage.

(*b*) Define stain. Write the types of stain.

(*c*) Define pasteurization and lyndallization.

P.T.O.

(*d*) What is bioburden ?

(*e*) Write ideal properties of disinfectant.

(*f*) Write nutritional requirements for growth of bacteria.

(*g*) Give difference between prokaryotes and eukaryotes.

(*h*) Enlist different cultural media.

(*i*) What is Dop test ?

(*j*) What is a Preservative ?

2. Solve any *two* of the following : 2×10=20

(*a*) Define sterilization. List the different methods used for sterilization and explain any *one* sterilization method.

(*b*) Explain method of cultivation of viruses in chick embryo.

(*c*) What is contribution of Louis Pasteur in field of microbiology ? Explain scope and importance of pharmaceutical microbiology.

3. Solve any *seven* of the following : 7×5=35

(*a*) Explain in detail lytic cycle of bacteriophage.

(*b*) Discuss in detail sterilization indicators.

(c) Explain in detail microbiological assay of antibiotics.

(d) How will you assess new antibiotics by MIC ?

(e) Discuss factors which affecting preservative efficacy.

(f) Explain in detail bacterial growth curve.

(g) Discuss morphological classification of bacteria.

(h) Explain sterility testing.

(i) Define disinfectant. Give its classification with examples.

This question paper contains 3 printed pages]

IM—42—2025

FACULTY OF SCIENCE AND TECHNOLOGY

B.Pharm. (Second Year) (Third Semester) EXAMINATION

NOVEMBER/DECEMBER, 2025

PHARMACEUTICAL ENGINEERING

Paper BP304T

(Tuesday, 18-11-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(2) Draw a neat labelled diagram wherever necessary.

(3) Answer to the point only.

(4) Figures to the right indicate full marks.

1. Answer the following : 10×2=20

(*a*) Define manometer and classify it.

(*b*) Define filter aid. Give its examples.

(*c*) Define coarse powder and moderately coarse powder.

P.T.O.

(*d*) Enlist factors affecting rate of filtration.

(*e*) Define corrosion. List out types of corrosion.

(*f*) What is meant by centrifugation ? Give its application.

(*g*) Write objective and application of size separation.

(*h*) Enlist mechanism used for size reduction.

(*i*) Write mechanism of solid mixing.

(*j*) Why blending is required before granulation ?

2. Answer any *two* of the following : 2×10=20

(*a*) Explain in detail ball mill with principle, construction, working merits, demerits and uses with neat labelled diagram.

(*b*) Explain mechanisms of mixing and write about impellers in detail.

(*c*) Discuss principle, construction working, merits, demerits and uses of spray dryers with neat labelled diagram.

3. Answer any *seven* of the following : 7×5=35

(*a*) Write Reynolds numbers in detail and give its significances.

(*b*) Write construction, working, principle of cyclone separator.

(*c*) Write principle, construction and working of F.B.D.

(*d*) Write in detail on conduction, convection and radiation.

(*e*) Write principles of steam jackated kettle.

(*f*) Write in detail about fractional distillation.

(*g*) Write principle, construction, working of double cone blender.

(*h*) Describe plate and frame filter press. Write principle, construction and working.

(*i*) Describe planetary mixture. Write its principle, construction and working.

IM-42-2025

FACULTY OF SCIENCE AND TECHNOLOGY
B.Pharm (Second Year) (Third Semester)
WINTER-2025 EXAMINATION
Subject : Pharmaceutical Engineering (BP-304T)

(Tuesday, 18-11-2025) **Time: 02.00 p.m. to 05.00 pm**

Time – Three Hours **Maximum Marks - 75**

N.B. : 1. All Question are compulsory
2. Figure to right indicate full marks
3. Draw well labelled diagram wherever neccessary

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Q.1) Answer all questions **10x2=20 Marks**

a) What is evaporation? Give applications of evaporation
b) What is heat inter changer? Explain any one
c) What is corrosion? give its types
d) What is poiseulle's equation ?
e) State the applications of drying
f) Define Reynolds number
g) Define filter aids, give example.
h) What is coarse powder & fine powder
i) Draw a labelled diagram of fluidised bed dryer
j) Explain factors affecting filtration

Q.2) Solve any two of the following **02x10=20 Marks**

a) Discuss principle, construction working, merits, demerits and uses of Horizontal tube evaporator.
b) Discuss in brief about metal as a material used in plant construction
c) Describe the principle, construction, working , uses advantages & Disadvantages of Ball Mill

Q.3. Solve any seven of following **07X05 = 35 Marks**

a) Write a note on Distillation under reduced pressure
b) Explain in detail perforated Basket centrifuge
c) Explain principle, construction and working of planetary mixer
d) What is Meta filter? Explain all the aspects of Meta Filter
e) Draw a diagram of evaporating pan, write its contraction and working
f) Explain the mechanisms involved in heat transfer & Explain Fourier's law
g) Explain construction, working of cyclone separator
h) Give objective and Mechanism of size reduction.
i) What is Manometer? What is turbulent and laminar flow of fluid?