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IM—32—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

NOVEMBER/DECEMBER, 2025

PHARMACEUTICAL ORGANIC CHEMISTRY

Paper III (BP401T)

(Wednesday, 12-11-2025) **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) Write structure and chemical reaction wherever necessary.

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

(*a*) Define stereoisomerism with example.

(*b*) Define configurational isomers with example.

(*c*) Write the resonance structure of Furan.

(*d*) Write any *one* method of synthesis of pyrazole.

(*e*) Write Wolff-Kishner reduction reaction.

P.T.O.

(*f*) Explain Meso compound with example.

(*g*) Define stereoselective reaction with suitable example.

(*h*) What are fused heterocyclic compounds ? Give examples.

(*i*) Give the basic structure and uses of Azepines.

(*j*) What is Dakin reaction ?

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

(*a*) Define and classify heterocyclic compounds with suitable examples and explain aromaticity and reactivity of Furan, Pyrrole and Thiophene.

(*b*) Explain in brief the methods used to determine the configuration of geometrical isomers.

(*c*) Define configuration. Explain the sequence rule for RS and DL system of nomenclature of optical isomers.

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

(*a*) Define chiral and achiral molecules with suitable examples. Write any *two* reactions of chiral molecules.

(*b*) Write a note on E & Z and Syn and Anti system of nomenclature.

(*c*) Outline the Skraup's synthesis of Quinoline with their chemical reactions.

(*d*) Write the method of synthesis, chemical reaction and medicinal use of Thiazole.

(e) Explain the following :

(i) Beckmann's rearrangement

(ii) Birch reduction reaction.

(f) Give the methods of synthesis, chemical reactions and medicinal uses of Furan and Pyrrole.

(g) Explain conformational isomers in Ethane.

(h) Draw the structure and IUPAC name of the following :

(i) Oxazole

(ii) Isoquinoline

(iii) Indole

(iv) Acridine

(v) Pyrimidine.

(i) Give mechanism and orientation of electrophilic substitution of Thiophene.

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IM—36—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

NOVEMBER/DECEMBER, 2025

MEDICINAL CHEMISTRY

Paper I (BP402T)

(Friday, 14-11-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(2) Answer to the point only.

(3) Figures to the right indicate full marks.

1. Solve the following : 10×2=20

(*a*) Sketch out scheme of synthesis for carbachol.

(*b*) Define partition coefficient.

(*c*) Draw structure and write IUPAC name of salbutamol.

(*d*) What is drug metabolism ? Enlist types of drug metabolism pathway.

(*e*) Classify general anaesthetics.

P.T.O.

(*f*) Draw structure and give therapeutic uses of chlorpromazine hydrochloride.

(*g*) Differentiate between benzodiazepines and barbiturates.

(*h*) Give synthesis of Phenytoin.

(*i*) Draw structure and *two* adrenergic neurotransmitter.

(*j*) Classify parasympathomimetic agents.

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

(*a*) What are Narcotic analgesics ? Discuss the chemistry and SAR of morphine.

(*b*) What are Sedatives and Hypnotics ? Classify them with at least *one* structure from each class. Discuss SAR of benzodiazepines.

(*c*) What are parasympathomimetic agents ? Discuss the SAR of parasympathomimetic agent. Draw structure of any *two* parasympathomimetic agents. Draw scheme of synthesis of Neostigmine.

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

(*a*) Explain the physiochemical properties of drugs in relation to biological action.

(*b*) Classify adrenergic antagonist and give SAR of beta blockers.

(*c*) Classify anticonvulsants with structure of at least *one* drug from each class.

(*d*) Draw scheme synthesis of propranolol and Dicyclomine hydrochloride.

(*e*) Draw structure of the following compounds :

(*i*) Haloperidol

(*ii*) Diazepam

(*iii*) Dopamine

(*iv*) Ketamine hydrochloride

(*v*) Halothane.

(*f*) Discuss SAR of phenothiazines.

(*g*) Give chemical classification of anti-inflammatory agent.

(*h*) Discuss biosynthesis, release and metabolism of catecholamines.

(*i*) Discuss in short phase-I metabolic pathway.

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IM—40—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

NOVEMBER/DECEMBER, 2025

PHYSICAL PHARMACEUTICS—II

(Monday, 17-11-2025) (BP403T) **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 structure, write examples wherever necessary.

(3) Answer to the point only.

(4) Figures to the right indicate full marks.

1. Write answer for the following questions : 10×2=20

(*a*) Define half life and shelf life.

(*b*) What is protective action of colloids ?

(*c*) Define :

(*i*) Stokes' diameter

(*ii*) Projected diameter.

P.T.O.

(*d*) Draw HLB scale.

(*e*) What is Young's module ? Enlist its types.

(*f*) What is photolytic degradation ? Give its prevention.

(*g*) Define :

(*i*) Zeta potential

(*ii*) Nernst potential.

(*h*) Define viscosity and enlist its type.

(*i*) Write a short note on particle number.

(*j*) Differentiate between flocculated and deflocculated suspension.

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

(*a*) Define colloids and explain optical properties of colloids.

(*b*) Define stability of dosage form and explain chemical degradation factors with its prevention.

(*c*) Define viscometer and explain in detail rotational viscometers.

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

(*a*) Explain in detail non-Newtonian system.

(*b*) Define emulsion and describe theories of emulsification.

(*c*) What is thixotropy ? Discuss the methods of its determination.

(*d*) Write a short note on stability of emulsion.

(*e*) Write in detail air permeability method for determining surface area.

(*f*) Describe the methods for determination of order of reaction.

(*g*) Explain in detail Coulter Counter method for determination of particle size.

(*h*) Describe the derived properties of powder.

(*i*) Explain in detail about Accelerated Stability Study.

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IM—44—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

NOVEMBER/DECEMBER, 2025

PHARMACOLOGY

Paper I

(Wednesday, 19-11-2025) (BP404T) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

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

(2) Answer to the point only.

(3) Figures to the right indicate full marks.

1. Answer the following : 10×2=20

(*a*) Define drug dependence and Idiosyncrasy.

(*b*) Give sources of drugs with example.

(*c*) What are adverse drug reaction ? Give its type.

(*d*) Write a note on therapeutic index.

P.T.O.

(e) Classify neuromuscular blocking agent with an example.

(f) Give drugs used in Myasthenia gravis.

(g) Enlist various centrally acting muscle relaxant.

(h) Write therapeutic uses of carbamazepine.

(i) Write pharmacotherapy for Alzheimer disease.

(j) Give reasons why L-dopa is always given in combination with carbidopa.

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

(a) Enlist factors affecting drug metabolism and explain enzyme induction and enzyme inhibition of drug with examples.

(b) What are parasympathomimetic agents ? Classify them with examples and explain the pharmacology of Acetylcholine.

(c) Classify sedative and hypnotics with example. Write in detail pharmacology of diazepam

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

(a) Explain the JAK-STAT binding receptor transduction mechanism.

(b) Define drug interaction. Explain in detail about drug interaction.

(c) Discuss the various steps involved in drug discovery.

(d) What is sympathalytic agents ? Explain pharmacology of atenolol.

(e) Discuss steps of neurohumoral transmission in CNS.

(f) Explain the pharmacology of hydantoin derivatives.

(g) Define opioid analgesic and write on the pharmacology of morphine.

(h) Classify antidepressant drugs Write pharmacology of tricyclic antidepressant drugs.

(i) Classify CNS stimulant with example. Explain pharmacology of amphetamine.

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IM—45—2025

FACULTY OF PHARMACEUTICAL SCIENCE

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

NOVEMBER/DECEMBER, 2025

PHARMACOGNOSY AND PHYTOCHEMISTRY

Paper I

(Thursday, 20-11-2025) (BP405T) **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) Write to the point only.

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

(*a*) What are edible vaccines ?

(*b*) Define Alkaloids and Glycosides.

(*c*) Differenntiate between organised and unorganised crude drug.

(*d*) What are natural allergens ? Give any *two* examples.

P.T.O.

(e) Define Stomatal number and Stomatal index.

(f) Write biological sources and uses of Jute.

(g) List out any *four* medicinal agents from marine source.

(h) Give uses of Papain and Bromolein.

(i) Define Mutation and Polyploidy.

(j) Give list of plant hormones and write any *two* applications.

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

(a) Explain the Ayurvedic and Siddha system of medicine.

(b) Describe the various factors affecting on cultivation of medicinal plants.

(c) Give the biological source and uses of Acacia, Agar, Hemp, Castor oil and Chaulmoogra oil.

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

(a) Write a note on applications of PTC in Pharmacognosy.

(b) Define crude drug evaluation and explain physical method of evaluation of crude drug.

(c) Define Volatile oils. Discuss chemical classification of Alkaloids.

(*d*) Explain about Lycopodium spore method of evaluation of crude drug.

(*e*) Discuss scope and historical development of Pharmacognosy.

(*f*) Write biological source, chemical constituents and uses of Tragacanth and Wool fat.

(*g*) Write about the morphological and chemical type of classification of crude drug.

(*h*) Explain about nutritional requirement of plant tissue culture.

(*i*) Write a note on Halucinogens and Teratogens.