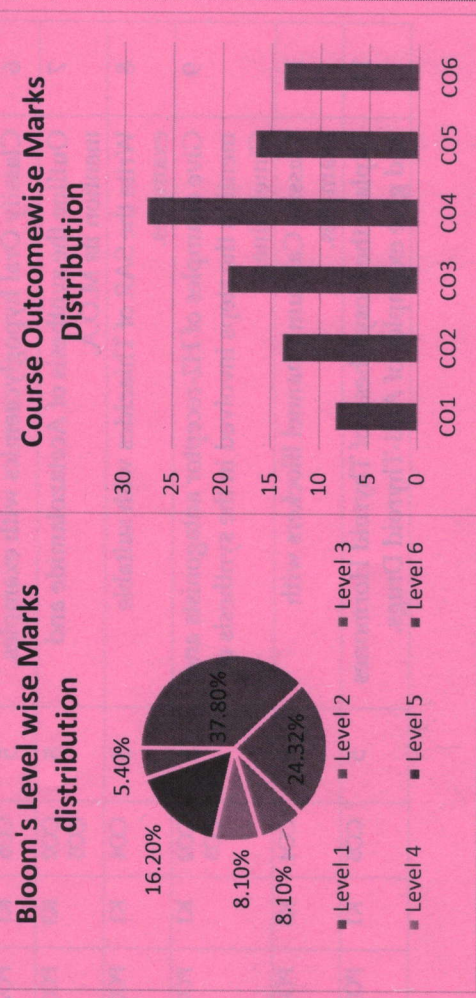


12	Write a detailed account on the SAR of Local Anaesthetics with examples.	5	CO6	K6,	PO2
13	Outline the synthesis of Isosorbide dinitrate and clearly mention its M.O.A. and any two uses.	5	CO2 CO4	K1	PO2

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

CO1	Analyze the correlation between pharmacology of a disease and its mitigation or cure.
CO2	Understand the chemical synthesis of some drugs.
CO3	Analyze detailed aspects of design and development of drugs including classification, nomenclature, structure activity relationship (SAR), mechanism of action, adverse effects, therapeutic uses of various categories such as anti histaminic agents and anticancer.
CO4	Analyze the structural activity relationship of different class of drugs. To understand detailed aspects of design and development of drugs including classification, nomenclature, structure activity relationship (SAR), mechanism of action, adverse effects, therapeutic uses of drugs acting on CVS.
CO5	Analyze the classification, nomenclature, stereochemistry, SAR and mechanism of action and metabolism of drugs acting on the endocrine system.
CO6	Understand about the chemotherapy for cancer and detailed aspects of design and development of drugs including classification, nomenclature, structure activity relationship (SAR), mechanism of action, adverse effects, therapeutic uses of various categories of drugs antidiabetic agents and local anesthetics.

GRAPHICAL REPRESENTATION



ARKA JAIN University
Jharkhand

NAAC GRADE A
ACCREDITED UNIVERSITY

[18-11-2025]
END SEM EXAMINATION
School of Health & Allied Sciences

Program Bachelor of Pharmacy
Subject Name Medicinal Chemistry-II
Semester V
Session Odd, 2025-26
Year Nov, 2025 *

Time: 3 Hour
Max. Marks : 75

• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside**

• Answer all Questions of Section A (Compulsory)

• Answer Any Two out of Three of Section B

• Answer Any Seven out of Nine of Section C

• Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers.

Knowledge Level (KL)
 K1 : Remembering
 K2 : Understanding
 K3 : Applying
 K4 : Analysing
 K5 : Evaluating
 K6 : Creating

Section A (Each question Carry 01 Mark from Q1-i to xx) – 20 Marks

Q. N I	QUESTIONS	Marks	COs	KL	PO
i	Hematogenous route for spread of Cancer is commonly found in: a) Sarcomas b) Carcinomas c) Benign tumours d) Hamartoma	1	CO1	K2	PO9
ii	Normally arranged tissues at abnormal site is a condition termed as: a) Teratoma b) Choriostoma c) Hamartoma d) Desmoplasia	1	CO1	K2	PO1
iii	Identify the correct feature of Anaplasia: a) Meiotic figures b) Mitotic figures c) Gigantism d) Nucleosis	1	CO1	K5	PO2
iv	Which amino acid is present in Dactinomycin: a) N-methylglycine b) N-methylglucosamine c) Both (a.) and (b.) d) None of these	1	CO6	K5	PO2
v	Presence of acidic nitrogen in PPIs facilitates: a) Salt formation with Lead b) Increase in aqueous solubility c) Formation of Ionic complexes d) Decrease in toxicity	1	CO3	K2	PO1
vi	Introduction of a methoxy group at meta position of the benzyl group _____ the Anti-histaminic activity of the drug. a) Increases b) Retains c) Decreases d) None of these	1	CO3	K1	PO2

vii	Which factor increases the potency of Cimetidine: a) Guanidine molecule b) 5-methyl imidazole c) Thioether d) Cyano group	1	CO3	K1	PO1
viii	Nizatidine contains _____ group as its characteristic moiety in the structure: a) 2-guanidothiazole b) Sulphonamide c) Cyano d) Nitro	1	CO3	K1	PO1
ix	eNOS helps in the conversion of: a) L-Arginine to Nitric oxide b) L-Arginine to Nitrites c) L-Arginine to Nitrates d) Both (a.) and (b.)	1	CO4	K2	PO1 0
x	Which drug belongs to the category of Phenylalkylamines? a) Diltiazem b) Virapamil c) Nifedine d) Both (a.) and (b.)	1	CO4	K2	PO1
xi	Acetazolamide contains _____ ring. a) Thiaziazole b) Imidazole c) Pteridine d) Isoxazole	1	CO4	K1	PO2
xii	Bendroflumethiazide contains _____ moiety. a) Benzyl b) Phenyl c) Carboxamide d) Pyrimidine	1	CO4	K1	PO1
xiii	Identify the Diuretic: a) Quinapril b) Quinethazone c) Quinine d) None of these	1	CO4	K1	PO2
xiv	17-β-HSD is used for the conversion of Androstenedione to _____. a) 17β-estradiol c) Testosterone b) 5α-dihydroxytestosterone d) Estrone	1	CO5	K1	PO1
xv	Diltiazem belongs to the category of : a) Benzodiazepines b) Benzothiazepines c) Phenylalkylethers d) None of these	1	CO4	K1 K2	PO2
xvi	Histamine is obtained from Histidine by: a) Decarboxylation b) Oxidation c) Hydrolysis d) Hydrogenation	1	CO3	K2 K3	PO2
xvii	_____ is a PDE-5 inhibitor. a) Ranolazine b) Nicorandil c) Tadalafil d) Methimazole	1	CO5	K2 K3	PO2
xviii	Bleomycin contains _____ moiety in its structure.	1	CO6	K4 K5	PO2

xix	a) Oxazole b) Thiazole c) Pyrazole d) Imidazole Thioguanine and Mercaptopurine differ in structure with each other by an _____ group. a) Thiol b) Thioether c) Amine d) Chloro	1	CO6	K4 K5	PO1
xx	Hypoxanthine is the starting material for the synthesis of _____. a) Methotrexate b) Mercaptopurine c) Mechlorethamine d) Cimetidine	1	CO6	K4 K5	PO1
Section B (Answer any TWO out of THREE) – 20 Marks (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Classify Anti-hypertensive agents with examples and outline the synthesis of Methyldopa hydrochloride.	10	CO2 CO4	K1	PO1
3	Classify H1-receptor antagonists with classical structures. Outline the synthesis of Triprolidine hydrochloride.	10	CO2 CO3	K6	PO2
4	Classify Anti-neoplastic agents with examples. Clearly mention the steps involved in the synthesis of Mercaptopurine.	10	CO2 CO6	K5	PO1 0
Section C (Answer any SEVEN out of NINE) – 35 Marks (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Give examples of drugs used for treating Erectile Dysfunction and clearly mention its M.O.A.	5	CO5	K2	PO1
6	Classify Oral hypoglycaemics with examples.	5	CO5	K1	PO2
7	Outline the synthesis of Acetazolamide and mention its M.O.A.	5	CO2 CO5	K3	PO1
8	Write the SAR of Thiazides with suitable examples.	5	CO4	K1	PO2
9	Give examples of H2-receptor antagonists and mention the steps involved in the synthesis of Cimetidine.	5	CO2 CO3	K1	PO2
10	Classify Calcium Channel Blockers with examples.	5	CO4	K3	PO4
11	Explain the biosynthesis of Thyroid Hormones and give examples of Anti-Thyroid Drugs.	5	CO5	K1	PO7



Program	Bachelor of Pharmacy	
Subject Name	Pharmacology-II	
Semester	V	Year
	Session	Odd, 2025-26
	Year	Nov, 2025
Time: 3 Hour	Start writing from 2nd page onwards; don't write on the 1st Page	
Max. Marks : 75	Backside	
	<ul style="list-style-type: none"> Answer all Questions of Section A (Compulsory) Answer Any Two out of Three of Section B Answer Any Seven out of Nine of Section C Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u> 	
Knowledge Level (KL)	K1 : Remembering	K3 : Applying
	K2 : Understanding	K4 : Analysing
	K5 : Evaluating	K6 : Creating

Section B (Answer any TWO out of THREE) – 20 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Define antihyperlipidemic drugs. Classify them with suitable examples and explain the mechanism of action, therapeutic uses and adverse effects of statins.	10	CO2	K1,K2,K4	PO1
3	Discuss about synthesis, storage & release of Thyroid hormone. Write notes on Anti-thyroid drugs.	10	CO3	K1,K2,K3,K6	PO2
4	Define antihypertensive drugs. Classify them with examples, and describe the pharmacology of Calcium channel blockers.	10	CO3	K2,K5,K1	PO2

Section C (Answer any SEVEN out of NINE) – 35 Marks
(Each question Carry 05 Marks)



Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Discuss the mechanism of action and therapeutic significance of Digoxin in CHF.	5	CO1	K2,K4	PO1
6	Discuss the mechanism of action and adverse effects of Warfarin.	5	CO4	K1,K6	PO2
7	Briefly discuss about drugs for used for the treatment of gout.	5	CO2	K3,K5	PO1
8	Define bioassay. Explain its basic principles with suitable examples.	5	CO6	K1,K6	PO2
9	Explain the role of selective COX-2 inhibitors in the management of pain and inflammation.	5	CO3	K1,K2	PO2
10	Classify Anti-arrhythmic drugs and briefly discuss about Class-III drugs.	5	CO3	K3,K6	PO4
11	Discuss the mechanism of action of vasopressin.	5	CO3	K1,K3,K4	PO7
12	Write a short note on antiplatelet drugs with examples and mechanism of action.	5	CO1	K6,K2,K3,	PO2
13	Discuss drugs affecting 5-HT system.	5	CO6	K1,K3	PO2

Section A (Each question Carry 01 Mark from Q1-i to xx) – 20 Marks

Q. N1	QUESTIONS	Marks	COs	KL	PO
i	Aspirin exerts its primary action by: a) Competitive inhibition of COX-1 and COX-2 b) Irreversible inhibition of cyclooxygenase enzymes c) Reversible inhibition of lipoxigenase d) Blocking thromboxane receptor	1	CO1	K1, K3	PO9
ii	Misoprostol, a uterine stimulant, is a synthetic analogue of: a) PGE1 b) PGE2 c) PGF2α d) TXA2	1	CO3	K2, K1	PO1
iii	Desferrioxamine is primarily used in the treatment of: a) Lead poisoning b) Iron poisoning and iron overload c) Mercury poisoning d) Copper poisoning	1	CO5	K1	PO2
iv	The biologically active form of folic acid is: a) Tetrahydrofolate (THF) b) Dihydrofolate (DHF) c) Folic acid itself d) 5-methyltetrahydrofolate	1	CO2	K4	PO2

v	The main mechanism of action of methotrexate is:	1	CO3	K4	PO1
	a) Inhibition of thymidylate synthase b) Inhibition of dihydrofolate reductase → decreased tetrahydrofolate → inhibits DNA synthesis c) Alkylation of DNA strands d) Blocking topoisomerase II				
vi	Which of the following antihistaminics is known for strong anticholinergic action?	1	CO1	K1	PO2
	a) Loratadine b) Cetirizine c) Diphenhydramine d) Fexofenadine				
vii	Which of the following is a Selective Estrogen Receptor Downregulator (SERD)?	1	CO4	K1	PO1
	a) Tamoxifen b) Raloxifene c) Fulvestrant d) Clomiphene				
viii	Which of the following is an endothelial NOS (eNOS) function?	1	CO2	K1, K4	PO1
	a) Neurotransmission in the CNS b) Immune defense via macrophages c) Vasodilation by stimulating cGMP in vascular smooth muscle d) Muscle contraction in skeletal muscle				
ix	Fibrates mainly act by:	1	CO4	K2, K3	PO9
	a) Inhibiting HMG-CoA reductase b) Activating PPAR- α (peroxisome proliferator-activated receptor- α) c) Inhibiting cholesterol absorption d) Binding bile acids in the intestine				
x	Which drug is a recombinant human BNP used therapeutically in acute decompensated heart failure?	1	CO6	K2, K4	PO1
	a) Nesiritide b) Sacubitril c) Entreston d) Dobutamine				
xi	Flutamide and bicalutamide are classified as:	1	CO3	K1	PO2
	a) Anti-estrogen b) Anti-androgens c) GnRH agonists d) 5 α -reductase inhibitors				
xii	Which oral antidiabetic drug delays carbohydrate absorption in the intestine?	1	CO3	K1, K2	PO1
	a) Acarbose b) Repaglinide c) Dapagliflozin d) Rosiglitazone				
xiii	Which of the following is an oral bisphosphonate commonly used in	1	CO1	K1, K2	PO2

xiv	osteoporosis? a) Zoledronate c) Denosumab	1	CO3	K1, K2	PO1
	b) Alendronate d) Teriparatide				
	The mechanism of action of trimetazidine is:				
	a) Inhibition of L-type calcium channels b) Inhibition of fatty acid oxidation → shifting myocardial metabolism toward glucose utilization c) Increasing nitric oxide release d) Blocking β 1-receptors in the heart				
xv	Which of the following can be determined using a Schild plot?	1	CO6	K1, K2	PO2
	a) Affinity of antagonist for receptor b) Intrinsic efficacy of agonist c) Receptor reserve d) EC50 of agonist directly				
xvi	The common adverse effect unique to ACE inhibitors is:		CO2	K2, K3	PO2
	a) Hypokalemia b) Cough due to bradykinin accumulation c) Constipation d) Thrombocytopenia				
xvii	Propylthiouracil (PTU) differs from methimazole because it also:	1	CO2	K2, K3	PO2
	a) Stimulates thyroid peroxidase b) Inhibits peripheral conversion of T4 to T3 c) Increases iodine uptake by thyroid d) Blocks TSH receptors				
xviii	The primary mechanism of action of februxostat is:	1	CO1 CO3	K4, K5	PO2
	a) Increasing renal uric acid excretion b) Inhibiting xanthine oxidase → reduces conversion of xanthine to uric acid c) Suppressing inflammation in joints d) Inhibiting purine synthesis				
xix	According to Vaughan-Williams classification, amiodarone belongs to:	1	CO4	K5	PO1
	a) Class I b) Class II c) Class III d) Class IV				
xx	Triptans relieve migraine mainly by:	1	CO4	K4	PO1
	a) Inhibiting phosphodiesterase b) Blocking dopamine receptors c) 5-HT1B/1D receptor agonism d) Inhibition of cyclooxygenase				

 ARKA JAIN University Jharkhand		 NAAC GRADE A ACCREDITED UNIVERSITY		[20-11-2025] END SEM EXAMINATION School of Allied Health Sciences	
Program Bachelor of Pharmacy			Session Odd, 2025-26		
Subject Name Industrial Pharmacy-I			Year Nov, 2025		
Semester V			Start writing from 2nd page onwards; don't write on the 1st Page Backside		
Time: 3 Hour Max. Marks : 75			<ul style="list-style-type: none"> • Answer all Questions of Section A (Compulsory) • Answer Any <i>Two</i> out of <i>Three</i> of Section B • Answer Any <i>Seven</i> out of <i>Nine</i> of Section C • Possession of Mobile Phones or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers.</u> 		
Knowledge Level (KL)		K1 : Remembering K2 : Understanding K3 : Applying K4 : Analysing K5 : Evaluating K6 : Creating			

Q.N	QUESTIONS	Marks	COs	KL	PO
1					
i	According to USP, Sparingly soluble means the Parts of solvent required for one part of solute is a) 30-100 b) 10-30 c) 100-1000 d) Less than 1	1	CO5	K2,K1	PO9
ii	The ratio of void volume to bulk volume is known as a) Bulk density b) Tapped density c) Porosity d) Granule volume	1	CO3	K2,K1	PO1
iii	Which of the following tablet are formulated to prevent drug release in stomach? a) Enteric coated tablet b) Film coated tablet c) Sugar Coated tablet d) Chewable tablet	1	CO5	K5,K1	PO2
iv	Which of the following tablet placed under the tongue to dissolve? a) Sublingual tablet b) Buccal tablet c) Lozenges d) Troches	1	CO2	K5	PO2
v	Why tragacanth is not used as binder because it a) Harden on storage b) Require in large amount c) Incompatible with most of the drugs d) Suitable in warm condition	1	CO3	K2,K1	PO1

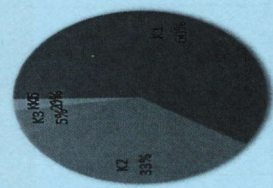
8	Write short notes on pellets and pelltization process.	5	CO3	K1,K6	PO2
9	Write a short note on Polymorphism.	5	CO3 CO2	K1,K2	PO2
10	Write a note on BCS Classification of drugs and its importance.	5	CO3	K3,K6	PO4
11	Write a shot note on Ophthalmic preparations.	5	CO3	K1,K3 K4	PO7
12	Give detail account of formulation of injections and explain sealing and filling of ampoules?	5	CO6	K6,K2 .K3,	PO2
13	Write about various steps involved in sugar coating.	5	CO3 CO	K1,K3	PO2

CO- Course Outcomes, KL- Knowledge Level, PO - Program Outcome

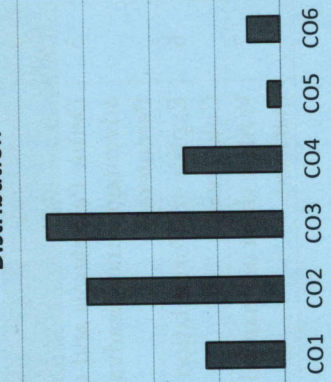
CO1	Understand various pre-formulation considerations in development of pharmaceutical dosage
CO2	Apply solid (tablet), liquid orals and evaluate them for their quality
CO3	Apply the techniques of formulation of capsules/ pellets and their quality evaluations
CO4	Understand the formulation aspects and quality control of sterile dosage forms
CO5	Understand the preparation of various cosmetic products
CO6	Apply the formulation and evaluation of aerosols and to understand materials used for packaging of pharmaceutical products

GRAPHICAL REPRESENTATION

Bloom's Level Wise Marks Distribution



Course Outcome Wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

vi	Adhesion of tablet material to die wall is called a) Mottling b) Sticking c) Picking d) Capping	1	CO1	K1	PO2
vii	In emulsion distribution of globules is not uniform. This stage is called a) Caking b) Creaming c) Breaking d) Coalescence	1	CO4	K1,K3	PO1
viii	On commercial scale emulsion is prepared by a) Homogenization b) Dialysis c) Freezing d) Centrifugation	1	CO2	K1,K4	PO1
ix	Smallest size of capsule most widely used is a) 0 b) 5 c) 1 d) 000	1	CO4	K2,K3	PO1 0
x	ErwekaKEA is used in capsule manufacturing or processing a) As weighing machine b) To fill pellets into capsules c) To remove unfilled or unjoined de dusting capsule d) For dusting and polishing of capsules	1	CO4	K2,K4	PO1
xi	Isoelectric point of Type A gelatine is a) Between 7 and 9 b) 10 c) Between 4.7 and 5.3 d) Between 12 and 15	1	CO3	K1,K2	PO2
xii	Basic empty capsule shell are made from a mixture of a) Sugar b) Water c) Gelatine d) All of the above	1	CO3	K1,K2	PO1
xiii	Which of the following is not pelletization process? a) Agitation b) Compaction c) Sieving d) Globulation	1	CO1	K1,K2	PO2
xiv	An injection inserted directly into artery is known as a) Intra-arterial b) Inter-arterial c) Extra arterial d) Intravenous	1	CO3	K1,K2	PO1
xv	Which of the following used as stabilizer in parenteral dosage form? a) Acetates b) Tetrasodium edentate c) Creatinine d) Benzyl alcohol	1	CO2	K1,K2	PO2
xvi	Thiomersal is used in parenteral products as a) Buffer b) Antimicrobial agent c) Antioxidant d) Chelating agent	1	CO2	K2,K3	PO2

xvii	Which of the following is used as vehicle in ophthalmic drops a) Ethanol b) Methanol c) Isopropyl alcohol d) Boric acid	1	CO2	K2,K3	PO2
xviii	Which of the following propellant used for topical pharmaceutical aerosols? a) Trichloro monofluoro methane b) Propane c) Dichloro difluoro methane d) Dichloro tetra fluoro ethane	1	CO1 CO 3	K4,K5	PO2
xix	Which apparatus is used to determine flash point of aerosol products a) Coulter counter b) Tag open cup apparatus c) Rheometer d) Osmometer	1	CO4	K4,K5	PO1
xx	Vapour pressure of propellant for aerosol are calculated from a) Boyal's law b) Fick's law c) Stoke's law d) Dalon's law	1	CO4	K4,K5	PO1
Section B (Answer any TWO out of THREE) – 20 Marks (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Define Aerosols. Mention the various evaluation test for aerosols.	10	CO2	K1,K2, K4	PO1
3	Write a brief note on Various types of Tablets.	10	CO3	K1,K2 K3,K6	PO2
4	Define Parenterals. Explain in detail quality control tests for Parenterals.	10	CO4	K2,K5, K1	PO1 0
Section C (Answer any SEVEN out of NINE) – 35 Marks (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Define Parenterals and write about advantages and disadvantages of Parenterals.	5	CO1	K2,K4	PO1
6	Explain the formulation and Preparation of Cold cream.	5	CO1 CO2	K1,K6	PO2
7	Write a short on manual capsule filling machine.	5	CO2	K3,K5	PO1

Section B (Answer any TWO out of THREE) – 20 Marks

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Discuss the code of ethics for pharmacist in relation to his job and his profession.	10	CO4	K1 K2	PO6 PO8
3	Discuss the structure and functions of the Pharmacy Council of India and State Pharmacy Councils under the Pharmacy Act, 1948.	10	CO4 CO5	K2 K6	PO1 PO6
4	Describe in detail the provisions related to the import, manufacture, and sale of drugs under the Drugs and Cosmetics Act, 1940 and Rules, 1945.	10	CO2 CO3	K2 K3	PO6 PO8

Section C (Answer any SEVEN out of NINE) – 35 Marks

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
5	What are the exemptions provided under the Drugs and Magic Remedies (Objectionable Advertisements) Act?	5	CO1 CO2	K2 K3	PO6
6	Explain the role and functions of the Drugs Technical Advisory Board (DTAB).	5	CO3 CO5	K2	PO1 PO8
7	Write short notes on "In-bond" and "Outside-bond" manufacturing under the Medicinal and Toilet Preparations Act, 1955.	5	CO1 CO2	K2	PO1 PO6
8	Write a short note on Schedule M and its importance in pharmaceutical manufacturing.	5	CO3 CO5	K2 K3	PO1 PO6
9	Explain the composition of the Pharmacy Council of India and discuss its major functions in regulating pharmacy education and profession in India.	5	CO2	K1 K2	PO1 PO6
10	Explain the objectives and functions of the National Pharmaceutical Pricing Authority (NPPA).	5	CO2 CO3	K1 K2	PO1 PO8
11	What are the qualifications, powers, and duties of Drugs Inspectors under the Drugs and Cosmetics Rules, 1945?	5	CO3 CO5	K1 K2	PO6 PO8
12	Differentiate between import license and manufacturing license under the Drugs and Cosmetics Act.	5	CO2 CO3	K2 K3	PO2 PO6
13	Write a short note on the use of the RTI Act, 2005 by pharmacists to access drug regulatory information.	5	CO2 CO4	K2 K3	PO1 PO8



ARKA JAIN University
Jharkhand



[27-11-2025]
END SEM EXAMINATION
School of Allied Health Science

Program	Bachelor of Pharmacy	
Subject Name	Pharmaceutical Jurisprudence	
Semester	V	
	Session	Year
	Odd	Nov, 2025
	2025-26	
Time: 3 Hour	Start writing from 2nd page onwards; don't write on the 1st Page	
Max. Marks : 75	Backside	
	<ul style="list-style-type: none"> Answer all Questions of Section A (Compulsory) Answer Any Two out of Three of Section B Answer Any Seven out of Nine of Section C Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under <u>Unfair Means</u> and will Result in the <u>Cancellation of the Papers.</u> 	
Knowledge Level (KL)	K1 : Remembering	K5 : Evaluating
	K2 : Understanding	K6 : Creating
	K3 : Applying	
	K4 : Analysing	

Section A (Each question Carry 01 Mark from Q1-i to xx) – 20 Marks

Q. N	QUESTIONS	Marks	COs	KL	PO
i	Import of drugs into India is prohibited under which of the following conditions? <ul style="list-style-type: none"> a) Drugs are misbranded, adulterated, or spurious b) Drugs have less than 80% potency c) Drugs are imported for personal use only d) Drugs bear the same name as an Indian product 	1	CO1 CO5	K1 K2	PO1 PO6
ii	Schedule H1 drugs require: <ul style="list-style-type: none"> a) Prescription by an RMP and record maintenance by pharmacist b) Over-the-counter sale after pharmacist advice c) Dual approval from CDSCO and State FDA d) Separate packaging standards 	1	CO1 CO5	K1	PO1
iii	A registered pharmacist's name can be removed from the register when he/she: <ul style="list-style-type: none"> a) Retires voluntarily b) Commits professional misconduct c) Shifts to another country d) Fails to renew registration 	1	CO1 CO2	K1	PO1 PO6
iv	Which parameter is not considered when fixing ceiling price under DPCO 2013?	1	CO1 CO3	K1 K2	PO1 PO2

v	a) Average retail price based on market data b) Profit margin of manufacturers c) Therapeutic category d) Annual export turnover Intellectual Property Rights (IPR) in the pharmaceutical field primarily protect: a) The safety and efficacy of drugs b) The financial transactions of pharmacies c) The innovation and originality of drug formulations and processes d) The manufacturing license number	1	CO2 CO4	K2	PO1 PO6
vi	A 20 week pregnancy can be terminated with the consent of: a) Doctor holding M.B.B.S degree b) Doctor holding M.D degree c) Gynaecologist d) Two registered medical practitioners.	1	CO2 CO4	K1 K2	PO1 PO6
vii	MRP of scheduled formulations = Ceiling Price + a) Local Taxes as Applicable b) Retail Price c) None d) All of the above	1	CO1 CO3	K1 K3	PO2
viii	The term "Pharmacist's Oath" is related to: a) Code of Pharmaceutical Ethics b) NDPS Act c) DPCO d) Pharmacy Act	1	CO4	K1	PO1 PO6
ix	The committee that recommended uniform pharmacy education in India: a) Hathi Committee b) Mudaliar Committee c) Drugs Enquiry Committee d) Health Survey Committee	1	CO2 CO4	K1	PO6
x	How frequently does WHO review and publish the updated Model List of Essential Medicines? a) 1 year b) 2 years c) 3 years d) 5 years	1	CO1 CO5	K1	PO2
xi	Which Schedule of the Drugs and Cosmetics Rules, 1945, prescribes the requirements and guidelines for clinical trials of new drugs in India? a) Schedule Y b) Schedule M c) Schedule H d) Schedule G	1	CO2	K1	PO6
xii	NLEM stands for: a) National List of Essential Medicines	1	CO1 CO3	K1	PO1 PO8

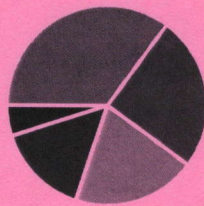
xiii	b) National Legal Enforcement Mechanism c) National Licensing of Exported Medicines d) None of the above CPCSEA stands for: a) Committee for the Purpose of Control and Supervision of Experiments on Animals b) Central Pharmaceutical Council for Scientific Ethics Association c) Control Panel for Clinical and Scientific Experimental Approvals d) None of the above	1	CO1 CO3	K1 K2	PO1 PO8
xiv	Which body manages the "National Fund for Controlling Drug Abuse"? a) Central Government b) Narcotics Control Bureau c) NDPS Consultative Committee d) Pharmacy Council of India	1	CO1 CO5	K1 K2	PO8
xv	The Medicinal and Toilet Preparations Act deals with: a) Alcoholic preparations b) Narcotic drugs c) Cosmetics d) Patented drugs	1	CO2	K1 K2	PO1
xvi	Which authority advises the Central Government on technical matters relating to drugs? a) DTAB b) DCGI c) CDSCO d) NPPA	1	CO2	K1 K2	PO1 PO8
xvii	Schedule M deals with: a) Manufacturing premises and equipment b) List of poisons c) List of permitted colours d) Labelling of cosmetics	1	CO5	K1 K2	PO1 PO8
xviii	A loan license is issued to: a) A pharmacist with no premises b) A manufacturer using another's facility c) A wholesale dealer d) A clinical researcher	1	CO2 CO5	K1 K2	PO8
xix	Which Schedule deals with the list of habit-forming drugs? a) Schedule G b) Schedule H c) Schedule X d) Schedule M	1	CO1 CO2	K1	PO1 PO8
xx	The Rules under the Drugs and Cosmetics Act were framed in a) 1940 b) 1945 c) 1935 d) 1950	1	CO2 CO4	K1 K2	PO1 PO8

CO- Course Outcomes, **KL-** Knowledge Level, **PO** – Program Outcome

CO1	Understand the mechanism of drug action and its relevance in the treatment of different diseases
CO2	Analyze the newer targets of several disease conditions for treatment
CO3	Understand the clinical uses, side effects and contraindications of different drugs.
CO4	Understand the cell communication mechanism
CO5	Acquire knowledge about the newer targets of several disease conditions for treatment
CO6	Apply the basic concepts of bioassay

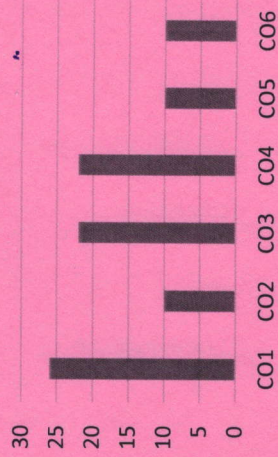
GRAPHICAL REPRESENTATION

Bloom's Level-wise Mark's distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome-wise Mark's distribution



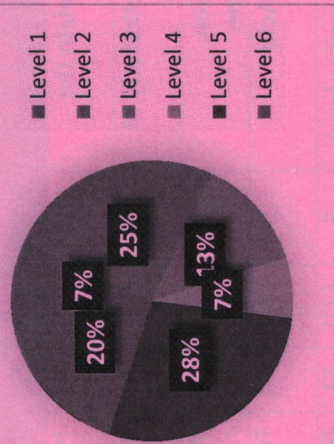
Program	Bachelor of Pharmacy	
Subject Name	Pharmacognosy and Phytochemistry-II	Session Odd, 2025-26
Semester	V	Year Nov, 2025 *
Time: 3 Hour Max. Marks : 75	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Two out of Three of Section B Answer Any Seven out of Nine of Section C Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers. 	
Knowledge Level (KL)	K1 : Remembering	K3 : Applying K5 : Evaluating
	K2 : Understanding	K4 : Analysing K6 : Creating

Q. N1	QUESTIONS	Marks	COs	KL	PO
i	Biological source of Rauwolfia is: a) Rauwolfia serpentina b) Digitalis purpurea c) Catharanthus roseus d) Atropa belladonna	1	CO6	K2	PO2
ii	The main constituent of Mentha oil is: a) Eugenol b) Menthol c) Atropine d) Thymol	1	CO3	K4	PO1
iii	The principal active constituent of Tea is: a) Nicotine b) Caffeine c) Morphine d) Atropine	1	CO1	K2	PO2
iv	The synonym of Belladonna is: a) Deadly nightshade b) Indian snakeroot c) Henbane d) Periwinkle	1	CO6	K1	PO2
v	The main active constituents of Digitalis are: a) Tropane alkaloids b) Cardiac glycosides c) Isoquinoline alkaloids d) Purine alkaloids	1	CO3	K5	PO1
vi	Which part of the plant is used as clove? a) Leaves b) Flower buds c) Bark d) Seeds	1	CO6	K2	PO2
vii	Cinnamon belongs to which family? a) Lauraceae b) Myrtaceae c) Solanaceae d) Rutaceae	1	CO6	K2	PO1

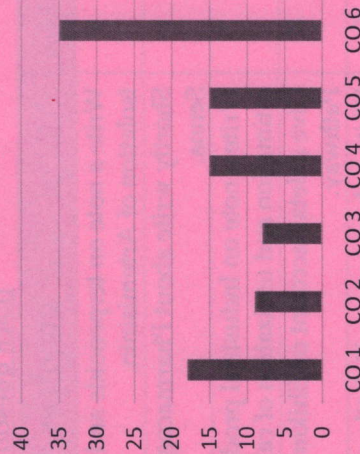
CO1	Apply the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
CO2	Apply the skills to preparation and development of herbal formulation.
CO3	Understand the herbal drug interactions
CO4	Apply isolation and identification of phytoconstituents
CO5	Analyze the various metabolic pathways of plant secondary metabolites.
CO6	Understand the biological source, macroscopical & histological properties, phytochemical constituents, therapeutic uses, and commercial applications of crude drugs.

GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution



Course Outcome Wise Marks Distribution



viii	The chief chemical constituent of Coriander oil is:	1	CO4	K4	PO1
	a) Linalool b) Anethole c) Cinnamaldehyde d) Eugenol				
ix	Ginger belongs to which family?	1	CO6	K1	PO2
	a) Solanaceae b) Zingiberaceae c) Apiaceae d) Lamiaceae				
x	The main purpose of oxidative phosphorylation is to produce:	1	CO5	K5	PO2
	a) NADH b) ATP c) FADH ₂ d) CO ₂				
xi	Asafoetida is also known as:	1	CO6	K2	PO1
	a) Hing b) Jeera c) Katha d) Amba Haldi				
xii	Senna is mainly used as:	1	CO3	K1	PO1
	a) Laxative b) Carminative c) Antiemetic d) Anthelmintic				
xiii	The major bioactive constituent of Turmeric is:	1	CO4	K2	PO2
	a) Curcumin b) Eugenol c) Linalool d) Menthol				
xiv	Biological source of Vinca is:	1	CO6	K1	PO2
	a) Catharanthus roseus b) Digitalis purpurea c) Nerium oleander d) Rauwolfia serpentina				
xv	Taxol is mainly used as:	1	CO2	K3	PO1
	a) Anticancer drug b) Cardiotonic c) Purgative d) Analgesic				
xvi	The therapeutic action of Caffeine is mainly as:	1	CO3	K4	PO2
	a) CNS stimulant b) Cardiotonic c) Purgative d) Analgesic				
xvii	Biological source of Artemisia is:	1	CO6	K5	PO1
	a) Artemisia annua b) Artemisia absinthium c) Artemisia vulgaris d) All of the above				
xviii	The chief active constituents of Aloes are:	1	CO5	K4	PO2
	a) Anthraquinone glycosides b) Alkaloids c) Tannins d) Flavonoids				
xix	Biological source of Opium is:	1	CO6	K5	PO2
	a) Papaver somniferum b) Papaver rhoeas c) Atropa belladonna d) Rauwolfia serpentina				

xx	Colophony belongs to which family?	1	CO6	K2	PO2
	a) Apiaceae b) Pinaceae c) Fabaceae d) Zingiberaceae				
Section B (Answer any TWO out of THREE) – 20 Marks (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Write down the different identification test for Alkaloids. Mention the biological sources, Chemical constituents and Uses of Rauwolfia and Vinca.	10	CO6, CO5	K3, K5	PO2
3	Define extraction. Briefly write about the soxhlation method with neat diagram.	10	CO1, CO2	K5, K6	PO1
4	Write the biological source, cultivation, collection, chemical constituents, uses and microscopic characteristic of Digitalis.	10	CO6	K2, K6	PO2
Section C (Answer any SEVEN out of NINE) – 35 Marks (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Write a note on terpenoids and explain the isolation of Artemisinin.	5	CO4	K4	PO1
6	Shortly write about Pharmacognostic study of Senna.	5	CO6	K2	PO1
7	Write a note on Industrial production, estimation and utilization of caffeine.	5	CO1	K5	PO2
8	Give a detail account on Shikimic Acid Pathway.	5	CO5	K2	PO1
9	Write a short note on Volatile oils, write about biological source, chemical constituent and uses of Tea.	5	CO3	K1	PO2
10	Discuss the isolation and analysis of Curcumin.	5	CO4	K5	PO2
11	Write a short note on chromatography.	5	CO1	K2	PO1
12	Explain the microscopy of Coriander with a neat labelled diagram of TS.	5	CO6	K6	PO2
13	Explain the identification for Atropine.	5	CO4	K3	PO1

CO1	Understand about the Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
CO2	Understand various Indian pharmaceutical Acts and Laws
CO3	Understand regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
CO4	Understand the code of ethics during the pharmaceutical practice
CO5	Understand the concept of Drugs Act, Pharmacy Act, Excise Act.

GRAPHICAL REPRESENTATION

