



ARKA JAIN
University

Jharkhand



[15-05-2025]

END SEM EXAMINATION
School of Health & Allied
Sciences

Program	Bachelor of Pharmacy		
Subject Name	Pharmacology-I	Session	Even, 2024-2025
Semester	IV	Year	May, 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 comes 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

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

Q. N1	QUESTIONS	Marks	COs	KL	PO
i	Which of the following drugs reduces intraocular pressure in glaucoma by decreasing aqueous humor production? a) Latanoprost b) Timolol c) Pilocarpine d) Physostigmine	1	CO4	K2, K1	PO1
ii	What is the mechanism of action of Vesamicol? a) Inhibits acetylcholinesterase b) Blocks vesicular storage of acetylcholine c) Stimulates muscarinic receptors d) Inhibits choline uptake into the neuron	1	CO4	K2, K1	PO3
iii	What is the role of a peripheral decarboxylase inhibitor like Carbidopa in the treatment of Parkinson's disease? a) Enhances dopamine production in the brain b) Prevents dopamine degradation in the brain c) Inhibits peripheral conversion of levodopa to dopamine, increasing its availability in the CNS	1	CO5	K5, K1	PO2
iv	d) Acts as a dopamine receptor agonist Phase II clinical trials are primarily designed to: a) Study the drug in healthy volunteers b) Determine pharmacokinetics c) Evaluate efficacy and side effects	1	CO3	K5	PO2

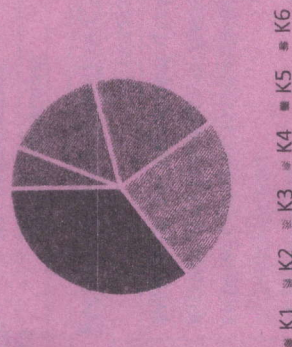
v	Which of the following drugs is a pure opioid antagonist used to reverse opioid overdose? a) Morphine b) Fentanyl c) Naloxone d) Methadone	1	CO5	K2, K1	PO1
vi	In competitive enzyme inhibition a) Km value decreases, Vmax remain unchanged b) Km value increases, Vmax remain unchanged c) Km value increases, Vmax decreased d) Km value decreases, Vmax increased	1	CO2	K1	PO2
vii	How many half-lives does it take for a drug to be considered completely eliminated ($\approx 97\%$) from the body? a) 1-2 half-lives b) 3-4 half-lives c) 4-5 half-lives d) More than 10 half-lives	1	CO1	K1, K3	PO1
viii	Which analeptic drug is used as a respiratory stimulant in cases of drug-induced respiratory depression? a) Levodopa b) Doxapram c) Carbamazepine d) Naloxone	1	CO5	K1, K4	PO1
ix	Which of the following cytokines exerts its action through a transmembrane receptor linked to the JAK-STAT signaling pathway? a) Insulin b) Interleukin-6 (IL-6) c) Thyroid hormone d) Acetylcholine	1	CO2	K2, K3	PO1 0
x	Which of the following skeletal muscle relaxants acts as a depolarizing neuromuscular blocker? a) Atracurium b) Pancuronium c) Rocuronium d) Succinylcholine	1	CO4	K2, K4	PO1
xi	Which of the following is an indirect sympathomimetic drug? a) Adrenaline b) Phenylephrine c) Amphetamine d) Isoproterenol	1	CO4	K1, K2	PO2
xii	Darifenacin primarily act by a) Blocking muscarinic receptors in the detrusor muscle b) Enhancing acetylcholine release in the bladder c) Stimulating beta-adrenergic receptors d) Inhibiting nicotinic receptors at the neuromuscular junction	1	CO4	K1, K2	PO1
xiii	Which of the following is considered a first-line drug for generalized tonic-clonic seizures?	1	CO6	K1, K2	PO2

xiv	a) Ethosuximide c) Phenytoin b) Diazepam d) Lamotrigine Which route provides 100% bioavailability? a) Oral b) Intramuscular c) Intravenous d) Sublingual	1	CO1	K1, K2	PO1
xv	Which of the following antidepressant classes primarily works by inhibiting the reuptake of both serotonin and norepinephrine? a) Selective Serotonin Reuptake Inhibitors (SSRIs) b) Monoamine Oxidase Inhibitors (MAOIs) c) Tricyclic Antidepressants (TCAs) d) Atypical antipsychotics	1	CO2	K1, K2	PO2
xvi	Which of the following enzymes is the rate-limiting step in the synthesis of catecholamines? a) Dopamine β -hydroxylase b) Tyrosine hydroxylase c) DOPA decarboxylase d) Mono amine oxidase	1	CO4	K2, K3	PO2
xvii	Which of the following is a cholinesterase reactivator used in organophosphate poisoning? a) Atropine b) Pralidoxime (2-PAM) c) Neostigmine d) Physostigmine	1	CO4	K2, K3	PO2
xviii	What is the primary mechanism of action of Disulfiram in the treatment of chronic alcoholism? a) Inhibits alcohol dehydrogenase b) Stimulates GABA receptors c) Inhibits aldehyde dehydrogenase d) Acts as a dopamine receptor antagonist	1	CO5	K4, K5	PO2
xix	Which of the following beta-blockers exhibits membrane-stabilizing activity at high concentrations? a) Atenolol b) Propranolol c) Esmolol d) Sotalol	1	CO4	K4, K5	PO1
xx	Which of the following statements about GABA (Gamma-Aminobutyric Acid) is TRUE? a) GABA is an excitatory neurotransmitter acting on NMDA receptors b) GABA acts primarily through GABA-A and GABA-B receptors to inhibit neuronal activity c) GABA is synthesized from glutamine by the enzyme monoamine oxidase d) GABA increases intracellular calcium levels	1	CO5	K4, K5	PO1

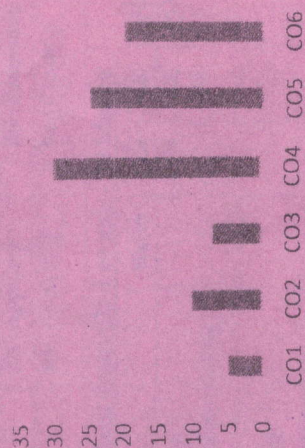
Course Outcomes	CO1	CO2	CO3	CO4	CO5	CO6
Explain the general principles of pharmacology						
Describe the pharmacokinetic, pharmacodynamic, adverse drug reactions and drug interactions						
Explain drug discovery and clinical evaluation of new drugs						
Explain the drugs acting on the peripheral nervous system						
Describe the drugs acting on the central nervous system						
Strengthen the basic knowledge in the field of pharmacology and to impart recent advances in the drugs used for the treatment of various diseases.						

GRAPHICAL REPRESENTATION

Bloom's Level-wise Marks Distribution



Course Outcome Wise Marks Distribution



Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Describe the classification, mechanism of action, and clinical uses of local anesthetic drugs.	10	CO5 CO6	K1, K2, K4	PO1
3	Classify anti-epileptic drugs and explain their mechanisms of action with relevant examples.	10	CO5 CO6	K1, K2, K3	PO2
4	Describe the classification, mechanism of action, and clinical uses of skeletal muscle relaxants.	10	CO4 CO5 CO6	K2, K5, K1	PO1 0
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Explain anticholinesterase poisoning, its mechanism, and management.	5	CO4 CO6	K2, K4	PO1
6	Describe the process of adrenergic neurotransmission, including the synthesis, release, and termination of Nor-adrenaline.	5	CO4	K1, K4	PO2
7	List the drugs used in the treatment of Alzheimer's disease. Describe their mechanisms of action and therapeutic roles.	5	CO5	K3, K5	PO1
8	Explain the pharmacology of lithium.	5	CO5	K1, K3	PO2
9	Explain the different types of combined effects of drugs with suitable examples.	5	CO2	K1, K2	PO2
10	Describe the pharmacological classes of drugs used in the treatment of glaucoma along with their mechanisms of action.	5	CO4	K3, K4	PO4
11	Briefly describe the pharmacological treatment of Parkinson's disease.	5	CO5 CO6	K1, K3, K4	PO7
12	Describe the different phases of clinical trials. Mention the objective and key features of each phase.	5	CO3	K2, K3	PO2
13	What are pre-anesthetic medications? Mention their classification and describe their purposes in anesthesia practice.	5	CO5	K1, K3	PO2



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[10-05-2025]

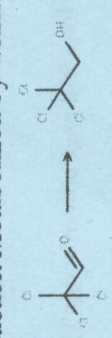
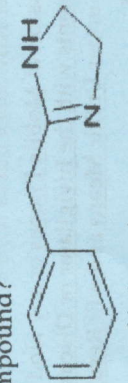
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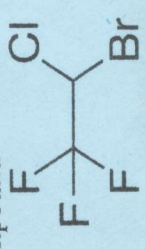
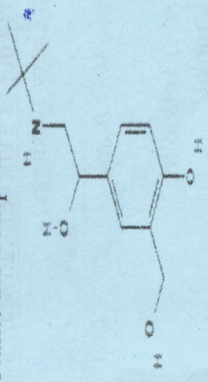
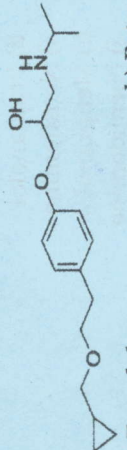
Program	Bachelor of Pharmacy		
Subject Name	Medicinal Chemistry I	Session	Even, 2024-2025
Semester	IV	Year	May, 2025*
• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any <i>Two</i> out of <i>Three</i> of Section B • Answer Any <i>Seven</i> out of <i>Nine</i> of Section C • Possession of <u>Mobile Phones</u> or any kind of <u>Written Material</u>, <u>Arguments with the Invigilator</u> or <u>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	K3 : Applying	K5 : Evaluating
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Time: 3 Hour
Max. Marks : 75

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

Q. N I	QUESTIONS	Marks	COs	KL	PO
i	Name of the yield product? a) Salicylic acid only b) CH₃COOH c) Succinic acid d) Salicylic acid and CH₃COOH	1	CO4	K2, K1	PO9
ii	Alkenes and aromatic groups can be metabolised to diols. Which enzymes are involved? a) Cytochrome P450 enzymes b) Epoxide hydrolase c) Both of the above d) Neither of the above	1	CO2	K2, K1	PO1
iii	Name the Compound?	1	CO4	K5, K1	PO2

iv	a) Pyridostigmine b) Tacrine Hydrochloride c) Ambenonium chloride d) Physostigmine		1	CO2 CO4	K1, K4	PO2
v	a) Tolazoline b) Atropine c) Prazosin d) Ephedrine		1	CO3	K1, K6	PO2
vi	Name the reaction Metabolized by which reaction? a) Hydroxylation reaction b) Oxidation of benzylic carbon reaction c) Hydroxylation of Hetroatom reaction d) Aromatic Hydroxylation reaction		1	CO2 CO4	K1, K4	PO2
vii	UDPGA means.... a) Urane diphospho -a- D glucuronic acid b) Uridine diphospho-D glucuronic acid c) Uridine diphospho -a- D glucuronic acid d) Uric diphospho -a- D glucuronic acid		1	CO1	K1, K3	PO1
viii	Identification of a new chemical entity as a potential therapeutic agent (From Hit to Lead) is known as a) Drug discovery b) Drug development c) Both of above d) None of above		1	CO1	K1, K4	PO1
ix	What is the site of first-pass metabolism before molecules reach systemic circulation? a) Kidney b) Throat c) Liver d) Intestine		1	CO2	K2, K3	PO1 0

x	Name the Enzyme involve in this Reaction? 	1	CO3	K1, K6	PO2
xi	a) Decarboxylase b) Tyrosine Hydroxylase c) Tyrosine Hydroxylase d) None of the above (+) Warfarin is _____ times more potent than (-) Warfarin.A. a) 2 b) 3 c) 4 d) 5	1	CO1	K1, K2	PO2
xii	Ephedrine is a) Direct Acting b) Indirect acting c) Mixed Acting d) None of the Above	1	CO2	K1, K2	PO1
xiii	Name the compound 	1	CO4	K1, K2	PO2
xiv	a) Enflurane b) halothane c) Isoflurane d) None of the above Name the Compound? 	1	CO3	K1, K4	PO1
xv	a) Clonidine b) Bitolterol c) Terbutaline d) Albuterol Name the compound? 	1	CO2 CO4	K1, K2	PO2
xvi	a) Esmolol b) Betaxolol c) Metoprolol d) Atenolol Which of the following reaction is not Phase-I metabolic transformation? a) Reduction of ketone b) conjugation of alcohol c) Mono amine oxidase d) None of the Above	1	CO2	K2, K3	PO2

xvii	Name the Beta Blocker?		1	CO4	K1, K3, K4	PO2
xviii	a) Propranolol c) Atenolol Replacement of Catechol by Resorcinol increase _____ selectivity? a) α c) α_1 Direct acting Cholinergic drugs known as _____ a) Cholinestrases b) Anticholinestrases c) Both d) Chlinolytic agents	b) Metoprolol d) none of the above	1	CO4	K1, K6	PO2
xix	a) Cholinestrases b) Anticholinestrases c) Both d) Chlinolytic agents		1	CO4 CO1	K4, K5	PO1
xx	Name the Enzyme Involve in this Reaction? a) Transferase c) Esterase	b) Hydroxylase d) none of the above	1	CO4	K1, K6	PO2
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 IUPAC, Synthesis, M.O.A and uses of the following Drugs: a) Phenylephrine b) Neostigmine c) Tolazoline d) Ipratropium bromide e) Propranolol?	10	CO4	K3, K4	PO9	
3	Draw the structures and IUPAC name of following Compounds a) Ephedrine c) Tolazoline e) Carbachol g) ipratropium bromide i) Phenytoin b) Salbutamol d) Propranolol f) Neostigmine h) Metipranolol j) Pentalomine	10	CO3 CO4	K3, K4	PO1 0	
4	Define Biotransformation, Explain properties of drug metabolism along with examples?	10	CO1 CO2	K1, K2	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	Write a short note on biosynthesis and catabolism of Acetylcholine?	5	CO1 CO4	K4, K5	PO2	

6	Draw the structure and IUPAC name of Naphzoline, Phenoxybenzamine, Atenolol, Methacoline, Edrophonium Chloride?	5	CO4	K3, K4	PO10
7	Write a short note on SAR of Parasympathomimetic Drug?	5	CO3	K3, K4	PO9
8	Discuss the biosynthesis and catabolism of Catecholamines?	5	CO1 CO4	K1, K6	PO2
9	Write a short note on SAR of beta blockers?	5	CO3	K3	PO1
10	Write down cholinergic receptors and their distribution with their location and function?	5	CO1 CO3	K3, K4	PO1
11	Draw the structure and uses of Hydroxyamphetamine, Prazosin, Dicyclomine hydrochloride, Bethanechol and Pilocarpine?	5	CO4	K3, K4	PO10
12	Write down the Synthesis, Moa and uses of Salbutamol & Carbachol?	5	CO2 CO4	K3, K4	PO9
13	Write about physicochemical properties in relation to biological action of following:- (i) Bioisosterism (ii) Optical and Geometrical isomerism	5	CO2 CO1	K3, K4	PO10

CO- Course Outcomes,

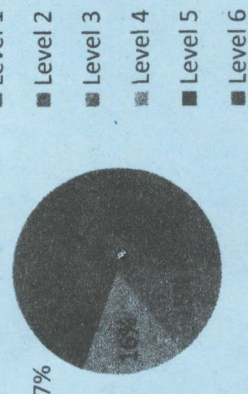
KL- Knowledge Level,

PO – Program Outcome

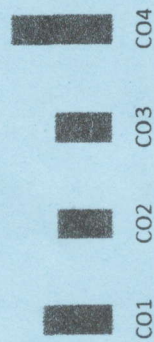
Course Outcomes	CO1	understand the chemistry of drugs with respect to their pharmacological activity
	CO2	understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
	CO3	know the Structural Activity Relationship (SAR) of different class of drugs
	CO4	write the chemical synthesis of some drugs
GRAPHICAL REPRESENTATION		

Bloom's level wise marks distribution

Course outcomewise .
marks distribution



60
40
20
0



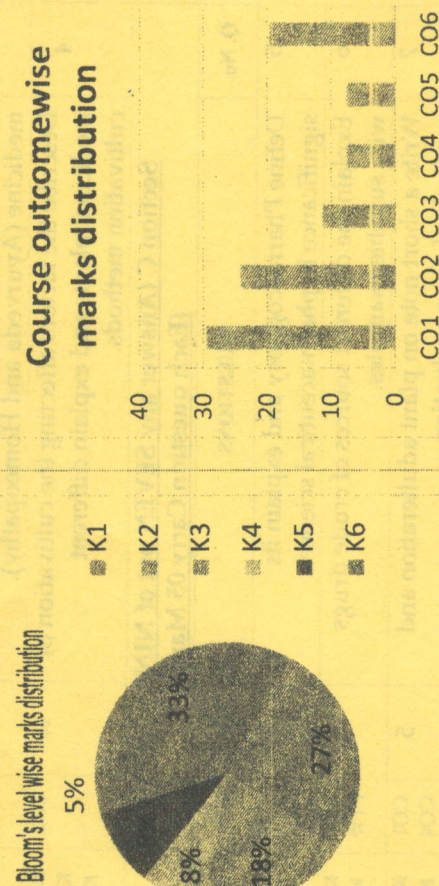
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Section A (Each question Carry 01 Mark from Q1-i to xx) – 20 Marks					
Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Who investigated medicinal value of several herbs and written a book – “Pen T-Sao” or native herbal A) Dioscorides B) Aristotile C) Hippocrates D) Shen Nung	1	CO1	K2, K1	PO1
ii	The main active constituent of Digitalis is: A) Reserpine B) Digoxin C) Quinine D) Vincristine	1	CO6	K2, K1	PO1
iii	Alkaloids are mainly derived from: A) Carbohydrates B) Lipids C) Amino acids D) Proteins	1	CO6	K1	PO2
iv	The test used to detect saponins in crude drugs is: A) Keller-Kiliani test B) Foam test C) Borntrager’s test D) Dragendorff’s test	1	CO6	K2	PO1
v	Dragendorff’s reagent is used to test for: A) Flavonoids B) Alkaloids C) Tannins D) Glycosides	1	CO6	K2, K1	PO1
vi	Which of the following alkaloids is used as an anticancer agent? A) Vinblastine B) Morphine C) Atropine D) Quinine	1	CO6	K1	PO2

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

GRAPHICAL REPRESENTATION



vii	Menthol is obtained from: A) Clove B) Spearmint C) Eucalyptus D) Peppermint	1	CO2 CO6	K1, K3	PO1
viii	The Keller-Kiliani test is used to detect: A) Cardiac glycosides B) Alkaloids C) Flavonoids D) Tannins	1	CO2	K1, K4	PO1
ix	A drug classified based on its therapeutic use is called: A) Morphological classification B) Chemical classification C) Pharmacological classification D) Taxonomical classification	1	CO1	K2, K3	PO2
x	Pharmacognosy plays a significant role in which branch of medicine? A) Allopathy B) Ayurveda C) Homeopathy D) All of the above	1	CO1	K2, K4	PO1
xi	The drug Digitalis is classified under which morphological category? A) Root B) Leaf C) Bark D) Flower	1	CO1 CO6	K1, K2	PO2
xii	Alkaloids are best classified under: A) Morphological classification B) Chemical classification C) Pharmacological classification D) Geographical classification	1	CO6	K1, K2	PO1
xiii	Which of the following is an example of a crude drug classified under the 'Rhizome' category? A) Ginger B) Clove C) Cardamom D) Neem	1	CO2	K1, K2	PO2
xiv	The main function of secondary metabolites in plants is: A) Photosynthesis B) Growth and development C) Defense against herbivores and pathogens D) Water absorption	1	CO6	K1, K2	PO1
xv	Cardiac glycosides are used in the treatment of: A) Diabetes B) Hypertension C) Heart failure D) Fever	1	CO6	K1, K2	PO2
xvi	The best time to collect leaves for medicinal use is:	1	CO2	K2, K3	PO1

xvii	A) During the rainy season B) Before flowering C) After fruiting D) During winter	1	CO2	K2, K3	PO2
xviii	Which of the following drugs is obtained from a fungal source? A) Penicillin B) Quinine C) Atropine D) Ephedrine	1	CO2	K1	PO1
xix	The primary method of drying delicate flowers is: A) Sun drying B) Shade drying C) Vacuum drying D) Oven drying	1	CO6	K1	PO1
xx	The main active constituents responsible for the medicinal properties of plants are called: A) Primary metabolites B) Enzymes C) Secondary metabolites D) Hormones	1	CO2	K2	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 crude drugs based on different classification systems with suitable examples.	10	CO1	K1, K2, K4	PO1
3	Discuss in detail the significance of Pharmacognosy in different systems of medicine (Ayurveda and Homeopathy).	10	CO1 CO3	K1, K2, K3	PO2
4	Describe the factors affecting the cultivation of medicinal plants and explain different cultivation methods.	10	CO2	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 Pharmacognosy and explain its significance in pharmaceutical sciences.	5	CO1 CO3	K2, K4	PO2
6	Explain the different sources of crude drugs with suitable examples.	5	CO1 CO2	K1, K6	PO1
7	Write a short note on plant adulteration and methods of drug evaluation.	5	CO1 CO4	K3, K5	PO1
8	Define plant tissue culture and explain its importance in Pharmacognosy.	5	CO5	K1	PO2

 ARKA JAIN University Jharkhand			END SEM EXAMINATION School of Health & Allied Sciences	[13-05-2025]
Program	Bachelor of Pharmacy			
Subject Name	Physical Pharmaceutics-II			Session
Semester	IV		Year	Even, 2024-2025
	- Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - 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 Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers</u>.			May, 2025
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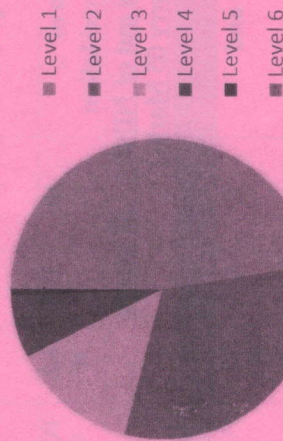
Section A (Each question Carry 01 Mark from Q1-i to xx) – 20 Marks					
Q. N1	QUESTIONS	Marks	COs	KL	PO
i	On commercial scale, emulsions are prepared by - a) Centrifugation b) Dialysis c) Freezing d) Homogenization	1	CO4	K2, K1	PO9
ii	Creaming is a..... process . a) Reversible b) Irreversible c) A & B d) Unpredicted	1	CO4	K3	PO1
iii	The true density of talc is 2.7 g/cc, the bulk density (g/cc) of talc will be - a) Equal to 2.7 b) Greater than 2 c) Less than 2.7 d) Unrelated	1	CO5	K5	PO2
iv	The term Micromeritics was given by - a) J.M. Dalla Valle b) James Kelvin c) William Procter d) Mahadeva Lai Schroff	1	CO5	K1	PO2
v	Field of science dealing with study of small particles is known as - a) Rheology b) Physiology c) Micromeritics d) Pedagogy	1	CO5	K1	PO1
vi	Which of the following is identification test for emulsion ? a) Dilution test b) Cobalt Chloride Test c) Conductivity Test d) All of the above	1	CO4	K4	PO2

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

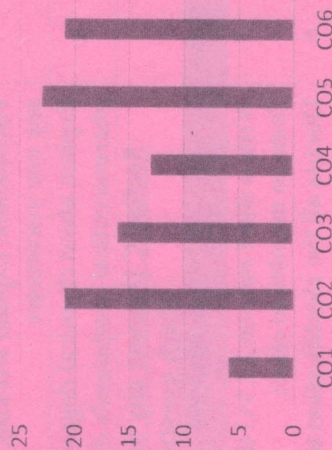
CO1	Understand the concept of colloidal dispersion systems.
CO2	Illustrate fundamentals and pharmaceutical applications of rheology and deformation of solids.
CO3	Understand the concept of formulation and stabilization of suspension
CO4	Understand the concept of formulation and stabilization of emulsions
CO5	Have basic understanding of micromeritics and its application in pharmacy
CO6	Analyze the reaction kinetics and chemical stability of various drug products

GRAPHICAL REPRESENTATION

Bloom's Level Wise Marks Distribution



Course Outcomewise Marks Distribution



vii	Centipoises is equal to- a) 0.01 poise b) 10 poise c) 100 poise d) 0.1 poise	1	CO4	K4	PO1
viii	High angle of repose of the powder indicates: a) Bulk density b) Roughness c) Porosity d) Smoothness	1	CO5	K4	PO1
ix	Thixotropy is- a) Gel- sol - gel transformation b) Sol- gel- sol transformation c) Both a and b d) None	1	CO2	K1	PO10
x	Which one of the following is colloidal drug delivery system? a) Liposomes b) Niosomes c) Nanoparticles d) All of them	1	CO1	K1	PO1
xi	Angle of repose for excellent flow powder is- a) 31-35 b) 25-30 c) 36-40 d) 56-65	1	CO5	K1	PO2
xii	The HLB range of a solubilizing agent is - a) 3 to 6 b) 7 to 12 c) 13 to 14 d) More than 16	1	CO4	K1	PO1
xiii	Which one of the following method is used to estimate particle sizes- a) Optical microscopy b) Sieving method c) Sedimentation method d) All of them	1	CO5	K1	PO2
xiv	The cracking & phase separation problem is associated with- a) Tablet b) Capsule c) Emulsion d) Syrup	1	CO4	K1, K2	PO1
xv	Tyndall effect is the- a) Optical properties of colloids b) Mechanical properties of colloids c) Electrical properties of colloids d) None of the above	1	CO2	K3	PO2
xvi	Newtonian fluids include- a) Water b) Glycerine c) Chloroform d) All of them	1	CO2	K1	PO2
xvii	The w/o type emulsion remains stable when diluted with- a) Oil b) Water c) Tween d) All of them	1	CO4	K3, K4	PO2
xviii	Shear stress is defined as- a) Force per unit area	1	CO2	K1	PO2

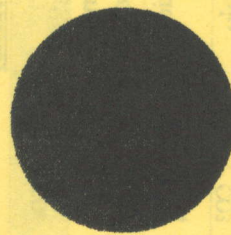
xix	b) Force per unit length c) Change in the velocity with an infinitesimal change in distance d) All of them	1	CO5	K1	PO1
xx	% compressibility for excellent flow powder is- a) 5-15 b) 16-18 c) 22-35 d) 36-40 The basic unit of stress is- a) Pascal b) N/ m ² c) Both a & b d) None	1	CO2	K1	PO1
Section B (Answer any TWO out of THREE) - 20 Marks (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain in detail about the methods for determining particle size.	10	CO5	K1	PO1
3	Define viscosity. Classify different types of viscometers. Explain working principle of any one viscometer.	10	CO2 CO3	K1, K2	PO2
4	Explain about chemical degradation of pharmaceutical compounds due to oxidation.	10	CO6	K2, K3	PO10
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 short note on DLVO theory and Donnan membrane effect.	5	CO1	K1, K2	PO1
6	Discuss all the identification tests for emulsions.	5	CO4	K3	PO2
7	What is gold number? Discuss purification of colloids.	5	CO3	K1	PO1
8	What are the derived properties of powders? Explain any one.	5	CO5	K1, K2	PO2
9	Derive an equation for rate constant, half-life and shelf-life for first order reaction kinetics.	5	CO6	K4	PO2
10	Differentiate between colloidal, coarse and molecular dispersion.	5	CO1 CO3	K2	PO4
11	Briefly discuss about optical and kinetic properties of colloidal dispersion.	5	CO1	K1	PO7
12	Discuss the principle, construction & working of falling sphere viscometer.	5	CO2	K1, K2	PO2
13	Write a short note on accelerated stability study of drugs.	5	CO6	K1, K2	PO2

10	Explain Diel's Alder reaction of Furan with a suitable example (only reaction.)	5	CO3 CO4	K1 K3	PO1 PO9
11	Mention any three methods of synthesis of Acridine along with its medicinal uses (any two.)	5	CO3 CO5	K1 K2	PO1 PO2
12	Explain cis- and trans- isomerism with a suitable example.	5	CO1 CO2	K1 K2	PO9
13	Outline the Robinson-Gabriel synthesis of Oxazole and mention any two medicinal uses.	5	CO3 CO5	K1 K2 K3	PO2 PO3 PO9

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

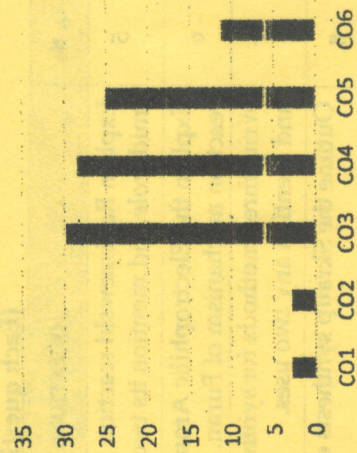
Course Outcomes	CO1	CO2	CO3	CO4	CO5	CO6
	Learn stereo-isomerism and racemic modification and resolution of racemic mixture.	Understand the geometrical isomerism and conformations, stereoselective and stereo specific reaction mechanism	Understand the nomenclature and numbering of five, six membered heterocyclic compounds with fused heterocyclic structures	Understand the physical and chemical properties of five, six membered heterocyclic and fused ring compounds	Learn about the drugs and their therapeutic usage, derived from heterocyclic compounds	Describe detailed mechanisms for common naming reactions.
GRAPHICAL REPRESENTATION						

Bloom's level wise marks distribution



Level 1 ■ Level 2 ■ Level 3
Level 4 ■ Level 5 ■ Level 6

Course Outcome wise Marks Distribution



 ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY	[08-05-2025] END SEM EXAMINATION School of Health & Allied Sciences	
Program	Bachelor of Pharmacy			
Subject Name	Pharmaceutical Organic Chemistry-III		Session	Even, 2024-2025
Semester	IV		Year	May, 2025
Time: 3 Hour Max. Marks : 75	• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • 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</u> with the Invigilator or <u>Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u>			
	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. N1	QUESTIONS	Marks	COs	KL	PO
i	Which heterocyclic compound is present in the structure of Nitrofurantoin which is used to treat UTI? a) Furan b) Pyrrole c) Thiophene d) None of these	1	CO5	K1	PO1
ii	Beckmann's Rearrangement is seen with ketoximes reacting with:- a) P_2O_5 b) H_3PO_4 c) $POCl_3$ d) All of these	1	CO6	K2	PO1
iii	Reagent for Clemmensen's Reduction Reaction of acetaldehyde is:- a) Zinc amalgam + Conc. HCl b) Zinc amalgam + dil. HCl c) Conc. H_2SO_4 d) Conc. HCl	1	CO6	K1	PO2
iv	Which is the wrong statement for Birch reduction a) Sodium in ammonia with alcohol act as catalyst b) Lithium in Ammonia with alcohol act as catalyst c) Magnesium in Ammonia with alcohol act as catalyst d) 1,4-reduction in aromatic ring	1	CO6	K1	PO1

v	Two moles of Acetylene react with Ammonia produces a) Pyrrolidine c) Imidazole	1	CO4	K2	PO1
vi	Main precursor of Paal-Knorr Synthesis is:- a) Hexane 2,5-dione c) Hexane 1,6-dione	1	CO4	K1	PO2
vii	Articaine which is a local anaesthetic contain ring. a) Pyrrole c) Furan	1	CO5	K1	PO1
viii	Reagent for VILSMAYER'S reaction is:- a) DMSO c) NBS	1	CO4	K1	PO1
ix	Gomberg reaction of furan with aryl diazonium halide gives:- a) 2-aryl furan c) Furoic acid	1	CO4	K2	PO1
x	Iodination of Pyrrole gives _____ iodo-derivative of Pyrrole:- a) mono- c) tri-	1	CO4	K1	PO1
xi	Oxazole contains: a) O, N c) O, O	1	CO3	K1	PO1
xii	Quinoline nucleus is used found in: a) Anti-malarial c) Anti-TB	1	CO3	K2	PO1
xiii	Tacrine contains: a) Acridine c) Both (a) and (b)	1	CO5	K2	PO2
xiv	Pyrrole contains which atom in the five membered ring? a) N c) N,S	1	CO3	K1	PO1
xv	Pyridine is: a) acidic c) amphoteric	1	CO3	K1	PO2
xvi	Imidazole contains nitrogen in which position in a five membered ring? a) 1,3 c) 1,4	1	CO3	K1	PO2

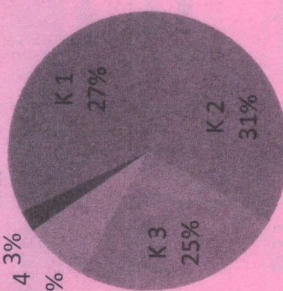
xvii	Phenazone contains: a) Imidazole c) Oxazole	1	CO5	K2	PO2
xviii	C-atom containing all different substituents is called: a) Chiral c) Aromatic	1	CO1 CO2	K1	PO2
xix	Cis- and trans- isomerism belongs to the class of which isomerism? a) Optical c) Both of these	1	CO1 CO2	K1	PO1
xx	Furan contains which atom in the five membered ring? a) N c) N,S	1	CO4	K2	PO1
Section B (Answer any TWO out of THREE) - 20 Marks (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Outline the synthesis, chemical properties and medicinal uses of a five membered heterocyclic ring containing Nitrogen.	10	CO3 CO4 CO5	K1 K2 K6	PO1 PO2 PO9
3	Write the reaction, mechanism and application of reaction of aldehyde with zinc-amalgam and conc. HCl and also for the reaction involving aldehyde with hydrazine followed by hydrolysis with ethylene glycol and KOH.	10	CO6	K1 K2 K3	PO1 PO2 PO9
4	Write different methods of preparation, chemical properties and uses of five membered heterocyclic ring containing Oxygen.	10	CO3 CO4 CO5	K1 K2 K3 K6	PO1 PO2 PO3 PO9
Section C (Answer any SEVEN out of NINE) - 35 Marks (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Explain Radziszewski reaction for preparation of Imidazole and mention its two medicinal uses.	5	CO3 CO5	K1 K2 K3	PO1 PO2 PO9
6	Explain the Electrophilic Aromatic Substitution reaction mechanism of Furan.	5	CO3 CO4	K1 K2	PO1 0
7	Write three methods for synthesizing Pyrazole and mention any two uses.	5	CO3 CO5	K1 K2 K3	PO1 PO3 PO9
8	Outline the Skraup synthesis of Quinoline.	5	CO4	K2 K6	PO2 PO3
9	Explain Birch Reduction with respect to its chemical reaction, mechanism and application.	5	CO6	K1 K2	PO1 PO2

CO1	Apply the knowledge of mathematics and computing fundamentals to pharmaceutical applications for any given requirement
CO2	Discuss about computers (I/O devices), binary conversion, applications of computers in pharmacy.
CO3	Describe Concept of common languages in computers, algorithm flow chart, solution of problems based on biostatistics and other simple problems of pharmaceutical interest.
CO4	Explain MS Word, MS Excel, MS Power Point.
CO5	Explain Concept of ISIS, RASMOL, CHEMSKETCH
CO6	Know the web-based tools for pharmacy practice. Apply the knowledge to design and develop digital tools for pharmaceutical applications.

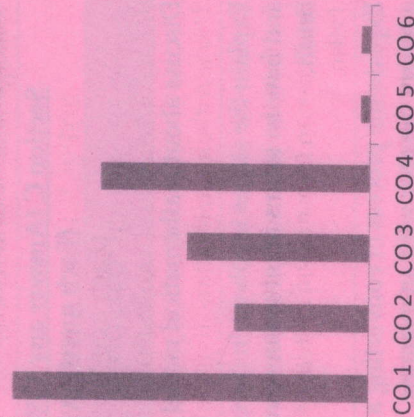
GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution

K 4 7%
K 5 3%
K 6 7%



Course Outcome Wise Marks Distribution



ARKA JAIN University
Jharkhand



[06-05-2025]
END SEM EXAMINATION
School of Health & Allied Sciences

Program	Bachelor of Pharmacy		
Subject Name	Computer Applications in Pharmacy	Session	Even, 2024-2025
Semester	IV	Year	May, 2025
Time: 2 Hour Max. Marks : 50	- Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Two out of Four of Section C - Possession of <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u>		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 01 Marks from Q1-i to x) – 10 Marks

Q.N	QUESTIONS	Marks	COs	KL
i	Find the 1s complement of 1010 A. 1011 B. 1010 C. 1111 D. 0101	01	CO2	K1
ii	Convert the decimal number 25 to its binary equivalent. A. 11001 B. 11101 C. 10010 D. 10010	01	CO2	K2
iii	What is the main advantage of digital storage over physical storage in pharmacies? A. Requires more space B. Slower retrieval time C. More efficient and secure D. Needs regular paper maintenance	01	CO6	K2
iv	Why is QSAR important in drug design? A. It ensures faster drug approval B. It predicts drug interactions without testing C. It relates a drug's structure to its biological activity	01	CO1	K2

	using mathematical models D. It measures drug taste and texture				
v	Identify the correct match of QSAR descriptors with their definitions: A. π - Steric effects B. σ - Electronic effects C. Es - Lipophilicity D. MR - Size and shape	01	CO1	K2	
vi	What is Computer? A. Electrical machine B. Electronic machine C. Producing electrical signal D. Counting machine	01	CO2	K1	
vii	Convert the following Binary numbers 1111 into Decimal number system. (1111) ₂ = (?) ₁₀ A. 12 B. 13 C. 14 D. 15	01	CO2	K2	
viii	Find out the decimal equivalent of the following (A3B) H: (A3B) H = (?) ₁₀ A. (2618) ₁₀ B. (2619) ₁₀ C. (2650) ₁₀ D. None of these	01	CO2	K3	
ix	Which of the following techniques is not explicitly mentioned as part of bioinformatics methods in the presentation? A. Data mining B. Machine learning C. Pattern recognition D. DNA cloning	01	CO6	K4	
x	Find the 2s complement of 11001011 A. 00110101 B. 10110011 C. 11101101 D. None of these	01	CO2	K1	

Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 5 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	
2	Discuss about the use of computer in lab diagnostic system.	05	CO2	K3	
3	What is a questionnaire? Explain the basic rules for constructing questionnaire items.	05	CO3*	K2	
4	List the steps involved in the Bioinformatics Data Flow Life Cycle.	05	CO6	K2	
5	What is an Electronic Prescription? What are the benefits of it?	05	CO6	K3	
6	What is the need of XML?	05	CO6	K2	
7	List the different type of Laboratory Information Management System (LIMS).	05	CO6	K1	
Section C (Answer any TWO out of FOUR) - 20 Marks (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	
8	Discuss about mathematical model for drug design.	10	CO1	K4	
9	Explain the stages involved in developing software and how an information system evolves from start to finish.	10	CO6	K4	
10	Explain the process of converting a decimal number to a binary number with an example.	10	CO2	K3	
11	What is QSAR? Discuss the Hansch equation used in QSAR and explain the significance of each parameter involved with the example of Ciprofloxacin.	10	CO1	K4	