

8	Explain about the standard deviation with example.	5	CO6	K1,K5,K6	PO9
9	Write about surface response methodology.	5	CO5	K1,K2,K3	PO2
10	What is clinical trial? Describe different phases of clinical trial	5	CO4	K3,K4	PO4
11	What is non parametric test? Explain about any one of the non-parametric tests.	5	CO3	K1,K3,K4	PO7
12	What is a designed experiment? Outline the process involved in experimental design.	5	CO4	K6,K2,K3	PO2
13	What is hypothesis? Shortly write about different types of hypothesis.	5	CO3	K1,K3	PO2

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

Course Outcomes	CO1	Understand basic needs of Statistics and Biostatistics. Learn concept of Frequency distribution, Measures of central tendency, Measures of dispersion and Correlation
	CO2	Learn basics of Regression, Parametric test and probability distribution with examples
	CO3	Learn the basics of Non-Parametric tests with examples. Learn the application of biostatistics for assessing the pharmaceutical experimental data by Curve fitting. Understand the basic need for research; protocol preparation, Experimental Design Technique, plagiarism and representation of data
	CO4	Learn basics of Blocking design and Hypothesis testing in Simple and Multiple regression models.
	CO5	Learn the confounding system for Two-level factorial design and Advantage of factorial design. Learn the basics of Response Surface methodology
	CO6	Understand the applications of Biostatistics in Pharmacy. Appreciate statistical techniques in solving the problems

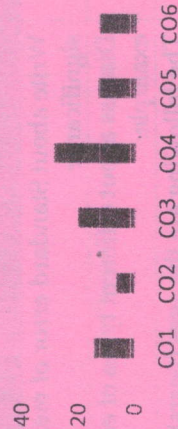
GRAPHICAL REPRESENTATION

Blooms Taxonomy Marks Wise Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course outcome-wise marks distribution



ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY	END SEM EXAMINATION School of Health & Allied Sciences		[06-05-2025]
Program	Bachelor of Pharmacy			Session	Even, 2024-2025,
Subject Name	Biostatistics and Research Methodology – Theory			Year	May, 2025
Semester	VIII				
• 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, Arguments with the Invigilator or Discussing with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers.</u>					
Time: 3 Hour Max. Marks : 75					
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.N	QUESTIONS	Marks	COs	KL	PO
i	Standard deviation is calculated based on (a) Median (b) Mean (c) Mode (d) None of these	1	CO1	K2, K1	PO1
ii	The mean of 15 numbers is 15, if the two numbers are 18 and 12 are excluded then mean of remaining numbers be (a) 15 (b) 10 (c) 25 (d) None of these	1	CO1	K5	PO9
iii	In which of the following average grouping method is used? (a) Mean (b) Median (c) Mode (d) None of these	1	CO1	K5, K1	PO2
iv	In perfect Correlation, coefficient of correlation (r) is (a) +1 (b) 0 (c) -1 (d) None of these	1	CO2	K4	PO2
v	What is the probability of drawing a card either of diamond or club when drawn randomly? (a) 13/52 (b) 1/2 (c) 1/4 (d) 13/24	1	CO3	K4, K6	PO9
vi	The limit of Karl Pearson's correlation coefficient is (a) +1 (b) +2 (c) +3 (d) None of these	1	CO1	K1, K4	PO2

vii	The Coefficient of regression line y on x is (a) b_{xy} (b) b_{yx} (c) b_{yy} (d) b_{xx}	1	CO4	K1, K3	PO2
viii	Which of the following is a measure of variation? (a) Standard Deviation (b) Midrange (c) Mode (d) Median	1	CO1	K1	PO1
ix	Two variables deviate in opposite directions is called (a) Positive Correlation (b) Ideal Correlation (c) Inverse Correlation (d) Moderate Positive	1	CO2	K1	PO1 0
x	Standard deviation (a) Is the square root of variance (b) Is measured using the unit of the variable (c) Is measured using the squared unit of the variable (d) Has values generally comparable with the average value	1	CO2	K1, K2	PO1
xi	The Student's t test is (a) A Parametric Test (b) A Nonparametric Test (c) A Test For Comparing Averages (d) A Test For Comparing Variances	1	CO3	K1, K2	PO2
xii	Research is (a) Repeated Search (b) Finding solution to problem (c) Working in a scientific way to search for truth of any problem (d) Doing literature	1	CO6	K1, K2	PO9
xiii	If the number of values in a data set is even, and the numbers are ordered, then (a) The median cannot be found (b) The median is the average of the two middle numbers (c) The median, mode and mean are equal (d) None	1	CO1	K4, K6	PO1 0
xiv	The regression lines help to find the ____ (a) Average of x and y. (b) Average of x only. (c) Average of y only. (d) The median of x and y	1	CO4	K1, K4	PO1
xv	The spearman rank correlation coefficient is a ____ measure of rank correlation. (a) Parametric (b) Non-parametric (c) Linear (d) Non-linear	1	CO1	K1, K2	PO2

xvi	When the sample size n is less than 30 it is called (a) Small sample test. (b) Large sample test. (c) ANOVA. (d) None of these	1	CO3	K2, K3	PO2
xvii	The hypothesis is true but our test rejects it. It is known as ____ (a) Type I error. (b) Type II error. (c) Wrong decision. (d) None of the above	1	CO4	K2, K3	PO2
xviii	The regression equation of x on y is expressed as ____ (a) $y=a+b$. (b) $y=ab$. (c) $y=a+bx$. (d) $y = a/bx$	1	CO4	K2, K3	PO2
xix	____ curve should begin and end at the baseline. (a) Ogives. (b) Frequency. (c) Histogram. (d) None of the above	1	CO3	K1, K3	PO1
xx	Two level factorial experiments are factorial experiments in which each factor is investigated at ____ levels (a) single (b) two (c) multiple (d) three	1	CO5	K4, K6	PO1
Section B (Answer any TWO out of THREE) – 20 Marks (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Write in details about different types of Experimental design.	10	CO5	K1, K2, K4	PO1
3	Define Sampling. Explain different types of Sampling.	10	CO4	K1, K2	PO9
4	Distinguish between one way and two ways ANOVA. Explain the steps of performing ANOVA with example.	10	CO3 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	Write about Standard error of mean and its significance	5	CO1	K2, K4	PO1
6	Discuss about different types of errors with example.	5	CO1 CO2	K1, K6	PO2
7	The following are the ages (years) of 10 children admitted in a hospital on a particular day. Compute the mean and standard deviation of ages. 10, 3, 8, 7, 11, 2, 1, 5, 14, 9	5	CO6	K3, K5, K6	PO9

7	Write a note on social and cultural factors in health and diseases.	5	CO1, CO2	K1, K2	PO1
8	Define Urbanization and Poverty.	5	CO1	K1, K2	PO1
9	Write a note on National Leprosy Control Programme.	5	CO2, CO3	K1, K3	PO2, PO3
10	Write a short note on Pulse Polio Programme.	5	CO2, CO4	K3, K4	PO4
11	Write short note on Dengue, Hypertension and Lymphatic Filariasis.	5	CO2, CO3	K1, K3, K4	PO1, PO2
12	Explain Universal Immunization Programme.	5	CO4, CO6	K2, K3, K4	PO2
13	Explain Malnutrition and its prevention.	5	CO1, CO2	K1, K2, K3	PO2

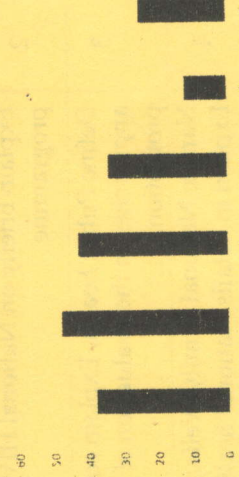
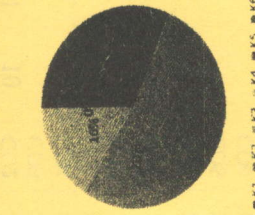
CO- Course Outcomes, KL- Knowledge Level, PO - Program Outcome

Course Outcomes	CO1	Acquire high consciousness/ realization of current issues related to health
	CO2	Get knowledge about pharmaceutical problems within the country and worldwide
	CO3	Understand about various preventive medicines
	CO4	Have a critical way of thinking based on current healthcare development
	CO5	Evaluate alternative ways of solving problems related to health and pharmaceutical issues
	CO6	Design a better health care service system

GRAPHICAL REPRESENTATION

Bloom's Level Wise Marks Distribution

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	Session	Even, 2024-2025
Subject Name	Social and Preventive Pharmacy-Theory	Year	May, 2025
Semester	VIII		
	- 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.		
	*Time: 3 Hour Max. Marks : 75		
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 of the following diseases is caused by the deficiency of niacin? a) Scurvy b) Rickets c) Pellagra d) Pernicious anemia	1	CO1	K2, K1	PO1, PO0
ii	The leading causes of poor health globally is. a) Poverty b) Smoking c) Sanitation d) cardiovascular disease	1	CO2, CO3	K1, K2	PO1, PO2
iii	What is the full frame of SARS? a) Severe acute respiratory syndrome b) Severe acute respiratory symptoms c) Severe actual respiratory symptom d) Serious acute respiratory syndrome	1	CO2, CO3	K1, K2	PO2
iv	Biggest achievement of immunization program is the eradication of a) Chickenpox b) Smallpox c) Tetanus d) TB	1	CO2, CO4	K1, K2	PO2
v	Which of the following is the activity of the family welfare program? a) Malnutrition program b) Child marriage c) One child one nation policy	1	CO3	K2, K1	PO1

vi	c) IUD program What does DPT vaccine protect against a) Dengue , Pertusis , Tetanus b) Diarrhoea , Polio, Tetanus c) Diphtheria , Pertusis , Tetanus d) Diphtheria, Polio , Typhoid	1	CO1	K1	PO1
vii	Which of the following are major components of coordinated school health? a) Comprehensive school health education b) Physical education c) Nutrition services d) All of the above	1	CO3 CO4	K1, K2	PO1
viii	The key public health challenges are a) Weak and dysfunctional public system of outreach b) Poor environment health, poor housing c) Many slums not having primary health care facility d) All of these	1	CO1	K1, K3	PO1
ix	We can protect ourselves from malaria..... a) Using mosquito repellent b) Wearing light- coloured , long sleeved shirts and trousers c) Sleeping under insecticide- treated bed nets d) All of these	1	CO2 CO3	K2, K3	PO1 0
x	The primary objective of immunization program is to a) Prevent infection b) Prevent disease c) Prevent further transmission of the disease agent d) All the above	1	CO1	K2, K4	PO1
xi	Which of the following indicates hypertensive crisis? a) Blood pressure of 140/9 mmhg b) BP of 160/100 mmhg c) BP of 150/99 mmhg d) BP of 180/ 120 mmhg	1	CO1	K1, K2	PO2
xii	Which of the following diseases has been eradicated? a) Smallpox c) Polio b) Leprosy d) All of the above	1	CO3	K1, K2, K4	PO1, PO2
xiii	Which of the following is a viral disease? a) Diphtheria b) Filariasis	1	CO2 CO3	K1, K2, K4	PO2

xiv	c) Leprosy Which of the following is fat soluble vitamin? a) Vitamin B c) Vitamin B12 d) Vitamin D	1	CO1 CO2	K1, K2	PO1
xv	The inadequate absorption or availability of proteins and energy in body known as: a) Protein energy malnutrition b) Pepsin enzyme malnutrition c) Passing energy malnutrition d) Protein excess malnutrition	1	CO1	K1, K2	PO2
xvi	Incubation period of Ebola virus is a) Within an hour c) Within 48 hrs. d) 2 to 21 days d) 2 to 7 days	1	CO2 CO3	K2, K3, K4	PO2
xvii	Which of the following coronavirus has goes to thousands of deaths around the world as emergent virus? a) MERS b) SARS c) OC43 d) HKU1	1	CO2	K1, K3	PO2
xviii	World's AIDS day was observed in which day? a) 30 th November c) 1 st December d) 3 rd December	1	CO1 CO3	K1, K2	PO2
xix	National mental health program launched in a) 1980 b) 1985 c) 1986 d) 1990	1	CO4 CO5	K1, K2	PO1
xx	The central rural sanitation program launched in a) 1980 b) 1985 c) 1986 d) 1990	1	CO4 CO5	K1, 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	Explain briefly on National HIV / AIDS Control programme.	10	CO2 CO3 CO4	K1, K2, K3	PO1, PO2
3	Define Public health. Explain concepts and approaches in the evaluation of health promotion.	10	CO1 CO3 CO6	K1, K2 K3	PO1, PO2
4	Narrate National Family Welfare Programme. Explain in details National health intervention programmes for mother and child.	10	CO4 CO5 CO6	K1, K2, 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	Write a note on vitamin deficiencies.	5	CO1 CO2	K2, K4	PO1
6	Write about prevention and control of: a) Cholera b) SARS	5	CO2 CO3	K1, K2	PO2

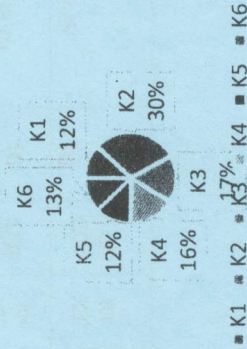
Section C (Answer any SEVEN out of NINE) – 35 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	PO
5	Give a Short note on Pharmacovigilance Program of India (PvPI).	5	CO2	PO1
6	Discuss about Genetic related ADR.	5	CO1	PO9
7	Discuss some Basic terminologies used in Pharmacovigilance.	5	CO1 CO2	PO1
8	Give a Short note on CDSCO.	5	CO3	PO1
9	Discuss about Contract research organization.	5	CO3 CO5	PO1
10	Write a short note on schedule Y.	5	CO5	PO11
11	Explain the Periodic Safety Update Reports (PSUR).	5	CO4 K2, K3	PO3
12	Discuss Drug Safety evaluation in case of Pregnancy.	5	CO1 CO4	PO9
13	Give a short note on Clinical trials.	5	CO4	PO10

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

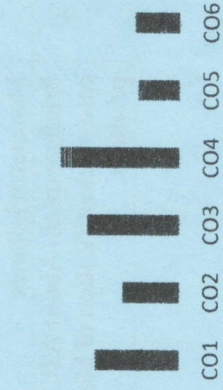
Course Outcomes	CO1	CO2	CO3	CO4	CO5	CO6
	Know the importance and attributes of drug safety monitoring.	Know the history, development and procedures of pharmacovigilance.	Aware about the national and international scenario of pharmacovigilance.	Develop the skills of classifying drugs, diseases and adverse drug reactions in students.	Know the stock holders and guidelines of pharmacovigilance programmes.	Know the dictionaries, coding and terminologies used in pharmacovigilance.

GRAPHICAL REPRESENTATION

Bloom's level wise marks distribution



Course outcome wise mark distribution



 ARKA JAIN University Jharkhand				[10-05-2025] END SEM EXAMINATION School of Health & Allied Sciences	
Program	Bachelor of Pharmacy				
Subject Name	Pharmacovigilance				
Semester	VIII		Session	Even, 2024-2025	
			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 <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 comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation</u> of the <u>Papers</u>.				
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	The Uppsala Monitoring Centre is located in which of the following country? a) China b) Japan c) Sweden d) India	1	CO3	K1	PO1
ii	Yellow card in pharmacovigilance was introduced in _____. a) USA b) INDIA c) Europe d) UK	1	CO2	K1	PO1
iii	Phase 02 of Clinical Trials is Conducted For _____. a) Micro dosing Phase b) Safety check c) Therapeutic Confirmation d) Therapeutic Exploration	1	CO4	K3, K4	PO9
iv	What is Pharmacovigilance a) Effects of drugs and mechanism of action b) Biochemical and physiological effect of drug c) Analyse the risk, safety of medicine d) Role of the drug of Genome Response	1	CO1	K2	PO1
v	The no of volunteers involved in phase 3 Clinical trials are - a) <10 b) 20-80. c) 200 -300 d) 1000-3000	1	CO4	K5, K6	PO9

vi	A harm that Occurs When a patient is taking a drug, irrespective of whether the drug is suspected to be the cause is also Known as ____.	1	CO1	K2	PO2
vii	a) Adverse event b) Unwanted effect c) Serious adverse effect d) Toxic effect In which year WHO Organized a Programme for International Drug Monitoring? a) 1964 b) 1968 c) 1962 d) 1969	1	CO2	K1	PO1
viii	Type E adverse drug reaction is a) A withdrawal reaction b) An unexpected failure of therapy reaction c) A dose-related reaction d) An expected failure of therapy reaction	1	CO3	K2	PO11
ix	CIOMS is based in - a) Uppsala Sweden b) California c) Geneva d) England	1	CO3	K1, K3	PO11
x	CROs stands for a) Contract research organizations b) Controlled research organizations c) Contract risk organizations d) Controlled risk organizations	1	CO6	K1, K3	PO11
xi	In Which Year, Florence Nightingale, made 1st model of systemic collection of hospital data? a) 1860 b) 1862 c) 1894 d) 1893	1	CO2	K1	PO1
xii	ICH stands for - a) The International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use b) International council on harmonization c) Internal conference on harmonization d) Indian committee on harmonization	1	CO4	K3, K4	PO9
xiii	Adverse event is due to - a) Life threatening b) Due to drug/treatment c) May have causal relationship with treatment d) May not have causal relationship with treatment	1	CO4	K2, K3	PO9
xiv	Management of ADR involves a) Symptomatic and specific treatment of	1	CO4	K2, K3	PO2

xv	suspected reaction b) Unwanted reaction c) Drug Management d) Dose Reduction Which tool is used to determine adverse drug reaction probability? a) Naranjo Algorithm b) Vigibase c) Bayesian Adverse Reactions Diagnostic Instrument (BARDI) d) None of them	1	CO4	K2, K3	PO1
xvi	The subjects for Clinical trials are ____. a) Healthy Humans b) Disease State Humans c) Both A & B d) None of them	1	CO2	K1, K3	PO9
xvii	Which regulation of GLP is intended to confirm the Preclinical studies? a) GLP (21 CFR, 57) b) GLP (21 CFR, 58) c) GLP (21 CFR, 51) d) GLP (21 CFR, 52)	1	CO6	K2	PO9
xviii	D&C act was passed in - a) 1947 b) 1980 c) 1951 d) 1940	1	CO2	K1, K2	PO2
xix	Indian Pharmacovigilance system is regulated by - a) USFDA b) CDSO c) IPC d) DRDO	1	CO5	K1, K2	PO11
xx	The Pharmacovigilance Programme of India (PvPI), coordinated by the Indian Pharmacopeia Commission, is situated at a) Calcutta b) Mumbai c) Ghaziabad d) Jaipur	1	CO3	K1, 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	Give a Brief explanation about Vaccine Safety surveillance.	10	CO1	K5, K6	PO9
3	Elaborate safety data generation methods in Pharmacovigilance	10	CO3	K2, K4	PO1
4	Briefly explain About ATC classification in case of Identification of Medical Drug products.	10	CO4 CO6	K3, K4	PO1

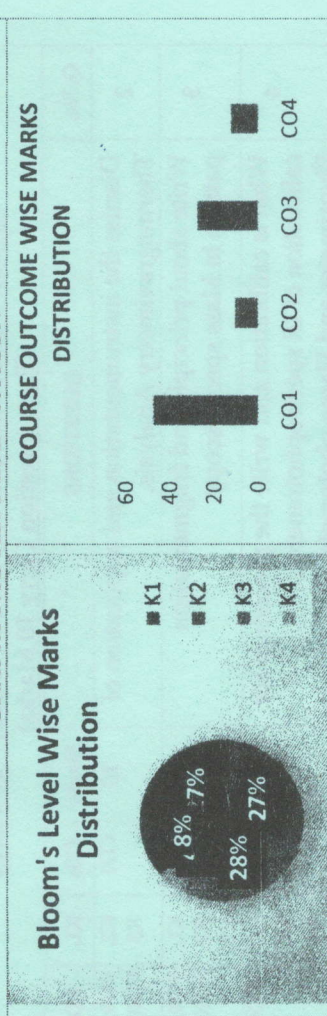
Section C (Answer any SEVEN out of NINE) - 35 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Write any two methods of ionization techniques in Mass Spectroscopy.	5	CO1	K1, K2	PO1, PO2
6	Write about chemical shift, spin-spin coupling and application of NMR Spectroscopy.	5	CO1	K1, K3	PO1, PO2
7	Write short note on Differential Thermal Analysis (DTA).	5	CO1, CO4	K3, K5	PO1, PO9
8	Define Validation. Write different phases in process validation.	5	CO3	K1, K6	PO1
9	Discuss objective and steps of solid phase extraction.	5	CO2	K1, K2	PO1, PO9
10	Write principle and procedure for Radio Immuno Assay.	5	CO4	K3, K6	PO9
11	Discuss the calibration procedure for UV-Visible spectroscopy.	5	CO3	K1, K3, K4	PO1
12	Discuss about FAT and SAT.	5	CO3	K6, K2, K3,	PO10
13	Write short notes on LC-MS/MS	5	CO1, CO2	K1, K3	PO1

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

Course Outcomes	CO1	CO2	CO3	CO4
Understand the advanced instruments used and its applications in drug analysis				
Understand the chromatographic separation and analysis of drugs.				
Understand the calibration of various analytical instruments				
Know analysis of drugs using various analytical instruments.				

GRAPHICAL REPRESENTATION



Program	Bachelor of Pharmacy
Subject Name	Advanced Instrumentation Techniques
Semester	VIII
Session	Even, 2024-2025
Year	May, 2025
Start writing from 2nd page onwards; don't Write on the 1st Page	
Backside	
Time: 3 Hour	
Max. Marks : 75	
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 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	The distance between the centers of the peaks of doublet is called as? a) Doublet constant b) Spin resonance c) Coupling constant d) None of these	1	CO1	K1	PO1
ii	What is the typical energy of the electrons used to ionize analytes by Electron Impact Ionization (EI)? a) 1eV b) 50eV c) 70eV d) 1000eV	1	CO1	K1, K3	PO9
iii	Which of the following is not a component of mass spectrometer? a) Inlet system b) Sweep generator c) Ion transducer d) Mass analyser	1	CO4	K1, K2	PO11
iv	Which of the following is not a type of ionisation? a) Spontaneous ionisation b) Field ionisation c) Chemical ionisation d) MALDI	1	CO1	K1, K2	PO11
v	Which isotope is frequently utilized in NMR? a) C-13 b) H-1 c) O-16 d) Both a and b	1	CO1	K1, K2	PO1
vi	For the TGA and DTA, which of the following options is appropriate?	1	CO4	K1	PO1

	a) TGA and DTA measures only weight b) TGA measures only weight while DTA measures other effects c) TGA and DTA measures only temperature d) TGA measures only temperature while DTA measures other effects				
vii	Which of the following settings is appropriate for use with DSC and DTA cells? a) Catalytic properties of enzyme b) Elasticity of crystals c) Enthalpy of substances d) Line positions of phase	1	CO4	K1, K3	PO1
viii	The peak area of the DTA is proportional to a) Mass of the Sample b) Heat of decomposition change c) Both a and b d) None of these	1	CO1	K1, K4	PO1
ix	The term calibration is used for a) Equipment b) Processes c) None of these d) Both a and b	1	CO3	K2, K3	PO9
x	Installation Qualification (I.Q) purpose is to check a) Installation site / environment b) Maintenance c) Proper ventilation site d) Equipment stability	1	CO3	K2, K3	PO1
xi	The validation _____ production is known as a) during b) before c) after d) all the above	1	CO3	K2, K3	PO2
xii	What is not involved in the solid-liquid separation process? a) Gravity sedimentation b) Filtration c) Magnetic separation d) Centrifugation	1	CO2	K3, K4	PO2
xiii	Solvent extraction is governed by which law? a) Ostwald dilution law b) Boyle's law c) Nernst distribution law d) Beer's law	1	CO2	K3, K4	PO10
xiv	What is the primary purpose of RIA? a) Quantification of Radioisotopes b) Measurement of specific antigens or hormones c) Visualization of cells using radioisotopes d) Detection of antibodies in blood samples.	1	CO1	K3, K4	PO10

xv	Which radioactive isotope is commonly used in RIA? a) Uranium 238 b) Iron 55 c) Tritium d) Carbon 14	1	CO1	K1, K2	PO1
xvi	What is the name of the container in RIA that contains the solid phase in which the complexes of antigen and antibody are formed? a) Radioactivity chamber b) Tube or Well c) Radioisotope chamber d) Sample vial.	1	CO1	K1, K3	PO1
xvii	Which of the following is used to transfer the ions into the high vacuum analyser? a) Orifice b) Nozzle c) Nebulizer d) Venturi tube	1	CO1	K1, K3	PO2
xviii	How many NMR signals are formed for 2-chloro propene? a) 2 b) 3 c) 1 d) 6	1	CO1, CO4	K4, K5	PO9
xix	Mc Lafferty Rearrangement ion peak in mass spectrum is usually the basic peak for a) Aldehydes b) Ketones c) Acids (straight chain) d) All of these	1	CO4	K4, K5	PO9
xx	The NMR spectroscopy is useful for the detection of a) Hydrogen bonding b) Aromaticity c) Geometrical Isomerism d) All of these	1	CO3	K2, K5	PO9
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 instrumentation and application of Thermogravimetry Analysis.	10	CO1	K2, K3	PO9, PO10
3	Write about principle and fragmentation pattern in Mass spectroscopy.	10	CO1	K1, K2, K3	PO9, PO10
4	What is calibration and write the procedure for calibration of IR spectrophotometer, Fluorimeter and Flame photometer.	10	CO3	K2, K5, K1	PO9