

11	Describe bacterial growth curve.	5	CO 5	K1, K2	PO1
12	Outline the process of assessment of new antibiotic.	5	CO 4	K1, K2, K3	PO1, PO3
13	Write about classification of virus.	5	CO 1	K1	PO

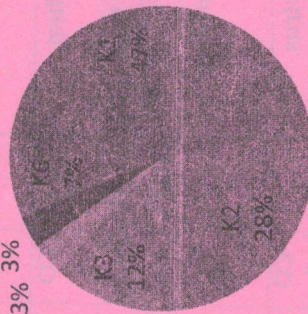
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

CO1	Understand methods of identification, cultivation and preservation of various microorganisms
CO2	To understand the importance and implementation of sterilization in pharmaceutical processing and industry
CO3	Learn sterility testing of pharmaceutical products.
CO4	Carry out microbiological standardization of Pharmaceuticals.
CO5	Understand the cell culture technology and its applications in pharmaceutical industries.

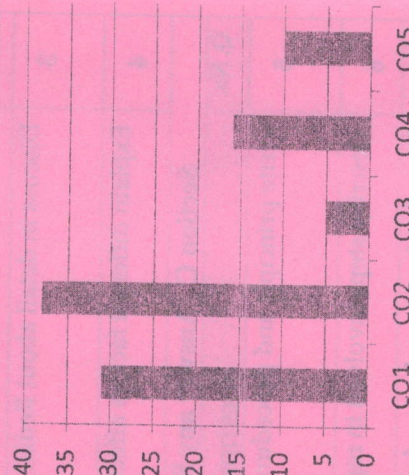
GRAFICAL REPRESENTATION

BLOOM'S LEVEL WISE MARKS DISTRIBUTION

K4 3%
K5 3%



COURSE OUTCOME WISE MARKS DISTRIBUTION



		End Term Examination School of Health & Allied Science	
		Program	B. Pharmacy
Branch	Bachelor of Pharmacy		
Subject Name	Pharmaceutical Microbiology		
	Semester	3 rd	
	Year	2023/Odd	
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 <u>Mobile Phones</u> 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 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 Q1-xx) – 20 Marks

Q. No	QUESTIONS	Marks	COs	KL	PO
i	Father of medical microbiology is a) A.V. Leeuwenhock b) Lister c) Robert Koch d) Louis Pasteur	1	CO 1	K1	PO1
ii	Motility test used for to determine the presence of: a) mitochondria b) Spore c) Flagella d) Cell wall	1	CO 1	K1	PO1
iii	Which of the following is/are the sexual spore? a) Ascospores b) Basidiospores c) Both a & b d) None of these	1	CO 1	K1	PO1
iv	Virus reproduces in living cells by a) Multiplication b) Duplication c) Replication d) All of the above	1	CO 1, K2	K1, K2	PO1
v	Mode of action of disinfectant based on a) Alteration of membrane permeability. b) Damage to nucleic acids. c) Rupture of cell membrane. d) All of the above	1	CO 2	K1, K2, K3	PO1
vi	Solutions of sodium hypochlorite of 1% concentration is used for, a) Sanitizing dairy equipment b) Personal hygiene and a household disinfectants c) Household bleaches d) Disinfecting open wounds	1	CO 2	K1, K2	PO1

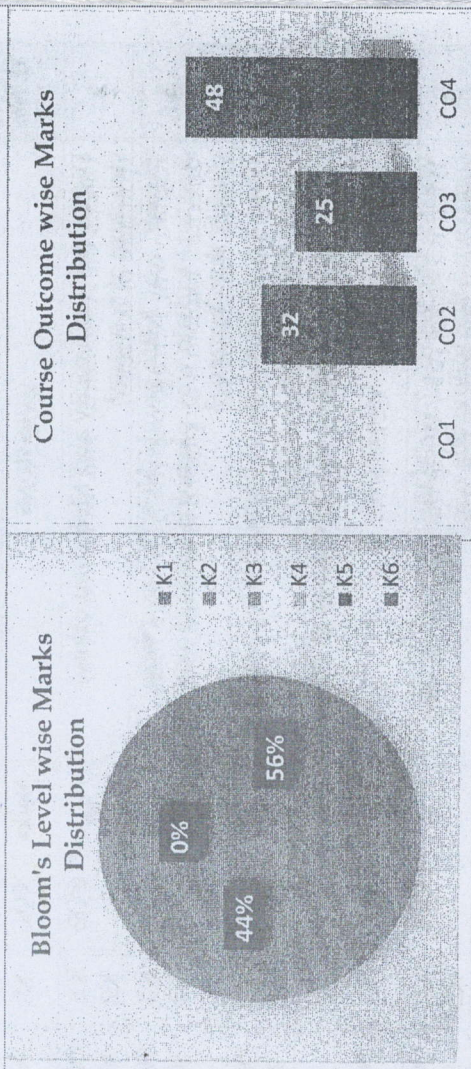
xvii	The viruses that live as parasites on bacteria are a) Fungi b) Commensals c) Bacteriophages d) All of these	1	CO1	K1	PO1
xviii	Virus will contain a) Cell Membrane b) DNA c) Cell Wall d) DNA or RNA	1	CO1	K1	PO1
xix	Bacillus is an example of a) Gram Positive Bacteria b) Gram Negative Bacteria c) Virus d) Fungi	1	CO1	K1, K2	PO1, PO3
xx	The viruses that attack bacteria are a) Bacteria pathogens b) Bacteriophages c) Bacteria Viruses d) Villi	1	CO1	K1	PO1
Section B Answer any Two out of Three [2 x 10 = 20 Marks]					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Define Microbiology. Write down the difference between Prokaryotes and Eukaryotes.	10	CO 1	K2, K4	PO1
3	Discuss in detail about Redial Walker's test.	10	CO 2	K1, K6	PO1, PO3
4	Explain different factors affecting disinfection.	10	CO 2	K3, K5	PO1
Section C Answer any Seven out of Nine [7 x 5 = 35 Marks]					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Write principle and procedure of Gram staining.	5	CO 2	K1, K2	PO1, PO3
6	Describe steps involved in replication of virus.	5	CO 5	K1, K3, K6	PO1
7	Describe the general procedure of antibiotic assay.	5	CO 4	K2, K6	PO1, PO3
8	Write a note on raw materials used for preparation of culture media.	5	CO 2	K1, K3	PO1, PO3
9	Write briefly on different methods used for microbiological assay of antibiotics.	5	CO 4	K3, K5, K6	PO1, PO3
10	How will you detect microbial contamination in pharmaceuticals?	5	CO 3	K1, K2	PO1, PO3

vii	The air filtered from laminar air flow is claimed to be _____ free from microbial contamination. a) 89.67% b) 80.87% c) 95.59% d) 99.97%	1	CO 2	K1, K2	PO1
viii	Which paints are used to avoid cracking and peeling in aseptic area? a) Epoxy resin b) Polyurethane c) Both a & b d) None of these	1	CO 2	K1, K2	PO1
ix	What constructional materials should be used to build a cleanroom? a) Steel b) Glass c) PVC d) None of these	1	CO 2	K1	PO1
x	Protective clothing must be sterilized by _____ a) Dry heat sterilization b) Moist heat sterilization c) Ethylene oxide sterilization d) Radiations sterilization	1	CO 2	K1	PO1
xi	The image obtained in a compound microscope is a) Real b) Virtual c) Virtual Inverted d) Real Inverted	1	CO 1	K1, K2, K3	PO1, PO3
xii	Disease that affects many people at different countries is termed as a) Sporadic b) Pandemic c) Epidemic d) Endemic	1	CO 1	K1	PO1
xiii	The main feature of prokaryotic organism is a) Absence of locomotion b) Absence of nuclear envelope c) Absence of nuclear material d) Absence of protein synthesis	1	CO 1	K1, K2	PO1
xiv	Tuberculosis is a a) Water borne disease b) Air borne disease c) Food borne disease d) Athropod borne disease	1	CO 1	K1, K2	PO1
xv	Electron microscope gives magnification up to a) 100 X b) 2000 X c) 50,000 X d) 2,00,000 X	1	CO 1	K1	PO1, PO3
xvi	Condensation of light in light Microscope is by a) Objective b) Condenser c) Ocular d) All of these	1	CO 1	K1, K2	PO1, PO3

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

Course Outcomes	CO1	Elucidate the structure, name and the type of isomerism of the organic compound
	CO2	Understand the reaction, name the reaction and orientation of reactions
	CO3	Account for reactivity/stability of compounds,
	CO4	Identify/confirm the identification of organic compound
	CO1	Elucidate the structure, name and the type of isomerism of the organic compound

GRAPHICAL REPRESENTATION



Note : This above figure is only Example and must prepare this type of figure in these two column

		ARKAJAIN University Jharkhand		End Term Examination School of Health & Allied Science	
Branch	Bachelor of Pharmacy	Program	B. Pharmacy	Semester	3 rd
Subject Name	Pharmaceutical Organic Chemistry II	Year	2023/Odd		
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	K3 : Applying	K5 : Evaluating		
	K2 : Understanding	K4 : Analysing	K6 : Creating		

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

Q. No1	QUESTIONS	Marks	COs	KL	PO
i	Which are the following statements being false about benzene? a) It is planer structure with bond angle 120° b) It is miscible with water c) Undergoes Electrophilic substitution Reaction d) It is a colorless Liquid	1	CO3	K1	PO 1
ii	The Carbon atom in Benzene ring is a) Sp b) Sp ² c) Sp ³ d) None of these	1	CO3	K1	PO 2
iii	In chlorination of benzene, FeCl ₃ is used to generate a) Cl ⁻ b) Cl ⁺ c) Cl ₂ d) HCl	1	CO4	K1	PO 2
iv	In Sulphonation of Benzene, the attacking species is a) SO ₂ b) SO ₃ c) SO ₃ H d) HSO ₄	1	CO3	K1	PO 2
v	Benzene under goes substitution reaction more easily than addition reaction because of a) It has cyclic structure b) It has delocalized pi electron c) It has Planer structure d) It has Six Hydrogen atom	1	CO4	K1	PO 2

xix	Which of the following is not a carboxylic acid a) Malonic acid b) Acetic acid c) Adipic acid d) Picric acid	CO4	K1	PO 1
xx	The order of increasing acidity is a) Chloroacetic acid > formic acid > benzoic acid b) Chloroacetic acid < formic acid < benzoic acid c) All are the same d) None of the same	CO4	K1	PO 2
Section B Answer any Two out of Three [2 x 10 = 20 Marks]				
Q. No.	QUESTIONS	Marks	COs	KL PO
2	Discuss the Aromaticity and Molecular orbital structure of benzene?	10	CO2	PO K1, K2 10
3	Explain why Nitro group (NO ₂) act as a meta director? Explain why phenol is nitrated more readily than benzene?	10	CO4	PO K1, K2 10
4	Write a note on Acidity of phenol? Why phenol is more acidic than Ethyl alcohol?	10	CO2	PO K1, K2 9
Section C Answer any Seven out of Nine [7 x 5 = 35 Marks]				
Q. No.	QUESTIONS	Marks	COs	KL PO
5	What is Huckel rule? Write the structure of two compound that follow this rule?	5	CO4	PO K1, K2 1
6	What happens when Benzene reacts with acetyl Chloride in the presence of AlCl ₃ and also write its reaction mechanism?	5	CO3	PO K1, K2 10
7	Give the Mechanism of Nitration and Chlorination of benzene?	5	CO3	PO K1, K2 9
8	Write down the Structure and uses of resorcinol, naphthol?	5	CO3	PO K1, K2 10
9	What happens when Benzoic acid is treated with concentrated Nitric acid in presence of concentrated Sulphuric acid?	5	CO4	PO K1, K2 2
10	What are oils & fats? How they are different from each other?	5	CO2	PO K1, K2 10
11	Define the term Acid value & Saponification value?	5	CO2	PO K1, K2 9
12	Define Rancidity of oils & Drying oils.	5	CO4	PO K1, K2 2
13	How you will synthesize Anthracene from benzene?	5	CO4	PO K1, K2 10

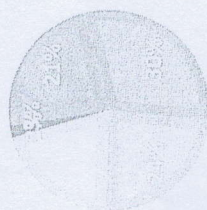
vi	What is Huckel's rule? a) 3n+2 b) 3n+3 c) 3n-2 d) None of these	CO4	K1	PO 2
vii	Hydroxybenzene also called as: a) Cresol b) Phenol c) Resorcinol d) Quinol	CO3	K1	PO 2
viii	DDT used for: a) Insecticide b) Pesticide c) Both a & b d) none of these	CO4	K1	PO 1
ix	Compare to Benzene, Nitration of toluene take place at a) Same rate b) Slow rate c) Faster rate d) Cannot predict	CO3	K1	PO 2
x	Which of the following compound undergoes nitration most easily a) Benzene b) Toluene c) Nitro benzene d) Benzoic acid	CO3	K1	PO 2
xi	What is chemical formula of saccharin? a) C ₇ H ₆ NO ₃ S b) C ₇ H ₅ NO ₃ S c) C ₇ H ₄ NO ₃ S d) None of the above	CO4	K1	PO 1
xii	Which of the following test is not qualitative test for Phenols: a) Ferric chloride test b) Melzer test c) Leak test d) Lieber Mann test	CO4	K1	PO 1
xiii	Phenol is acidic because of a) Resonance b) Inductive effect c) Electrometric Effect d) Peroxide effect	CO3	K1	P02
xiv	Which of the following is least acidic a) Formic acid b) Ethanol c) Acetic acid d) Phenol	CO3	K1	PO 1
xv	Which of the following is most acidic a) Formic acid b) Ethanol c) Acetic acid d) Phenol	CO3	K1	PO 2
xvi	Aniline is prepared by a) Reaction of benzene with ammonia b) Reduction of nitro benzene with HCl c) Dehydrogenation of Nitrobenzene d) Reaction of nitrobenzene with NaOH	CO2	K1	PO 1
xvii	Which of the following compound is most Basic a) Aniline b) Benzyl amine c) Acetanilide d) p-nitro aniline	CO2	K1	PO 1
xviii	Which of the following compound is least Basic a) Aniline b) Benzyl amine c) Acetanilide d) p-nitro aniline	CO3	K1	PO 2

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

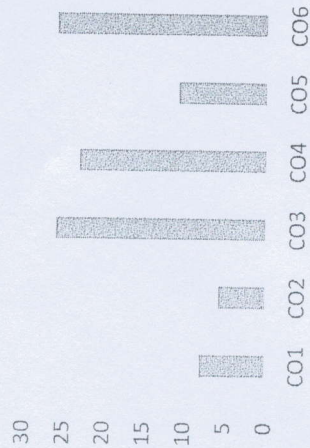
CO1	To understand the behavioral needs for a Pharmacist to function effectively in the
CO2	To know about the areas of pharmaceutical operation
CO3	Communicate effectively (Verbal and Non Verbal)
CO4	Effectively manage the team as a team player
CO5	To develop interview skills
CO6	To develop Leadership qualities and essentials

GRAFICAL REPRESENTATION

Bloom's level wise marks distribution



Course Outcome Wise Marks Distribution



Legend: K1 (light blue), K2 (medium blue), K3 (dark blue), K4 (light green), K5 (medium green), K6 (dark green)



End Term Examination
School of Pharmacy

Branch	Bachelor in Pharmacy
Subject Name	Communication skill
Program	B. Pharmacy
Semester	3 rd Semester (Lateral Entry)
Year	2023/ Odd

- Start writing from 2nd page onwards; don't Write on the 1st Page Backside
- Answer all Questions of Section A (Compulsory)
- Answer Any Five out of Six of Section B
- Answer Any Three out of Five of Section C

Time: 1:30 Hour
Max. Marks : 35

- 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

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

Q. No.	QUESTIONS	Marks	COs	KL	PO
1					
i	What is horizontal communication?	1	CO1, CO3	K1, K2, K3	PO3, PO4
ii	What is the manner of communication of a manager and a worker	1	CO3, CO4, CO6	K2, K3	PO3, PO4
iii	What do you understand by the term Active Listening	1	CO3, CO4, CO6	K1, K2, K3	PO3, PO4
iv	What do you understand by the term media in communication	1	CO1, CO3, CO4, CO6	K1, K2, K3	PO3, PO4
v	What do you understand by the term GD?	1	CO1,C O2,CO 3,CO4, CO5,C O6	K1, K2, K3, K4, K5	PO3, PO4
vi	What are the factors responsible for effective writing?	1	CO3,C O4,CO 5,CO6	K1, K2, K3, K6	PO3, PO4
vii	What are the key elements for a good presentation?	1	CO3,C O4,CO 5,CO6	K1, K2, K3, K4	PO3, PO4
viii	Mention few points to consider before presentation.	1	CO3,C O4,CO 5,CO6	K1, K2, K3, K4	PO3, PO4
ix	Formal writings are of many types. Mention them	1	CO3,C O4,CO 5,CO6	K1, K2, K3, K4	PO3, PO4

x	What do you understand by interview preparations?	1	CO3, CO5	KL, K2, K3, K4	PO3, PO4
Section B Answer any FIVE out of SIX [5x2=10 Marks]					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What are the elements of communication? Explain them.	2	CO1,CO 2,CO3,C O4,CO5, CO6	K1, K2, K3, K4	PO3, PO4
3	What do you understand by communication barriers? State the barriers with examples	2	CO3,CO 4,CO6	K1, K2, K3, K4	PO3, PO4
4	What is the significance of interview? Explain its importance.	2	CO4,CO 5,CO6	K2, K3, K4	PO3, PO4
5	Why do you need to learn about group discussion? What is its significance	2	CO1,CO 2,CO3,C O4,CO5, CO6	K1, K2, K3, K4, K5	PO3, PO4
6	Active listening makes a good speaker. Elaborate	2	CO1,CO 3,CO4,C O5,CO6	K2, K3, K4, K6	PO3, PO4
7	Before any presentations, one has to understand few things and practice them. What are they?	2	CO3, CO4, CO6	K1, K2, K3, K4	PO3, PO4
Section C Answer any THREE out of FIVE [3x5= 15 Marks]					
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	What are the different elements of communication process?	5	CO1,CO 2,CO3,C O4,CO5, CO6	K1, K2, K3, K4	PO3, PO4
9	What do you mean by the term barriers in communication?	5	CO3,CO 4,CO6	K1, K2, K3, K4	PO3, PO4
10	State the various kinds of barriers in communication with an example for each?	5	CO3,CO 4,CO6	K1, K2, K3, K4	PO3, PO4
11	What do you understand by the term self-awareness? State its importance	5	CO3, CO4, CO6	K2	PO3, PO4
12	What do you mean by the term visual perspective?	5	CO3, CO4, CO6	K2	PO3, PO4

CO- Course Outcomes,

KL- Knowledge Level,

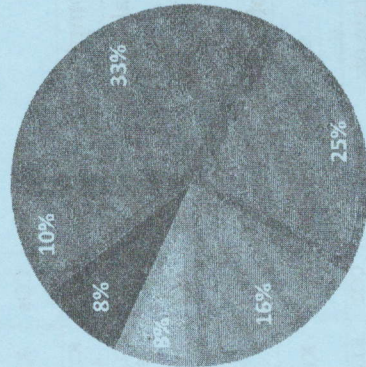
PO - Program Outcome

CO1	Understand various physicochemical properties of drug molecules in the designing the dosage forms
CO2	Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations
CO3	Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

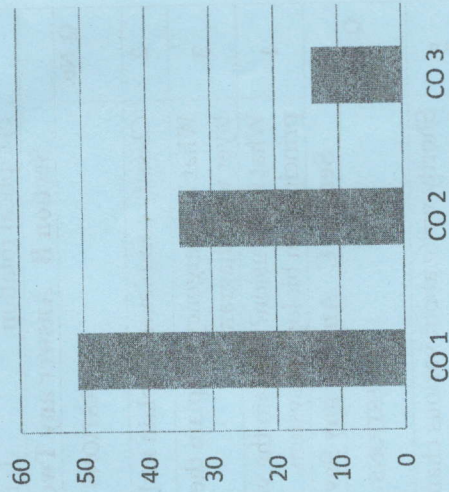
GRAPHICAL REPRESENTATION

BLOOM'S LEVEL WISE MARKS DISTRIBUTION

■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6



COURSE OUTCOME WISE MARKS DISTRIBUTION



ARKAJAIN University
Jharkhand

End Term Examination
School of Health & Allied Science

Branch	Bachelor of Pharmacy	Program	B. Pharmacy
Subject Name	Physical Pharmaceutics I	Semester	3 rd
		Year	2023/Odd
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 <u>Unfair Means</u> and will result in the <u>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 Q1-xx) – 20 Marks

Q. No1	QUESTIONS	Marks	COs	KL	PO
i	Maximum buffer capacity equals to a) 0.576°C b) 57.6°C c) 2.303°C d) 0.2303°C	1	CO1	K1	PO1
ii	The solution which can't hold no more solute is termed as: a) Concentrated solution b) Dilute solution c) Saturated solution d)Aqueous solution	1	CO1	K1	PO1
iii	In BCS classification class II drugs are with a) Low solubility with high permeability b) High solubility and low permeability c) Low solubility and low permeability d) High solubility and high permeability	1	CO1	K1	PO1
iv	Which of the following statement is in-correct? a) Interfacial tension is less than surface tension. b) Interfacial tension is more than surface tension c) The unit of surface tension is same as that of interfacial tension d) All of these	1	CO2	K1, K2	PO1
v	The induced dipole moment per unit electric field is called a) Polari ability b) Dipole moment c) Dielectric constant d) None of these	1	CO1	K1, K2, K3	PO1

xviii	Which one of the following is limitation of Nernst's distribution law? a) Dilute solution temperature b) Constant c) Same molecular state d) All of these	1	CO3	K1	PO1
xix	Energy dependent diffusion is a) Active transport b) Passive diffusion c) Facilitated diffusion d) Filtration	1	CO3	K1, K2	PO1, PO3
xx	The ratio of the speed of light in vacuum relative to that in the considered medium is known as a) Refractive index b) Dipole moment c) Optical rotation d) Dielectric constant	1	CO1	K1	PO1
Section B Answer any Two out of Three [2 x 10 = 20 Marks]					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Classify complexes. Explain inclusion complexes.	10	CO2	K2, K4	PO1
3	What is detergency? Explain the electrical double layer with diagram.	10	CO3	K1, K6	PO1, PO3
4	What is diffusion? Explain the various diffusion principles in biological system.	10	CO1	K3, K5	PO1
Section C Answer any Seven out of Nine [7 x 5 = 35 Marks]					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Shortly write about various changes in state of matter.	5	CO2	K1, K2	PO1, PO3
6	What is a surface active agent? Shortly write about various surfactants.	5	CO2	K1, K2, K3, K6	PO1
7	What is HLB? Briefly write about HLB scale.	5	CO1	K2, K6	PO1, PO3
8	Write shortly about Raoult's Law.	5	CO2	K1, K3	PO1, PO3
9	Write shortly about Solubility Expression.	5	CO1	K3, K4, K5, K6	PO1, PO3
10	Write short note on Dielectric constant.	5	CO1	K1, K2	PO1, PO3
11	What is buffer? Shortly write about the various applications of buffers.	5	CO1	K1, K2	PO1
12	Briefly explain Solute Solvent interaction.	5	CO2	K1, K2, K3	PO1, PO3
13	Write short note on optical rotation.	5	CO1	K1	PO1

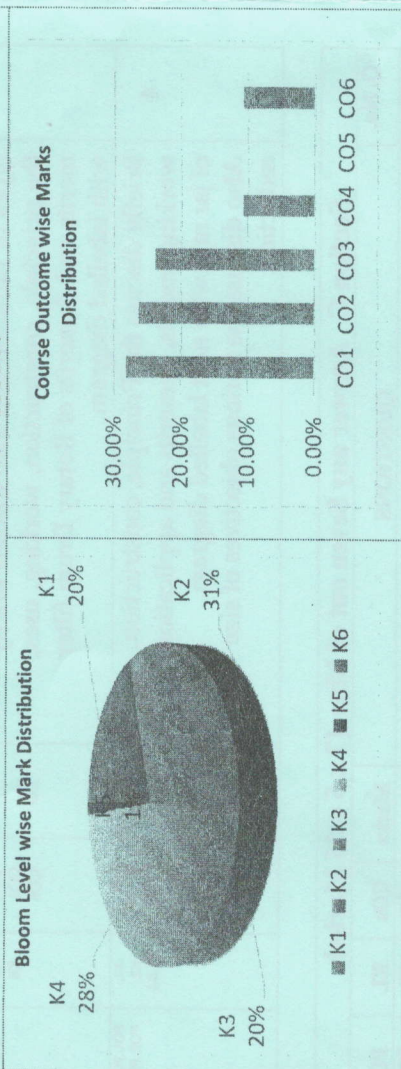
vi	Caffeine + gentisic acid complex a) Mask bitter test of caffeine absorption b) Improve c) Enhances solubility d) All of these	1	CO3	K1, K2	PO1
vii	Cohesive forces are the forces acting a) Between molecules of different molecule b) Between molecules of same material c) Between water and glass capillary tube d) Due to gravity	1	CO2	K1, K2	PO1
viii	Among all these proteins, which protein level is high a) Albumin b) Globulin c) Alpha- acid d) Glycoprotein	1	CO2	K1, K2	PO1
ix	The number of osmoles of solute in a litre of solution is called a) Osmolarity b) Osmolality c) Buffer capacity d) Molarity	1	CO1	K1	PO1
x	Which of the following buffers is basically used in the Parenteral preparations a) Acetate buffer b) Phosphate buffer c) Citrate buffer d) All of these	1	CO1	K1	PO1
xi	The unit of surface tension in CGS system is a) Newton/ metre b) Dy/ cm c) Milli-newton/ metre d) All of these	1	CO1	K1, K2, K3	PO1, PO3
xii	Tween 80 is a surfactant of type a) Anionic b) Cationic c) Non-Ionic d) Amphoteric	1	CO1	K1	PO1
xiii	Gram equivalent weight of solute in one liter of solution a) Molarity b) Molality c) Normality d) Mole fraction	1	CO1	K1, K2	PO1
xiv	In BCS classification class IV drugs are with a) Low solubility with high permeability b) High solubility and low permeability c) Low solubility and low permeability d) High solubility and high permeability	1	CO1	K1, K2	PO1
xv	Tween 60 is a surfactant of type a) Anionic b) Cationic c) Non-Ionic d) Amphoteric	1	CO1	K1	PO1, PO3
xvi	The HLB range for lipophilic surfactant is a) 9 to 16 b) 16 to 20 c) More than 20 d) 3 to 8	1	CO1	K1, K2	PO1, PO3
xvii	The units of Dipole moment a) Coulomb meters b) Debye c) Stat c. cm d) All of these	1	CO1	K1	PO1

7	Write a note on construction of sieve shaker.	5	CO1, CO2, CO3	K1, K2, K4	PO1, PO2, PO7, PO9, PO10
8	Write a note on construction of basket centrifuge.	5	CO1, CO2, CO3	K1, K2, K4	PO1, PO2, PO7, PO9, PO10
9	Write a note about sintered glass filter.	5	CO1, CO2	K1, K2, K4	PO1, PO2, PO7, PO9, PO10
10	Write a note on applications of mixing.	5	CO1, CO2, CO3	K1, K2, K4	PO1, PO2, PO7, PO9, PO10
11	Discuss about types of mixtures	5	CO1, CO2	K1, K2, K4	PO1, PO2, PO7, PO9, PO10
12	Write a note on Darcy's equation	5	CO1, CO2	K1, K2, K4	PO1, PO2, PO7, PO9, PO10
13	Discuss various factor affecting filtration	5	CO1, CO2, CO3	K1, K2, K4	PO1, PO2, PO7, PO9, PO10

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

CO1	To know various unit operations used in Pharmaceutical industries.
CO2	To understand the material handling techniques
CO3	To perform various processes involved in pharmaceutical manufacturing process.
CO4	To carry out various test to prevent environmental pollution
CO5	To appreciate and comprehend significance of plant layout design for optimum use of resources.
CO6	To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.

GRAPHICAL REPRESENTATION



 ARKAJAIN University Jharkhand	End Term Examination School of Health & Allied Science	
	Branch Bachelor of Pharmacy	Program B. Pharmacy
Subject Name Pharmaceutical Engineering	Semester 3rd	Year 2023/Odd
• 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 <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 Marks from Q1-i to Q1-xx) – 20 Marks					
Q. No1	QUESTIONS	Marks	COs	KL	PO
i	Which among the following principle is meant for Andreason apparatus a) Impingement b) Entanglement c) Straining d) Sedimentation	1	CO1, CO2 & CO3	K2	PO1, PO2 & PO9
ii	Which of the following unit is suitable for milling of heat sensitive material a) Hammer mill b) Jet mill c) End runner mill d) Mortar and pestle	1	CO1, CO2 & CO3	K2, K3 & K4	PO1, PO2 & PO9
iii	Which of the following unit is called as micronizer a) Fluid energy mill b) Ball mill c) Hammer Mill d) Edge runner mill	1	CO1, CO2 & CO3	K2, K3 & K4	PO1, PO2 & PO9
iv	Clarification is a process of filtration to separate solids and liquid from the slurry having concentration a) <1% b) > 1% c) = 1% d) None of above	1	CO1, CO2 & CO3	K2, K3 & K4	PO1, PO2 & PO9
v	Which among these is a filter aid a) Magnesium carbonate b) Calcium carbonate c) PEG d) Kieselguhr	1	CO2 & CO3	K2, K3, K4	PO1, PO2 & PO9

vi	Which of the following unit is suitable for disintegrating the vegetative materials a) Jar mill b) Hammer mill c) Fluid energy mill d) Edge runner mill	1	CO1 & CO2	K2, K4	PO1, PO2 & PO9
vii	Diffusive mixing is the term used for a) Micro mixing b) Convective mixing c) Shear mixing d) Intimate mixing	1	CO1 & CO2	K2, K4 & K5	PO1, PO2 & PO9
viii	Which of the following is a dimensionless number a) Gold number b) Reynolds number c) Sieve number d) None of above	1	CO2	K2, K3, K4 & K5	PO1, PO2 & PO9
ix	Tumbling is the term is applicable for a) Knewood mixer b) Emulsifier c) Silverson mixer d) Double cone blender	1	CO1, CO2, CO3	K2, K3	PO1, PO2 & PO9
x	If Reynolds number is 1500 then flow type is. a) Viscous b) Turbulent c) Critical d) None of above	1	CO2	K2, K3	PO1, PO2 & PO9
xi	What will be the sieve number if the number of pores in a linear inch will be 22 a) 25 b) 44 c) 22 d) 30	1	CO2 & CO3	K2, K3, K4 & K5	PO1, PO2 & PO9
xii	Screen that does not give perfect separation about the cut diameter a) Actual screen b) Ideal Screen c) Real screen d) None of above	1	CO2	K2, K4 & K5	PO1, PO2 & PO9
xiii	Among which of the following factors fluid losses Energy a) Friction b) Fittings c) sudden Enlargement d) All above of pipe line	1	CO1, CO2, CO3	K2 & K4	PO1, PO2 & PO9
xiv	Berkefeld filter made up of a) Pyrex glass beads b) Jute c) Diatomaceous earth d) None of above	1	CO1, CO2, CO3	K2 & K3	PO1, PO2 & PO9
xv	Randomisation of dissimilar particles within a system is relevant to a) Separation b) Mixing c) Drying d) All above	1	CO1, CO2, CO3	K2 & K3	PO1, PO2 & PO9
xvi	Trituration is a process for both a) Mixing and size reduction b) Mixing and size separation c) Mixing and drying d) None of above	1	CO2, CO3	K2 & K3	PO1, PO2 & PO9

xvii	Convective as well as Shearing conducted by which of the following mixer. a) Double cone blender b) Fluidized bed mixer c) Ribbon blender d) All above	1	CO1 & CO2	K2 & K3	PO1, PO2 & PO9
xviii	The other term used for Rotameter is a) Variable head meter b) Vertical head meter c) Horizontal head meter d) None of above	1	CO1 & CO2	K2 & K3	PO1, PO2 & PO9
xix	What among the following factors responsible For Segregation of Particles in a System a) Internal forces b) Gravitational forces c) Surface Interface forces d) All above	1	CO1 & CO2	K2 & K3	PO1, PO2 & PO9
xx	Rotary filter rotates at a speed of a) Less or equal to 4 RPM b) Less or equal to 3 RPM c) Less or equal to 2 RPM d) Less or equal to 1 RPM	1	CO1 & CO3	K2 & K3	PO1, PO2 & PO9

Section B Answer any Two out of Three [2 x 10 = 20 Marks]

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Classify mixers used for solid-solid mixing. Discuss various criteria for solid-solid mixing. Discuss briefly about constructions, working, merits, demerits and applications of Double cone blender with labelled diagram.	10	CO1, CO2, CO3, CO4, CO6	K1, K2, K3, K4	PO1, PO2, PO7, PO9
3	Discuss various mechanisms of filtration, types of filtration and also discuss briefly the principle, construction, working, uses, merits and demerits of Rotary Drum filter with labelled diagram.	10	CO1, CO2, CO3, CO4, CO6	K1, K2, K3, K4	PO1, PO2, PO9
4	Briefly discuss the Principle, construction, working, merits, demerits and application of jar mill with neat labelled diagram. Also discuss the various objectives of size reduction.	10	CO1, CO2, CO3, CO4, CO6	K1, K2, K3, K4	PO1, PO2, PO7, PO9

Section C Answer any Seven out of Nine [7 x 5 = 35 Marks]

Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Discuss various factors affecting size reduction.	5	CO1, CO2, CO3	K2, K3, K4	PO1, PO2, PO7, PO9, PO10
6	Write a note on application and merits of hammer mill.	5	CO1, CO2, CO3	K2, K3, K4	PO1, PO2, PO7, PO9, PO10