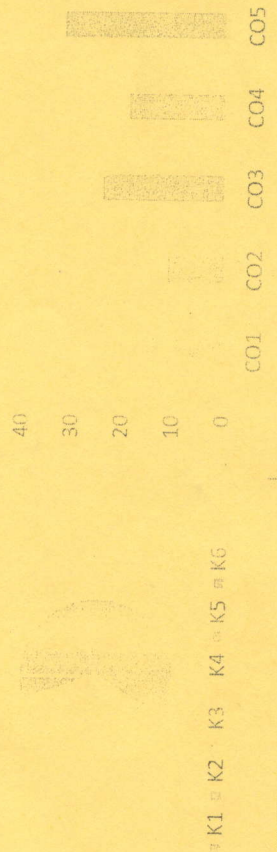


CO1	To understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
CO2	Communicate effectively (Verbal and Non Verbal)
CO3	Effectively manage the team as a team player
CO4	To develop interview skills
CO5	To develop Leadership qualities and essentials

**GRAPHICAL REPRESENTATION**

**Bloom's Level wise Marks Distribution**  
**Course Outcome Wise Marks Distribution**



\* K1 = K2 = K3 = K4 = K5 = K6

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**ARKA JAIN University**  
Jharkhand



**NAAC GRADE A**  
ACCREDITED UNIVERSITY

**END SEM EXAMINATION**  
School of Health and Allied Science

Program	Bachelor of Pharmacy	
Subject Name	Communication Skills	Semester III Year Nov/Dec 2024
Time: 1.5 Hour Max. Marks : 35	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't Write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Five out of Six of Section B</li> <li>Answer Any Two out of Four of Section C</li> <li>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</u> in the <u>Cancellation of the Papers</u>.</li> </ul>	
Knowledge Level (KL)	K1: Remembering K2: Understanding	K3: Applying K4: Analysing K5: Evaluating K6: Creating

**Section A (Each question Carry 01 Marks from Q1-i to v) - 05 Marks**

Q. N	QUESTIONS	Marks	COs	KL
i	The origin word of communication is.....	01	CO1	KL1
ii	Define communication.	01	CO1	KL2
iii	What is formal communication?	01	CO3	KL2
iv	Encouraging open communication is an advantage of .....	01	CO1	KL2
v	What is feedback?	01	CO2	KL1

**Section B (Answer any FIVE out of SIX) - 10 Marks**  
(Each question Carry 02 Marks)

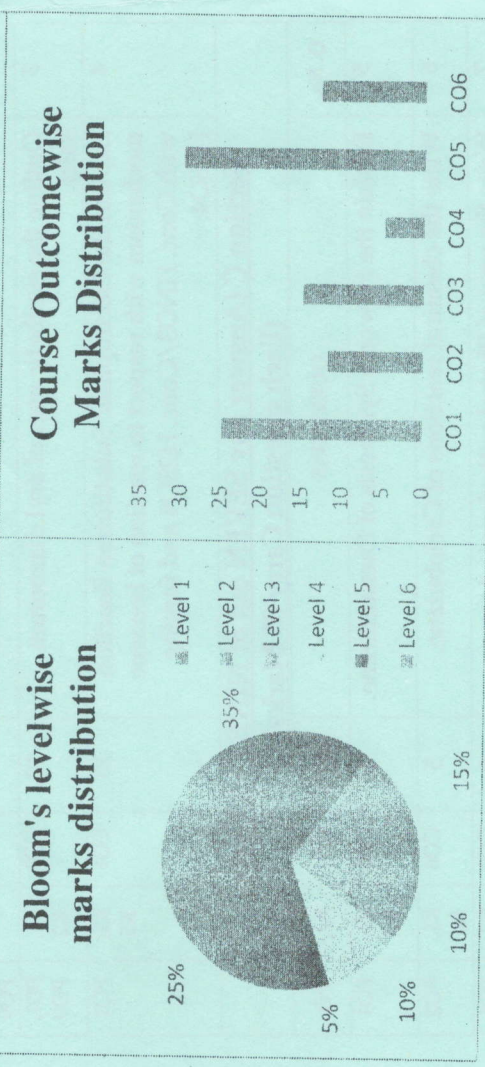
Q. No.	QUESTIONS	Marks	COs	KL
2	What are the basic plans needed for an effective presentation?	02	CO2	KL3
3	Write two purposes of communication.	02	CO1	KL1
4	What is the primary goal of effective classroom communication?	02	CO4	KL3
5	What do you understand by perspectives in communication?	02	CO1	KL2
6	Mention a situation where you persuaded others.	02	CO5	KL3

7	What is haptics and how is it useful?	02	CO4	KL2
<b>Section C (Answer any TWO out of FOUR) - 20 Marks</b> (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Enunciate the basic listening skills and write about its importance.	10	CO3	KL3
9	Describe the main Barriers to Communication and write how to overcome them.	10	CO4	KL3
10	Explain the process of communication with a flow chart.	10	CO2	KL3
11	Write in detail the importance of non-verbal communication for effectiveness.	10	CO3	KL2

	<b>ARKA JAIN University</b> Jharkhand		<b>END SEM EXAMINATION</b> School of Health & Allied Science
<b>Program</b>	Bachelor of Pharmacy		
<b>Subject Name</b>	Pharmaceutical Organic Chemistry-II	<b>Semester</b>	III
		<b>Year</b>	Nov/Dec 2024
<b>Time: 3 Hour</b> <b>Max. Marks : 75</b>	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any <u>Two</u> out of <u>Three</u> of Section B</li> <li>Answer Any <u>Seven</u> out of <u>Nine</u> of Section C</li> <li>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 in the Cancellation of the Paper.</u></li> </ul>		
<b>Knowledge Level (KL)</b>	K1: Remembering K2: Understanding	K3: Applying K4: Analysing	K5: Evaluating K6: Creating

Q. N I	QUESTIONS	Marks	COs	KL	PO
i	C <sub>6</sub> H <sub>5</sub> - is known as (a) Phenyl (b) Amine (c) Benzyl (d) Benzene	1	CO1	K1	PO9
ii	Methyl benzene is also called (a) Xylene (b) Toluene (c) Cresol (d) None of these	1	CO1	K1	PO1
iii	Electrophile generated in sulphonation of benzene is (a) Hydronium ion (b) Bisulphate ion (c) Sulphur trioxide (d) Sulphur dioxide	1	CO1	K5	PO2
iv	-NH <sub>2</sub> group in Aniline is:- (a) ortho directing (b) para directing (c) Both (a) and (b) (d) None of these	1	CO1	K1	PO1
v	Chlorination of benzene takes place in the presence of chlorine and:- (a) FeCl <sub>3</sub> (b) AlCl <sub>3</sub> (c) BF <sub>3</sub> (d) None of these	1	CO1	K1	PO1
vi	The catalyst used for Friedal Craft alkylation of Benzene is:- (a) B <sub>2</sub> H <sub>6</sub> (b) AlCl <sub>3</sub> .6H <sub>2</sub> O (c) Al(OH) <sub>3</sub> (d) AlCl <sub>3</sub>	1	CO1	K1	PO1

CO- Course Outcomes,	KL- Knowledge Level,	PO – Program Outcome
CO1	Understand the reactions with mechanisms of benzene and orientation of groups in aromatic compounds	
CO2	Understand the reaction the reactions of some aromatic alcohols.	
CO3	Understand the reactions of some aromatic organic compounds.	
CO4	Know the reactions of Fatty acids with significance and principle involved in their determination.	
CO5	Understand structure, reactions and medicinal uses of polynuclear hydrocarbons	
CO6	Know the stability and reactions of cycloalkanes.	



vii	The nitrating mixture used for nitration of benzene is:- (a) dil. $\text{HNO}_3 + \text{conc. H}_2\text{SO}_4$ (b) conc. $\text{HNO}_3 + \text{conc. H}_2\text{SO}_4$ (c) dil. $\text{HNO}_3 + \text{dil. H}_2\text{SO}_4$ (d) None of these	1	CO3	K1, K3	PO1
viii	-CHO group in benzaldehyde is:- (a) ortho directing (b) para directing (c) Both (a) and (b) (d) None of these	1	CO1	K1, K4	PO1
ix	Benzene undergoes:- (a) Addition Reaction (b) Substitution Reactions (c) Electrophilic Substitution Reactions (d) Nucleophilic Addition Reactions	1	CO1	K2, K3	PO9
x	Gammexane is used as an:- (a) Antiseptic (b) Disinfectant (c) Insecticide (d) Both (a) and (b)	1	CO4	K2, K4	PO1
xi	The simplest polynuclear hydrocarbon is (a) Pyrene (b) Anthracene (c) Naphthalene (d) Phenanthrene	1	CO5	K1, K2	PO2
xii	Phenanthrene is a polycyclic compound containing-----benzene rings (a) Three (b) Four (c) Two (d) Five	1	CO5	K1, K2	PO1
xiii	In addition reaction of naphthalene all atoms of bromine and chlorine add on (a) Same ring (b) Other ring (c) Both the ring (d) None of above	1	CO5	K1, K2	PO2
xiv	Huckle's rule has a formula----- $\pi$ electrons (a) $2n+4$ (b) $4n+2$ (c) $4n+4$ (d) $2n+2$	1	CO1	K1, K2	PO1
xv	Basicity of amine is most in? (a) Ammonia (b) Primary amine (c) Secondary amine (d) Tertiary amine	1	CO3	K1, K2	PO2
xvi	What is required to measure acid value? (a) NaCl (b) KOH (c) $\text{K}_2\text{Cr}_2\text{O}_7$ (d) $\text{KMnO}_4$	1	CO4	K2, K3	PO2
xvii	Which of the following compounds have all of the carbon atoms in the same plane? (a) Cyclopropane (b) Cyclobutane (c) Cyclohexane (d) Cyclopentane	1	CO6	K2, K3	PO2
xviii	Azo compounds are? (a) Non coloured (b) Moderately coloured (c) Highly coloured (d) Transparent	1	CO2, CO3	K4, K5	PO2

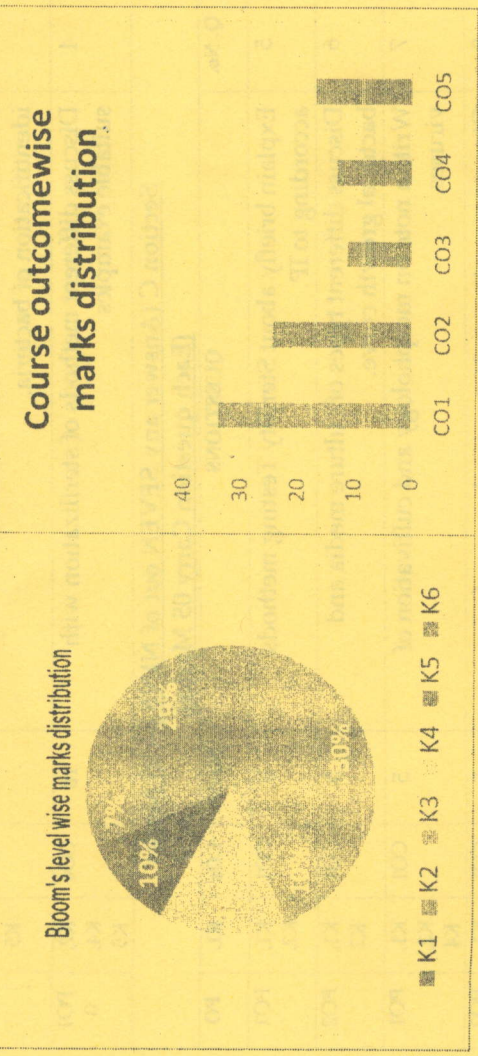
xix	Formula for naphthol? (a) $\text{C}_{10}\text{H}_8\text{OH}$ (b) $\text{C}_{12}\text{H}_{22}\text{OH}$ (c) $\text{C}_6\text{H}_5\text{OH}$ (d) $\text{C}_{10}\text{H}_9\text{OH}$	1	CO5	K4, K5	PO1
xx	Reaction of benzene diazonium chloride with warm water gives (a) Phenol (b) Benzene (c) Benzoic acid (d) Aniline	1	CO3	K4, K5	PO9
<b>Section B (Answer any TWO out of THREE) – 20 Marks</b> (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain the Haworth Synthesis of Naphthalene along with its chemical reactions.	10	CO5	K1, K2	PO1, PO2, PO9
3	Outline the synthetic uses of aryl diazonium salts.	10	CO3	K1, K2	PO1, PO9
4	Explain the Electrophilic Substitution Reaction mechanism with respect to reaction of benzene with Conc. $\text{HNO}_3/\text{Conc. H}_2\text{SO}_4$ and fuming $\text{H}_2\text{SO}_4$ .	10	CO1	K1, K5	PO1
<b>Section C (Answer any SEVEN out of NINE) – 35Marks</b> (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Explain the Haworth Synthesis of Phenanthrene.	5	CO5	K1, K2	PO1
6	Write the chemical reactions of Cyclobutane.	5	CO6	K1, K6	PO2
7	Write the uses of Phenol with chemical reactions.	5	CO2	K3, K5	PO1
8	Explain Acid Value.	5	CO4	K1, K6	PO2
9	Outline the steps involved in the conversion of Phthalic anhydride to Anthracene.	5	CO5	K1, K2	PO9
10	Explain the basicity of Aniline and the effect of substituents on the basicity of Aniline.	5	CO3	K3, K6	PO4
11	Write the reaction and mechanism of Friedel Craft Acetylation of Benzene.	5	CO1	K1, K3K4	PO9
12	Write the structure and uses of DDT, Saccharin, BHC, Chloramine and Phenol.	5	CO1	K1	PO1
13	Explain the orientation effect of Phenol.	5	CO2	K3, K6	PO2



<b>Program</b>	Bachelor of Pharmacy	
<b>Subject Name</b>	Pharmaceutical Microbiology	
	<b>Semester</b>	<b>III</b>
	<b>Year</b>	<b>Nov/Dec 2024</b>
	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Two out of Three of Section B</li> <li>Answer Any Seven out of Nine of Section C</li> <li>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</u> in the <u>Cancellation of the Papers.</u></li> </ul>	
<b>Time:</b>	3 Hour	
<b>Max. Marks:</b>	75	
<b>Knowledge Level (KL)</b>	K1 : Remembering	K3 : Applying
	K2 : Understanding	K4 : Analysing
		K5 : Evaluating
		K6 : Creating

Q. N I	QUESTIONS	Marks	COs	KL	PO
i	Which of the following RNA viruses evolved within the last 10 years? a. Poliovirus b. SARS-CoV c. Smallpox d. West Nile	1	CO1	K1, K2	PO9
ii	What structure is specifically responsible for transporting genetic material from one bacterium to another during conjugation? a. Sheath b. Pili c. Capsid d. All the above	1	CO1	K1, K2	PO1
iii	Alcohol act as a disinfectant by---- a. Producing toxins b. Protein denaturation c. Membrane lysis d. Coagulation	1	CO2	K1, K2	PO2
iv	Test for sterility is intended to detect the presence of---- a. Dust particles b. Particulate impurity c. Viable microbes d. Chemical impurity	1	CO1	K2, K3	PO
v	The first step in infection of a host bacteria cells by a phage is a. Adsorption b. Release c. Penetration d. Replication	1	CO2	K2, K3	PO1
vi	In the cup plate method, the graph plotted relates----to the logarithm of the concentration of antibiotics. a. Time b. Density c. Zone diameter d. Antibacterial capacity	1	CO1	K2, K3	PO2

CO - Course Outcomes,	KL- Knowledge Level,	PO - Program Outcome
CO1	Define and classify the historical development and scope of microbiology.	
CO2	Employ the knowledge to control the microbe by physical and chemical methods.	
CO3	Understand the communicable diseases, sewage and sewage disposal, food spoilage and prevention of food from microbes.	
CO4	Carry out microbiological standardization of Pharmaceuticals.	
CO5	Understand the cell culture technology and its applications in pharmaceutical industries.	



9	Give details on designing of aseptic area.	5	CO2	K2, K6	PO2
10	Explain the gram's staining technique for identification of bacteria with appropriate example.	5	CO2, CO5	K1, K2, K6	PO4
11	Write a note on sources and types of microbial contaminants.	5	CO3, CO5	K1, K6, K4	PO7
12	What is spoilage? Write down the factors affecting the spoilage of pharmaceutical products	5	CO5	K1, K3, K4	PO2
13	Explain the different types of microbial spoilage that can occur in pharmaceutical products and what are the key factors that influence the microbial spoilage of these products?	5	CO3	K3, K4	PO2

vii	Staining material of gram-positive bacterium is a. Fast green b. Haematoxylin c. Crystal violet d. Safranin	1	CO1	K3, K	PO1
viii	Rod shaped bacteria are known as a. Cocci b. Comma forms c. Bacilli d. Polymorphic form	1	CO1	K3, K4	PO1
ix	The most active-stage in the sigmoid curve of bacteria in which maximum growth is attained a. Lag phase b. Stationary phase c. Decline phase d. Log phase	1	CO2	K3, K4	PO1 0
x	The cell wall of Gram-positive bacteria is primarily composed of: a. Peptidoglycan b. Lipopolysaccharide c. Chitin d. Cellulose	1	CO2	K1	PO1
xi	Which staining technique is used to differentiate between Gram-positive and Gram-negative bacteria? a. Acid-fast staining b. Gram staining c. Endospore staining d. Simple staining	1	CO3 CO 5	K1, K2	PO2
xii	The function of pili in bacteria is to: a. Provide motility b. Facilitate DNA transfer c. Protect against phagocytosis d. Store nutrients	1	CO2	K1, K2	PO1
xiii	The term "pathogenic" refers to microorganisms that: a. Are always beneficial b. Cause disease c. Live in extreme environments d. Are used in fermentation	1	CO3	K1	PO2
xiv	In the bacterial growth curve, the phase where the number of dying cells exceeds the number of new cells formed is called: a. Lag phase b. Log phase c. Stationary phase d. Death phase	1	CO4	K1	PO1
xv	Which of the following is NOT a method of physical control of microorganisms? a. Radiation b. Filtration c. Antibiotics d. Heat	1	CO5	K1, K5	PO2
xvi	Which of the following is a method of sterilization that uses high pressure and temperature? a. Pasteurization b. Autoclaving c. Filtration d. UV radiation	1	CO2	K3, K4	PO2

xvii	Which of the following is a mechanism of genetic variation in bacteria? a. Cloning b. Mutation c. Mitosis d. Budding	1	CO4	K1, K5	PO2
xviii	What is the purpose of iodine in the Gram staining procedure? a. Decolorizer b. Mordant c. Counterstain d. Primary stain	1	CO4	K1, K5	PO2
xix	What is the role of a HEPA filter in an aseptic area? a) To add moisture to the air b) To remove contaminants from the air c) To reduce the temperature d) To monitor air pressure	1	CO5	K1	PO1
xx	What is the primary purpose of an aseptic area? a) To ensure the elimination of all bacteria b) To maintain sterile conditions and prevent contamination c) To remove all particulate matter from the environment d) To isolate chemical reactions from the environment	1	CO4	K1, K5	PO1
<b>Section B (Answer any TWO out of THREE) – 20 Marks</b> (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Give the ultrastructure and morphological classification of bacteria with diagram.	10	CO1	K1, K2	PO1
3	Describe the various methods used for identification of bacteria.	10	CO2	K2, K5	PO2
4	Discuss different methods of sterilization with suitable examples	10	CO4	K2, K4, K5	PO1 0
<b>Section C (Answer any SEVEN out of NINE) – 35 Marks</b> (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Explain briefly about Sterility Testing methods according to IP.	5	CO1	K1, K2,	PO1
6	Discuss different types of culture media and bacterial growth curve.	5	CO1	K1, K2	PO2
7	Write a note on morphology and cultivation of viruses.	5	CO1	K1, K2, K4	PO1
8	Give an overview on history and scope of microbiology.	5	CO1	K1, K2	PO2

Program	Bachelor of Pharmacy	
Subject Name	Pharmaceutical Engineering	Semester III
	Year	Nov/Dec 2024

• 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

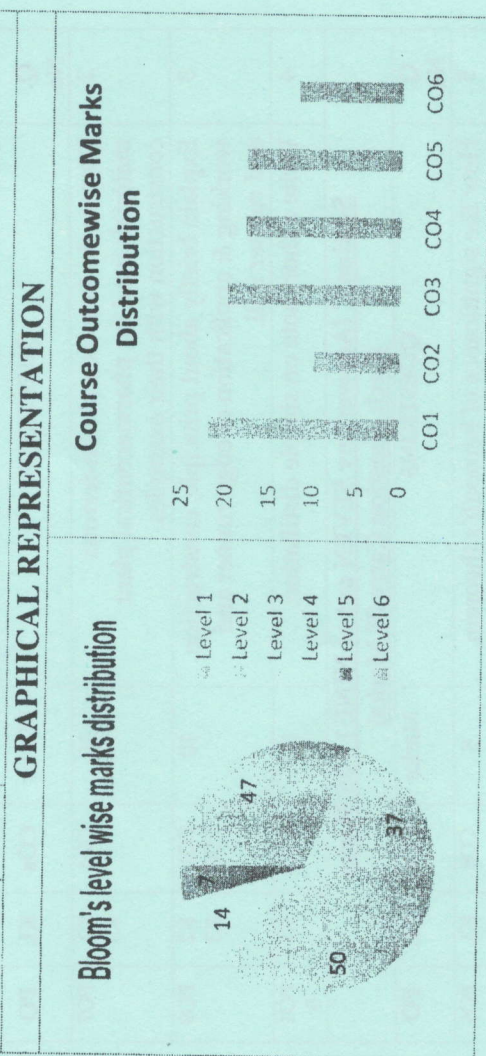
• Possession of Mobile Phones or any kind of Written Material Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers.

Time: 3 Hour  
Max. Marks : 75

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

Q. N	QUESTIONS	Marks	COs	KL	PO
i	_____ deals with fluids in motion. a. Fluid flow b. Fluid-statics c. Fluid dynamics d. Fluidised solids	1	CO6	K2, K1	PO7
ii	Which of following is the mechanism of drying? a. Attrition c. Impact b. Heat transfer d. Stirring	1	CO5	K2, K1	PO1
iii	Which of the following evaporator can be used for thermolabile substances? a. Horizontal b. Forced circulation c. Climbing film d. Evaporating pan	1	CO3	K5, K1	PO9
iv	Which factor is directly proportional to rate of filtration? a. Area b. Volume c. Coefficient d. Viscosity	1	CO3	K5	PO9
v	The principle of Roller mill a. Compression b. Impact c. Agitation d. Seiving	1	CO3	K2, K1	PO9
vi	Which of the following is not the mechanism size reduction? a. Precipitation b. Cutting c. Compression d. Attrition	1	CO1	K1	PO9

CO1	Understand the various laws, mechanisms of unit operations.
CO2	Understand the material handling techniques.
CO3	Perform various processes involved in pharmaceutical manufacturing process.
CO4	Carry out various tests to prevent environmental pollution.
CO5	Know the principle, construction, working, uses, advantages and disadvantages of Pharmaceutical equipments used for various unit operations.
CO6	Understand the concepts of heat transfer and fluid flow.



vii	In air separator, centrifugal force for circulation of air is applied by one of the following ways. a. Applying vacuum c. Pumping	1	CO3	K1, K3	PO7
viii	Which of the following mill has tumbling action? a. Hammer mill c. Colloid mill	1	CO1, CO2	K1, K4	PO9
ix	The hammers in hammer mill is made up of a. Stainless steel c. Both a & b	1	CO2	K2, K3	PO9
x	A device which is used to detect the rate of flow of fluid: a. U-tube manometer c. Mechanical gauge	1	CO6	K1	PO8
xi	In evaporators, condensate outlet is present at a. Top c. Enclosed	1	CO3	K1	PO9
xii	_____ solution is a solution which distills unchanged at a constant temp. a. Clear c. Azeotropic	1	CO3	K3	PO9
xiii	In cyclone separator, Separation of the particles depends on a. Viscosity c. Temperature	1	CO1	K1	PO7
xiv	Which of the following is the equation of pressure by single column manometer: a. $P_A = \rho_2gh_2 - \rho_1gh_1$ c. $P_A = \rho_2gh_3 - \rho_2gh_2$	1	CO6	K1, K2	PO8
xv	The instrument helps in condensing the vapour a. Still c. Condenser	1	CO4	K2	PO9
xvi	Which of the following is NOT the mechanism of size separation? a. Agitation c. Brushing	1	CO1	K2, K3	PO9
xvii	Choose the example of rolling-compression mill. a. Hammer mill c. Roller mill	1	CO1	K4	PO8

xviii	If Reynolds No. is $>4000$ then the flow is, a. Laminar c. Turbulent	1	CO6	K1, K3	PO9
xix	Fourier's law of heat transfer relates with a. Conduction c. Steam	1	CO3	K4	PO9
xx	The rate of flow of fluid can be measured by a. Oscillator c. Manometer	1	CO3	K4*	PO9
<b>Section B (Answer any TWO out of THREE) – 20 Marks</b> (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Discuss the ferrous and non-ferrous materials used for pharmaceutical plant construction with their examples.	10	CO4	K2, K3	PO7
3	Explain briefly about principle, construction, working & application of edge runner and end runner mill.	10	CO1, CO5	K2, K3	PO9
4	Write a short note on simple distillation.	10	CO3	K1	PO1 0
<b>Section C (Answer any SEVEN out of NINE) – 35 Marks</b> (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	How the significance of bernoulli's theorem can be applicable in the theory of flow of fluids? Explain in detail.	5	CO6	K3, K4	PO1 0
6	Write a short note on cyclone separator.	5	CO1, CO5	K1, K6	PO9
7	Enlist and explain the physical factors affecting the materials for pharmaceutical plant construction.	5	CO4	K3, K5	PO1
8	Discuss the principle, construction & working of ball mill.	5	CO5	K1, K2	PO2
9	Define corrosion and discuss its prevention with examples.	5	CO4	K1, K3	PO9
10	What are the mechanism of Heat transfer? Explain conduction by Fourier's law method.	5	CO6	K4	PO1 0
11	Explain in detail about Jet mill.	5	CO2	K1, K3	PO9
12	Write a short note on Drying rate curve.	5	CO3	K2	PO9
13	Write a short note on Elutriation tank method.	5	CO1, CO2	K1, K3	PO1 0





vii	The surface of water in contact with glass wall is- a. plane b. concave c. convex d. both concave and convex	1	CO3	K2	PO1
viii	Cyclodextrins are: a. Mono-saccharides b. Di-saccharides c. Cyclic oligo saccharides d. All of these	1	CO1	K1	PO1
ix	The unit of surface tension in CGS system a. Newton/metre b. Dy/cm c. Milli-newton/ metre d. All of these	1	CO4	K2	PO2
x	Refractive index is measured by- a. Abbe refractometer b. Traditional handheld refractometer c. Digital handheld refractometer d. All of these	1	CO2	K2	PO2
xi	Phase changes from gas to solid is- a. Deposition b. Melting c. Freezing d. Sublimation	1	CO2	K1	PO2
xii	NaCl dissolved in to water then its surface tension is- a. Increases b. Decreases c. Remain same d. All of these	1	CO4	K2	PO1
xiii	The number of osmoles of solute in a litre of solution is called a. Osmolarity b. Osmolality c. Buffer capacity d. Molarity	1	CO6	K2	PO1
xiv	Adhesive forces are the forces acting a. between molecules of different molecule b. between molecules of same material c. Due to gravity d. Both a & b	1	CO2	K2	PO2
xv	Factors influences the solubility- a. Surface area b. Polarity c. Agitation d. All of these	1	CO1	K1	PO2
xvi	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	CO6	K2	PO2
xvii	Dielectric material can be- a. Solid b. Liquid c. Gas d. All of these	1	CO3	K2	PO2

xviii	Caffine + gentisic acid complex a. mask bitter test of caffeine b. improve absorption c. enhances solubility d. All of these	1	CO5	K1	PO1
xix	Nernst's distribution law has application in- a. Solvent extraction b. Determination of solubility c. Partition chromatography d. All of these	1	CO1	K2	PO1
xx	The induced dipole moment per unit electric field is called a. Polarizability b. dipole moment c. dielectric constant d. none of these	1	CO3	K1	PO2
<b>Section B (Answer any TWO out of THREE) – 20 Marks</b> (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain drug protein binding with its various applications.	10	CO6	K5	PO2
3	What is Refractive index? Explain it.	10	CO2	K6	PO1
4	Explain surface tension and its determination by Stalagmometer.	10	CO4	K4	PO1
<b>Section C (Answer any SEVEN out of NINE) – 35 Marks</b> (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
5	Write short note on optical rotation.	5	CO3	K2	PO2
6	What is a surface-active agent? Shortly write about various surfactants.	5	CO4	K1	PO1
7	Shortly write about Nernst potential & Zeta potential.	5	CO2	K2	PO1
8	What is pH? Mention the various applications of buffers.	5	CO6	K4	PO1
9	Write short note on Dielectric constant.	5	CO3	K2	PO2
10	Shortly write about the various interfaces with diagrams.	5	CO5	K6	PO2
11	Write shortly about Solubility Expression.	5	CO1	K5	PO2
12	Shortly write about vapour pressure and Latent heat.	5	CO2	K3	PO1
13	Shortly write about various diffusion principles in biological system.	5	CO6	K4	PO1