S. Y.B PHARM SEMESTER III EXAMINATION 2022-2023
SUBJECT -MICROBIOLOGY

QUESTION :1: MCQ 20

1) …… is an example of Light microscopy

a) Scanning

b) Transmission

c)Dark Field

d)Reflection

2) An example of Indicator medium----------

a) Mac Conkey Agar medium

b) Nutrient Broth

c) Nutrient Agar

d) Czapeckdox medium

3) The characteristic shape of the bacteria is maintained because of ……

a) capsule

b) cell wall

c)cell membrane

d) slime layer

4) Magnification of oil immersion objective is

a) 10x

b) 40x

c) 1000x

d)100x

5) …… developed pure culture technique.

a) A.V. Leeuwenhoek

b) John Tyndall

c)Lister

d) Robert Koch

6) Who is known as Father of microbiology?

a) A.V. Leeuwenhoek

b) John Tyndall

c)Lister

d) Robert Koch

7) Test for sterility is intended to detect presence of _____

a) Viable microorganisms

b) Dust particles

c)Particulate impurity

d)Chemical impurity

8) The full form of HEPA filter is

a) High effective particulate air

b) High effective particles in air

c) High efficiency of particles in air

d)High efficiency particulate air

9) Media prepared by addition of blood, serum or egg to basal media is called as _____

a) Enriched media

b) Enrichment media

c) Selective media

d) Differential media

10) Preservation of microorganisms using liquid nitrogen is employed in _____

a) Storage at low temperature

b) Storage in sterile soil

c) Storage in mineral oil

d) Lyophilization

11) Asbestos filters are also known as _____

a) Berkefield filter

b) Frittered glass filter

c)Seitz filter

d)Morton filter

12) Mordant used in gram staining is _____

a) Crystal violet

b) Gram's iodine

c) Safranin

d)Methylene blue

13) Which of the following agents are used as a preservative in ophthalmic solutions?

a) quaternary ammonium salts

b) alcohol

c)detergent

d)aldehydes

14) Positive air pressure means air flow from _____

a) Steady pressure

b) High pressure area to low pressure area

c)Low pressure area to high pressure area

d)Similar pressure at both side

15) Ingestion of DNA into bacterial cell by virus is also called as _____

a) Attachment

b) Maturation

c)Penetration

d)Biosynthesis

16) fungal cell wall is made up of

a) proteins

b) amino acids

c)peptidoglycan

d) chitin and glucan

17) Which of the following in vapour phase disinfectant

a) formaldehyde

b) soap

c)dyes

d)detergent

18) Primary stain used in Acid fast staining is

a) Crystal violet

b) Carbol Fuschin

c) safranin

d)Malachite green

19) Select the yeast from the following

a) Aspergillus

b) Saccharomyces

c) Streptomyces

d)Penicillium

20) Area of lysis caused by phage is known as

a) pox

b) plaque

c)pocket

d) pock

I Attempt **any one** question from the following

1. A. Explain fractional sterilization in detail 6

B. Write a note on Mechanical methods of Sterilization 6

OR

1. A. Define deferential staining and write principle and procedure of monochrome staining 6

B. write a note on dry heat sterilization methods along with chemical and biological indicators for the same. 6

II Attempt **any four** questions from the following

1. A. Define protoplast and write a note on cell wall of gram-positive bacteria 6

B. Write a note on reproduction in bacteria and add a note on capsule 6

2 A. Describe in detail measurement of growth of bacteria. 6

B. Write in detail various methods of preservation of bacteria. 6

3 A. Write in detail about lysogenic cycle along with the diagram 6

B. Explain sexual reproduction in fungi using a neat labelled diagram 6

4 A.Enlist various methods used for evaluation of Disinfectant as antimicrobial agents and explain any one in detail 6

B. Define disinfection and write note on Halogens and heavy metals and their salts as disinfectants 6

5 A. Write in detail about sterilization by Radiation 6

B. What is turbidimetric assay for antibiotics? Write the advantages of turbidometry over diffusion assay. 6

Subject: Pharmaceutical Engineering **Year and Sem: Second Year Semester III**

Duration: 3 Hrs **Total marks: 80**

N.B. : 1. All questions are compulsory

2. Figures to right indicate full marks

Q. 1	**Choose appropriate option for following multiple choice based questions.**	**20**
1	**Reynolds number depends on one of the following factor.**	
a	Viscosity of the liquid	
b	Surface area of the pipe	
c	Roughness of the pipe	
d	Volume of the liquid	
2	**Which of the following theory is used for the study of flow of fluids?**	
a	Stoke's	
b	Charle's	
c	Raymond's	
d	Bernoulis	
3	**Size reduction of potent materials is necessary for one of the following quality control parameters in formulation of dosage forms.**	
A	Hardness	
b	Friability	
c	Content uniformity	
D	Mixing	
4	**Which theory states that the energy required for size reduction is directly proportional to the new surface area produced?**	
a	Griffith's theory	
b	Rittinger's	
c	Kick's theory	
d	Bond's theory	
5	**During size separation movement of particles can be enhanced by_____**	
a	Agitation	
b	Attrition	
c	Gravitation	
d	Mixing	
6	**Economy of multiple effect evaporator is given by the formula**	
a	N unit of steam supplied / N units of vapour produced	
b	1 unit of steam supplied / N units of vapour produced	
c	N units of vapour produced / N unit of steam supplied	
d	N units of vapour produced / 1 unit of steam supplied	
7	**Process of evaporation can be fastened by**	
a	Increasing the boiling point of liquid feed	
b	Decreasing the boiling point of liquid feed	
c	Decreasing the surface area of evaporator	
d	Decrease the time of exposure of the liquid feed to heat	
8	**In a shell and tube heat exchanger, baffles are provided on the shell side to**	
a	Decreases coefficient of friction	
b	Decreases rate of heat transfer	
c	Prevent stagnation of shell side fluid	
d	Increase the cross-sectional path	
9	**Radiation heat transfer is characterized by**	
a	Movement of discrete packets of energy as electromagnetic waves	
b	Due to bulk fluid motion, there is a transport of energy	

c	There is the circulation of fluid by buoyancy effects	
d	Thermal energy transfer as vibrational energy in the lattice structure of the material	
10	**Stripping area in distillatory refers to_____**	
a	Fusing of liquid	
b	Condensation of liquid	
c	Separation of components	
d	Evaporation of liquid	
11	**Dry spots are formed during one of the following period?**	
a	First Falling period	
b	Constant Rate period	
c	Initial Adjustment period	
d	Second falling period	
12	**Which product is not dried by a spray dryer?**	
a	Fruit juice	
b	Bacterial & viral cultures	
c	Lactose	
d	Serum	
13	**The mixing of liquids at molecular level can be termed as :**	
a	Bulk transport	
b	Turbulent mixing	
c	Laminar mixing	
d	Molecular diffusion	
14	**Turbulent mixing is a mechanism of …… mixing.**	
a	Solid-solid mixing	
b	Solid-liquid mixing	
c	Liquid-liquid mixing	
d	solids only	
15	**One of the following equation gives the rate of filteration**	
a	Darcy's equation	
b	Stoke's equation	
c	Vant - Hoff equation	
d	Einstein equation	
16	**The sequence of arrangement of plates and frames in filter press can be given by dots as one of the following**	
a	1.2.3.1.2.3.1.2	
b	3.2.1.3.2.1.3.2	
c	1.2.3.2.1.3.2.1	
d	1.2.3.2.1.2.3.2	
17	**Centrifugal effect is ……**	
a	F=G/C	
b	C = F /G	
c	G=F/C	
d	C=FG	
18	**Which centrifuge causes considerable breakage of crystals during discharge**	
a	Non-perforated basket centrifuge	
b	Supercentrifuge	
c	Semicontinuous horizontal centrifuge	
d	Tubular bowl centrifuge	
19	**Which metal makes the steel corrosion resistant?**	
a	Chromium and nickel	
b	Copper and selenium	
c	Tantalum and molybdenum	

d	Titanium and niobium	
20	**Dry corrosion is also called as _____**	
a	Oxidation corrosion	
b	Electrochemical corrosion	
c	Wet corrosion	
d	Chemical corrosion	
Q. 2 A	**Answer any one question.**	**12**
a	I. Describe the principle, construction and working of fluidized bed dryer	
	II. Explain Measurement of equilibrium moisture content	
b	I. What is corrosion? Explain different theories of corrosion.	
	II. Describe various types of iron as a material of construction	
Q. 2 B	**Answer any four questions**	**48**
a	I. State and explain laws governing size reduction	
	II. Compare and contrast the advantages and disadvantages of Pitot tube and Rotameter	
b	I. Outline the principle, construction and working of horizontal tube evaporator	
	II. Memorize the concept of heat transfer by convection and working of shell and tube heat exchanger	
c	I. Give the basic principle, theory and application of molecular distillation	
	II. Explain the operation of bubble cap plate in fractional distillation	
d	I. Explain principle construction, working and uses of filterleaf.	
	II. Decribe principle construction, working and uses of perforated basket centrifuge	
e	Explain factors affecting mixing and add a note on liquid mixing mechanisms	

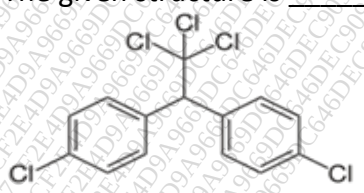
SET I

Subject: Pharmaceutical Organic Chemistry II **Year and Sem: Second Year III SEM**

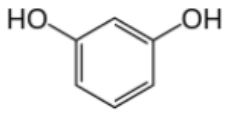
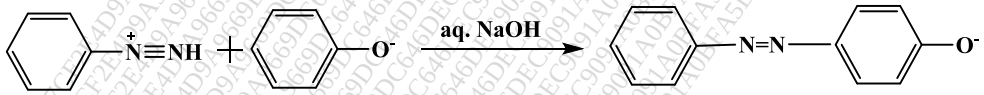
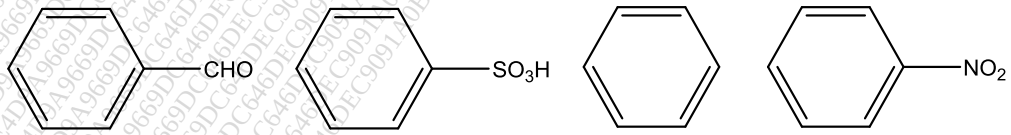
Duration: 3Hours **Total marks: 80**

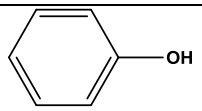
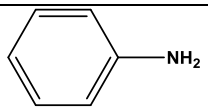
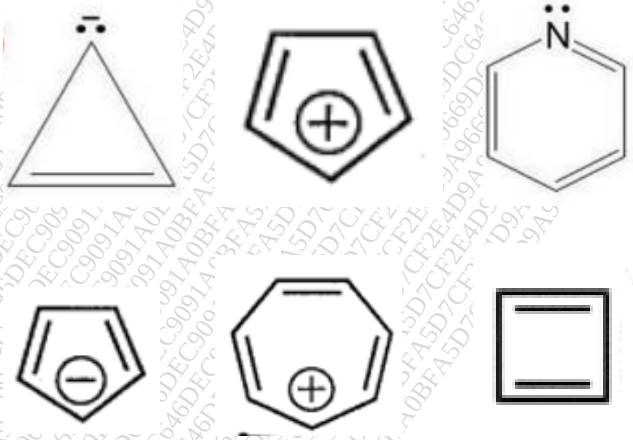
N.B. : 1. All questions are compulsory

2. Figures to right indicate full marks

Q. 1	**Choose appropriate option for following multiple choice based questions.**	**20**
1	According to Baeyer's theory deviation, the normal bond angle is	
a	60°	
b	70°	
C	109.5°	
d	45°	
2	Which one of the following is used for determination of volatile, water soluble fatty acids?	
a	Iodine value	
b	Saponification value	
C	Reichert Meissl value	
d	Acid value	
3	_____ cannot be oxidized by $KMnO_4$	
a	Naphthalene	
b	Anthracene	
C	Phenanthrene	
d	Biphenyl	
4	Which of the following is most deactivated towards electrophilic aromatic substitution?	
a	Benzene nitrile	
b	Toluene	
C	2-Hydroxybenzaldehyde	
d	4-Nitroanisole	
5	According to Baeyer's theory deviation for cyclopropane is _____	
a	60°	
b	49.5°	
C	109.5°	
d	90°	
6	The given structure is _____ and is used as _____ 	
a	Chloramine, disinfectant	
b	DDT, pesticide	
C	Saccharin, sweetener	
d	BHC, agricultural insecticide	

7	Which one of the following formulas corresponds to an unsaturated fatty acid?	
a	$C_{13}H_{27}COOH$	
b	$C_{15}H_{31}COOH$	
C	$C_{17}H_{33}COOH$	
d	$C_{17}H_{35}COOH$	
8	The main sources of naphthalene, anthracene and phenanthrene are ____	
a	Petroleum	
b	Biogas and petroleum	
C	Petroleum and coal tar	
d	Natural gas	
9	Which of the following is most reactive towards sulphonation?	
a	Toluene	
b	Chlorobenzene	
C	Nitrobenzene	
d	*m*-Xylene	
10	The free hydroxyl groups in the fat or oil can be determined by	
a	Acid value	
b	Saponification value	
C	Iodine value	
d	Acetyl value	
11	Iodination of diazonium salts can be done by using ----	
a	KI	
b	CuI	
C	BF_3I	
d	I_2	
12	Which of the following is linearly fused polynuclear aromatic hydrocarbon?	
a	Biphenyl	
b	Anthracene	
C	Phenanthrene	
d	Benzene	
13	Which of the following is not related to EAS reaction?	
a	Formation of benzyne	
b	Formation of σ-complex	
C	Generation of electrophile	
d	Synthesis of nitrobenzene	
14	Liquid oils can be converted to solid fats by	
a	Hydrogenation	
b	Saponification	
C	Hydrolysis	
d	Oxidation of double bonds	
15	The probable starting material for the synthesis of o-Toluic acid could be	
a	p-Toluidine	
b	o-Toluidine	
C	m-toluidine	
d	o-Anisidine	

16	When phenol is treated with excess bromine water, it gives	
a	m-bromophenol	
b	o- and p-bromophenol	
C	2,4-dibromophenol	
d	2,4,6-tribromophenol	
17	Oxidation-Polymerization reaction of oil is called as	
a	Hardening	
b	Rancidity	
C	Drying	
d	Hydrolysis	
18	2-bromo-aniline is less basic than 4-bromoaniline because of—	
a	Electron withdrawing effect of bromine	
b	Ortho effect	
C	Electron releasing effect of bromine	
d	Inductive effect	
19	Identify the structure and its use 	
a	Resorcinol, topical analgesic	
b	m-cresol, disinfectant	
C	o-cresol, antiseptic	
d	m-cresol, antiseptic	
20	In the given reaction, identify the electrophile and the nucleophile 	
a	Diazonium compound is electrophile and phenoxide ion is the nucleophile	
b	Diazonium compound is nucleophilic while phenoxide ion and coupled product is the electrophilic	
C	Both the reactants are nucleophilic	
d	Both the compounds are electrophilic	
Q. 2 A	**Answer any one question.**	**12**
a	**i)** Identify which of the following molecules will readily undergo electrophilic aromatic substitution: Using this molecule, suggest a suitable scheme for the synthesis of 4-Hydroxyacetanilide. (6M)  **ii)** Discuss the effect of -Cl, $-NO_2$, $-OCH_3$ in the para position on acidity of benzoic acid. With the help of simple chemical reagents, predict how you will distinguish between salicylic acid and benzoic acid. (6M)	
b	**i)** Which of the following molecules will undergo Friedel Crafts alkylation? Justify your answer. Give the detailed reaction mechanism for Friedel Crafts alkylation. Give the limitations of Friedel Crafts Alkylation Reaction. (6M)	

	 OR  OR both? **ii)** Why arylamines are weaker bases than cyclohexylamines? Give the factors affecting basicity. Arrange the following compounds in increasing order of basicity. p-chloro aniline, p-methyl aniline, aniline, p-nitro aniline. Justify your answer. (6M)	
Q. 2 B	**Answer any four questions**	**48**
a	**i)** Comment on the term rancidity of fat or oils with reactions and examples. Explain how rancidity of fat or oils is related to acid value? (6M) **ii)** How oils are structurally distinguished from fats? Explain the structural changes occurring in oil during hardening process with suitable example. (6M)	**12**
b	**i)** Arrange benzene, naphthalene, anthracene and phenanthrene in increasing order of reactivity towards electrophilic aromatic substitution reactions. Justify the order. Discuss Pschorr synthesis of phenanthrene. (6M) **ii)** Write the following reactions of anthracene (any three) (6M) a) Reaction with maleic anhydride b) Cl_2 in CCl_4 c) H_2SO_4 d) $AlCl_3$ in benzene, CH_3COCl	**12**
c	**i)** Discuss the structural differences between cyclopropane and cyclobutane with their reactivity. (6M) **ii)** Discuss in detail Baeyer's angle strain theory with its limitations. (6M)	**12**
d	**i)** Identify whether following compounds are aromatic, antiaromatic or nonaromatic. (6M)  **ii)** Describe the diazotization. Give reaction to synthesize azo dye compound. Give the applications of azo dyes. (6M)	**12**
e	**i)** Explain the terms Acid Value, Saponification Value and Iodine Value of fat or oil. Write the principle and significance of determination of these values. (6M) **ii)** Give the medicinal uses of anthracene and phenanthrene. (3M) **iii)** Draw the conformations of cyclohexane and comment on their stabilities. (3M)	**12**

Subject: Physical Pharmaceutics-I **Year and Sem: Second year B Pharm., Sem. III, CBCS (Revised 2019)**

Duration: 3 hours **Total marks: 80**

N.B.: 1. All questions are compulsory

2. Figures to right indicate full marks

Q. 1	Choose appropriate option for following multiple choice based questions.	20
1	Raoult's law describes	
a	how the solubility of gas varies with pressure	
b	how partial pressure of gas varies with temperature	
c	how partial pressure of solvent vapour varies with solute concentration	
d	how partial pressure of solvent vapour varies with solute molecular mass	
2	Solubility of a substance in decreasing order is as follows	
a	Crystalline, metastable, amorphous	
b	Crystalline, amorphous, metastable	
c	Amorphous, metastable, crystalline	
d	Amorphous, crystalline, metastable	
3	In endothermic processes solubility increases with the	
a	Decrease in temperature	
b	Increase in viscosity	
c	Decrease in volume	
d	Increase in temperature	
4	Fick's law is used for the study of	
a	Dissolution rate	
b	Disintegration rate	
c	Dissociation rate	
d	Diffusion	
5	When oil is dispersed in a polar solvent using surfactants, the process is called	
a	Polarization	
b	Emulsification	
c	Gelatinization	
d	Solubilization	
6	Relative humidity is measured by using	
a	Hygrometer	
b	Manometer	
c	Viscometer	
d	Stalagmometer	
7	For the proper functioning of aerosol, adequate vapour pressure is needed for this component	

a	Propellant	
b	Actuator	
c	Drug Solution	
d	Preservative	
8	Amorphous solid is	
a	isotropic	
b	anisotropic	
c	hydrotropic	
d	mesotropic	
9	Optically active substance is able to show its optical activity due to_____	
a	Chiral Carbon in molecule	
b	Symmetry in molecule	
c	Polarity of molecule	
d	Cohesivity of molecule	
10	Which of the following methods is used to determine surface tension?	
a	Rheometer	
b	Sonometer	
c	Stalagmometer	
d	Viscometer	
11	Higher the HLB value of surfactant, more _____ it is	
a	Hydrophilic	
b	Lipophilic	
c	Amphiphilic	
d	Water insoluble	
12	The difference in the work of adhesion and the work of cohesion of liquids on the surface of other liquid is known as	
a	Spreading coefficient	
b	Henry's constant	
c	Diffusion coefficient	
d	Kinematic viscosity	
13	The surface tension usually decreases with	
a	Increase in temperature	
b	Decrease in temperature	
c	Addition of electrolytes	
d	Decrease in surfactant concentration	
14	Which of the following methods has an application in determination of specific surface area of solids?	
a	Langmuir	

b	BET	
c	Kisliuk	
d	Freundlich	
15	EDTA has coordination number	
a	Six	
b	Five	
c	Four	
d	Three	
16	The donor: acceptor ratio of a complex can be obtained by	
a	Solubility Method	
b	Scanning electron microscopy	
c	Differential Scanning Calorimetry	
d	X- ray Diffraction	
17	Identify the type of complex classified under organic molecular complex	
a	PABA-Caffeine Complex	
b	Starch iodine complex	
c	Hexamine Cobalt Chloride complex	
d	Beta Cyclodextrin-salicylic acid	
18	pH of 0.01 N HCL is	
a	2.00	
b	0.699	
c	1.699	
d	1.2	
19	Bursting of blood cells takes place in……..solution	
a	Hypotonic	
b	Hypertonic	
c	Isotonic	
d	Neutral	
20	Buffer capacity can be defined as the ratio of increment of strong base or strong acid to the……..	
a	Change in pH	
b	Change in buffer index	
c	Change in osmotic pressure	
d	Change in temperature	

Q. 2 A	**Answer any one question.**	**12**
a	Explain solubility by different solute-solvent interactions with suitable examples.	
b	What are the assumptions of Langmuir adsorption isotherm study? Derive the expression for Langmuir adsorption isotherms.	
Q. 2 B	**Answer any four questions**	**48**
a	Explain principle of drop count method used in determination of surface tension. In the determination of surface tension of a liquid by the drop-number method, it gives 55 drops while water gives 25 drops for the same volume. The densities of the liquid and water are 0.996 and 0.800 g/cm3 respectively. Find the surface tension of the liquid if that of water is 72.0 dynes/cm.	
b	What is optical activity? With a neat labelled diagram explain the principle and working of polarimeter.	
c	State and explain Nernst distribution law of partition coefficient including its limitations. Explain the applications of partition coefficient in pharmacy.	
d	Classify complexes and explain different types of inclusion complexes.	
e	Give a detailed account of pharmaceutical buffers and buffer capacity.	