STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI 600 086 (For students admitted from the Academic Year 2019-2020 and thereafter)

B.Sc. DEGREE EXAMINATION, NOVEMBER 2024 FIFTH SEMESTER

COURSE : INTERDISCIPLINARY CORE PAPER : BIOANALYTICAL TECHNIQUES

SUBJECT CODE: 19ID/IC/BA55

TIME : 3 HOURS MAX. MARKS: 100

	SECTIO	ON –A			
ANSW	VER ALL THE QUESTIONS:		(30 MARKS)		
I.	MULTIPLE CHOICE QUESTIONS		$(10 \times 1 = 10 \text{ Marks})$		
1.	The light source in AAS isa) Tungsten lamps	•			
	a) Tungsten lamps	b) Sodium lamps			
	c) electrode-less discharge lamps	d) LASER			
2.	Which type of centrifuge form is impor	tant part of vaccine pro	duction?		
	a) Continuous flow b) Isopycnic c)				
3.	Solvent extraction is called	extraction m	nethod		
	a) solid – liquid b) liquid – liquid	c) solid – gas	d) liquid – gas		
4.	TEM was developed by	,	, 1		
	a) Frits Zernike b) Max Knoll & Erns	t Ruska c) George	es Nomarski d)		
	Leewenhoek	, ,			
5.	In electron microscope the specimens as	re mounted on			
	a) copper grid b) diamond slide				
6.	Which rotor hold the sample tubes at an				
	a) vertical b) fixed angle c) swin		orizontal		
7.	For a flame temperature 2100 – 2400 °C				
	mixture is used.	<i>C</i>	_		
	a) C_2H_2 / N_2O b) C_2H_2 / H_2O	c) C_2H_2 / O_2	d) C_2H_2 / Air		
8.	Glycerin can be purified by which of the		,		
	a) Simple distillation b) steam of				
	c) vacuum distillation d) solvent				
	,				
9.	Solvent extraction is governed by which	ı law?			
			law		
	a) Boyle's lawc) Ostwald dilution law	d) Beer's law			
	,	,			
10.	Anthranilic acid is an organic precipitant to extract				
	a) Cu(II) b) Mg(II) c) Fe(II)				
II.	FILL IN THE BLANKS:		$(10 \times 1 = 10 \text{ Marks})$		
11.	In technique the partic	cle size of the sample s	olution must be smaller		
	than $1/10^{th}$ of the wavelength of light				
12.	The gels used for proteins and have high	h resolving power for s	eparating smaller		
	fragments of DNA is				
	-				
13.	Rate-zonal separation is based on partic	lesand _	•		
14.	The cathode of Transmission Electron N	Microscope consists of	•		

15.	Aluminium ion can be precipitated at pH					
16.	Recrystallization involving more than one solvent is termed as					
17.	filter is used in turbidimeter.					
18.	Sectioning is accomplished by using a cutting apparatus called a					
19.	The ratio of increase in size of optical image over the actual size of object being viewed is					
20.		or UV radiation is	lamp.			
III.	MATCH THE FOLLOWING: (5 x 1 = 5 Marks					
21.	Agarose gel	A. Scatter	ted light			
22.	Desiccant	B. Heavy	_			
23.	Formalin		charide polymers			
24.	TEM	D. Fixative				
25.	Nephelometry	E. Calciun				
IV.	ANSWER IN ONE / TWO LINES: (5		$(5 \times 1 = 5 \text{ Marks})$			
26.	Expand FIGE?					
27.	What is solubility	product?				
28.	Define Sedimentation coefficient.					
29.	Define Beer-Lam	bert's law.				
30.	What is confocal	microscopy?				
		SECTIO	N - B			
V.	Answer any FIV	E of the following:	($5 \times 6 = 30 \text{ Marks})$		
31.			Isolation of Chloroplast			
32.	Draw the schematic diagram of flame photometer. Explain its principle.					
33.	Explain the criteria required for an ideal extraction solvents.					
34.	a) Describe the different types of chemicals used as fixatives.			(3 Marks)		
	b) What is drying and igniting the precipitate? (3 M			(3 Marks)		
35.	What is fractional distillation? Give its applications.					
36.	Explain the princi	Explain the principle and applications of Phase contrast Microscopy.				
37.	a). Differentiate between co-precipitation and post precipitation		± •	(3 Marks)		
	b). List the steps i	nvolved in differential	centrifugation with a flow c	hart. (3 Marks)		
		SECTI	ON-C			
VI.	Answer any TW	O of the following:	(2	x 20 = 40 Marks)		
38.	a) What is meant is performed.	is meant by Paraffin Infiltration and Embedding? Elaborate how sectioning rformed. (10 Marks)				
	b) What is Soxhlet extraction? Explain its working principle with a diagram.(10 Marks					
39.	a) Discuss the principle, instrumentation and application of Fluorescence spectrometry					
	b) Explain how nucleation and crystal growth affect the particle size of the precipitate.					
	c) Explain the principle, instrumentation and mechanism involved in capillary					
	electrophoresis.	<u>.</u> '		1 ,		
40.	Write short notes on : $(4 \times 5 = 20 \text{ Mark})$					
	(i) Sublimation (ii) Recrystallisation (iii) Refrigerated Centrifuge			,		
	(iv) SDS- PAGE	•	. ,	_		
