

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2023  
(First Semester)

Branch – FOOD TECHNOLOGY MANAGEMENT

**INSTRUMENTATION & ANALYTICAL TECHNIQUES**

Time: Three Hours

Maximum: 75 Marks

**SECTION-A (10 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Recall the neutral value of the pH scale . a. Less than 5                      b. Equal to 7 c. Equal to 8                        d. Less than 9	K1	CO1
	2	Measure of actual amount of water vapour in the air regardless the air's temperature is ----- a. Relative humidity b. Absolute humidity c. Specific humidity d. None of the above	K2	CO1
2	3	Select the wavelength range corresponding to UV – visible region. a. 400 - 800 nm b. 200 - 800 nm c. 25 µm -2.5 µm d. 2.5 µm – 1mm	K1	CO2
	4	The Scanning Electron Microscope is utilized to test the ----- --of sample. a. Composition b. structure c. Surface topography d. Concentration	K2	CO2
3	5	Which of the following cannot be used as an adsorbent in Column adsorption chromatography? a. Magnesium oxide b. silica gel c. activated alumina d. Potassium permanganate	K1	CO3
	6	Infer the most useful application of affinity chromatography. a. Separation b. identification . c. purification d. quantification	K2	CO3
4	7	Stationery phase in gel filtration technique is ----- a. Buffer b. Silica c. Porous gel matrix d. Squalene	K1	CO4
	8	What are the classifications of membrane separation? a) Pore size b) Separation driving force c) Separation driving pressure d) Separation driving force and pore size	K2	CO4

Cont...



5	9	Enzyme activity is influenced by the following factors except a.pH b. temperature c. pressure d. substrate concentration	K1	CO5
	10	Find the most important immunochemical method? a. Assay b. ELISA c. Radio immunoassay d. turbidimetry	K2	CO5

**SECTION - B (35 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the different criteria that are important in selecting instrumental analytical techniques.	K2	CO1
	(OR)			
	11.b.	Summarize the types of pressure and its method of measurement.		
2	12.a.	Explain the components of NMR Spectroscopy and working principle with a sketch.	K3	CO2
	(OR)			
	12.b.	Explain the principles of fluorescence spectroscopy instrument with a neat sketch.		
3	13.a.	Appraise the principle and working procedure of adsorption chromatography with a diagram.	K3	CO3
	(OR)			
	13.b.	Explain the working principle and components of HPLC with a sketch.		
4	14.a.	Examine the steps followed in gel filtration chromatographic technique with a diagram.	K4	CO4
	(OR)			
	14.b.	Analyze the application of membrane separation technique in food industry.		
5	15.a.	Describe the ELISA technique and its application.	K4	CO5
	(OR)			
	15.b.	Classify the Rapid microbial methods and state its application in food industry.		

**SECTION - C (30 Marks)**

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Categorize the different parameters that are measured by texture analyzer with suitable graph.	K4	CO1
2	17	State the principle and explain the parts of UV Vis spectroscopy.	K4	CO2
3	18	Explain the principle, parts and operating procedure of Gas chromatography.	K4	CO3
4	19	Examine the Gel electrophoresis procedure with a diagram.	K4	CO4
5	20	Analyze the working principle, procedure and application of Differential Scanning calorimeter.	K4	CO5

Z-Z-Z END