

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2024
(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	What is the property determined by use of bomb calorimeters in food analysis? a. Energy content b. Nutrient composition c. Microbial content d. Sensory properties	K1	CO1
	2	Relate the neutral value of the pH scale. a. Less than 5 b. Equal to 7 c. Equal to 8 d. Less than 9	K2	CO1
2	3	Tell the principle on which NMR spectroscopy is based on: a. Absorption of electromagnetic radiation b. Interaction of magnetic nuclei with a magnetic field c. Mass-to-charge ratio of molecules d. Chemical reactions	K1	CO2
	4	Show TEM operates by: a. Focusing light on a sample b. Scanning a sample with a focused electron beam c. Passing a beam of electrons through a thin sample d. Measuring the electrical conductivity of a sample	K2	CO2
3	5	What is Gas chromatography (GC) used for? a. Separating volatile compounds b. Separating non-volatile compounds c. Separating large molecules d. Separating inorganic ions	K1	CO3
	6	Interpret HPLC is a type of which amongst the following: a. Gas chromatography b. Liquid chromatography c. Mass spectrometry d. Spectrophotometry	K2	CO3
4	7	Relate electrophoresis is based on the principle of: a. Differential adsorption b. Differential partitioning c. Differential migration in an electric field d. Differential volatility	K1	CO4
	8	Outline the most commonly used supercritical fluid for extraction is: a. Water b. Ethanol c. Carbon dioxide d. Hexane	K2	CO4
5	9	Match the principle of immunoassays based on: a. Antigen-antibody binding b. Enzyme activity c. Mass spectrometry d. Spectrophotometry	K1	CO5
	10	Translate the number of colonies counted on a plate is directly proportional to: a. The concentration of bacteria in the original sample b. The volume of the sample plated c. The incubation temperature d. The type of agar used	K2	CO5

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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.	Outline the different parameters measured by texture analyser.	K2	CO1
	(OR)			
	11.b.	Summarise the principle and working of a moisture analyser.		
2	12.a.	Model the components of a fluorescent spectrophotometer.	K3	CO2
	(OR)			
	12.b.	Apply the principle of atomic absorption spectrophotometer in food and explain its applications.		
3	13.a.	Organize the working procedure of adsorption chromatography and write its principle.	K3	CO3
	(OR)			
	13.b.	Construct components of a HPLC and note its working principle.		
4	14.a.	Examine gel filtration technique.	K4	CO4
	(OR)			
	14.b.	Dissect the principle and working procedure of isoelectric focusing electrophoresis.		
5	15.a.	Inspect the ELSA technique and its application.	K4	CO5
	(OR)			
	15.b.	Analyze the importance of microbial enumeration in food products .		

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	Categorise the methods of viscometer and state its application.	K4	CO1
2	17	Inspect the principles and parts of UV-Vis spectroscope diagrammatically.	K4	CO2
3	18	Examine the principle, procedure and parts of a gas chromatography.	K4	CO3
4	19	Infer the solid phase extraction principle & procedure with a diagram.	K4	CO4
5	20	Examine the principle and procedure of differential scanning colorimetry.	K4	CO5

Z-Z-Z END