Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Instrumental Methods of Food Analysis — **Semester: VI**

Program: B.Tech. Food Technology — **Duration: 3 Hours**

Course Code: HSFT3016 — **Max. Marks: 100**

Instructions: Read all the questions carefully.

S. No.	Section A Short answer questions (MCQ/ T&F) (20Q x 1.5M= 30 Marks)	Marks	COs
Q1	Which of the following instruments is best for measuring pH? A) Colorimeter B) Spectrometer C) pH meter D) Moisture analyzer	1.5	CO1
Q2	Which method is used to determine total fat in food samples? A) Kjeldahl method B) Soxhlet extraction C) Benedict's test D) Dumas method	1.5	CO1
Q3	Which method is not used for moisture determination? A) Infrared drying B) Oven drying C) Freeze drying D) Kjeldahl method	1.5	CO1
Q4	Which of these methods analyzes carbohydrates by color formation? A) Dumas method B) Anthrone method C) Biuret method D) Soxhlet extraction	1.5	CO1
Q5	Which technique is most suitable for analyzing mineral content? A) Ashing B) Kjeldahl method C) Turbidimetry D) Nephelometry	1.5	CO1
Q6	Turbidity in a food sample is usually caused by: A) Dissolved gases	1.5	CO2

	B) Suspended particles C) Protein denaturation D) High temperature		
Q7	What is the first step in food sample preparation for analysis? A) Filtering B) Labeling C) Homogenization D) Weighing	1.5	CO2
Q8	A nephelometer measures: A) Absorbance B) pH level C) Light scattered by particles D) Heat capacity	1.5	CO2
Q9	Spectrophotometry is based on: A) Heat changes B) Sound waves C) Light absorption D) Electrical signals	1.5	CO2
Q10	What is the principle of the Kjeldahl method? A) Moisture loss B) Ash content C) Nitrogen estimation D) Fat oxidation	1.5	CO2
Q11	Infrared moisture analyzers are faster because they use: A) Microwaves B) Visible light C) Infrared radiation D) Ultrasound	1.5	CO3
Q12	Food sampling must be: A) Random B) Systematic and representative C) Taken only from the top D) Done after processing	1.5	CO5
Q13	Which of the following is NOT a purpose of food analysis? A) Quality control B) Nutrient labeling C) Pricing strategy D) Recipe formulation	1.5	CO3
Q14	Ash content in food reflects the: A) Organic matter	1.5	CO3

	B) Moisture level C) Total mineral content D) Protein breakdown		
Q15	Turbidimetry is ideal for solutions that are: A) Highly transparent B) Colorless and clear C) Cloudy or particulate-rich D) Oily	1.5	CO5
Q16	A drying oven used in food analysis is typically set at: A) 25°C B) 60°C C) 105°C D) 200°C	1.5	CO4
Q17	The main principle behind nephelometry is: A) Transmission of UV rays B) Reflection of light C) Light scattered by suspended particles D) Infrared absorption	1.5	CO4
Q18	Why is sample homogenization important in food analysis? A) To add more nutrients B) To ensure uniformity of the sample C) To reduce volume D) To remove color	1.5	CO3
Q19	Which of these is a gravimetric method for moisture analysis? A) Spectrophotometry B) Refractometry C) Oven drying D) Titration	1.5	CO4
Q20	Which instrument helps determine the total soluble solids (TSS) in a food sample? A) Colorimeter B) pH meter C) Refractometer D) Centrifuge	1.5	CO5
Section B (4Qx5M=20 Marks)			
Q 1	What are the different methods of turbidity analysis? Describe three in detail.	5	CO4
Q 2	Why fat analysis is important? Describe one method of fat analysis in detail.	5	CO5

Q 3	Describe the sampling process. What are the different sampling techniques? Describe briefly.	5	CO3
Q 4	What is the importance of colour analysis? Describe different methods for this.	5	CO1
Section C (2Qx15M=30 Marks)			
Q 1	Ravi owns a food processing unit for multiple food products. a) Write down different physicochemical properties that can be analyzed for a particular food product (Choose any food of your choice). **(5 marks)** b) Describe the principle and working of five different instruments that can be used for analysis of that food product. **(10 marks)**	15	CO5
Q 2	Sunil owns a fruit and vegetable processing unit. Answer the following questions: a) Describe all the proximate properties that can be analysed for a food product. **(5 marks)** b) Describe the principle and methods of analysis for all proximate components. **(10 marks)**	15	CO4
Section D (2Qx10M=20 Marks)			
Q 1	What are Turbidimetry and Nephelometry? Explain their principles, instrumentation, and application in food analysis.	10	CO2
Q 2	Describe the methods of moisture content analysis with its principles.	10	CO3