

- Q.24 Describe how a thermocouple works and its application in industrial settings.
- Q.25 Name a common instrument used to measure viscosity in food products. Explain any one off them.
- Q.26 Define TSS and describe a method for its measurement.
- Q.27 What are industrial weighing systems, and where are they commonly used?
- Q.28 How does a venturi meter measure fluid flow?
- Q.29 What role do instruments play in ensuring product quality and safety?
- Q.30 Explain the process of measuring pH in food products.
- Q.31 Explain the function of a rotameter in flow measurement.
- Q.32 Define manometer, and how does it measure pressure?
- Q.33 Describe the working principle of a Bourdon gauge.
- Q.34 What are the main classifications of automatic process control systems?
- Q.35 What is the differential method of liquid level measurement, and how does it work?

#### **Section-D**

**Note:** Long answer questions. Attempt any two question out of three Questions. (2x10=20)

- Q.36 Define the Bourdon tube? Explain the working of "C" type bourdon tube.
- Q.37 Describe the concept of automatic process control and its classification.
- Q.38 Define an orifice meter? Explain its working with the help of diagram.

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#### **5th Sem./ Food Tech. Subject : Instrumentation & Process Control**

Time : 3 Hrs. M.M. : 100

#### **SECTION-A**

**Note: Multiple type Questions. All Questions are compulsory. (10x1=10)**

- Q.1 What is the primary function of instruments in process industries?  
 a) Increase energy consumption  
 b) Decrease efficiency  
 c) Monitor & control process variables  
 d) Ignore process variations
- Q.2 What is the primary advantages of using a thermistor for temperature measurement?  
 a) High durability      b) Wide temperature range  
 c) High accuracy      d) Resistance to corrosion
- Q.3 Which temperature sensor is suitable for applications requiring high accuracy and precision?  
 a) Thermometer      b) Thermocouple  
 c) Thermistor      d) Pyrometer
- Q.4 Which of the following is NOT a type of industrial weighing system?  
 a) Bench scale      b) Crane scale  
 c) pH meter      d) Platform scale

- Q.5 The viscosity of a fluid is primarily influenced by its:  
 a) Temperature      b) Color  
 c) pH level      d) Humidity
- Q.6 What is the purpose of manometer in process industries?  
 a) Measure flow rate      b) Measure pressure  
 c) Measure temperature      d) Measure viscosity
- Q.7 Which instrument is used to measure the viscosity of fluids in process industries?  
 a) Viscometer      b) Conductivity meter  
 c) Hygrometer      d) pH meter
- Q.8 What does TSS stand for in industrial processes?  
 a) Total Suspended Solids  
 b) Total Solute Solution  
 c) Temperature Sensing System  
 d) Transient State Solids
- Q.9 Which instrument is commonly used to measure humidity levels?  
 a) Hydrometer      b) Hygrometer  
 c) Thermometer      d) pH meter
- Q.10 A solution with a pH value of 10 is considered:  
 a) Neutral      b) Acidic  
 c) Basic      d) Saline

### Section-B

- Note:** Objective type questions. All questions are compulsory. (10x1=10)
- Q.11 Pyrometers are used to measure temperatures by direct contact with the object being measured. (True/False)

- Q.12 Bourdon gauge is suitable for measuring vacuum. (True/False)
- Q.13 TSS stands for Total Suspended Solids and is used to measure the concentration of suspended particles in a liquid. (True/False)
- Q.14 Automatic process control involves manual adjustment of process variable. (True/False)
- Q.15 Measurement of vacuum is usually done in units of pounds per square inch (psi). (True/False)
- Q.16 \_\_\_\_\_ is a measure of a fluid's resistance to flow, with higher viscosity indicating thicker or more resistant fluid (Viscosity/Conductivity)
- Q.17 Orifice meters are commonly used for liquid level measurement. (True/False)
- Q.18 \_\_\_\_\_ is the measure of the amount of water vapor present in the air, typically expressed as a percentage. (Humidity/Conductivity)
- Q.19 A \_\_\_\_\_ is a type of temperature sensor that exhibits a decrease in resistance with increasing temperature. (Thermistor/Pyrometer)
- Q.20 \_\_\_\_\_ are instruments used to measure pressure, typically using a column of liquid in a U-shaped tube. (Manometers/Rotameter)

### Section-C

- Note:** Short answer type Question. Attempt any twelve questions out of fifteen Questions. (12x5=60)
- Q.21 What are dynamic characteristics of an instrument?
- Q.22 How do instruments contribute to process control and optimization?
- Q.23 Explain the application of thermometer in process industries.