Seat No: _____ Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Winter2019 - 20Examination

Semester: 5th **Date: 26/11/2019**
Subject Code: 03112301 **Time: 10:30am to 01:00pm**
Subject Name: Industrial Measurement Techniques-II **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 **Objective Type Questions** - (All are compulsory) (Each of one mark) **(15)**

1. _____transducers are self-generating devices.
   a) Active b) Passive c) Electrical d) Pneumatic
2. _____ are used to determine when an object has moved to within some particular critical distance of the sensor.
   a) Proximity Sensor b) Ultrasonic Sensor c) Piezoelectric Sensor d) None of these.
3. _____is defined as the difference between the indicated value and the actual value.
   a) Accuracy b) Range c) Span d) Linearity
4. What is the unit of Strain?
   a) Unitless b) $N*m/s^2$ c) Poise d) N*m
5. _____ Signals are associated with changes in logical state (T/F).
   a) Analog b) Digital c) Sinusoidal d) All off the above
6. _____is used for measurement of angular displacement.
7. Define: Viscosity and give it's unit.
8. Give full form of: SONAR
9. Differentiate Range and Span.
10. What is the industrial standard range of electrical & pneumatic signal?
11. What is the range of ultrasonic signal?
12. State the meaning of electrolyte solution?
13. Distinguish: Accuracy and Precision
14. Express the formula for measuring Gauge factor of strain gauge.
15. What is the difference between stress and strain?

Q.2 **Answer the following questions. (Attempt any three)** **(15)**

A) Discuss optical transducers.
B) Illustrate: DC Polarography.
C) Give differences between Newtonian liquids and Non Newtonian liquids.
D) A metal wire is a 2.5 mm diameter and 2m long. A force of 12N is applied to it and it stretches 0.3mm. Assume the material is elastic. Determine the stress &strain in the wire.

Q.3 A) Explain principle, construction & working, advantages, disadvantages of LVDT for linear Displacement measurement. **(07)**

B) Describe working methods for Turbidity measurement.. **(08)**

OR

B) Explain principle, construction and working of Infrared Gas Analyzer **(08)**

Q.4 A) Two strain gauges attached to the surface of a cylindrical pressure vessel, one in axial and one in circumferential direction, gave the strain values of 0.00120 and 0.00230 respectively. Calculate the hoop and the longitudinal stress values if the cylinder is of steel having a modulus of elasticity of 198 GN/m^2 and poison's ratio =0.18. **(07)**

OR

A) Explain the methods of force measurement. **(07)**

B) Explain Buoyancy principle and different techniques for density measurement of density. **(08)**