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**Question Paper Code: 41642**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Fourth Semester

Instrumentation and Control Engineering

14UIC402 - INDUSTRIAL INSTRUMENTATION - I

(Common to Electronics and Instrumentation Engineering)

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Which of the following statements is true about stroboscope?
  - Stroboscope is non-contact type frequency instrument
  - Stroboscope can measure frequency upto 5 Hz
  - Stroboscope uses electromagnetic radiations to measure frequency
  - All of the above
- Pneumatic load cells use this method for measuring
  - temperature
  - pressure
  - force
  - torque
- An LVDT has an output in the form of
  - linear displacement of core
  - pulse
  - rotary movement of core
  - angular movement of core
- The atmospheric pressure is taken as one bar: 1bar =
  - 10.3 kg/cm<sup>2</sup>
  - 20.6 kg/cm<sup>2</sup>
  - 5.2 kg/cm<sup>2</sup>
  - 15.8 kg/cm<sup>2</sup>
- 1 psi is equal to
  - 6.895 pa
  - 68.95 pa
  - 6.895 k pa
  - 68.95 k pa

6. Pirani gauge is a device that measures \_\_\_\_\_ pressure.
- (a) absolute (b) relative  
(c) vacuum (d) low pressure
7. Thermistor can be used to measure
- (a) flow (b) level  
(c) temperature (d) pressure
8. Resistors with negative temperature coefficient are called as
- (a) Thermocouple (b) Thermistor  
(c) RTD (d) pyrometer
9. The optical pyrometer cannot be used for temperature under \_\_\_\_\_ approximately.
- (a)  $800^{\circ}\text{C}$  (b)  $900^{\circ}\text{C}$  (c)  $1000^{\circ}\text{C}$  (d)  $700^{\circ}\text{C}$
10. Standard current signal in process industry is
- (a)  $4 - 20\text{ mA}$  (b)  $0 - 20\text{ mA}$  (c)  $10 - 20\text{ mA}$  (d)  $5 - 20\text{ mA}$

PART - B (5 x 2 = 10 Marks)

11. Define proving ring.
12. What are the applications of bridge type gas densitometer?
13. What are the demerits of dead weight tester?
14. Point out the factors governs the sizes of wires used for thermocouples.
15. List the advantages of RTD's.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain about magneto elastic and piezo electric load cell with neat sketch. (16)
- Or
- (b) Explain any one method of torque measurement with neat diagram. (16)
17. (a) Explain in detail about LVDT and strain gauge accelerometer. Give its merit and demerits. (16)
- Or
- (b) Explain the working principle of strain gauge accelerometer. (16)

18. (a) With a neat sketch derive and explain any two types of manometers. (16)

Or

(b) Describe the Bourdon tube gauges. (16)

19. (a) Describe the construction and working of 3 wires and 4 wires RTDs. (16)

Or

(b) Demonstrate any one type of filled in system thermometer. (16)

20. (a) Describe the commercial circuits for cold junction compensation. (16)

Or

(b) (i) Explain optical radiation pyrometer. (8)

(ii) Explain total radiation pyrometer. (8)

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