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Question Paper Code: 44602

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

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 up to 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/cm²
 - 20.6 kg/cm²
 - 5.2 kg/cm²
 - 15.8 kg/cm²
- 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°C (b) 900°C (c) 1000°C (d) 700°C
10. Optical pyrometer is used to measure
- (a) light intensity (b) low temperature
(c) high temperature (d) light intensity and high temperature

PART - B (5 x 2 = 10 Marks)

11. Define proving ring.
12. What are the applications of bridge type gas densitometer?
13. Differentiate gauge pressure and absolute pressure.
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) What is a load cell? Explain with neat sketches the construction and working of any three types of load cells. (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) Describe the operating principle of a pressure head type densitometer for open and closed tanks with relevant diagrams. (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) Illustrate how radiation measurement is done using optical pyrometers. Mention its advantages and disadvantages. (16)

Or

(b) Why cold junction compensation is necessary in thermocouple? Describe any three cold junction compensation techniques in detail. (16)

