

B.E DEGREE EXAMINATIONS: APRIL/MAY 2014

(Regulation 2009)

Sixth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE109 : Industrial Instrumentation - II

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. What causes the piezoelectric effect?
 - a) Heat or dissimilar metals
 - b) Pressure on a crystal
 - c) Water running on iron
 - d) A magnetic field
2. Hot wire anemometers are used for measuring
 - a) Gas velocities
 - b) Pressure of fluids
 - c) Liquid Discharges
 - d) Very low pressures
3. A flow meter that is independent of liquid density is
 - a) Rotometer
 - b) Electromagnetic flow meter
 - c) Venturimeter
 - d) Orifice meter
4. Pitot tube has _____
 - a) Less pressure loss
 - b) High pressure loss
 - c) High head loss
 - d) Less head loss
5. _____ is a variable area flow meter.
 - a) Rotameter
 - b) Ultrasonic flowmeter
 - c) Bubbler system
 - d) Level switches
6. _____ is a type of quantity flow meter.
 - a) Mutating disc
 - b) Vortex flow meter
 - c) Laser meter
 - d) Target flow meter
7. Ultrasonic flow meter works under the principle of _____
 - a) Laser Doppler
 - b) Electromagnetic
 - c) Angular momentum
 - d) Coriolis
8. Which of the following transducers is used for transmitting as well as receiving the acoustic energy in an ultrasonic flow meter?
 - a) LVDT
 - b) RTD
 - c) Strain gauge
 - d) Piezo electric crystals

9. LVDT is an
 - a) Eddy current transducer
 - b) Inductive transducer
 - c) Resistive transducer
 - d) Magneto striction transducer
10. Capacitive transducers are normally employed for
 - a) Static measurements
 - b) Dynamic measurements
 - c) Static and dynamic measurements
 - d) Transient measurements

PART B (10 x 2 = 20 Marks)

11. State the advantages and disadvantages of piezo resistive pressure sensor.
12. List the different types of manometers.
13. Define Stagnation point in pitot tube.
14. What is meant by Vena contracta taps?
15. What are the different types of positive displacement meters?
16. What is the principle of turbine flow meter?
17. What is the principle of working of vortex flow meter?
18. What are the different methods of solid flow measurement?
19. How ultrasonic sensors be used for level measurement?
20. What is meant by bubbler system?

PART C (5 x 14 = 70 Marks)

21. a) i) Briefly explain how mcLeod gauge can be used for pressure measurement. (7)
ii) Explain how dead weight pressure tester be used to calibrate pressure gauges. (7)
(OR)
b) Briefly explain with neat diagram the strain gauge type and capacitive type pressure gauges
22. a) i) Discuss the principle and operation of Dall tube with neat sketches. (7)
ii) Explain the principle of operation of flow nozzle. (7)
(OR)
b) Describe in detail the installation and piping arrangements of different fluids in head flow meters.
23. a) (i) Write short notes on Angular-Momentum-Type Mass Flow Meters. (9)
(ii) Briefly Explain about the types of Thermal Mass Flow Meters (5)

(OR)

b) Briefly explain the essential elements of any rotameter.

24. a) Describe with neat sketch the construction and working of different types of Ultrasonic flow meters.

(OR)

b) Discuss Laser Doppler anemometer with neat diagram.

25. a) How gauge glasses can be are used to measure liquid level.

(OR)

b) Describe what a displacer liquid level measurement system is and how it measures level.
