KUMARAGURU
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Register Number: ……..

B.E DEGREE EXAMINATIONS:MAY 2015

(Regulation 2009)

Sixth Semester

ELECTRONICS AND INSTRUMENTATION ENGG

EIE 109: Industrial Instrumentation- II

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. ---------- represents the difference between absolute pressure and local atmospheric pressure
   a) Gauge pressure b) Vaccum pressure
   c) Static pressure d) Dynamic Pressure
2. Dead weight tester is used for
   a) testing dead weights b) producing high pressures
   c) calibrating pressure instruments d) measuring process pressures
3. ---------- is mainly used for measurement of fluid velocity.
   a) orifice b) Flow nozzle
   c) Dahl tube d) Pitot tube
4. Which of the following restriction type primary element has low pressure loss but cost is high?
   a) Orifice b) Flow nozzle
   c) Dahl tube d) Pitot tube
5. ---------- flowmeter is used to measure the mass flow rate of foams, slurries and peanut butter.
   a) Rotameter b) Coriolis
   c) Angular momentum d) thermal
6. -------- flow meter measures flow rates which is independent of density.
   a) Rotameter b) Venturimeter
   c) Orificemeter d) Electromagnetic flowmeter
7. The flow meter that works on the principle of Faraday's law is
   a) Ultrasonic flow meter b) Vortex shedding flow meter
   c) Positive displacement flow meter d) electromagnetic flow meter

8. Solid flow measurement is done by

a) Dynamic weighing b) Ultrasonic method

c) Electromagnetic method d) None of the above

9. If P is the pressure and ρ is the density, the level h is given by

a) $h=P/\rho$ b) $h=\rho/P$

c) $h=P\rho$ d) $h=P-\rho$

10. Hydrostatic pressure type level indicator is

a) Direct method of liquid measurement b) Indirect method of level measurement

c) Non contact type of level measurement d) None of the above

PART B (10 x 2 = 20 Marks)

11. State the working principle of McLeod gauge.
12. ry is the commonly used manometric fluid. Why?
13. What is venacontracta position?
14. Differentiate between laminar and turbulent flow.
15. State the working principle of positive displacement flow meters.
16. What are the different types of inferential flow meter?
17. Summarize the factors to be considered for the selection of flow meters?
18. Why DC excitation is not permitted in electromagnetic flow meter? How pulsed dc excitation account for such disadvantages?
19. What are the advantages of sight glass level instrument?
20. Write the working principle of air purge system.

PART C (5 x 14 = 70 Marks)

21. a) Illustrate how vaccum can be measured using ionization gauges. Also list their advantages and disadvantages.

(OR)

b) Describe the construction and working of different types of elastic type pressure gauges with neat diagrams.

22. a) (i) Review the theory of variable head flow meters in detail with a neat diagram. (8)

(ii) Differentiate between orifice and venturi flow meters. (6)

(OR)

b) Discuss the installation of head flow meters and piping arrangement for different fluids with neat diagrams.

23. a) Explain in detail about calibration procedure of flow meters with neat sketches.

(OR)

b) Discuss the construction and working of angular momentum mass flow meter with neat diagram.

24. a) Explain the following with neat diagrams

Ultrasonic flow meter (8)

Laser Doppler anemometer (6)

(OR)

b) (i) With neat sketch, explain the working of Electromagnetic flow meter. (7)

(ii) Explain about solid flow measurements. (7)

25. a) (i) Explain how boiler drum level is measured using hydra step system with a neat diagram. (8)

(ii) Discuss the operation of magnetic float type level switches. (6)

(OR)

b) (i) of nuclear level detection system (7)

(ii) Explain the construction and working principle of Displacer and Torque Tube type level measurement (7)

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