**Reg. No. \_\_\_\_\_\_\_\_**

**Karunya University**

**(Karunya Institute of Technology and Sciences)**

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination - June 2011**

**Subject Title: INDUSTRIAL INSTRUMENTATION Time: 3 hours**

**Subject Code: EI256 Maximum Marks: 100**

#### **Answer ALL questions**

**PART – A (10 x 1 = 10 MARKS)**

1. One Torr is defined as

a. one inch Hg b. one mm Hg c. one atmosphere d. one kilopascal

2. An ionization gauge measures the \_\_\_\_\_\_\_\_\_ of the gas instead of its pressure.

3. Variable head flow meters operate on the \_\_\_\_\_\_\_\_\_ theorem.

4. Rotameter is good in pulsating services. (True / False)

5. A thermocouple is calibrated

a. by comparing its response with standard thermometer at the same temperature

b. by comparing its response with standard thermometer at the different temperature

c. by comparing its response with ordinary thermometer at the same temperature

d. none of the above

6. Pyrometry is a technique for measuring temperature \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_.

7. The pressure gauge level indicator must be mounted at \_\_\_\_\_\_\_\_\_ as the \_\_\_\_\_\_\_\_\_ level of the tank.

8. The performance of capacitance level indicator is severely affected by dirt, because they change

a. area of the plate. b. distance between two plates. c. dielectric constant

d. none of the above.

9. MOD bus is a transmission protocol for \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ systems.

10. The protocols used for smart transmitter can be

a. DE b. INTENSOR c. HART d. all the above.

**PART – B (5 x 3 = 15 MARKS)**

11. Define the following terms

a. gauge pressure b. static pressure c. Velocity pressure

12. Name three types of flow meters. Explain the principle of operation of one of them.

13. Write down the lower and higher temperature limits in the centigrade scale and Fahrenheit scale on commonly used thermometers. At what temperature the reading of Centigrade and Fahrenheit scales are equal?

14. List the advantages and disadvantages of float type level indicators.

15. List out the features of field bus over hard wired installation.

**PART – C (5 x 15 = 75 MARKS)**

16. What are the different types of manometers? Explain the working of any one manometer with a neat sketch. What are the types of errors in manometers?

(OR)

17. Explain with a neat diagram, the construction and working of Mc Leod gauge.

[P.T.O]

18. Discuss any type of flowmeter used to measure the flow of highly corrosive liquids involving measurements of erosive slurries. Also discuss its advantages and disadvantages.

(OR)

19. Describe any type of flowmeter effectively used for aerospace and airborne applications for energy fuel and cryogenic flow measurements.

20. Explain with a neat sketch, the construction and working of thermistor.

(OR)

21. Describe the working principle, construction and operation of an optical pyrometer with a neat sketch.

22. List the various types of solid level measurement systems used in industry. Describe in detail the working and construction of any one of them.

(OR)

23. Discuss in detail the construction and working of

a. Air purge system for liquid level b. Radiation level indicator.

24. Write detailed notes on the various types of field buses, features, advantages and limitations.

(OR)

25. What are smart and intelligent transmitters? Discuss the operation of smart transmitter with HART communicator.