**MSCI01**

**MTEE16A1/MTETE16B1**

**MODEL QUE PAPERS**

**M.TECH**

**IV Semester**

**SPE: (CONTROL & INSTRUMENTATION ENGINEERING)**

**INDUSTRIAL INSTRUMENTATION & CONTROL**

Time: 3 Hours Max. Marks: 75

***INSTRUCTIONS:***

* *Question paper is divided into three groups.*
* *Each group is of 25 marks.*
* *Figure to the right in bracket indicates mark.*
* *Assume suitable data if necessary.*

**GROUP A : Answer any three questions. (Question No. 1 is compulsory)**

Q.1 What is a microscope? What are the different types of microscope? (05)

Q.2 Compare with respective advantages and disadvantages the inductive,

capacitive and ultrasonic methods of thickness measurements. (10)

Q.3    What is the basic concept of optical pyrometer? How it is applicable in

Temperature measurement? (10)

Q.4    Explain differential pressure measure is applicable in measurement of flow?

(10)

Q.5    Enumerate and explain any two method to measure the force.  (10)

**GROUP B : Answer any three questions. (Question No. 6 is compulsory)**

Q.6 What is telemetry system? What are the different types of telemetry systems used? (05)

Q.7 Describe the construction and operation of a permanent magnet moving coil instrument. How could it be modified for use as (i) ammeter and (ii) voltmeter? (10)

Q.8 Explain with the help of neat sketch the construction and working of a

programmable logic controller used in process industries. Explain the benefits of using PLCs for the industrial application.? (10)

Q.9 A coil with a resistance of 6 Ω is directly connected to the test terminal .

For a 120 pF capacitance of the tuning capacitor the resonance is obtained atthe oscillator frequency of 1 MHz. Calculate the percentage error introduced in the calculated value of Q by the 0.01 Ω insertion resistance? (10)

Q.10 Explain how the diaphragms help to detect pressure with the help of a bridge circuit? (10)

**GROUP C: All Questions are Compulsory.**

**Q.11 Fill in the blanks (Each question carries 2 marks)**

(i) Bimetallic thermometers strips are made of two metals with different \_\_\_\_\_\_.

(ii) The average deviation is a \_\_\_\_\_\_\_\_\_\_\_ of the instruments.

(iii)      To minimize the offset of proportional controller, Proportional gain is

required to \_\_\_\_\_\_\_\_

(iv)       Distribution control system is used for \_\_\_\_\_\_\_\_\_\_\_\_type of process.

(v)  Hot wire anemometer is used for \_\_\_\_\_\_\_\_\_\_\_\_

**Q.12 Multiple choice question. (Each question carries 2 marks)**

(i) Vibrating densitometer is used for density measurement of \_\_\_\_\_\_\_\_\_\_.

(a) Both solids and gases

(b) Both solids and liquids

(c) Both liquids and gases

(d) All of these

(ii) The principle requirements in magnetic measurements are \_\_\_\_\_\_\_\_\_\_\_.

(a) Measurements of magnetic field strength in air

(b) Determination of B-H curve and hysteresis losses of ferromagnetic

materials

(c) Determination of eddy current losses

(d) All of the above

(iii) The magnetic pick-up sensors produces

1. pulses from a rotating shaft with mechanical contact
2. pulses from a rotating shaft without mechanical contact
3. an analog signal in the form of a continuous drag
4. none of these

(iv) Micro can passes through

1. Fibre glass tank
2. Metal tank
3. Both of them
4. None of these
   1. In laser diameter gauge
5. Two pairs of laser beam transmitter receiver are used
6. One pairs of laser beam transmitter receiver are used
7. Four pairs of laser beam transmitter receiver are used
8. None of these

**Q.13 True or false (Each question carries 1 marks)**

(i) The input to a PLC is always analog and the output from PLC is always digital in nature.

(ii) In torque sensors, temperature sensor is not required.

(iii)    PT-100 means platinum 100.

(iv)      Square root extractor is used in pressure transmitter.

(v) Telemetry is used to transmit a data for long distance

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