B.E. Fourth Semester (Instrumentation Engineering) (CGS)

10782 : Advance Sensors and Transmitters : 4 IE 04

P. Pages : 2 | **AU - 2597**

Time : Three Hours | Max. Marks : 80

Notes : 1. All question carry equal marks.
2. Answer **three** question from Section A and **three** question from Section B.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) Explain on chip signal processing of intelligent sensor. **6**

b) Explain, how intelligent sensor is different from conventional transducer. **7**

OR

2. a) Explain photolithography and micromatching techniques of MEMS sensor fabrication. **7**

b) Explain design challenges which occurs in MEMS sensors. **6**

3. a) Explain procedure for cleaning electrode. **6**

b) What is the effect of frequency occurs on cell constant. **7**

OR

4. a) What is standard Hydrogen electrode? Why is it used generally as a reference electrode? Discuss it's utility in chemical measurement analysis. **7**

b) How do we measure pH with the help of pH scale? Explain. **6**

5. a) Explain disc type digital encoder. **7**

b) Explain digital torque sensor with inductive pick-up. **7**

OR

6. a) Explain proximity sensor in detail. **7**

b) Explain with suitable circuit diagram, how incremental optical encoder can be used as a position transducer. **7**

SECTION - B

7. a) What do you mean by density and viscosity? What is the need of density and viscosity measurement. **6**

b) Explain vibrating tube densitometer. 7

OR

8. a) Explain in detail about rotameter type viscometer. 6

b) Explain the working of centrifugal gas density sensor. 7

9. a) Explain piezoelectric biosensor with their merits and demerits. 7

b) What is a nanosensor? Explain development procedure of nanosensor. 7

OR

10. a) Explain in detail Jerk meter type accelerometer. 7

b) Explain the selection criteria of vibration sensor. 7

11. a) What is a actuator? Explain electrohydraulic actuator with its constructional details. 6

b) Explain construction and working of 2-wire transmitter. 7

OR

12. a) Explain in detail the differential pressure transmitter. 6

b) Explain pneumatic actuator with suitable diagram. 7

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