Roll No. ☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 01

Total No. of Questions : 8

M.Tech. (EPDT) (2018 Batch) (Sem.–2)
ADVANCED SENSORS AND ACTUATOR
Subject Code : MTEP-PE4C-18
M.Code : 76228

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1.   Attempt any FIVE questions out of EIGHT questions.
2.   Each question carries TWELVE marks.

1.   a.   Explain the various sources of errors encountered in a measurement system.   6

      b.   Explain the static and dynamic characteristics of measurement systems.   6

2.   a.   Explain the principle, construction and working of thermocouple as temperature sensor. Mention the important consideration for the selection of thermocouple wire material.   8

      b.   Why is silicon not a piezoelectric material? What structure does a material have to have to be piezoelectric?   4

3.   a.   What is CCD and what is its basic working and principle?   6

      b.   Explain how an optical sensor can be used for position measurement.   6

4.   With neat diagram, explain the construction and working of stepper motor. State its applications.   12

5.   a.   Explain the factors to be considered during selection of actuators.   6

      b.   Explain actuator bandwidth and frequency response.   6

6.   a.   Explain different components of hydraulic actuating systems.   8

      b.   How do you protect against over-current and over-voltage? Explain with the help of suitable circuit diagram.   4

7.   a.   Elaborate the techniques of generating frequency from a sensor signal.   6

      b.   Explain the advantages offered by the use of linear electric motor for the transport industry.   6

8.   Write short notes on :

      a.   Tachometer   6

      b.   MEMS   6

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.