

Roll No.

Total No. of Pages : 02

Total No. of Questions : 8

M.Tech. (Embedded System) (Sem.-2)

ADVANCE SENSORS AND ACTUATOR

Subject Code : MTES-PE4C-18

M.Code : 76216

Date of Examination : 19-07-22

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) Define the following terms with reference to sensors :
 - i) Accuracy 2
 - ii) Resolution 2
 - iii) Linearity 2
 - iv) Calibration and Traceability. 2
- b) Enlist the factor that should be considered while choosing a Sensor. 4
2. a) Discuss the principle, Construction and working of any one Temperature sensor. Also, enlist the applications where temperature sensors are used. 6
- b) Write short note on following sensors :
 - i) CMOS sensors 3
 - ii) Electrostatic Sensors. 3
3. a) Mention the different deviations that need to be compensated in sensor system. 3
- b) Write a short note on : 9
 - i) Excitation, amplification and filters.
 - ii) Home Appliance sensors.

4. a) Explain about the different pressure control valves in detail. 8
- b) Explain the principle operation of hydraulic cylinder. 4
5. a) What are electrical actuation systems? Explain the important functions of electrical actuation systems. 6
- b) Explain in brief how bearing mechanisms used as mechanical actuation systems? 6
6. Explain the following :
- a) Soft and Intelligent sensors 6
- b) Virtual instrumentation. 6
7. a) How is the water level sensed in washing machines? Sketch the sensor and explain its operation. 6
- b) Explain with a block diagram to show how sensors interact with the automated manufacturing process. 6
8. Explain the following in brief :
- a) Fault Tolerance 4
- b) Ultrasonic sensors 4
- c) DC Motors. 4

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.