

313330

12526

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Answer each next main Question on a new page.
- (3) Illustrate your answer with neat sketches wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Assume suitable data, if necessary.
- (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: 10
- a) Define calibration. State the significance of Calibration of an instrument.
- b) Define :-
- i) Speed of response
- ii) Lag
- c) State the advantages of Digital multimeter. (Any two points)
- d) State the need of signal conditioning circuit.
- e) State the full form of :-
- i) PLC
- ii) SCADA
- f) State the different types of automation systems.
- g) Define DOF.

P.T.O.

- 2. Attempt any THREE of the following: 12**
- a) Explain the sources of errors in the measurement system.
 - b) List any two uses of the following instruments :-
 - i) Digital multimeter
 - ii) Signal generator.
 - c) Explain the block diagram of the function generator.
 - d) Explain the block diagram of the AC signal conditioning circuit.
- 3. Attempt any THREE of the following: 12**
- a) Explain the block diagram of signal generator.
 - b) Compare Data Logger with Data Acquisition system (Any four points)
 - c) Compare analog and digital instruments (any 4 points)
 - d) Draw and explain the arm geometry of cylindrical robot.
- 4. Attempt any THREE of the following: 12**
- a) Explain with diagram the measurement of linear displacement using potentiometer.
 - b) Draw the diagram showing the automation hierarchy and explain the functions of each level.
 - c) Define Automation and State needs of industrial automation systems (Any four points).
 - d) State the role of sensors in Robotics. Name any two sensors in robotics.
 - e) Explain briefly about :-
 - i) Process automation
 - ii) Factory automation.

5. Attempt any TWO of the following:**12**

- a) Draw the block diagram of DSO and list the applications of it. (any three)
- b) Explain Fixed automation with one example.
- c) Explain the functions of following with respect to signal conditioning circuit:
 - i) Amplifier
 - ii) Isolator
 - iii) Filter

6. Attempt any TWO of the following:**12**

- a) State the need of Data Acquisition system. Explain the block diagram of single channel Data Acquisition system.
 - b) Draw the block diagram of the Robotic system. Explain each block.
 - c) List the different systems used in industrial automation and explain the functions of any two.
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