313330

12425

03 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) 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:

i) Speed of response

ii) Lag

b) State the significance of Calibration of an instrument.

c) State the advantages of Digital multimeter. (any four)

d) State the need of amplifier in signal conditioning circuit.

e) List the types of signal conditioning circuit.

f) State the different types of automation systems.

g) Define end effector.

Marks

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) Write the benefits of automation system. (four)

d) State the role of sensors in Robotics. Name any 2 sensors in robotics.

3. Attempt any THREE of the following: **12**

a) Explain the block diagram of signal generator.

b) Explain the block diagram of single channel Data Acquisition system.

c) Draw the diagram showing the automation hierarchy and explain the function of each level.

d) Explain angular displacement measurement using potentiometer.

4. Attempt any THREE of the following: **12**

a) Draw the block diagram of the function generator and explain the function of upper current source and lower current source.

b) Explain the block diagram of the DC signal conditioning circuit.

c) Define automation and state needs of industrial automation systems (Any 4 points)

d) Draw the explain the arm geometry of cylindrical robot.

e) i) Write the function of Data Logger.

ii) Give any two applications of Data Logger

Marks

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

a) Draw the block diagram of DSO and list the application of it. (any three)

b) Explain fixed automation with one example.

c) Draw the block diagram of the Robotic system. Explain each block.

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

a) i) Compare Analog instruments with digital instruments on the basis of

1) Display,

2) Resolution

3) Accuracy

4) Power consumption

ii) Classify the measuring instruments.

b) Explain the function of following with respect to signal conditioning circuit:

i) Converter

ii) Isolator

iii) Filter

c) List the different systems used in industrial automation and explain the function of any two.