22640

24225

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) 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) Write any two advantages of automation.

b) Write different types of PLC.

c) Draw block diagram of AC input module.

d) List any four PLC programming language.

e) Draw ON-delay and OFF-delay PLC programming instructions.

f) Specify the concept of Tags need in SCADA.

g) Write advantages of SCADA (Any Four)

Marks

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

a) Write any four advantages and four dis-advantages of PLC.

b) Explain any four selection criteria for I/O module used in PLC Hardware.

c) Write a ladder programming for EX-OR gate and prepare its truth table.

d) Describe Alarm generation system using SCADA.

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

a) Draw block diagram of analog AC input module and describe each block.

b) Explain count-up and count-down PLC instruction with timing diagram.

c) Write the steps involved in interfacing PLC based application to a SCADA system.

d) Draw ladder diagram for following Boolean expressions

$A+B+C\overline{D}+E = Y_1$

$FGH+I\overline{J} = Y_2$

$Y_1+Y_2 = Q_1$

$Y_1 \cdot Y_2 = Q_2$

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

a) Describe memory organization of PLC with neat diagram.

b) Explain sinking and sourcing concept with respect to AC output module with diagram.

c) Describe the architecture of SCADA.

d) Write a ladder program for a two motor operation for a start switch starts motor 1 and motor 2. The stop switch stops motor 1 first after 15 seconds motor 2 stops.

e) Develop a traffic light control system in SCADA and explain its operation.

Marks

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

a) Compare SCADA and PLC (Six points)

b) Draw the block diagram of DC output module and explain function of each block.

c) Create a 12 hour time delay that will give an alarm of 10 seconds duration after which the entire system is reset. Draw the ladder diagram for this system.

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

a) Two pulser starts at the same time, pulse output J is pulse for 2 seconds at every 12 seconds; pulse output K is to pulse for 2 seconds at every 4 seconds. Draw ladder diagram for such system.

b) Draw ladder diagram for 8:1 mux. Also write its truth table.

c) Describe the steps to develop SCADA system for water distribution system.