Scheme - I

Sample Question Paper

Program Name	: Electronics Engineering Programme Group	
Program Code	: DE/EJ/ET/EN/EX/EQ/IS/IC	**22534**
Semester	: Fifth	
Course Title	: Industrial Automation (Elective for DE/EJ/ET/EN/EX/EQ)	
Marks	: 70	**Time: 3 Hrs.**

Instructions:

(1) All questions are compulsory.

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data if necessary.

(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following.   **10 Marks**

a) State the benefit of Automation.

b) Compare Fixed and Modular PLC. (any two points)

c) State the I/O Module selection criteria wrt PLC.

d) List different programming languages used with PLC.

e) Give list of any four relay type instructions with their symbols.

f) List the functions of Electrical drives.

g) List different editors used in SCADA.

Q.2) Attempt any THREE of the following.   **12 Marks**

a) Compare fixed and flexible automation on any four points.

b) With neat sketch explain redundancy in PLC.

c) Draw a neat block diagram of PLC and describe the working of its parts.

d) List different PLC programming languages. Explain any one with suitable example.

Q.3) Attempt any THREE of the following.   **12 Marks**

a) List any four device & four output devices that can be connected to PLC.

b) Draw a generalized block diagram of Electrical Drives and explain in brief.

c) Compare PLC and SCADA system on any four points.

d) Write a PLC ladder program for 24-hour time clock.

Q.4) Attempt any THREE of the following.   **12 Marks**

  a) Draw block diagram of SCADA system and explain its parts.

  b) Explain the sinking & sourcing concept in PLC input output module.

  c) Describe the working of UP counter with neat diagram and waveform.

  d) Compare AC and DC drives on any four points.

  e) Draw a symbol of ON delay timer instruction. State the function of following :

   i) Enable bit (EN) ii) Done bit (DN) iii) Timer timing bit (TT)

Q.5) Attempt any TWO of the following.   **12 Marks**

  a) Select device that can be used with PLC to control the speed of AC motor. Explain how?

  b) Develop a ladder program for Traffic light control system with following conditions:
   i) Red light ON for 30 sec, ii) green light ON for 25 sec, and
   iii) Yellow light on for 05 sec. iv) Repeat the sequence until stop push button is pressed.

  c) Draw a neat wiring diagram (interfacing diagram) of following I/O devices with appropriate PLC module: i) Proximity sensor – 24VDC, ii) Limit switch, iii) Lamp - 24VDC, iv) Fan – 230VAC.

Q.6) Attempt any TWO of the following.   **12 Marks**

  a) Describe the steps involve developing SCADA application for following system.

  b) There are four outputs A, B, C, D. Draw the ladder diagram for following condition:
   i) A goes off when stop switch is pressed.   ii) B goes off 7 seconds after A.
   iii) C goes off 6 seconds after B.   iv) D goes off 2 seconds after C.

  c) Draw Ladder diagram for automatic bottle filling system. Assume suitable system design for the same.

Scheme - I

Sample Test Paper - I

Program Name	**: Electronics Engineering Programme Group**
Program Code	**: DE/EJ/ET/EN/EX/EQ/IS/IC**
Semester	**: Fifth**
Course Title	**: Industrial Automation (Elective for DE/EJ/ET/EN/EX/EQ)**
Marks	**: 20**

$$\boxed{\textbf{22534}}$$

Time: 1 Hour

Instructions:

(1) All questions are compulsory.

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data if necessary.

(5) Preferably, write the answers in sequential order.

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Q.1 Attempt any FOUR.   **08 Marks**

    a) Define Automation.

    b) List different systems used in Industrial Automation.

    c) Draw block diagram of Power supply used in PLC.

    d) List different speciality I/O module.

    e) Give addressing format for me I/P and O/P in PLC.

    f) List any four comparison instructions.

Q.2 Attempt any THREE.   **12 Marks**

    a) Draw automation hierarchy and explain.

    b) Write functions of following parts of PLC.

    c) Give I/O selection criteria for PLC.

    d) Write a ladder diagram for traffic light control with following conditions: i) Red light
      – 25sec, ii) Green light – 20 sec, iii) Yellow light – 5 sec, iv) Repeat the sequence.

    e) List different PLC programming languages. Explain any one with example.

Scheme - I

Sample Test Paper - II

Program Name	**: Electronics Engineering Programme Group**	
Program Code	**: DE/EJ/ET/EN/EX/EQ/IS/IC**	**22534**
Semester	**: Fifth**	
Course Title	**: Industrial Automation (Elective for DE/EJ/ET/EN/EX/EQ)**	
Marks	**: 20**	**Time: 1 Hour**

Instructions:

(1) All questions are compulsory.

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data if necessary.

(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.   **08 Marks**

    a) List types of Electric drives.

    b) Define wrt to SCADA: i) Tags, ii) Items.

    c) List various elements of SCADA system.

    d) Elaborate the term "an OPC"

    e) Draw format of following instructions wrt to PLC:

       i) Down Counter, ii) ON Delay timer

    f) State the function Variable frequency drives.

Q.2 Attempt any THREE.   **12 Marks**

    a) Draw functional block diagram of Electrical drives and explain in brief.

    b) Draw basic architecture of SCADA and explain in brief.

    c) List different editors in SCADA (any four) and describe the functions of each.

    d) Write a PLC ladder diagram for following motor sequence:

       i) Start button starts motor M1.

       ii) After 10 sec M1 is off and M2 is ON.

       iii) After 5 sec motor M2 is off.

       iv) Stop push button stops M1, M2, if pressed any time during process.

    e) Enlist different specifications of AC drives. (Any eight)