


<b>Name:</b>	 <b>UPES</b> UNIVERSITY WITH A PURPOSE
<b>Enrolment No:</b>	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**Online End Semester Examination, Dec 2020**

**Course: Automation in Power Systems**  
**Program: B Tech Electrical & PSE**  
**Course Code: EPEG 4008**

**Semester: VII**  
**Time : 03 hrs**  
**Max. Marks: 100**

**SECTION A**

- 1. Each Question will carry 5 Marks**  
**2. Instruction: Complete the statement / Select the correct answer(s)**

S. No.	Question	CO
Q 1	Define Automation in power systems in short notes.	CO 1
Q 2	Write down the Abbreviations used in automation RTU -----, STLF -----, DMS -----, EMS ----- AGC -----	CO 1
Q 3	Write down the 5 advantages of PLC (Programmable Logic Controller) systems -----,-----,-----,-----,-----	CO 1
Q 4	Write down the components required and their purpose for the power system automation in short notes	CO 2
Q 5	Write down 5 industrial applications of SCADA -----,-----,-----,-----,-----	CO 1
Q 6	Write down the steps involved in Monitoring and Controlling of automation	CO 2

**SECTION B**

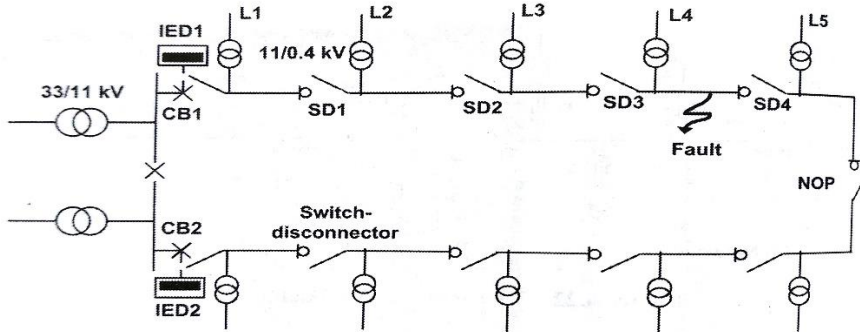
- 1. Each question will carry 10 marks**  
**2. Instruction: Write short / brief notes**

Q 7	Explain briefly the basic functions and Application/Advanced functions of SCADA with neat block diagram	CO 2
Q 8	Compare the functionalities of PLC(Programmable Logic Controller ) and RTU (Remote Terminal Unit) systems	CO3
Q 9	(a) Draw the block diagram of data flow from the field to SCADA control center (b) describe the building blocks of data flow in SCADA systems	CO3
Q 10	Explain the need for substation automation by considering all the factors	CO2
Q 11	Draw and Describe the complex automation process of Spray Paint conveyor industrial machine system.	CO 4

**Section C**

1. Each Question carries 20 Marks.
2. Instruction: Write long answer.
3. Answer any one question

Q 12



The figure represents a typical 11 kV distribution network section. IED1 & IED2 consists an over current protection element. The fault occurred in between SD3 and SD4. Restore the supply in less span time is the main objective. Considering the data given,

- a) Propose a simple method to reduce the restoration time of loads L1, L2, L3 and L4.
- b) Propose a fully automated distribution network
- c) Propose an automatic restoration method in steps.

**CO4**

(OR)

- (i) Explain the following basic Instructions with neat sketch
  - (a) Examine If closed (XIC)
  - (b) Examine If Open (XIO)
  - (c) Output Energize (OTE)
  - (d) Output Latch (OTL)
  - (e) Output Unlatch (OTU)
  - (f) One-shot Rising (OSR)
- (ii) Describe the Islands of Automation in a conventional substation with neat sketch

**CO4**