Reg. No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

| Question Paper Code | 12226 |

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023
Sixth Semester
Electrical and Electronics Engineering
20EEPC602 - POWER SYSTEM OPERATION AND CONTROL
(Regulations 2020)

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks, K-Level, CO
1.	List the various types of loads.	2,K1,CO1
2.	Outline the difference between load curve and load duration curve.	2,K1,CO1
3.	Define control area.	2,K1,CO2
4.	Describe the advantages of multi area operation.	2,K1,CO2
5.	Draw the block diagram of load frequency control of a two-area control system.	2,K2,CO3
6.	Compare shunt and series capacitors.	2,K2,CO3
7.	What is ALFC?	2,K1,CO4
8.	Define Crew constraints.	2,K1,CO4
9.	Define state estimation.	2,K1,CO5
10.	List the three major functions of power system security.	2,K1,CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

11. a) A diesel supplies the following loads to various customers   13,K3,CO1
    Industrial Consumer   =   95 MW,
    Commercial Establishment   =   12MW,
    Domestic Power   =   8MW,
    Domestic Light   =   5MW.
    If the maximum demand on the station is 92MW and the number of unit generated per year is 3×10^8.
    Determine (a) Diversity Factor, (b) Annual Load Factor.

OR

    b) (i) Explain diversity factor and plant use factor.   6,K2,CO1

       (ii) A generating station has maximum demand of 400 MW. The   7,K3,CO1
       annual load factor is 65% and capacity factor is 50%. Interpret the
       reserve capacity of the plant.

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **12226**

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12. a) Discuss in detail the dynamic response of single area system of uncontrolled case and controlled case. *13,K2,CO2*

OR

b) Explain with neat block diagram tie line with frequency bias control of two area system. *13,K2,CO2*

13. a) What are the various methods of voltage control? Explain any one in detail. *13,K2,CO3*

OR

b) Explain the basic operation of TCR and TSC with neat diagram and draw the V-I characteristics. *13,K2,CO3*

14. a) Explain Priority list method using full load average production cost. State the merits and demerits. *13,K2,CO4*

OR

b) The cost characteristics of three plants of a system are *13,K3,CO4*
$C1=0.05P_1^2+17.0P_1+160$Rs/hour
$C2=0.06P_2^2+14.4P_2+200$ Rs/hour
$C3=0.08P_3^2+9.0P_3+240$ Rs/hour
Where P_1, P_2, P_3 are in MW. The incremental transmission losses for the network with respect to plants 1, 2 and 3 are 0.05, 0.10 and 0.15 MW per MW of generation. Develop the optimal dispatch for a total load of 100MW.

15. a) Explain briefly the typical functions of ECC. What are the main functions common to all SCADA system and the main tasks of control centre at different levels? *13,K2,CO5*

OR

b) Explain various state transitions and control strategies using state transition diagram. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) The recorded peak load from 2000-2006 of an area are shown below. *15,K2,CO1*

Year	2006	2007	2008	2009	2010	2011	2012
Peak load (MW)	570	590	740	750	810	890	990

Project the load upto 2019 by using Extrapolation method.

OR

b) Develop the static and dynamic analysis of AVR. *15,K3,CO3*