

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)
B.Tech.Sem - VII ELECTRICAL : : SUMMER - 2022
SUBJECT : OPERATION & CONTROL OF POWER SYSTEM

Day : Tuesday
Date : 31-05-2022

S-13338-2022

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B. :

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Draw neat and labelled diagram **Wherever** necessary.
 - 4) Assume suitable data, if **NECESSARY**.
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- Q.1 a)** Define and classify power system stability. Explain the concept of transient stability in short. **(05)**
- b)** Derive equal area criterion for stability study of one machine infinite bus system. **(05)**

OR

- Q.1** Explain in detail point-by-point method for solution of swing equation. **(10)**

- Q.2 a)** Explain in short the concept of : **(05)**
- i) Unit commitment
 - ii) Economic load dispatch.

- b)** Explain dynamic programming method of unit commitment in short. **(05)**

OR

- Q.2 a)** Discuss priority list method of unit commitment in short. **(05)**

- b)** The fuel input per hour of plant 1 and plant 2 are given below: **(05)**

$$F_1 = 0.2(P_1)^2 + 40P_1 + 120 \text{ Rs./Hr.}$$

$$F_2 = 0.26(P_2)^2 + 30P_2 + 150 \text{ Rs./Hr.}$$

Determine economic operating schedule and corresponding cost of generation, if the maximum and minimum loading on each unit is 100 MW and 25 MW and demand is 180 MW.

- Q.3 a)** Sketch and compare the dynamic response of load frequency control of an isolated power system with and without integral control action. **(05)**

- b)** Explain the concept of speed governor dead band and its effect on Automatic Generation Control. **(05)**

OR

- Q.3 a)** Draw composite block diagram representation of two area load frequency control. **(05)**

- b)** Write short note on load frequency control with generation rate constraints. **(05)**

- Q.4** What is the necessity of reactive power compensation in power system? Explain in brief series and shunt compensation in power system. **(10)**

OR

- Q.4 a)** Explain the loading capability curve of a synchronous generator. **(05)**

- b)** Write brief note on sub-synchronous resonance. **(05)**

P.T.O.

- Q.5 a) Discuss any two types of FACTs controllers in short. (05)
- b) What is FACTs technology? Write advantages and disadvantages of series compensation. (05)

OR

- Q.5 a) Write short note on SVC. (05)
- b) Explain UPFC in detail with schematic diagram and characteristic. (05)

- Q.6 a) Discuss the concept of interchange evaluation with unit commitment. (05)
- b) Write short note on energy banking. (05)

OR

- Q.6 a) Explain the concept of:
i) Capacity interchange
ii) Diversity interchange (05)
- b) Discuss the concept of power pool. (05)

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