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B. Tech 5th Semester Examination

Electrical Power Generation (CBS)

EE-503

Time : 3 Hours www.epaper.tk Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting at least one question from each section A, B, C, and D. Section E is compulsory.

SECTION - A

1. (a) Give the general lay out of a hydropower station. Explain the functions of different components in storage reservoir plants. (6)
- (b) Explain the schematic layout of thermal power station in detail with necessary diagram. (6)
2. (a) What is nuclear reactor? Describe the various parts of nuclear reactor. (6)
- (b) Explain the different types of turbine used in hydro power station. (6)

SECTION - B

3. (a) Explain the load duration curve and energy load curve with their complete information. (6)
- (b) Define:
 - (i) Capacity factor.
 - (ii) Demand factor.
 - (iii) Utilization factor. (6)

4. (a) A generating station has a connected load of 43 MW and a maximum demand of 20 MW; the generated being 6.15×10^7 per annum. Calculate (i) the demand factor and (ii) Load factor. (6)
- (b) Differentiate between base load plants and peak load plants. (6)

SECTION - C

5. (a) Distinguish between long term and short term hydro-thermal scheduling. (6)
- (b) Give the concept of optimal unit commitment. Discuss the reliability based generation system. (6)
6. (a) With the help of a mathematical model, explain the hydro thermal scheduling. (6)
- (b) What are the methods of scheduling of generation of thermal power plants? Explain their merits and demerits? (6)

SECTION - D

7. (a) What do you understand by Economic Dispatch problem? (6)
- (b) Explain the following terms with reference to thermal plants:
- (i) Heat rate curve.
- (ii) Incremental fuel rate curve. (6)
8. (a) A power system consists of two, 125 MW units whose input cost data are represented by the equations:
- $$C_1 = 0.040 P_1^2 + 22 P_1 + 800 \text{ Rs/hr}$$
- $$C_2 = 0.045 P_2^2 + 15 P_2 + 1000 \text{ Rs/hr}$$
- If the total received power $P_R = 200$ MW. Determine the load sharing between units for most economic operation. (6)

- (b) Explain the economic dispatch by using base point and participation factor. (6)

SECTION - E

9. Attempts all questions.

- (a) Generally which type of generation is used for base load demand?
- (b) Write function of economizer in thermal power plant.
- (c) Why overall efficiency of hydro power plant is high?
- (d) Discuss the different type load.
- (e) Why nuclear power plants are used as base load plants?
- (f) Describe the application of optimal load flow.

(2×6=12)