

CBCS SCHEME

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17EE42

Fourth Semester B.E. Degree Examination, July/August 2021 Power Generation and Economics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

1. a. Give the classification of hydro power plant. Explain base load and peak load. (07 Marks)
b. With a neat schematic diagram, explain working operation of hydro power plant. (07 Marks)
c. Mention the merits and demerits of hydroelectric power plant. (06 Marks)
2. a. What are the types of turbines? With a neat diagram, explain the working of reaction turbine and give examples. (07 Marks)
b. Mention the factors to be considered for selection of site of Hydropower plant. (07 Marks)
c. Explain the governing mechanisms of hydraulic impulse turbine and impulse turbine with neat sketches. (06 Marks)
3. a. Explain the working of steam power plant with neat schematic diagram. (07 Marks)
b. Explain the function of air preheater and economizer in thermal power plant. (07 Marks)
c. Mention advantages and disadvantages of diesel power plant. (06 Marks)
4. a. With neat sketch, explain the working of gas power plant. (07 Marks)
b. Give the comparison of hydropower plant with thermal power plant. (07 Marks)
c. Explain how the use of regenerative and reheater in gas turbine plant. How it helps in improvement of thermal efficiency? (06 Marks)
5. a. With a neat diagram, explain the working of main parts of nuclear reactor. (07 Marks)
b. Describe construction and working of a pressurized water reactor and fast reactor. (07 Marks)
c. Explain the various methods of nuclear waste disposal. (06 Marks)
6. a. What are the classifications of nuclear reactors? Explain operations of fast breeder reactor. (07 Marks)
b. Mention the factors to be considered for the selection of site for nuclear power plant. (07 Marks)
c. Explain function of moderator control rod, coolant in nuclear power plant. (06 Marks)
7. a. Explain resonant grounding with neat diagram. (07 Marks)
b. Explain the function of transformer, high voltage circuit breaker and high voltage insulator. (07 Marks)
c. Draw line diagram of 11 KV substation. (06 Marks)
8. a. Define substation and mention different types of substation and explain. (07 Marks)
b. Explain double bus without sectionalization. (07 Marks)
c. What is a protective relay? Explain its function in an electrical system. (06 Marks)
9. a. Define the following terms as applied in power system:
(i) Load factor (ii) Demand factor
(iii) Diversity factor (iv) Plant capacity factor (07 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

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- b. Explain factors affecting tariff. (07 Marks)
- c. A generating station has 3×50 MW units, the station output is 876×10^6 KWH/Annum. The max demand is 120 MW. Calculate:
- (i) Average load on the station
 - (ii) Annual load factor
 - (iii) Annual capacity factor (06 Marks)

- 10 a. What is power factor? Explain any one method of improving power factor. (07 Marks)
- b. Define tariff. Explain in detail:
- (i) Block rate tariff
 - (ii) Two part tariff (07 Marks)
- c. A power station has to supply load as follows:

Time (hours)	0 - 6	6 - 12	12 - 14	14 - 18	18 - 24
Load (MW)	30	90	60	100	50

- (i) Draw the load curve
- (ii) Draw load-duration curve
- (iii) Calculate the load factor (06 Marks)

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