

# CBCS SCHEME

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18EE42

## Fourth Semester B.E. Degree Examination, June/July 2023 Power Generation and Economics

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

### Module-1

- 1 a. Explain the factors to be considered for the selection of site for a hydro electric power plant. (06 Marks)  
b. Explain the general arrangement and operation of hydroelectric power plant. (06 Marks)  
c. Describe the following with respect to hydro electric power plant  
i) Dam  
ii) Penstock  
iii) Surge tank  
iv) Tail race. (08 Marks)

OR

- 2 a. Discuss the utility of hydrograph, flow duration curve, and mass curve for the hydro power plant. (06 Marks)  
b. Explain the classification of hydropower plant. (06 Marks)  
c. List the advantages and disadvantages of hydro power plant. (08 Marks)

### Module-2

- 3 a. Explain with block diagram, the process of Ash handling in a thermal power plant. (06 Marks)  
b. List the advantages and disadvantages of thermal power plant. (08 Marks)  
c. Discuss the functions of condenser, cooling towers and economizer in thermal power plant. (06 Marks)

OR

- 4 a. Explain with block diagram, the process of fuel handling in a thermal power plant. (06 Marks)  
b. Explain with schematic diagram the open cycle and closed cycle gas turbine power plant. (08 Marks)  
c. List the applications of diesel power plant. (06 Marks)

### Module-3

- 5 a. Discuss the factors to be considered for site selection of nuclear power plant. (06 Marks)  
b. List the advantages and disadvantages of nuclear power plant. (08 Marks)  
c. Explain the disposal of nuclear waste in nuclear power plant. (06 Marks)

OR

- 6 a. Compare various reactors used in nuclear power plant. (06 Marks)  
b. Explain the following with respect to nuclear power plant  
i) Nuclear fuel  
ii) Control rod material  
iii) Coolants  
iv) Cladding and structural material. (08 Marks)  
c. List the advantages and disadvantages of nuclear power plant. (06 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.

**Module-4**

- 7 a. Briefly explain substation equipments. (06 Marks)  
b. Discuss the classification of substations. (06 Marks)  
c. Explain the following :  
i) Resistance grounding  
ii) Resonant grounding. (08 Marks)

**OR**

- 8 a. Explain advantages and disadvantages of gas insulated substation. (08 Marks)  
b. Briefly explain selection of site for substation. (06 Marks)  
c. Explain the concept of interconnections of power stations. (06 Marks)

**Module-5**

- 9 a. List the objectives and requirements of tariff. (06 Marks)  
b. Discuss any four types of tariff used in fixation of tariff for electrical energy. (08 Marks)  
c. Discuss the effects of low power factor. (06 Marks)

**OR**

- 10 a. Explain types of consumers and their tariffs. (06 Marks)  
b. Discuss the various methods for power factor improvement. (06 Marks)  
c. A consumer takes a steady load of 120 kw at a p.f of 0.8 lagging for 10 hrs day and 300 days per annum. Estimate the annual payment under each of following tariff.  
i) Rs. 1.20 per kwh + Rs 1200 per KVA per annum  
ii) Rs. 1.20 per kwh + Rs. 1200 per kw per annum + 25 paise per KVARH. (08 Marks)

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