

Code No: R204103H

R20

SET - 1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
IV B. Tech I Semester Advanced Supplementary Examinations – March 2025
POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

UNIT-I

1. Explain the different systems used in pulverized coal firing in detail. [14M]

(OR)

2. a) Discuss the different methods to prevent corrosion in the feed water treatment [7M]
b) Discuss the working of over feed stoker with neat sketch [7M]

UNIT-II

3. a) What is meant by supercharging? Why supercharging is needed for the diesel power plants and discuss the procedure involved in the supercharging of diesel engines? [7M]
b) Discuss the working of the combined gas turbine plant used to heat the feed water with exhaust gases. [7M]

(OR)

4. a) Discuss the common rail fuel injection system of diesel engine with neat sketch [7M]
b) Discuss the working of the combined gas turbine employing the gases from super charged boiler to expand in the gas turbine [7M]

UNIT-III

5. a) Describe the detail about surge tank used in hydroelectric power plant. Also explain about the classification and selection of dams [7M]
b) Examine the Safety measures to be taken to protect from radiation emitted by nuclear Power plants [7M]

(OR)

6. a) Generalize in detailed notes on following: (i) Boiling water reactor (ii) Gas cooled reactor. [7M]
b) Illustrate the pumped storage plant. Explain it with a sketch. [7M]

UNIT-IV

7. a) Discuss the different factors to be considered in the load division between the power stations in the combined power plant. [7M]
b) Discuss the procedure involved in the measurement of moisture in the carbon dioxide circuit. [7M]

(OR)

8. a) Discuss the working of storage type hydroelectric power plant in combination with steam power plant [7M]
b) Discuss the different methods used in the measurement of dust in flue gases emitted by power plants [7M]

UNIT-V

9. a) Describe, what you understand by power plant economics? Explain the fixed costs and operating costs of a power station. [7M]
b) The annual load duration of hydro plant shows 500 MWh of energy during the year. It is peak load plant 25% annual load factor. Find station Capacity. If the plant capacity factor is 20 %, find the reserve capacity. [7M]
- (OR)
10. a) Summarize the elements which contribute to the cost of the electricity? And how can the cost power generation be reduced? [7M]
b) Load on a Power Plant on a typical day is as under: [7M]

Time	12 midnight-5 am	5-9 am	9am-6pm	6-10pm	10pm-12 midnight
Load(MW)	20	40	80	100	20

Plot the chronological load curve and load duration curve of the plant. Find the load factor of the plant.
