

CHARTERED INSTITUTE OF TECHNOLOGY, ABU ROAD

B.Tech. VIII Sem. MODEL QUESTION PAPER-I, 2020

MECHANICAL ENGINEERING

8ME3A POWER GENERATION

4th Year / 8th Sem.

10:30AM to 01:30PM

DATE:

STAFF NAME: - SANDEEP GURJAR

Maximum Marks: 80

Note: - Attempted all questions (2 question from each unit). All carrying equal marks (08).

UNIT-I

1. What are the considerations to be made while selecting the location for a thermal power plants?
2. Define the terms: (i) Load factor, (ii) Plant factor, (iii) Demand factor, (iv) Diversity factor, (v) Reverse factor.

OR

3. Define 'depreciation' and explain its significance.
4. A power station has a maximum demand of 15 MW, a load factor of 0.7, a plant capacity factor of 0.525 and a plant use factor of 0.85. Find:
 - i. The daily energy produced.
 - ii. The reserve capacity of the plant.
 - iii. The maximum energy that could be produced daily if the plant operating schedule is fully loaded when in operation.

UNIT-II

5. What is condenser? Name the different types of condenser. Describe the operation of surface condenser.
6. State the advantages and disadvantages of a steam power station as compared to hydroelectric power station and nuclear power station.

OR

7. Explain different type of air heaters used in power plants. Discuss their advantages and disadvantages.
8. What are the considerations on which the location of steam power plant depends?

UNIT-III

9. Discuss the advantages and disadvantages of a diesel engine.
10. Explain the typical layout of hydroelectric power plant with a neat sketch.

OR

11. Discuss the performance characteristics of a gas turbine power plant.
12. What is surge tank? Explain the various types of surge tanks in HEPS with neat sketches.

UNIT-IV

13. What is the Betz limit? Explain the significance of Bet'z limit with the help of Axial momentum theorem.
14. Write short note on:
 - i. Characteristics of good wind power site.
 - ii. Method of wind measurement.

OR

15. What is aero foil? Explain its importance in wind power generation.
16. Differentiate between horizontal axis and vertical axis wind machines.

UNIT-V

17. What is selective coating? Also explain its importance in Flat plate collector.
18. Discuss in brief the various photovoltaic applications.

OR

19. Classify the different types of solar thermal collectors and explain the working of liquid flat plate collector with necessary sketch.
20. What are the main problems with solar thermal power generation system?