



(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 140801

Roll No.

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B. Tech.

**(SEM. VIII) THEORY EXAMINATION, 2014-15
POWER PLANT ENGINEERING**

Time : 3 Hours]

[Total Marks : 100

- Note :**
- (i) Attempt all questions.
 - (ii) Be precise in your answer.

1 Attempt any two parts : 2×10=20

- (a) Enumerate the major and minor sources of energy. What are the main limitations of minor sources of energy? Why is electrical energy the most convenient form of energy? Give reasons.
- (b) A power plant has a rated capacity of 402 MW and the peak load on the plant is 351MW. Certain consumer groups having maximum demands of 120 MW, 103 MW, 79 MW and 92 MW are connected to the power plant. If the annual load factor is 0.81, find :
 - (i) The average load,
 - (ii) The capacity factor
 - (iii) The energy supplied per year
 - (iv) The demand factor
 - (v) The diversity factor.

(c) Describe the sinking fund method for calculating depreciation rate of any power plant

2 Attempt any two out of the following : $10 \times 2 = 20$

(a) With the help of neat sketch, explain the working of a fluidized bed combustion system. Enumerate major disadvantages of this system.

(b) What do you mean by pulverized fuel firing? Explain with appropriate diagram. Write down the advantages of pulverized fuel firing.

(c) With the help of neat diagram, explain the working of DM plant for fuel water treatment

3 Attempt any two out of the following : $10 \times 2 = 20$

(a) Describe forced circulation cooling system using suitable diagram.

(b) Discuss the working and construction of gas turbine combustion chamber.

(c) Discuss combined steam and gas turbine power plants

4 Attempt any two out of the following : $10 \times 2 = 20$

(a) Write down the function and materials for the following in connection with a nuclear reactor.

(i) Reflector

(ii) Control rods

(iii) Biological shield

(iv) Moderator.

(b) Discuss the various factors while selecting a site for a hydro-electric plant. In what way a forebay differs from a surge tank.

(c) Draw the diagram for the wind energy power plant and explain the working of basic components. Give a list of uses of wind-electric system.

5 Attempt any two out of the following : $10 \times 2 = 20$

(a) With the help of neat sketch, explain the working principles of a power transformer.

(b) Discuss the working principle of measurement of pH value of water.

(c) Write down some specific definitions of air pollution. Enumerate the power plant pollutants of most concern.