Printed Pages: 02   Sub Code: REE401

Paper Id: | 120252 | Roll No. ☐☐☐☐☐☐☐☐☐☐☐

B. TECH.
(SEM IV) THEORY EXAMINATION 2018-19
POWER PLANT ENGINEERING

Time: 3 Hours   *Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt** *all* **questions in brief.**   2 x 7 = 14
   a. How can hydroelectric power plant be classified according to water head?
   b. What do understand by tariff? Give its types.
   c. Classify the hydroelectric plant on the basis of available water head.
   d. What are the various types of non-conventional energy resources?
   e. What are the components of a photovoltaic (PV) system?
   f. Why is nuclear power plant used as base load plant?
   g. What are the advantages of using pulverized coal in thermal power plant?

SECTION B

2. **Attempt any** *three* **of the following:**   7 x 3 = 21
   a. Explain following: (i)Reservoir (ii) Spillways (iii) Surge Tank (iv) Penstock
   b. Discuss in detail open and closed cycle gas turbine plant along with methods to improve its thermal efficiency.
   c. Find the cost of generation per kW-hr from the following data.
      Capacity of the plant   : 120 MW
      Capital cost   : Rs.1, 200 per kW installed
      Interest and depreciation: 10 % on capital
      Fuel consumption   : 1.2 kg / kW-hr.
      Fuel cost   : Rs. 40/ tonne
      Salaries, wages, repairs and maintenance: 6, 00,000 / year
      The maximum demand is 80 MW and load factor is 40 %.
   d. What are the different types of nuclear reactors? What is the role of moderator & coolant in a nuclear power plant?
   e. Explain generation of electricity by wind mills. What are the different types of generators used in wind energy generation?

SECTION C

3. **Attempt any** *one* **part of the following:**   7 x 1 = 7
   (a) What are the input & output curves of thermal & hydroelectric power plants?
   (b) Write a note on the development of pumped storage plant in India.

4. **Attempt any** *one* **part of the following:**   7 x 1 = 7
   (a) Draw the layout of thermal power plants & describe the working of it. Give the functions of (i)Economizer (ii) Preheater & (iii) Condenser
   (b) What are the various types of steam turbines? Discuss.

5. **Attempt any** *one* **part of the following:**   7 x 1 = 7
   (a) Explain the working of diesel electric plant with diagram.

(b)   What are the various factors to be considered for selection of site for nuclear power plant?

6.   Attempt any *one* part of the following: **7 x 1 = 7**
  (a)   What is the principle of MHD generation? Give the advantages & limitations of MHD generation.
  (b)   Explain thermionic and thermo electric converters for direct conversion of solar heat to electricity.

7.   Attempt any *one* part of the following: **7 x 1 = 7**
  (a)   Explain the following terms:
     i.   Connected load
     ii.   Load factor
     iii. Max demand
     iv.   Diversity factor
  (b)   Describe the following methods of determination of depreciation:
     i.   Straight line method
     ii.   Sinking fund method