

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

Time: 3 Hours

Total Marks: 70

**Note** Attempt Section B if you are unable to attempt Section A suitably.

**SECTION A**

- 1. Attempt any 7 questions brief.** **2 x 7 = 14**
- a. How can hydroelectric power plant be classified according to water head?
  - b. What do you 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?  
Explain generation of electricity by wind mills. What are the different types of generators used in wind energy generation?
  - e.

**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

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