

**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**
- How can hydroelectric power plant be classified according to water head?
  - What do understand by tariff? Give its types.
  - Classify the hydroelectric plant on the basis of available water head.
  - What are the various types of non-conventional energy resources?
  - What are the components of a photovoltaic (PV) system?
  - Why is nuclear power plant used as base load plant?
  - 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**
- Explain following: (i) Reservoir (ii) Spillways (iii) Surge Tank (iv) Penstock
  - Discuss in detail open and closed cycle gas turbine plant along with methods to improve its thermal efficiency.
  - 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 %.
  - 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?

**SECTION C**

3. **Attempt any one part of the following:** **7 x 1 = 7**
- What are the input & output curves of thermal & hydroelectric power plants?
  - Write a note on the development of pumped storage plant in India.
4. **Attempt any one part of the following:** **7 x 1 = 7**
- Draw the layout of thermal power plants & describe the working of it. Give the functions of (i) Economizer (ii) Preheater & (iii) Condenser
  - What are the various types of steam turbines? Discuss.
5. **Attempt any one part of the following:** **7 x 1 = 7**
- 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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