**18MED22**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **August, 2021** | **Mechanical Engineering** | | |
| **Sixth Semester** | **Power Plant Engineering** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | Define the term run off. | CO1 | |  |
|  | b) | What is meant by Hydrology? | CO1 | |  |
|  | c) | What are the applications of diesel power plant? | CO1 | |  |
|  | d) | Name the various types coal handling equipments. | CO2 | |  |
|  | e) | How condensers are classified? | CO2 | |  |
|  | f) | What are the requirements of fission process? | CO3 | |  |
|  | g) | What are the essential components of a nuclear reactor? | CO3 | |  |
|  | h) | Write two merits and demerits of nuclear power plant. | CO3 | |  |
|  | i) | State the working principle of solar pond. | CO4 | |  |
|  | j) | Mention the advantages and disadvantages of geothermal power plant. | CO4 | |  |
| **Unit - I** | | | | | |
| 2. | a) | Explain briefly 'hydrographs' and flow duration curves, and what are their uses? | CO1 | **5M** | |
|  | b) | Describe a typical layout of a hydro electric power plant with neat sketch? | CO1 | **5M** | |
|  |  | Or |  |  | |
| 3. | a) | Compare the hydro electric & Diesel power plants with:  Location, required and setting up cost.  Running cost, and efficacy. | CO1 | **5M** | |
|  | b) | Draw a neat diagram of diesel power plant and explain various systems. | CO1 | **5M** | |
| **Unit – II** | | | | | |
| 4. | a) | Explain the constructing and working principle of “Lamont Boiler” with neat sketch? | CO2 | **5M** | |
|  | b) | What are the types of cooling towers? Explain Natural draft spray type cooling tower with neat sketch. | CO2 | **5M** | |
|  |  | Or |  |  | |
| 5. | a) | What is meant by draught? Explain the types of draughts. | CO2 | **5M** | |
|  | b) | Draw a general layout of a thermal power plant and explain the working of main components in layout? | CO2 | **5M** | |
| **Unit – III** | | | | | |
| 6. | a) | Explain Boiling Water Reactor (BWR) with neat sketch. Give its advantage and disadvantage. | CO3 | **5M** | |
|  | b) | Briefly explain Diversity factor and state the advantages of the diversity of load in a power supply system? | CO3 | **5M** | |
|  |  | Or |  |  | |
| 7. | a) | Explain different methods for nuclear waste disposal with necessary sketch. | CO3 | **5M** | |
|  | b) | A power plant has the following annual factors. Load factor = 80%. Capacity factor = 60%. Use factor = 50%. Maximum demand is 20 MW.  Find: (a) Annual energy production. (b) Reserve capacity over and above peak load. | CO3 | **5M** | |
| **Unit – IV** | | | | | |
| 8. | a) | What are the types of geothermal power generator? Explain any one with neat sketch? | CO4 | **5M** | |
|  | b) | Explain the working principle of OTEC with a neat diagram. | CO4 | **5M** | |
|  |  | Or |  |  | |
| 9. | a) | Explain the working of open cycle MHD power generation with a neat sketch | CO4 | **5M** | |
|  | b) | Explain working of Direct methanol fuel cell with neat sketch? | CO4 | **5M** | |

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**SCHEME OF VALUATION**

**PART A**

1. **a to j –10 QUESTIONS 10 x 1M 10M**

**PART B**

**UNIT I**

1. **2a Hydrograph 2M**

**Flow duration curve 2M**

**Uses 1M**

**2b Sketch 2M**

**Explanation 3M**

1. **3a Each factor 1M 5M**

**3b Sketch 2M**

**Explanation 3M**

**UNIT II**

1. **4a Sketch 2M**

**Explanation 3M**

**4b Types 1M**

**Sketch 2M**

**Explanation 3M**

1. **5a Definition 2M**

**Explanation 3M**

**5b Sketch 2M**

**Explanation 3M**

**UNIT III**

1. **6a Sketch 2M**

**Explanation 3M**

**6b. Definition 2M**

**Explanation 3M**

1. **7a Sketch 2M**

**Explanation 3M**

**7b.a. Solution 3M**

**7b.b. Solution 2M**

**UNIT IV**

1. **8a Sketch 2M**

**Explanation 3M**

**8b Sketch 2M**

**Explanation 3M**

**9. 9a Sketch 2M**

**Explanation 3M**

**9b. Sketch 2M**

**Explanation 3M**