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R-15

Code: 5G583

IV B.Tech. II Semester Regular & Supplementary Examinations September 2020

Non Conventional Sources of Energy

(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

- 1 a) Explain any two instruments used for measuring solar radiation with neat sketches. 10M
b) Give the significance of solar energy. 4M

OR

- 2 a) Describe the role and potential of various Renewable energy sources. 10M
b) Explain about extraterrestrial and terrestrial solar radiation. 4M

UNIT-II

- 3 a) Describe the operation of a non-convective solar pond for the solar energy collection and storage. 8M
b) With the aid of neat sketch explain the working of any one type of solar heating system. 6M

OR

- 4 Enumerate the different types of concentrating type collectors. Explain the collector used in power plant for generation of Electric energy. 14M

UNIT-III

- 5 What is meant by anaerobic digestion? Explain the factors which effect Bio digestion. 14M

OR

- 6 a) Explain with a neat sketch the working of a wind energy conversion system (WECS) with its main components. 7M
b) Explain various types of horizontal axis type aero generators. 7M

UNIT-IV

- 7 a) Explain Binary cycle system for liquid dominated geo thermal system. 8M
b) What are the advantages and disadvantages of geothermal energy forms? 6M

OR

- 8 Explain with neat sketches the various methods of Tidal power generation. What are the limitations of each method? 14M

UNIT-V

- 9 a) Explain the basic principle of MHD power generation. 4M
b) Draw a configuration of open cycle MHD generator and explain its working. 10M

OR

- 10 a) What is Seebeck thermoelectric effect? 4M
b) With the aid of a neat sketch explain a thermoelectric power generator. 10M

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R-15

Code: 5G584

IV B.Tech. II Semester Regular & Supplementary Examinations September 2020

Power Plant Engineering
(Mechanical Engineering)

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. Explain the principle involved in preparation of coal and what methods are available for coal preparation? 14M

OR

2. Draw an explanatory line diagram of an ash handling system employed in steam power plants and also explain the difficulties encountered in the handling of ash in a thermal power station. 14M

UNIT-II

3. What are the different types of pulverizing mills? Explain with neat sketches. 14M

OR

4. Explain the various draught systems with neat sketches. 14M

UNIT-III

5. Describe the auxiliary equipments of a diesel engine power plant. What are the disadvantages of this plant? 14M

OR

6. Draw a neat diagram of a regenerative gas turbine with reheater and also explain it working with a help of a T-S diagram. 14M

UNIT-IV

7. Draw a layout of a typical micro hydro scheme and explain its working in detail. 14M

OR

8. Explain the construction and working of boiling water reactor with a layout. 14M

UNIT-V

9. Analyze the pollution from thermal power plants and suggest few control methods. 14M

OR

10. Estimate the cost of generation per kW-hr from the following data. Capacity of the plant – 120MW
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 / ton
Salaries, wages, repairs and maintenance – 6, 00,000/year
The maximum demand is 80 MW and load factor is 40 %. 14M

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Code: 5G68A

IV B.Tech. II Semester Regular & Supplementary Examinations September 2020

Disaster Management

(Common to EEE & ME)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) Degree of Vulnerability depends on the type of Hazard and Coping Capacity. Explain the statement with neat and suitable flow chart. 7M
- b) Differentiate the terms 'Vulnerability' and 'Risk'. Give two suitable examples. 7M

OR

2. a) Discuss about the statement 'Disasters occurs when Hazard meets the Vulnerability' with the help of any flow chart. 10M
- b) Define Impact and give classification. 4M

UNIT-II

3. a) Classify landslides and define them. 5M
- b) Explain causes of cyclone and their varieties. 5M
- c) Define ecological fragility and quote examples. 4M

OR

4. a) Define Soil erosion and write the ways to control soil erosion 4M
- b) Explain the causes of Volcanoes and discuss about their locations in India and worldwide. 5M
- c) Discuss about the urban flooding, its various causes and remedial measures to avoid urban flooding. 5M

UNIT-III

5. a) Discuss the ecological, social, economical impacts due to cyclones and drought taking suitable examples. 10M
- b) Define and write the reasons of urban disaster. 4M

OR

6. a) Discuss the demographic and psycho-social impacts due to war situation between two countries taking any suitable example. 4M
- b) Discuss the global disaster trends of floods and volcanoes. 5M
- c) Define Climate change, explain the causes of climate change and its impacts. 5M

UNIT-IV

7. Discuss in detail about the 'Disaster management' cycle and its phases with suitable flow chart. 14M

OR

8. a) Enlist the post disaster environmental response activities and explain any four of them. 8M
- b) Discuss the roles and responsibilities of Panchayat Raj Institutions and Urban Local Bodies in DRR. 6M

UNIT-V

9. a) Describe the natural and manmade causes of land use changes in your surrounding areas taking any suitable example. 6M
- b) Discuss the sustainable developmental methods to combat climate change globally. 4M
- c) Define vulnerability and discuss how industrialization effects vulnerability of the surrounding areas. 4M

OR

10. a) Discuss any one developmental project that you like mentioning the causes of it and its immediate and long term impacts. 6M
- b) Discuss the positive and negative impacts due to dam construction on both sides of dam. 8M
