

R16

Code No: 137FT

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, December - 2019

POWER PLANT ENGINEERING
(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

(25 Marks)

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|------|--|-----|
| 1.a) | List the sources of energy. | [2] |
| b) | State the properties of coal. | [3] |
| c) | Write the types of IC engines. | [2] |
| d) | What are the functions of lubrication system? | [3] |
| e) | Define hydrographs. | [2] |
| f) | Mention the components of hydroelectric power plant. | [3] |
| g) | Write the nuclear fuel -fertile materials. | [2] |
| h) | List the advantages of homogeneous reactor. | [3] |
| i) | Define load duration curves. | [2] |
| j) | Write about diversity factor. | [3] |

PART - B

(50 Marks)

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|----|---|------|
| 2. | Explain about the layout and working of steam power plant in detail. | [10] |
| | OR | |
| 3. | Describe about dust collectors and cooling towers. | [10] |
| 4. | Explain principles of working of closed and open cycle gas turbines. | [10] |
| | OR | |
| 5. | Write about thermo electric and MHD generation with neat sketches? | [10] |
| 6. | Classify and explain the different types of dams and spill ways. | [10] |
| | OR | |
| 7. | Describe the types of wind energy conversion techniques with neat diagrams. | [10] |
| 8. | Explain the working of sodium-graphite reactor and fast breeder reactor. | [10] |
| | OR | |
| 9. | Describe about radiation hazards and shielding. | [10] |

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10.a) In a 60 MW steam power station working at 40 % load factor the energy cost is found to be 5 paise /kWh. Calculate the cost of energy of the power station load factor is improved by 50 %. Due to increased energy generation the fuel cost increases the annual generation cost of 6%.

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b) Write about investment of fixed charges, operating costs and general arrangement of power distribution. [6+4]

OR

11. Explain the effluents from power plants and impact on environment. [10]

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