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Code No: 157DE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, July/August - 2023

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 Hours

Max.Marks:75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- | | | |
|------|--|-----|
| 1.a) | List properties of coal. | [2] |
| b) | Outline the development of power in India. | [3] |
| c) | Label the advantages with gas turbine plant. | [2] |
| d) | Explain super charging. | [3] |
| e) | What is the significance of water power? | [2] |
| f) | List the advantages with pumped storage plant. | [3] |
| g) | Outline the types of nuclear reactors. | [2] |
| h) | List the breeding materials in nuclear power station. | [3] |
| i) | Define investment of fixed charges in power plant economics. | [2] |
| j) | Outline significance of load curves. | [3] |

PART – B

(50 Marks)

2. Analyze the working of different Circuits involved in steam power plant. [10]

OR

3. Explain draught system, design and construction of cyclone furnace. [10]

4. Evaluate the types and construction of Internal Combustion engines. [10]

OR

5. Explain principles of working of closed and open cycle gas turbines. [10]

6. Analyze drainage area characteristics, hydrographs, storage and pondage. [10]

OR

7. Evaluate the classification and typical layout of hydro project and plant with neat sketch. [10]

QA QA QA QA QA QA QA G

8. Construct the working of sodium-graphite reactor and fast Breeder Reactor. [10]

OR

9. Discuss the operating principles of Homogeneous Reactor and Gas cooled Reactor. [10]

10.a) A power station has the installed capacity of 120 MW. Calculate the cost of generation, other data pertaining to power station are given:

Capital cost = Rs. 120×10^6

Rate of interest and depreciation = 18 %

Annual cost of fuel oil, salaries and taxation = Rs. 25×10^6

Load factor = 40 %.

b) Explain operating costs and general arrangement of power distribution in power plants. [5+5]

OR

11.a) Summarize pollutants and pollution standards.

b) Build the methods of Pollution control.

[5+5]

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QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G