Code No: 127GP

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, January/February - 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)	What are the different coal handling and transfer equipment's?	[2]
b)	What is pulverization? Why is it done?	[3]
c)	What is meant by super charging?	[2]
d)	Differentiate the open and closed cycle of GT.	[3]
e)	What is tidal energy? How tidal power can be generated?	[2]
f)	What is catchment area?	[3]
g)	What is meant by Fertile materials in nuclear fuels?	[2]
h)	What are the types of nuclear reactors?	[3]
i)	Define connected load and demand factor.	[2]
j)	Define diversity factors and load factor.	[3]

PART – B

(50 Marks)

2.a) Draw the line diagram and explain the different components used in steam power plant.
b) Describe different types of coal conveyors. [5+5]

OR

3.a) Discuss the constructional and operational features of retort stokers used in thermal power plants.
b) Draw a neat diagram of cyclone burner and explain its outstanding features. [5+5]

4.a) Which types of I.C Engines are used in diesel power plant and explain them in detail.
b) Explain the working details with line diagram of MHD generation. [5+5]

OR

5.a) Explain the working details of gas turbine power plant indicating all auxiliaries.
b) Draw the schematic representation of Fuel cell and explain its working (Hydrogen and oxygen). [5+5]

6.a) What are typical ponds and storage units suitable for installation of hydroelectric power plants? Explain them.

b) What is the importance of spill ways in hydroelectric power projects? Explain their practical applications. [5+5]

OR

7.a) What are the major sources for the tidal energy for power generation? Explain different sources available in India and the corresponding capacities of power generation.

b) Draw the typical layout of hydroelectric power generation plant along with the auxiliary components and explain. [5+5]

8.a) What are the principal parts of a nuclear reactor? Explain the working of each part.

b) Draw the line diagram and explain the working of Gas cooled reactor. [5+5]

OR

9.a) What are the radiation hazards and also explain the effect of shielding.

b) Draw the line diagram and explain the pressurized water reactor and its limitations.[5+5]

10.a) Write a note on "Pollution from atomic power station".

b) Discuss in detail the environmental hazards in respect of thermal power plants. [5+5]

OR

11.a) What is the impact on the environment and human health for the effluents released from the thermal power plants? Explain how to control them.

b) The yearly duration curve of a certain plant can be considered as a straight line from 20 MW to 3 MW. To meet this load, three turbine generator units, two rated at 10 MW each and one at 5 MW are installed. Determine
i) Installed capacity ii) Plant factor iii) Maximum demand iv) Load factor and v) Utilisation factor. [5+5]

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