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Question Paper Code	12894
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Fifth Semester

Electrical and Electronics Engineering

20EEEL501 - ELECTRICAL ENERGY GENERATION SYSTEMS

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

	Marks	K- Level	CO
1. Define steam rate and heat rate.	2	K1	CO1
2. What are types of fluidized bed boilers?	2	K1	CO1
3. What is reheating and regeneration of gas turbine?	2	K1	CO2
4. Interpret the Compression ratio and Pressure ratio.	2	K2	CO2
5. Outline the demerits of BWR Nuclear Power Plant.	2	K2	CO3
6. Define Chain reaction with necessary equations.	2	K1	CO3
7. Find the main purpose of the dam.	2	K1	CO4
8. List any four applications of solar collectors.	2	K1	CO4
9. Define diversity factor.	2	K1	CO5
10. Outline the acid rain.	2	K2	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Write short notes on cooling tower and Feed water treatment.	13	K2	CO1
OR			
b) With the help of a neat sketch describe the working of any one type of ash handling system.	13	K2	CO1
12. a) Discuss the essential components of the diesel power plant with neat layout.	13	K2	CO2
OR			
b) Explain the Otto cycle and processes with p-V and T-s diagrams.	13	K2	CO2
13. a) Explain the working of BWR based Nuclear Power Plant with neat layout. Also give it merits and Demerits.	13	K2	CO3
OR			
b) Illustrate a Nuclear Reactor clearly mentioning each part and specifying the work done by each of them.	13	K2	CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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14. a) Sketch a layout of a hydraulic power plant suitable for a high head. Indicate the essential elements in that power plant and explain their function. 13 K2 CO4

OR

- b) Sketch and explain the various types of tidal power plant. 13 K2 CO4

15. a) Explain the term depreciation and discuss various methods of calculating the depreciation of an electrical plant. 13 K2 CO5

OR

- b) Explain the site selection criteria for Thermal and nuclear power plants. 13 K2 CO5

PART - C (1 × 15 = 15 Marks)

16. a) i) Dry saturated steam is supplied to a steam turbine at 12 bars and after expansion its condenser pressure is 1 bar. Find the Rankine cycle efficiency and specific steam consumption. Neglect feed pump work. 8 K2 CO1
ii) Explain about the fuel handling system. 7 K2 CO1

OR

- b) i) A central power station has annual factors as follows: 8 K2 CO5
Load factor = 60%
Capacity factor = 40%
Use factor = 45%
Power station has a maximum demand of 15,000kW. Determine Annual energy production, Reserve capacity over and above peak load, Hours per year not in service.
ii) Compare the generation cost of Hydro and steam power plant. 7 K2 CO5