Reg. No															

B.Tech DEGREE EXAMINATION, DECEMBER 2023

Fifth, Sixth and Seventh Semester

18EEO304T - POWER PLANT ENGINEERING

(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks)

Answer **all** Questions

		Marks	BL	CO
1.	In India, frequency of three phase AC power generation is (A) 50 Hz (B) 60 Hz (C) 75 Hz (D) 100 Hz	1	1	6
2.	Which of following power plant contributes more power generation in India? (A) Hydro Power Plant (B) Solar Power Plant (C) Wind Power Plant (D) Thermal Power Plant	1	1	6
3.	Which of the following element is used to absorb excess neutron in nuclear reactor? (A) Graphite (B) Cadmium (C) Bromine (D) Lanthanum	1	2	1
4.	In a solar power plant, a solar array surface of one square kilometer can generate _____ of electric power (A) 250 W (B) 250 kW (C) 250MW (D) 250GW	1	3	1
5.	Moving iron instruments are used to measure (A) Power (B) Energy (C) Voltage (D) Frequency	1	1	2
6.	1 unit of electrical energy refers to (A) 1 Wsec (B) 1 kWsec (C) 1 Whr (D) 1 kWhr	1	1	2
7.	Giger Muller tube is used to measure (A) Smoke (B) Steam pressure (C) Radiation (D) Dust	1	2	2
8.	Which of the following particles has high mass? (A) Alpha (B) Beta (C) Gamma (D) Neutrons	1	1	2
9.	In thermal power plant _____ is used to remove SO_2 from flue gas (A) Photometer (B) Konitest (C) Scrubber (D) Katharometer	1	1	3
10.	pH value of pure water is (A) 0 (B) 1 (C) 7 (D) 14	1	2	3
11.	Full form of PPM is (A) Particulars per Million (B) Particulars per Microns (C) Parts per Microns (D) Parts per Million	1	1	3

12.	Fuel analyzer uses the ratio of _____ present in the waste. (A) Hydrogen / Carbon (B) Carbon / Hydrogen (C) O_2 / CO_2 (D) CO_2 / O_2	1	2	3
13.	Fission of 1 gram of uranium yields as much energy as burning _____ Kg of coal. (A) 100 (B) 300 (C) 1000 (D) 3000	1	1	4
14.	Natural uranium contains 99% of _____ (A) U-232 (B) U-234 (C) U-236 (D) U-238	1	2	4
15.	In nuclear power plant, commonly used liquid metal coolant is _____ (A) liquid copper (B) liquid sodium (C) liquid aluminum (D) liquid silver	1	2	4
16.	During nuclear fission, each fission produces an average of _____ number of neutrons (A) 1 (B) 2.5 (C) 5 (D) 7.5	1	2	4
17.	Francis turbine falls under the category of _____ turbine (A) Axil flow (B) Impulse (C) Reaction (D) natural gas	1	2	5
18.	In hydro power plant, water hammer is developed in _____ (A) Draft tube (B) Surge tank (C) Penstock (D) turbine	1	2	5
19.	Most widely used solar cells are _____ (A) Cadmium (B) Silicon (C) Boran (D) Graphite	1	1	5
20.	Which of the following is incorrect for fuel cells? (A) They are modular (B) They are highly efficient (C) The noise level is very high (D) The emission level is much below the permissible level	1	2	5

PART - B (5 × 4 = 20 Marks) — Marks | BL | CO

Answer **any 5** Questions

21.	List the points that should be consider while selecting site for hydro power plant.	4	1	1
22.	What do you understand about co-generation. List its applications.	4	1	1
23.	Discuss about the various radioactive materials that emits from nuclear power plant.	4	1	2
24.	Brief about eccentricity detector.	4	2	2
25.	Discuss about steam purity meter.	4	2	3
26.	What is chain reaction. How controlled chain reaction is done in nuclear power plant.	4	2	4
27.	Draw the schematic diagram of a low head hydro power plant.	4	2	5

PART - C (5 × 12 = 60 Marks) — Marks | BL | CO

Answer **all** Questions

28.	(a) Draw the schematic diagram of a modern thermal power plant and explain its operation.	12	2	1
	(OR)			
	(b) Draw the piping and instrumentation diagram of steam boiler and explain its operation.			

29.	(a) Explain various methods of measurement of feed air flow to boiler in thermal power plants.	12	2	2
	(OR)			
	(b) Explain drum level measurement in steam boilers with neat sketch			
30.	(a) List the Major impurities that are generally found in water to steam power plant. Explain electrical conductivity meter with neat sketch.	12	2	3
	(OR)			
	(b) What is the use of pH meter in thermal power plant. Where it is located in thermal power plant. Explain with neat diagram, any one type of pH meter.			
31.	(a) Explain boiling water reactor and pressurized water reactor with neat diagram.	12	2	4
	(OR)			
	(b) What are the safety measures that should be done in nuclear power plant. Explain. Also explain how waste from nuclear power plant are disposed.			
32.	(a) Draw the layout of pumped storage power plant and explain.	12	2	5
	(OR)			
	(b) Explain with neat layout, how can we generate electric energy from tides.			

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