Reg. No.																

Question Paper Code	14110

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Sixth Semester

Electronics and Instrumentation Engineering

20ICEL601 - POWER PLANT INSTRUMENTATION

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	What is a hydropower plant? (a) Mechanical energy from the stagnant water currents (b) Electrical energy from the moving water currents (c) Potential energy from the water currents (d) Electrical energy from the moving water currents	1	K1	CO1
2.	Where was India's first nuclear power plant was installed at? (a) Obninsk (b) Tarapur, Maharashtra (c) Boisar, Maharastra (d) None of the mentioned	1	K1	CO1
3.	When steam after doing work in the cylinder passes into a condenser, the engine is said to be a _____ (a) slow speed engine (b) vertical steam engine (c) condensing steam engine (d) no-condensing steam engine	1	Kx	CO2
4.	An economiser is installed in a boiler primarily to _____ (a) increase steam pressure (b) reduce fuel consumption (c) superheat the steam (d) all of the mentioned	1	K1	CO2
5.	In natural draught, increase in height of the chimney, the draught will (a) increases (b) decreases (c) remains constant (d) first increases then decreases	1	K1	CO3
6.	The air pressure at the fuel bed is reduced below that of the atmosphere by means of a fan placed near the bottom of the chimney to produce a draught. Such a draught is called (a) natural draft (b) induced draft (c) forced draft (d) actuated draft	1	K1	CO3
7.	Common size unit of a Steam Power Plant is? (a) 500 MW(e) (b) 150 MW(e) (c) 300 MW(e) (d) 30 MW(e)	1	K1	CO4
8.	What is done to increase the rate of heat transfer in the Velox boiler? (a) The boiler is heated up to a very high range of temperature (b) The size of the boiler is changed as it is flexible (c) High-grade fuel is made use for the combustion (d) Combustion gases are circulated through tubes with supersonic speed	1	K1	CO4
9.	Which of the following statements about throttle governing is wrong? (a) It cannot be used in small turbines (b) It has a relatively simpler mechanism (c) Steam is throttled whenever the load falls below the design load (d) Its initial cost is les	1	K1	CO5
10.	In case of throttle governing, the beat valve is operated using oil supply. The oil is supplies using a _____ (a) centrifugal pump (b) servomotor (c) reciprocatory pump (d) diaphragm pump	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	Compare hydro and thermal power plant.	2	K2	CO1
12.	What are the parameters to be considered to select a site for constructing a hydro power plant?	2	K1	CO1
13.	State the purpose of Flue gas analyzer.	2	K1	CO2

14.	What is called shrink and swell effects in boiler?	2	K1	CO2
15.	Infer the role of soot blowing in a thermal power plant.	2	K1	CO3
16.	State the significance of coal pulverizer control in boilers used in thermal plants.	2	K1	CO3
17.	What is boiler blow down?	2	K1	CO4
18.	Relate different types of interlocks.	2	K2	CO4
19.	State the purpose of oil cooling system in a turbo-alternator.	2	K1	CO5
20.	How vibration is monitored in steam turbine?	2	K1	CO5
21.	Compare throttle and nozzle control governing.	2	K2	CO5
22.	How turbine casing movement is measured?	2	K1	CO5

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Explain in detail about the layout of Hydro power plant also discuss its advantages and disadvantages.	11	K2	CO1
		OR			
	b)	Explain the importance of instrumentation in power plant.	11	K2	CO1
24.	a)	Draw a neat sketch of Dissolved O2 Analyzer and explain its operation (Any two methods).	11	K2	CO2
		OR			
	b)	Explain the working principle of instrument used to measure non electrical parameters	11	K2	CO2
25.	a)	Explain the importance of Air/Fuel ratio control in a boiler and the methods of controlling the Air/Fuel ratio with necessary diagram.	11	K2	CO3
		OR			
	b)	Describe the operation of the following with necessary sketches: (i) Deaerator (ii) Spray-water Attemperators	11	K2	CO3
26.	a)	Examine the structure of modern Distributed Control System used in power plant.	11	K3	CO4
		OR			
	b)	Illustrate the two-element drum level control and three-element boiler drum level control with neat sketch.	11	K3	CO4
27.	a)	What are the mechanisms adopted to control the steam pressure, flow and temperature at the turbine inlet?	11	K2	CO5
		OR			
	b)	How do you control the lubricant oil temperature and what are the control measures adopted to maintain the lubricant temperature at desired value?	11	K2	CO5
28.	a)	Explain the lubrication system adopted for steam turbines with a schematic diagram.	11	K2	CO5
		OR			
	b)	Illustrate how to monitor about the shell temperature of a turbine and how to control the same.	11	K2	CO5