

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024****Subject Code:3171718****Date:19-11-2024****Subject Name: Power Plant Instrumentation****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Explain electrical energy generation from solar power.	03
	(b) Describe objectives of Instrumentation and Control in power plant.	04
	(c) Draw layout of air-flue gas circuit in thermal power plant and explain various equipments of Boiler.	07
Q.2	(a) Classify hydroelectric power plant.	03
	(b) Briefly explain boiler water circulation.	04
	(c) Draw block diagram of nuclear power plant and explain main components of nuclear reactor.	07
	OR	
	(c) (i) Classify turbines according to process conditions.	07
	(ii) Explain different cooling methods for electric generator.	
Q.3	(a) Differentiate between Renewable and Non-Renewable energy sources.	03
	(b) Describe coal quantity measurement in air-fuel circuit.	04
	(c) What are objectives of boiler drum level control? Explain 3-element drum level control in detail.	07
	OR	
Q.3	(a) Compare Hydro electric and Nuclear power plant.	03
	(b) Explain water and steam flow measurement in water circuit.	04
	(c) Define draft pressure. Explain furnace draft control in detail.	07
Q.4	(a) Enlist advantages and disadvantages of nuclear power plant.	03
	(b) Explain lubrication system for turbo-alternator.	04
	(c) Explain measurements of turbine safety monitoring & control system.	07
	OR	
Q.4	(a) What are important factors in selection of site for thermal power plant?	03
	(b) Describe mechanical parameter measurement in turbine.	04
	(c) Explain pressurized water reactor (PWR) control in detail.	07
Q.5	(a) What is role of electrical substation control?	03
	(b) Explain measurement of process parameters in turbine.	04
	(c) (i) What is need of nuclear power plant training simulator? (ii) Explain basics of boiler water reactor (BWR).	07
	OR	
Q.5	(a) Explain terms: Excess air, Flue gases, Waste gases.	03
	(b) Explain main components of hydro electric power plant.	04
	(c) Describe safety and non-safety related system in nuclear power plant in detail.	07
