

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 2171910****Date: 19/06/2023****Subject Name: Power Plant Engineering****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) What is the function of feed water pump, nozzle and cooling tower in thermal power plant?	03
	(b) Why it is necessary to control the temperature of superheated steam in the thermal power plant? Explain any one method.	04
	(c) What is compounding in steam turbine? Explain pressure compounding impulse turbine with neat sketch	07
Q.2	(a) Explain belt conveyor with neat sketch.	03
	(b) Derive expression for mass flow rate of steam through nozzle	04
	(c) Explain with neat sketch 1. High velocity ash handling system 2. Tangential burner	07
	OR	
	(c) Explain construction and working of ball mill.	07
Q.3	(a) Compare open cycle and close cycle gas turbine.	03
	(b) Describe the advantages of high pressure boiler.	04
	(c) Explain sea water treatment using reverse osmosis.	07
	OR	
Q.3	(a) What are the advantages of gas turbine over steam turbine.	03
	(b) Discuss in brief the factors which are required to consider for the site selection of thermal power plant.	04
	(c) Write a short note on Zeolite ion exchange process	07
Q.4	(a) State classification of rocket engines.	03
	(b) What is boiler draught? Explain balance draught.	04
	(c) Explain with neat sketch construction and working of Boiling water reactor	07
	OR	
Q.4	(a) Define following terms as applied to jet propulsion: 1) Thrust 2) Propulsive power	03
	(b) Compare mechanical draught system with natural draught system.	04
	(c) Explain with neat sketch construction and working of CANDU type reactor	07
Q.5	(a) What are the sources of air leakage in a condenser?	03
	(b) Explain forced draught cooling tower with neat sketch.	04
	(c) Derive equation of thermal efficiency of gas turbine work as per brayton cycle.	07

OR

- Q.5**
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|------------|---|-----------|
| (a) | State the advantages of combined gas and steam power plant. | 03 |
| (b) | Explain central flow surface condenser. | 04 |
| (c) | Define the following terms:- | 07 |
| | (i) Peak load (ii) Average load | |
| | (iii) Plant Capacity factor (iv) Connected load | |
| | (v) Demand factor (vi) Diversity factor | |
| | (vii) Plant use factor | |
