

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 7 – EXAMINATION – SUMMER 2026

Subject Code: 2171910

Date: 08/06/2026

Subject Name: Power Plant Engineering

Time: 02:30 PM TO 05:00 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.**

- Q.1** (a) State the functions of following components of thermal power plant: **03**
1. Economizer, 2. Superheater 3. Feed pump
- (b) Explain with neat diagram the working of Benson Boiler **04**
- (c) Draw general layout of thermal power plant and label various components and name various circuits. **07**
- Q.2** (a) What do you mean by the compounding of steam turbine? **03**
- (b) Compare forced and induced draught. **04**
- (c) Describe with neat diagram the pneumatic and hydraulic ash handling systems. **07**
- OR
- (c) Explain the pressure compounding impulse turbine with neat sketch **07**
- Q.3** (a) State the functions of the following in nuclear power plant : **03**
(i) Moderator (ii) Radiation shield (iii) Coolant
- (b) Compare open cycle and close cycle gas turbine. **04**
- (c) Explain with neat sketch construction and working of Boiling water reactor. **07**
- OR
- Q.3** (a) Discuss any one method of cooling of gas turbine blade. **03**
- (b) Write short note nuclear waste and its disposal. **04**
- (c) Explain with neat sketch construction and working of CANDU type reactor **07**
- Q.4** (a) Define thrust, thrust power and propulsive power. **03**
- (b) Describe with neat diagram the combined steam and gas turbine plant **04**
- (c) Describe the effects of operating variables on the thermal efficiency and work ratio of gas turbine plant. **07**
- OR
- Q.4** (a) Differentiate between jet and rocket engines. **03**
- (b) Differentiate between ramjet and pulsejet engine. **04**
- (c) Derive the equation of thermal efficiency of gas turbine plant as per brayton cycle. **07**
- Q.5** (a) State the principle of reverse osmosis process. **03**

(b) Explain with diagram the working of Steam Condenser. **04**

(c) Define the following terms:- (i) Average load (ii) Peak load (iii) Connected load **07**
(iv) Demand factor (v) Plant Capacity factor (vi) Diversity factor (vii) Plant use factor

OR

Q.5 **(a)** What is the necessity of feed water treatment? **03**

(b) Describe with diagram the working of natural draught hyperbolic cooling tower. **04**

(c) Explain the load curves and load duration curves. **07**
