

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3172429****Date:27/12/2021****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.

- Q.1** (a) Explain in brief about Energy conversion. **03**
- (b) Which source of energy is a good source of energy? Enlist & explain about source of energy. **04**
- (c) Do as directed:- **07**
- (1) Explain following terms w.r.t. coal based thermal power plant.
Ranking cycle, improvisations, Steam & heat rate,
- (2) Explain Fuel handling & Draught System w.r.t. coal based thermal power plant.
- Q.2** (a) Define Brayton Cycle. Explain components of Gas Turbine power plant. **03**
- (b) Explain layout & subsystems of Nuclear Power Plants. **04**
- (c) Enlist & explain different types of Reactors. **07**
- OR**
- (c) Explain about Safety measures for Nuclear Power Plants. **07**
- Q.3** (a) Define Nuclear Engineering? Explain Analysis & optimization. **03**
- (b) Explain Construction and working of wind & Thermal system. **04**
- (c) Explain Classifications of Hydro Electric Power Plants. **07**
- OR**
- Q.3** (a) Explain in brief Fuel cell power systems. **03**
- (b) Explain Construction and working of Solar Thermal & Geothermal system. **04**
- (c) Explain Construction and working of Solar PV system. **07**
- Q.4** (a) Explain in brief transformer and Cooling system. **03**
- (b) Explain controller, recorder and their use in Power Plant automation. **04**
- (c) Explain in details Power Plant automation using PLC, SCADA system. **07**
- OR**
- Q.4** (a) What do you understand by Instrumentation in power plant? **03**
- (b) Explain Power tariff types, & Load distribution parameters. **04**
- (c) Explain different types of Boilers. Explain concept of Turbines & Condensers. **07**

- Q.5** (a) Explain in brief Load curve with net sketches. **03**
(b) Explain relative merits & demerits regarding comparisons of site selection criteria. **04**
(c) Write a technical note on:- Capital & operating Cost of various power plants. **07**

OR

- Q.5** (a) Explain Gasifier based Combined Cycle systems. **03**
(b) Explain Binary Cycles and Cogeneration systems. **04**
(c) Write a technical note on:- **07**
Pollution control technologies including Waste Disposal Options for Coal and Nuclear Power Plants.
