

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV(OLD) EXAMINATION – SUMMER 2023

Subject Code:140904**Date:21-07-2023****Subject Name:Energy Systems****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) Draw the general layout of steam power station and explain the working of it in brief. **07**
- (b) Explain the factors affecting the selection of site of Hydro power station. **07**
- Q.2** (a) Explain nuclear power plant with neat diagram. **07**
- (b) Compare steam, hydro, gas and diesel power plants on basis of site, initial cost, fuel cost, maintenance, water requirement, reliability, etc. **07**
- OR**
- (b) Explain the function of following equipments for Steam Power station : **07**
 (i) Air preheater (ii) Superheater (iii) Economiser (iv) Cooling tower
 (v) Electrostatic Precipitator (vi) Pulverizer (vii) Alternator.
- Q.3** (a) Draw and explain schematic arrangement of Diesel power plant. **07**
- (b) Explain combined cycle power plant with necessary diagram. **07**
- OR**
- Q.3** (a) List out the different types of solar collector. Explain the different types of flat plat collectors in brief. **07**
- (b) Discuss the grid connected wind energy conversion system with help of schematic diagram. **07**
- Q.4** (a) Explain floating drum type Biogas plant. List its merits and demerits. **07**
- (b) Explain the sources and properties of Hydrogen as fuel & also give the application of Hydrogen energy.. **07**
- OR**
- Q.4** (a) Explain the limitations of wind energy system also explain the effects of wind speed on grid conditions. **07**
- (b) What is Solar Pond? Discuss the working of solar pond with neat sketch. **07**
- Q.5** (a) Explain the principle of ocean thermal energy conversion & discuss Claude cycle OTEC system in brief. **07**
- (b) Explain principle of Fuel cells and classify them. Also state its advantages. **07**
- OR**
- Q.5** (a) Why Electrostatic Dust Collectors (ESP) is provided? Explain the operation of it with necessary diagram. **07**
- (b) State advantages and disadvantages of Gas Turbine Power station. **07**
