

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI EXAMINATION – SUMMER 2025

Subject Code: 3161312

Date: 26-05-2025

Subject Name: Global Warming and Climate Change

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) Define the term Green House Gas (GHG). Discuss the role of GHGs in Global warming and Climate change. **03**
- (b) 'Carbon Dioxide and Water Vapor are the most significant GHGs.' – Justify the statement. **04**
- (c) Describe the concept of enhanced greenhouse gas effect. **07**
- Q.2** (a) Define the following terms: **03**
1. Global Warming Potential 2. Jet Stream 3. Gulf Stream
- (b) Difference between Weather and Climate. **04**
- (c) Describe the latitudinal atmospheric circulation with figure. **07**
- OR**
- (c) Describe the longitudinal atmospheric circulation with figure. **07**
- Q.3** (a) State the Stephan-boltzman principle. **03**
- (b) Enlist and explain any TWO Carbon Fluxes in detail. **04**
- (c) Describe the Thermohaline Circulation in detail. **07**
- OR**
- Q.3** (a) Enlist the GHG and mention respective Global Warming Potential (GWP). **03**
- (b) Discuss the significance of ITCZ in atmospheric circulation. **04**
- (c) Discuss the role of Oceans with respect to Global Warming. **07**
- Q.4** (a) Define the term Carbon Capture and Utilization (CCU). **03**
- (b) Enlist and explain any ONE CO₂ capture technologies in detail with schematic block diagram. **04**
- (c) Enlist and explain options to mitigate the Climate Change in detail. **07**
- OR**
- Q.4** (a) Define the term Enhance Oil Recovery (EOR). **03**
- (b) Discuss the Oxy-fuel combustion capture systems in detail. **04**
- (c) Differentiate between Carbon Capture and Storage (CCS) and Carbon Capture and Utilization (CCU). **07**
- Q.5** (a) Explain the role of IPCC. **03**
- (b) Describe the Joint Implementation (JI) mechanism in detail. **04**
- (c) Discuss the National legislative frameworks for Climate Change in detail. **07**
- OR**
- Q.5** (a) Explain the significance of Kyoto protocol. **03**
- (b) Explain the concept of Circular Economy. **04**
- (c) Discuss the application of Climate Modelling. **07**
