Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI EXAMINATION – WINTER 2025

Subject Code:3161312 Date:19-11-2025

Subject Name:Global Warming and Climate Change

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.**

			Marks
Q.1	**(a)**	Explain the concept of Global Warming.	**03**
	(b)	Discuss the Natural Green House Effect.	**04**
	(c)	Differentiate between Weather and Climate.	**07**
Q.2	**(a)**	Explain the role of humans in Climate Change.	**03**
	(b)	Explain the sources of GHGs.	**04**
	(c)	Discuss the effect of Green House Effect.	**07**
		OR	
	(c)	Discuss the indicators of human fingerprint on climate change.	**07**
Q.3	**(a)**	Define the term Climate Impact.	**03**
	(b)	Explain the role of Oceans in climate.	**04**
	(c)	Discuss the Climate Impacts on Agriculture in detail.	**07**
		OR	
Q.3	**(a)**	Define the term ITCZ.	**03**
	(b)	Explain the Easterlies and Westerlies Wind.	**04**
	(c)	Explain the Global Carbon cycle in detail.	**07**
Q.4	**(a)**	Define the term Carbon Capture and Sequestration.	**03**
	(b)	Explain pathways to stabilize the Atmospheric CO_2 concentration.	**04**
	(c)	Discuss the applications of Carbon Capture and Sequestration.	**07**
		OR	
Q.4	**(a)**	Define the term Climate Resilience.	**03**
	(b)	Discuss the significance of Salinity in Ocean for Climate Change.	**04**
	(c)	Discuss the National Action Plan for Climate Change.	**07**
Q.5	**(a)**	Define the term : Clean Development Mechanism.	**03**
	(b)	Discuss the role of IPCC and UNFCCC.	**04**
	(c)	Explain the Kyoto Protocol in detail.	**07**
		OR	
Q.5	**(a)**	Discuss the significance of Climate Modelling.	**03**
	(b)	Enlist and explain any ONE element of weather modelling.	**04**
	(c)	Discuss the Global Circulation Model in detail.	**07**

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Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3161312 Date:28-11-2024

Subject Name: Global Warming and Climate Change

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.**

			Marks
Q.1	**(a)**	What is meant by climate variability and climate change?	**03**
	(b)	State the elements of the Climate. Explain any two in detail.	**04**
	(c)	Explain the significance of Global warming and Climate change in Environmental Engineering field.	**07**
Q.2	**(a)**	Give the statistical contribution of greenhouse gases in the atmosphere.	**03**
	(b)	Discuss the role of Oceans with respect to Global Warming.	**04**
	(c)	How does Methane can contribute in climate change? What are the sources and impacts?	**07**
		OR	
	(c)	"An estimate of the average rise in sea level is a useful measure of the future impact of global warming in terms of damage to property and loss of life", Justify the statement.	**07**
Q.3	**(a)**	How has climate change created an impact on India?	**03**
	(b)	Explain the concept of Carbon Capture and Sequestration.	**04**
	(c)	Explain the types of CO2 Capture technologies in detail with schematic block diagram.	**07**
		OR	
Q.3	**(a)**	Discuss the Post-combustion capture systems in detail.	**03**
	(b)	Differentiate between weather model and climate model.	**04**
	(c)	Enlist and explain configuration of CO2 Capture and Storage may for use in electricity generation with schematic block diagram	**07**
Q.4	**(a)**	Discuss the application of Climate Modelling.	**03**
	(b)	State the objectives of IPCC.	**04**
	(c)	Define and discuss the pathways for Carbon Dioxide Removal (CDR) and Negative Emissions.	**07**
		OR	
Q.4	**(a)**	Discuss the Oxy-fuel combustion capture systems in detail.	**03**
	(b)	Discuss the advantage of Carbon Capture and Utilization (CCU)	**04**
	(c)	Discuss the Industrial Process Capture System for following Industry: a. Natural gas sweetening b. Steel production c. Cement production	**07**

Q.5	**(a)**	What is the Kyoto Protocol? On which mechanism it works?	**03**
	(b)	What is CDM of Kyoto Protocol? How does CDM work?	**04**
	(c)	Explain in detail How does economic system help to solve economic issues and problems in an economy?	**07**

OR

Q.5	**(a)**	Enlist the important findings of IPCC AR5.	**03**
	(b)	What is the difference between joint implementation and Clean Development Mechanism?	**04**
	(c)	Discuss the Impacts of 1.5°C and 2°C of Warming.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2023

Subject Code:3161312 Date:07-12-2023

Subject Name:Global Warming and Climate Change

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)**	Define the following terms: 1. Global Warming Potential 2. Carbon Flux 3. Residence Time	**03**
	(b)	Differentiate between weather and climate.	**04**
	(c)	Water vapor and Carbon dioxide will act as significant Greenhouse Gases. – Justify the statement.	**07**
Q.2	**(a)**	State and derive the Stephan Boltzman law.	**03**
	(b)	Differentiate between Natural and Enhanced Green House Effect.	**04**
	(c)	Discuss the anthropogenic sources of Greenhouse Gases.	**07**
		OR	
	(c)	Discuss the Climate Change Impacts in detail.	**07**
Q.3	**(a)**	Explain the Global Wind Circulation for Hadley Cell.	**03**
	(b)	Discuss the Green House effect in detail.	**04**
	(c)	Describe the Global Carbon cycle in detail.	**07**
		OR	
Q.3	**(a)**	Explain the Global Wind Circulation for Polar Cell.	**03**
	(b)	Discuss the factors affecting ocean current in detail.	**04**
	(c)	Discuss the role of Ocean on Climate Change.	**07**
Q.4	**(a)**	Explain the application of Climate Modelling.	**03**
	(b)	Enlist and explain any TWO Climate element in detail.	**04**
	(c)	Enlist and explain options to mitigate the Climate Change in detail.	**07**
		OR	
Q.4	**(a)**	Explain the Global Circulation Model (GCM).	**03**
	(b)	Differentiate between Carbon Capture and Storage (CCS) and Carbon Capture and Utilization (CCU).	**04**
	(c)	Enlist and explain configuration of CO_2 Capture and Storage for use in electricity generation with schematic block diagram.	**07**
Q.5	**(a)**	Explain the term Sustainable Development.	**03**
	(b)	Discuss the role of UNFCCC and WMO.	**04**
	(c)	Discuss the significance of Kyoto Protocol in detail.	**07**
		OR	
Q.5	**(a)**	Define the term IPCC.	**03**
	(b)	Explain the Concept of Clean Development Mechanisms (CDM).	**04**
	(c)	Discuss the National Climate Action Plan in detail.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI(NEW) EXAMINATION – WINTER 2022

Subject Code:3161312 Date:15-12-2022

Subject Name:Global Warming and Climate Change

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.**

			MARKS
Q.1	**(a)**	Explain the terms weather and climate. Justify if both the terms can be used interchangeably or not.	**03**
	(b)	What is meant by climate variability and climate change.	**04**
	(c)	Explain the significance of Global warming and Climate change in Environmental Engineering field.	**07**
Q.2	**(a)**	Explain Greenhouse effect.	**03**
	(b)	How does energy gets balanced on the Earth?	**04**
	(c)	State the elements of the Climate. Explain any two in detail.	**07**
		OR	
	(c)	Compare and contrast the natural and anthropogenic causes of climate change.	**07**
Q.3	**(a)**	Give the statistical contribution of greenhouse gases in the atmosphere.	**03**
	(b)	During past changes in the climate, many forms of flora and fauna were able to migrate to areas where the new climate suited them. Why could this option not be available to many species as the climate changes in the future?	**04**
	(c)	Elaborate any one case study as an evidence of Climate change.	**07**
		OR	
Q.3	**(a)**	What is the COP?	**03**
	(b)	State the objectives of IPCC.	**04**
	(c)	Explain the consequences on economy of a country in times of extreme weather events.	**07**
Q.4	**(a)**	What is meant by a climate model?	**03**
	(b)	Explain testing the validity of models.	**04**
	(c)	Enlist and explain the various types of models used for modeling the climate.	**07**
		OR	
Q.4	**(a)**	How has climate change created an impact on India.	**03**
	(b)	Explain the concept of Carbon Capture and Sequestration.	**04**
	(c)	An estimate of the average rise in sea level is a useful measure of the future impact of global warming in terms of damage to property and loss of life. Justify the statement.	**07**
Q.5	**(a)**	Explain global warming in brief.	**03**
	(b)	List the models used for CO_2 storage through EOR. Explain any one.	**04**
	(c)	Write a detailed note on the Kyoto Protocol.	**07**

OR

Q.5	**(a)**	Enlist the important findings of IPCC AR5.	**03**
	(b)	Explain Environmental economics as a part of Climate change policies and legislation.	**04**
	(c)	Draw a neat and labeled diagram of global carbon cycle and explain it.	**07**

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