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RV COLLEGE OF ENGINEERING
Autonomous Institution affiliated to VTU
II Semester B.E. December -2023 Examinations
DEPARTMENT OF CHEMICAL ENGINEERING
Global Climate Change
2022 SCHEME

*Time: 03 Hours**Maximum Marks: 100**Instructions to candidates:*

1. Answer all questions from Part A. Part A questions should be answered in first three pages of the answer book only.
2. Answer FIVE full questions from Part B. In Part B question number 2 is compulsory. Answer any one full question from 3 and 4, 5 and 6, 7 and 8, and 9 and 10.

PART-A			Marks
1	1.1	Define energy intensity.	02
	1.2	How is temperature anomaly different from normal temperature.	02
	1.3	What is Chemical Weathering?	02
	1.4	List out the various renewable sources of energy?	02
	1.5	Name few human activities that causes climate change on Earth.	02
	1.6	What is turnover time of carbon.	02
	1.7	What is IPCC?	02
	1.8	How Cap-and-trade plan works?	02
	1.9	List the factors that control emissions.	02
	1.10	What causes abrupt climate change?	02
PART-B			
UNIT-I			
2	a	What is Climate Change? Discuss the atmospheric climate variables that affect climate system.	08
	b	What is the evidence that shows the climate is changing?	08
UNIT-II			
3	a	Derive the expression for planet's surface temperature assuming n layers of 'n' layers of atmosphere if planet has solar constant of 2000 W/m ² and albedo of $\alpha = 0.4$. Also calculate the surface temperature of the planet. Make the standard assumption that the atmosphere is transparent to visible photons but opaque to infrared photons.	10
	b	Explain the exchange of carbon exchange between the atmosphere, land biosphere, and ocean with the help of schematic diagram.	06
OR			
4	a	Discuss about emission of methane into the atmosphere from various sources and atmospheric abundances of methane.	10

	b	Describe the composition of our atmosphere, with a particular focus on greenhouse gases.	06
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UNIT-III

5	a	Explain IPAT relationship to analyze the driving forces of individual factors on CO2 emissions.	10
	b	What are the predictions of future atmospheric composition based on emissions scenarios from IPCC.	06

OR

6	a	Summarize the four different storylines on emissions scenarios created by IPCC?	08
	b	What is abrupt climate change? Why abrupt climate changes are a serious problem.	08

UNIT-IV

7	a	a) Explain how a carbon tax works. b) Explain how a cap-and-trade system works. c) Illustrate the fundamental difference between these two policies with an example	16
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OR

8	a	Explain the role of technologies in mitigation of climate change.	08
	b	What personal actions would you consider taking to mitigate climate change impacts?	08

UNIT-V

9	a	Who created the Paris Agreement? What are key features of the Paris Agreement to address climate change.	08
	b	What are the suggestions of latest IPCC report to address the climate change.	08

OR

10	a	What are the new insights on climate impacts, vulnerability, and adaptation from IPCC?	08
	b	What is COP and its functions? What is the role of the COP to deal with climate change?	08