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RV COLLEGE OF ENGINEERING®
 (An Autonomous Institution affiliated to VTU)
 II Semester B. E. Examinations November-2023
 Common to all Programs

GLOBAL CLIMATE CHANGE

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. Question number 2 is compulsory. Choose any one full question from 3 or 4, 5 or 6, 7 or 8 and 9 or 10.

PART-A

1	1.1	List out the greenhouse gases	02
	1.2	Define temperature anomaly.	02
	1.3	What is ocean acidification?	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 does global warming have to do with rising sea levels?	02
	1.7	How does climate change affect biodiversity?	02
	1.8	What is climate change adaptation?	02
	1.9	Define offset with respect to carbon emissions.	02
	1.10	How Cap-and-trade plan works?	02

PART-B

2	a	What is the difference between weather and climate, and why is it important to distinguish between the two when discussing climate change?	04
	b	Is our climate changing? What is the evidence that shows the climate is changing?	08
	c	How does the greenhouse effect contribute to global warming?	04
3	a	What is a climate model? Derive an expression for planet's surface temperature and calculate the same. Make the standard assumption that the atmosphere is transparent to visible photons but opaque to infrared photons. Assume a planet with a one-layer atmosphere has a solar constant of $S = 1,000 \text{ W/m}^2$ and an albedo of $\alpha = 0.4$.	10
	b	Explain the Atmosphere-rock carbon exchange system.	06
		OR	
4	a	Explain how humans are perturbing the carbon cycle.	08
	b	Explain how carbon exchange happens between atmosphere and land biosphere system.	08

5	a	Explain the four main emissions scenarios created by IPCC? Highlight the main differences between them.	10
	b	Discuss the factors that control greenhouse gas emissions.	06
OR			
6	a	How the climate changes effects humans and the aspects of the environment that we rely on.	08
	b	Why abrupt climate changes are a serious problem?	08
7		How does a carbon tax differ from cap-and-trade in terms of the regulatory approach? Explain difference between these two policies using an example.	16
OR			
8	a	What is mitigation of climate change? Discuss the role of technologies in mitigation of climate change.	08
	b	How can individuals contribute to mitigating climate change in their daily lives?	08
9	a	Discuss key aspects of the Paris Agreement to address climate change.	08
	b	What are the recommendations of latest IPCC report to mitigate the climate change?	08
OR			
10	a	What is IPCC? What are the Key Findings of IPCC latest reports?	10
	b	What is the role of the COP in the international efforts to address climate change?	06