KUMARAGURU
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M.E DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Third Semester

ENVIRONMENTAL ENGINEERING

P18EEE0002**:** Climate Change and Adaptation

COURSE OUTCOMES

CO1:   Apply the different concept of climate change and its consequences.

CO2:   Adopt the methodologies in finding the change in climate.

CO3:   Apply basic climatic modelling.

CO4:   Predict climate changes and downscaling techniques.

CO5:   Identify impacts of climate change.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1.   How long would it take to stabilize global temperature if immediate action is taken?   CO1   [K$_1$]

   a)   10 years   b)   20-30 years

   c)   50 years   d)   100 years

2.   Why are greenhouse gases essential to the survival of humans and other living things?   CO1   [K$_1$]

   a)   They make the earth habitable   b)   They cause global warming

   c)   They reduce air pollution   d)   They are toxic to most living things

3.   What is the main source of greenhouse gases?   CO1   [K$_1$]

   a)   Deforestation   b)   Agriculture

   c)   Fossil fuels   d)   Oceans

4.   Which of the following is not a green house gas?   CO1   [K$_1$]

   a)   Carbon di-oxide   b)   Methane

   c)   Nitrous oxide   d)   Carbon monoxide

5.   What is IPCC termed as   CO3   [K$_1$]

   a)   A government agency that promotes fossil fuel use   b)   An organization that promotes climate change denial

c)   A scientific panel that provides unbiased climate change information
d)   A lobbying group for renewable energy companies

6.   What is the fifth assessment report?   CO3   [K₁]

a)   A report on the causes of sea level rise
b)   A report on the benefits of renewable energy
c)   A report on the effects of climate change on wildlife
d)   A report on the dangers of climate change denial

7.   The EI-Nino phenomenon occurs in   CO1   [K₁]

a)   Atlantic Ocean
b)   Pacific ocean
c)   Indian ocean
d)   Arctic ocean

8.   What is the main cause of sea level rise?   CO1   [K₁]

a)   Glacier melt
b)   Ocean expansion
c)   Both glacier melt and ocean expansion
d)   Deforestation

9.   UNFCCC stands for   CO2   [K₁]

a)   United Nations Framework Convention on Climate Change
b)   United Nations Federation convention on climate change
c)   United Nations Framework council on climate change
d)   United nations federation council on climate change

10. What is the IPCC special report on the impacts of global warming of 1.5 degree Celsius?   CO3   [K₁]

a)   A report on the benefits of fossil fuel use
b)   A report on the positive effects of climate change
c)   A report on the negative effects of climate change
d)   A report on the benefits of limiting global warming to 1.5 degree Celsius

PART B (10 x 2 = 20 Marks)

No.	Question	CO	K
11.	What do you understand by the term "Earth's climate engine"?	CO1	[K₂]
12.	Classify trade winds and Hadley cell.	CO1	[K₂]
13.	List the probable drivers for climate change.	CO2	[K₂]
14.	Narrate the probable effects of climate change from the perspective of INDIA.	CO2	[K₂]
15.	What do you understand by the term "Sensitivity" in the perspective of modelling?	CO3	[K₂]
16.	List the climate models that are available or used in practice.	CO3	[K₂]
17.	Differentiate the terms prediction and forecasting.	CO4	[K₂]
18.	State the difference short-term forecast and medium-range forecast.	CO4	[K₂]

19. Whether climate change has a positive impact on water resources, justify your view point. CO5 [K₃]

20. Whether human activities trigger the change in micro climate, justify your stand. CO5 [K₃]

PART C (6 x 5 = 30 Marks)

21. Discuss the carbon cycle with a neat sketch. CO1 [K₂]

22. How do you visualize long-term pattern variability in a climatic variable? CO2 [K₃]

23. Discuss the various assessment reports (AR) prepared by IPCC highlighting relevant updates. CO3 [K₃]

24. Structure and brief a methodology to perform long-range climate prediction. CO4 [K₃]

25. Discuss a case to show the impact of climate change on agriculture. CO5 [K₂]

26. Discuss a case to justify the stand that industries play a role in driving climate change. CO5 [K₃]

Answer any FOUR Questions
PART D (4 x 10 = 40 Marks)

27. Conceptualize the hydrological cycle and discuss on the travel path of water along its flow. CO1 [K₂]

28. Discuss climate sensitivity and feedback. CO2 [K2]

29. Develop a conceptual model approach to perform climate change modelling to map future rainfall patterns in Coimbatore across time scale of 2030, 2050, and 2100. CO3 [K₃]

30. You have 20-year daily temperature data for a particular latitude and longitude. Your firm is interested in understanding the future temperature every 20 years. You are assigned a task to perform statistical downscaling. Structure a methodological approach that can serve the intended purpose. CO4 [K3]

31. With the help of case description, structure an discussion it may assist in visualizing the climate change impact on human health.   CO5   [K₃]

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