

**2025 / FYUG / EVEN / SEM /  
PHYIDC-151 / 043**

**FYUG Even Semester Exam., 2025**

**PHYSICS**

**( 2nd Semester )**

**Course No. : PHYIDC-151**

**( Understanding the Climate )**

**Full Marks : 70**

**Pass Marks : 28**

**Time : 3 hours**

**The figures in the margin indicate full marks  
for the questions**

**UNIT—I**

**1. Answer any four of the following as directed :**

**1×4=4**

- (a) What is percentage of oxygen in the atmosphere?
- (b) What is the lowest layer of Earth's atmosphere?
- (c) How does temperature vary with height in the troposphere?

(d) The atmospheric pressure increases with height. (Write True or False)

(e) What is the function of mesosphere layer?

2. Answer any one of the following questions :

(a) Explain greenhouse effect in brief.

(b) What are the main components of earth's atmosphere?

3. Answer any one of the following questions :

(a) Describe the composition and vertical structure of the atmosphere. Explain the role of atmospheric gases in heating the atmosphere, including greenhouse effect. Describe the mechanism of heat transfer and the earth's heat budget in maintaining global temperature balance. 2+3+3=8

(b) Explain earth-sun relationship and its impact on weather and climate. Describe the mechanism of heat transfer in the atmosphere and the role of solar radiation in earth's energy balance. How do atmospheric gases regulate global temperature? 2+4+2=8

4. Answer any four of the following questions : 1×4=4

(a) Is cloud seeding artificial?

(b) What is the size of aerosol?

(c) What is trade wind?

(d) Define humidity.

(e) What is condensation of droplet?

5. Answer any one of the following questions : 2

(a) How do cyclones develop in the atmosphere?

(b) What instruments are used to measure humidity, wind speed and atmospheric pressure?

6. Answer any one of the following questions : 8

(a) Describe the different methods of meteorological observation including surface weather station, upper air observation network and satellite observation. Describe the process of cloud formation, precipitation and the role of aerosols in droplet growth and condensation. 4+4=8

(b) Describe the different techniques used to measure temperature, humidity, wind speed and atmospheric pressure. Discuss about cloud seeding and its benefits. How is cloud seeding done?

UNIT—III

7. Answer any four of the following questions :

- (a) What is trace gas? 1×4
- (b) Name the natural cause of climate change. 4+4
- (c) Define global warming.
- (d) Is El Niño causing heatwaves?
- (e) Name two sources of carbon dioxide in the atmosphere.

8. Answer any one of the following questions :

- (a) What are the major causes of drought and heat waves?
- (b) How is climate change detected scientifically?

9. Answer any one of the following questions : 8

(a) Explain the climate system and various methods used for detecting climate change. Discuss the observed trends in climate change and the natural causes that contribute to it. How do carbon dioxide and other trace gases influence climate change?

(b) Describe the greenhouse effect and its role in global warming. How does the increasing concentration of carbon dioxide and other greenhouse gases impact weather pattern? Explain hurricanes and heatwaves. 3+3+2=8

UNIT—IV

10. Answer any four of the following questions : 1×4=4

- (a) Define fossil fuel.
- (b) What is the effect of melting of glaciers?
- (c) What is carbon footprint?
- (d) Why is industrialization a major cause of climate change?
- (e) What are the causes of formation of urban heat islands?

11. Answer any one of the following questions :

( 7 )

- (a) How does climate change affect monsoon pattern?
- (b) How does global warming lead to sea level rise?

12. Answer any one of the following questions :

- (a) Explain the concept of climate feedback mechanism and their role in climate change. Describe the impact of deforestation, fossil fuel burning on global warming. 4+4=8
- (b) Describe the major manifestations of global warming including sea level rise, glacier melting and variation in monsoon patterns. How do urban heat islands affect local climates? 6+2=8

UNIT—V

13. Answer any four of the following questions :

- (a) What is the aim of Kyoto Protocol? 1×4=4
- (b) What are key options for climate change adaptation?
- (c) How does geo-engineering help mitigate global warming? 3+2+3=8

14. Answer any one of the following questions : 2

- (d) What is the concept of Panchamrit in climate policy?
- (e) What is the difference between climate adaptation and mitigation?

15. Answer any one of the following questions : 8

- (a) Discuss the international legal and policy framework for climate change. Explain the objectives of Kyoto Protocol. How do climate change adaptation strategies help in sustainable development? 4+2+2=8
- (b) Explain the difference between climate change adaptation and mitigation. How can geo-engineering be used to mitigate global warming? Write the significance of Panchamrit in addressing climate change. 3+2+3=8

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