

Total number of printed pages-7

3 (Sem-5/CBCS) GLG HE 2

2023

GEOLOGY

(Honours Elective)

Paper : GLG-HE-5026

(Earth and Climate)

Full Marks : 60

Time : Three hours

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

1. Choose the correct option : 1×7=7

(a) Air glow occurs in the _____ at night.

(i) Ionosphere

(ii) Chemosphere

(iii) Exosphere

(iv) Mesosphere

Contd.

(b) E layer of ionosphere owes its characteristics to the absorption of X-rays, which ionize molecules of nitrogen. The E layer is also known as

- (i) Appleton layer
- (ii) Kennelly-Heaviside region
- (iii) Depletion layer
- (iv) Friction layer

(c) Which of the following is correct about the Coriolis force ?

- (i) Winds are blowing to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.
- (ii) It only affects wind direction and not wind speed.
- (iii) It is strongest at the poles and weakens equatorwards where it eventually, becomes non-existent.
- (iv) All of the above

(d) Which of the following is a local wind of USA ?

- (i) Chinook
- (ii) Foehn
- (iii) Harmattan
- (iv) Mistrel

(e) Which among the following materials is likely to have the lowest albedo ?

- (i) Thick cloud
 - (ii) Fresh snow in Antarctica
 - (iii) Moist ploughed soil
 - (iv) Mirror
- (f) Which of the following cyclones did not affect India ?
- (i) Nargis
 - (ii) Aila
 - (iii) Neelam
 - (iv) Thane

(g) During the Jurassic period the climatic conditions were generally :

(i) Warm

(ii) Cold

(iii) Glacial

(iv) Moderate

2. Answer the following questions :

2×4=8

(a) What do you understand by climate system response ?

(b) What is Heat Transformation ?

(c) What is the difference between Sea ice and Glacial ice ?

(d) What does 'aurora australis' mean ?

3. Write short notes on the following :

(any three)

5×3=15

(a) Component of the climate system

(b) Earth's heat budget

(c) Surface and deep circulation

(d) Archive based climate change data from the Indian continent

(e) Marine isotope stages

4. Answer the following questions : (any three)

10×3=30

(a) Write a note on climate controlling factors. Add a note on feedback in climate system.

5+5=10

(b) Describe Milankovitch cycle and variability in the climate. Add a note on Last Glacial Maximum (LGM).

5+5=10

(c) What are the factors associated with monsoonal intensity? Write a note on monsoonal variation through time.

5+5=10

(d) Describe briefly on Global oceanic conveyor belt and its control on Earth's system. Add a note on atmospheric circulation.

6+4=10

(e) Write a note on natural vs anthropogenic effects of climate change. What are the future perspectives of climate change?

4+4+2=10

(f) What do you understand by layering of atmosphere? Write briefly on atmospheric and ocean interaction and its effect on climate.

3+7=10