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S.No. 6015

P 22 AGCC 11

(For candidates admitted from 2022–2023 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Applied Geology

GEOMORPHOLOGY AND MARINE GEOLOGY

Time : Three hours

Maximum : 75 marks

PART A — (20 marks)

Answer ALL questions.

I. (A) Choose the correct answer. (5 × 1 = 5)

1. Volcanic landform of Pahoehoe is formed by

- (a) Slow moving viscous lava
- (b) Lava enriched in sodium and potassium, silica
- (c) Mafic lava
- (d) Rhyolitic lava

2. From the below answers, choose the right one: The erosional product of groundwater are:

- (a) Caverns
- (b) Cirques
- (c) Mondnak
- (d) Loess

3. Radial drainage is common in

- (a) Stratovolcanoes
- (b) Delta
- (c) Sand sea
- (d) U-valley

4. Deflation creates

- (a) Loess
- (b) Inselberg
- (c) Barchan
- (d) Desert pavement

5. Speleogenesis is

- (a) development of caves by groundwater
- (b) development of caves by waves
- (c) development of caves by wind erosion
- (d) development of caves by waterfall

(B) Fill in the blanks. (5 × 1 = 5)

6. Actualism is defined by uniformity of _____.

7. Moraine is a _____ landform created by _____.

8. The dominant process is _____ in submarine canyon.

9. Oscillatory flow cannot be generated below _____ base.

10. The oceanic trench is formed at _____ plate boundary.

II. Answer the following questions. (5 × 2 = 10)

11. What is peneplanation? In which stage of erosional cycle, it may be happened?
12. What is the main difference between U-shaped valley and V-shaped valley?
13. What are the basic differences between rockfall, rockslide and rock avalanches?
14. What are seamounts and guyots? How are they related to sea floor spreading?
15. Define seismic shooting.

PART B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b).

16. (a) What is the first fundamental concept of Geomorphology proposed by Hutton? Give an example from the past geological event that does not follow this law. (1+4)

Or

- (b) What is the geomorphic process? How many geomorphic processes are there? Discuss their impact on the earth surface. (1 +4)

17. (a) What is desertification? How does the plate tectonism play an important role in desertification? Give an example from Indian context. (1+3+1)

Or

- (b) What is strato-volcano? Illustrate its internal structure with a diagram. Along what type of lithospheric plate boundary is this volcano located? (1+2+2)
18. (a) What is the Karst topography? Describe the landforms which are common in Karst topography. (1+4)

Or

- (b) How do the developments of drainage system depend on the geological structures underneath the surface? Name one Indian River that does not follow the topology of the area. (4+1)
19. (a) What is the dominant process occurring on the sea floor? How do the seismic refraction and reflection reconstruct the topography of the sea floor? Discuss the methodology. (1+4)

Or

- (b) "Hurricanes generated in the northern hemisphere and southern hemisphere rotate in opposite direction" - What is the reason behind it? "The Tsunami and Hurricane can floods low-lying areas of coastal plains up to depths of few meters."- But what is the difference between these two phenomena? (3+2)

20. (a) What are the two important theories of coral reef formation? What are the three stages of atoll development? (2+3)

Or

- (b) What is Varve deposit? How do varved Sedimentary deposits can record short-term climate change in the past? (2+3)

PART C — ($3 \times 10 = 30$)

Answer any THREE from the following.

21. What is the cycle of erosion? Discuss the differences between the cycle of erosion proposed by Davis and Penck? Discuss examples from India where one can be explained by Davis cycle of erosion and another can be explained by Penck's cycle of erosion? (1+7+2)
22. What is littoral zone? Illustrate the different parts of littoral zone with a sketch. What are the dominating exogenic processes that modify the shoreline? (1+5+4)

23. What is a drainage system? How many drainage patterns (controlled by structure and slope) are there? Discuss with illustrations. (2+8)
24. What are the important differences between the Atlantic and Pacific oceans with regard topography, tectonics, volcanism, and other seafloor processes? (10)
25. What is continental shelf and slope? Describe the submarine landforms with a sketch. Does the coastal region of India belong to passive margin? (2+7+1)