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UG/II/GEOL/H/III/18 (New)

2018

GEOLOGY

[**Honours**]

PAPER – III

Full Marks : 90

Time : 4 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

[**NEW SYLLABUS**]

GROUP – A

(*Palaeontology*)

Answer the following questions (any five): 5 × 5

1. (a) Write two differences between regularia and irregularia.

(*Turn Over*)

- (b) What do you mean by oculo genital ring and madreporite ?
- (c) What are periproct and peristome ? 2 + 2 + 1
2. (a) What is pygidium ?
- (b) Discuss on different types of cephalic sutures of trilobite. 1 + 4
3. Draw a proper labelled diagram of cephalopoda. 5
4. Is the fossil record complete for understanding the evolution process ? Give proper reasons for your answer. 5
5. (a) Differentiate between sympatric and allopatric speciation.
- (b) Name the biostratigraphic zone that represent maximum abundance of a taxon.
- (c) Give examples of phyla, one with coelomate grade and another with acoelomate grade. 2 + 1 + 2
6. (a) What is peristome of gastropoda ?

- (b) Write about different types of shell shapes of gastropoda. 1 + 4
7. What are the different modes of preservation of plant fossils? – Discuss in brief. 5
8. Write a short note on fossil lagerstätten. 5

Answer the following questions (any one): 10×1

9. (a) Explain the concept of 'species' in palaeontology.
- (b) Define 'holotype' and 'paratype'.
- (c) State the 'Law of priority'. 5 + 2 + 3
10. (a) What are the major vertebrate fossils of Upper Siwalik with proper stratigraphic sequences.
- (b) Write a short note on Upper Gondwana Flora of India.
- (c) What types of morphological modifications are involved in ammonoid evolution? 4 + 4 + 2

GROUP – B

(*Geochemistry*)

Answer the following questions (any three): 5 × 3

11. Write a note on cosmic abundance of elements. 5
12. Write down the advantages and disadvantages of Sm-Nd dating method. 5
13. (a) Discuss on 'geochemical classification of elements'.
(b) How do you determine the siderophilic character of an element ? 3 + 2
14. State the Goldschmidt's rules of substitution. 5
15. Explain the K-Ar dating method. 5
16. (a) Differentiate between meteorite and crustal rock.
(b) Name two most abundant elements, each in the earth's crust and mantle. 3 + 2

GROUP – C

(*Hydrology and Environmental Geology*)

Answer the following questions (any two): 5 × 2

17. (a) Write a note on the sub-surface distribution of groundwater.

(b) What is hydraulic conductivity? 3 + 2

18. Write a short note on soil pollution. 5

19. (a) What do you mean by specific yield and specific retention? How these parameters are related to porosity?

(b) What is piezometric surface? 3 + 2

20. Write a short note on different types of landslides. 5

Answer the following questions (any one): 10 × 1

21. (a) Write a note on preventive measures of earthquake.

(b) Write a note on prediction of volcanic eruption. 5 + 5

22. (a) What are the reasons for seasonal fluctuations in groundwater table ?
- (b) Write a note on different types of springs. 4 + 6

GROUP – D

(*Exploration Geology, Engineering Geology*)

Answer the following questions (any two): 5 × 2

23. (a) What is instantaneous field of view (IFoV) ?
- (b) What are pathfinder elements ? Give examples.
- (c) What is across track scanner ? 2 + 2 + 1
24. (a) What type of instruments are used in magnetic survey ?
- (b) What kind of mineralization is examined by induced polarization method and why ?
- (c) What kind of geophysical prospecting is used for sulphide deposit ? 2 + 2 + 1
25. Write a note on the physical properties of building materials. 5

26. Write a note on induced polarization method and self potential method. 5

Answer the following questions (any one): 10×1

27. (a) Write the names of different types of electromagnetic waves in a tabular form.

(b) Write a short note on scattering. 5 + 5

28. (a) Classify dams according to construction materials.

(b) What geological considerations are taken for construction of a tunnel ? 3 + 7