

(4)

Ex./FG/1/IX/37/2019

FINAL BACHELOR OF SCIENCE EXAMINATION, 2019
(3rd Year, 1st Semester)

GEOLOGICAL SCIENCES

Principles of Stratigraphy and Environmental Geology

Paper - IX

Time : Two hours

Full Marks : 50

Use a separate answer script for each group.

GROUP - A

(PRINCIPLES OF STRATIGRAPHY)

Answer *q.no. 8* and any *four* from the rest.

- (c) What are the basic differences between ‘green house effect’ and ‘global warming’ ? Explain why ‘global warming’ is considered as ‘positive feedback’. 3+2
- (d) Present a schematic diagram to show the different layers of the atmosphere with the variation of temperature. Discuss the importance of ‘atmospheric window’. 3+2
- (e) How are biosphere and pedosphere interdependent? Mention some major natural reactions responsible for acid formation within subsurface soil strata. 2+3
- (f) What is meant by the term ‘intrinsic permeability’ ? Why does gradual local land subsidence causes frequent hazards in urban areas ? Discuss in brief. 2+3
- (g) What is ‘solar constant’ ? How the ‘radiation intensity’ and ‘radiation balance’ of the Earth surface vary with latitudes ? 1+4
- (h) Distinguish between (any *two*) 2x2.5=5
- (i) Eluviation and Illuviation;
- (ii) Hydrolysis and Hydraulic action;
- (iii) Drizzle and Snow.

1. What is net sedimentation ? What are the processes involved for preservation of sediments in rock record ? 1+4
2. (a) ‘There are more gaps than records in a stratigraphic sequence’ – Explain.
- (b) Why is unconformity surface better developed at basin margin than at basin interior ? 3+2
3. (a) Why are lithostratigraphic units more widely used for stratigraphic classification ?

— X —

(Turn over)

(2)

- (b) Do lithostratigraphic boundaries usually coincide with chronostratigraphic boundaries ? Justify your answer. 2+3
4. What are the major criteria to identify aeolian formation of Precambrian age ? 5
5. (a) What are the differences in geological significances of conformable and unconformable contacts ?
- (b) How do you define catastrophism ?
6. A stratigraphic succession starts with a planar laminated limestone (A), followed upward by cross-stratified calc-arenite beds with marine fossil (B). This succession is followed further upward by a coarse grained, poorly sorted, trough cross-stratified sandstone (C). A distinct irregular surface is observed between the B and the C units. Interpret the succession. 5

(3)

7. Define coastal onlap and offlap with suitable sketches. What type of stratigraphic succession is expected to develop during these events ? Explain. 3+2
8. Write notes on (any *two*) : 2x2.5=5
- (a) Law of superposition;
- (b) Unconformity and diastem;
- (c) Facies association;
- (d) Formation

GROUP - B (25 marks)
(ENVIRONMENTAL GEOLOGY)

9. Answer any *five* questions : 5x5=25
- (a) What is a system? How does a close dynamic system differ from an open dynamic system ? Discuss with examples. 2+3
- (b) What is meant by the term 'reservoir' on environmental aspect ? How 'stock' and 'flux' are important to maintain the steady state of a reservoir ? 2+3

(Turn over)