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**3 (Sem-4/CBCS) GLG HC 2**

**2022**

**GEOLOGY**

(Honours)

Paper : GLG-HC-4026

**(Stratigraphic Principles and  
Indian Stratigraphy)**

Full Marks : 60

Time : Three hours

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

1. Answer the following : **(any seven)**  $1 \times 7 = 7$ 
  - (a) Who developed the concept of 'uniformitarianism' ?
  - (b) What is the absolute age of the Cambrian and Precambrian ?
  - (c) In which Indian state Spiti is located ?

Contd.



- (d) In which stratigraphic unit the subdivision 'series' falls ?
- (e) Who developed the concept of 'Neptunism' ?
- (f) What is the geological age of the Rajmahal Traps ?
- (g) What is GSSP ?
- (h) Name any one ammonite found in Jurassic of Kutch.
- (i) Name one informal stratigraphic unit.
- (j) Name the formations of Barail Group in the Belt of Schuppen.

2. Answer briefly the following : **(any four)**

2×4=8

- (a) Why are different types of stratigraphic units, like lithostratigraphic, magnetostratigraphic, bio-stratigraphic etc. required instead of only any one of the units ?

- (b) Give the typical character of the stratotype of Jurassic.
- (c) Where is the stratotype of Devonian found and what significant geological characters it possesses ?
- (d) Explain the typical lithological and palaeontological characters of Semri Group.
- (e) Write on the physiographic subdivisions of India.
- (f) What is the difference between stratotype and type section ?
- (g) Give the geological time scale of the Cenozoic era.
- (h) Using suitable diagram explain the concept of sequence stratigraphy.



3. Answer briefly the following : *(any three)*

5×3=15

- (a) Explain how the Jaintta Group is subdivided into formations and members on the basis of its lithology and palaeontology.
- (b) Write on the distribution pattern of the Andaman basin's tertiary sequence.
- (c) Explain the cause of iridium concentration along Cretaceous-Tertiary boundary.
- (d) Explain how magnetic properties of rocks are used to delineate stratigraphic units.
- (e) Draw a sketch map of India showing distribution pattern of marine sedimentary rocks of the Cretaceous Age.
- (f) Give the Precambrian stratigraphic succession of Shillong basin.

(g) Can a stratigraphic sequence have juxtaposed lithostratigraphic and chronostratigraphic boundaries? Explain.

(h) Write on the lithology, mode of origin of the intertrappean beds of the Deccan Traps.

4. Answer briefly the following : *(any three)*

10×3=30

- (a) Write on the principles of seismic stratigraphy. Explain how stratigraphic units are established using seismic sections. Give examples from Assam-Arakan petroliferous basin on the use of seismic data in establishing / correlating its stratigraphy.
- (b) Discuss the geological time scale with references to how different geological time boundaries are established, and where these names were first established.



- (c) Explain the concept of sedimentary facies. Discuss how facies study helps in understanding the process of evolution of a sedimentary basin. Use diagram where necessary.
- (d) Discuss the tectonic subdivisions of India in the light of amalgamation of cratonic blocks in different geological time.
- (e) Discuss the Palaeozoic lithostratigraphy and biostratigraphy of the Spiti valley.
- (f) Discuss the tectonics of the Cuddapah basin giving emphasis on the relation of sedimentation and tectonics during the evolution of the basin.
- (g) Discuss the origin and composition of Sylhet Traps and also write on the stratigraphic significance of the Traps.

- (h) Discuss the criteria which are used in establishing the Precambrian-Cambrian boundary. Also write on the strength and weakness of each of the criterion discussed.
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