

8. (a) What do you mean by 'Central Indian Tectonic Zone'?

(b) Briefly describe the chronologic history of amalgamation of the North and South Indian blocks along the CITZ during the Proterozoic.

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5769

K

Unique Paper Code : 2192014701

Name of the Paper : DSC-19 : Crustal Evolution Through Time

Name of the Course : **B.Sc. Geology (NEP-UGCF)**

Semester : VII - 2025-26

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions.
3. **All** questions carry equal marks.

1. Enlist the characteristics of Earth's early oceanic and continental crust. Discuss the models for origin of earliest felsic crust. What is the timing for appearance of true granite in geological record and how did they form?

2. Answer the following :

- (a) Define granite. Discuss the mineralogical and chemical classification of granites.
- (b) Differentiate between I-type and S-type granite.
- (c) Discuss the formation of anorogenic granite.

3. 'An episodic distribution of crustal isotopic ages has been well-established' – Discuss the statement with suitable figure and proper reasoning. Write a short note on Earth's oldest rock record.

4. Write short notes on (any three) :

- (a) Continental freeboard
- (b) Greenstone
- (c) Komatiites
- (d) Ophiolite sequence

5. Answer the following :

- (a) How does the trondhjemite differentiation trend differ from the classical calc-alkaline trend?
- (b) How is subduction zone tectonics important for the growth of a continent?
- (c) The continental crust generally has a higher initial $(^{87}\text{Sr}/^{86}\text{Sr})_0$ and lower ϵ_{Nd} ratios compared to the upper mantle. Justify this statement with a proper explanation.

6. What is Great Oxygenation Event (GOE)? How do we infer GOE from the rock record? Discuss any report of oxygen whiff before GOE from Indian Precambrian rock record.

- 7. (a) Name different geological subdivisions of the Himalayas.
- (b) What is the Eastern Himalayan Syntaxis?
- (c) What is the geological significance of the South Tibetan Detachment (STD) fault?