

GEOLOGY

(Paper I)

Time Allowed : Three Hours

Maximum Marks : 300

QUESTION PAPER SPECIFIC INSTRUCTIONS

(Please read each of the following instructions carefully before attempting questions)

There are EIGHT questions divided in two Sections.

Candidate has to attempt FIVE questions in all.

Question Nos. 1 and 5 are compulsory and out of the remaining, any THREE are to be attempted choosing at least ONE question from each Section.

The number of marks carried by a question/part is indicated against it.

Wherever any assumptions are made for answering a question, they must be clearly indicated.

Word limit in questions, wherever specified, should be adhered to.

SECTION 'A'

1. Write critical notes, in around 150 words each, on the following:

15×4=60

 - (a) Apparent polar-wandering path
 - (b) Mylonites
 - (c) Indexing of topographic map of India
 - (d) Application of microfossils in stratigraphic correlation, palaeoclimatic and palaeogeographic analyses
2. Explain the following:

30×2=60

 - (a) The relation between depth and age of the oceanic crust near midoceanic ridges
 - (b) Overthrust, Klippe and Fenster with the help of labelled diagrams
3. Discuss the following:

30×2=60

 - (a) Geometrical parameters of joints measured during a survey of rock joints
 - (b) Morphotectonic elements, seismicity, heat flow and gravity anomaly patterns of an island-arc type subduction boundary
4. Give accounts of:

30×2=60

 - (a) The present status of the theory of Continental Drift in the light of geological and geophysical evidence
 - (b) Geological significance of (i) radial drainage, (ii) rectangular drainage and (iii) sinkholes

SECTION 'B'

5. Write critical notes, in around 150 words each, on the following:

15×4=60

 - (a) Coiling direction(s) in planktonic foraminifers and their climatic significance
 - (b) Precambrian banded iron formations
 - (c) Lower Gondwana flora
 - (d) Soil groups of India

6. Describe the following: **30×2=60**
- (a) Evolution of Proboscidea and their record in the Siwalik Group
 - (b) The methods of separation of foraminifers and calcareous nannoplanktons from calcareous rocks
7. Comment on the following: **30×2=60**
- (a) The lithostratigraphy, flora, fauna and economic importance of a sedimentary basin of India which has Palaeozoic glacial unit
 - (b) The cause, effect and petrology of Cretaceous igneous activity in Peninsular India
8. Write short notes, of around 200 words each, on the following: **20×3=60**
- (a) The salient features of groundwater exploration in gneissic terrains
 - (b) Data products of remote-sensing satellites
 - (c) Different methods of morphometric analysis of river basins