CSM – 34/18

Geology

Paper – I

Time : 3 hours

Full Marks : 300

The figures in the right-hand margin indicate marks.

Candidates should attempt Q. No. 1 from Section – A and Q. No. 5 from Section – B which are compulsory and ***three*** *of the remaining questions, selecting at least* ***one*** *from each Section.*

SECTION – A

1. Answer any **three** of the following :

   (a) What are meteorites ? How do they help in the study of age of Earth, Origin of Earth, and compositions of the different major layers of the Earth ? 5+5+5+5 = 20

   (b) What is an isochron ? Give an example of an isochron using any major parent-daughter systematics commonly used in

geochronology, and state the basic requirements that must be fulfilled in order to use radioactive decay to determine the age a rock. 5+10+5 = 20

(c) Write a short essay on the major applications of remote sensing in Geology. 20

(d) What is lithosphere ? What is the difference between continental lithosphere and oceanic lithosphere ? How the boundary between lithosphere and asthenosphere is defined ? What are the two major differences between the material immediately below the lithosphere and the material immediately below the lower mantle ? 5+5+5+5 = 20

2. (a) What is an unconformity ? Describe with the help of diagrams the important characters of the major types of unconformities. 5+25 = 30

(b) What is mass wasting ? What is the role of water in mass wasting ? Describe the similarities and differences between downhill creep and landslide. 5+5+10 = 20

(c) Each kind of plate boundary is associated with a different type of fault. Write down the names of the type of fault and the associated plate boundary type; also explain the reason (s) for such association. 5+5 = 10

3. (a) Write an essay on the major differences between continental drift and plate tectonics. 30

(b) What is a similar fold ? Briefly describe the different types of fold forming mechanisms, and the important characteristics of folds formed by them. 5+25 = 30

4. (a) Write a short essay on geomorphic cycle mentioning the definition, causes, the different stages and their characteristic features and controlling factors. 30

(b) What are marine magnetic anomalies and how do they prove seafloor spreading ? 5+15 = 20

(c) What is schistosity ? How does it differ from crenulation cleavage ? 5+5 = 10

SECTION – B

5. Answer any **three** of the following : 20×3 = 60

   (a) Describe the morphology of cephalon in trilobite with labelled diagrams.

   (b) Discuss the Pre – Cambrian / Cambrian boundary with Indian examples.

   (c) Geological consideration of bridge construction.

   (d) Source of Ground Water.

6. Describe the morphology of the Graptolites with labelled diagrams and their significance. 30+30 = 60

7. Discuss the following : 20×3 = 60

   (a) Suture line of cephalopods and their significance

   (b) Mahadeva Group

   (c) Upper Siwalik Group

8. Write about the following : 30×2 = 60

   (a) Ground Water Management and use

   (b) Geological Investigation of Dam Construction