

SUBJECT: GEOLOGY

Time-3Hours
Full Marks-200

Question No.1 is compulsory and attempt any four from the rest. All question carry equal marks.

Q.No.1. Attempt any 10 (ten) from the following

10x4=40

- A. Name two plutonic igneous rocks and two clastic- sedimentary rocks.
- B. Describe the numbers of crystallographic axis and orientation of the axes of isometric and hexagonal systems.
- C. Name three major types of seismic waves and write the name of one great Earthquake of India.
- D. Name two coal fields and two oil fields of northeast India.
- E. What are the three characteristic features of index fossils? What are the good index fossils?
- F. Name four physical characters which help in identification of a mineral in hand specimen.
- G. Name geographic location and stratigraphic horizon of the (i) sillimanite deposits and (ii) limestone deposits from NE India.
- H. What is petrological microscope? Name three essential parts of the microscope.
- I. Give the four examples of rocks, which are used as road material.
- J. What are joints? Name three types of joints.
- K. Which is the most abundant element in the crust? Name three other major elements that constitute the continental crust.
- L. Name four products of volcanic eruptions.

Q.No.2. Write short notes on any 8 (eight) from the following

8x5=40

- A. Alluvial fan and cone
- B. Uniaxial minerals
- C. Relative abundance of sedimentary rocks
- D. Refractory minerals
- E. Aquifer and aquiclude
- F. Glossopteris and Gangamopteris flora
- G. Mechanical weathering
- H. Advantage of open cast mining
- I. Dykes and sills
- J. Symmetry elements of crystals

Q.No.3. Attempt any 5 (five) from the following

5 x 8=40

- A. Write note on the processes of erosion and transportation of river.
- B. State and explain the laws of superposition. Mention its limitations.
- C. What are geosynclines and define different types of geosynclines. State the origin of geosynclines.
- D. Write a brief account of metallogenic province and epoch.

- E. Describe the continuous and discontinuous reaction series.
- F. What are index fossils? Give two examples of index fossils. Write the characteristic features of index fossils.
- G. What is remote sensing and name two Indian remote sensing satellites? Give an overview of remote sensing.

Q.No.4. Attempt any 4(four) from the following

10 x 4=40

- A. With neat sketch describe the morphology of Brachiopod's shell.
- B. Write a short account on the process of formation of sedimentary rocks.
- C. Define double refraction, interference colour and birefringence. State the relationship between birefringence and interference colour. What are the microscopic condition necessary for the determination of optic sign of biaxial mineral?
- D. What is the geological consideration in the selection of the site for dam construction?
- E. Explain the term, "stratigraphic correlation". Discuss briefly the principles of correlation.

Q.No.5. Attempt any 2(two) from the following

20 x 2=40

- A. Define ore and gangue. Name six different ore forming processes. Write in detail about any one of the ore forming processes.
- B. Describe the extent and lithology of the Deccan Traps. Discuss the different views put forwarded about the age of the Traps.
- C. Write an account of the structure and texture of plutonic igneous rocks. Illustrate your answer with suitable sketches.

Q.No.6 What is metamorphism? How do you distinguish metamorphic rocks from igneous rocks in field study? What are contact and regional metamorphism? Give the two examples of rocks with significant texture of each type of metamorphism. List the various factors of metamorphism. Name four metamorphic index minerals and four metamorphic facies of regional metamorphism. Describe mineralogy and textures of following metamorphic rocks:

(a) amphibolite (b) marble (c) mica-schist (d) granite gneiss

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Q.No.7. Describe the two features of the Earth as planet. State two major differences between the Earth and the Moon. Draw the major division of the Earth's interior and describe each division in terms of composition, temperature and density of materials.

Name six hypotheses regarding origin of the Earth. Write in detail about the recent hypothesis that you are believed to be most satisfactory. Discuss the reason for your choice and merit of the hypothesis.

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Q.No.8. Define strike and dip. What is the difference between direction of dip and angle of dip? Illustrate your answer with suitable sketches. Describe parts of a fault with the help of neat sketches. State the difference between fault and joint. Draw and describe the following structures:

(a) Anticline and syncline, (b) Current bedding and graded bedding, (c) Normal fault and Reverse fault, (d) Angular unconformity and disconformity.

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