

0005907

Geologist Exam-2015

A-IGQ-O-JHA

# GEOLOGY

## Paper I

*Time Allowed : Three Hours**Maximum Marks : 200*

### INSTRUCTIONS

*Please read each of the following instructions carefully before attempting the questions :*

*Candidates should attempt SIX questions in ALL including Question No. 1, which is compulsory, from Part I, and attempt ONE question each from Sections A, B, C, D and E from Part II.*

*The number of marks carried by each question is indicated against each.*

*Answers must be written only in ENGLISH.*

*Symbols and abbreviations are as usual.*

*Neat sketches are to be drawn to illustrate answers, wherever required.*

*All parts and sub-parts of a question being attempted are to be completed before moving on to the next question.*

## PART I

1. Describe the following in about 100 words each, with brief sketches, wherever necessary : 10×5=50

- (a) Weathering Index
- (b) Vertical exaggeration in aerial photographs
- (c) Harmonic folds
- (d) Types of tectonites
- (e) River terraces
- (f) Active continental margin
- (g) Retrograde evolution
- (h) Krol formation
- (i) Fossil record of vertebrates in Upper Siwalik
- (j) Ecology of Radiolaria

**PART II**  
**SECTION A**

2. (a) Give a detailed account of morphometric analysis of drainage basins and explain its significance. 15
- (b) What do you understand by Digital Image Processing (DIP) ? Describe its application in mineral exploration. 15
3. Write notes on each of the following 5×6=30
- (a) Glacial erosion and associated landforms
- (b) Landforms associated with mature and old stage of a river
- (c) Speleothems and their utility
- (d) Geostationary and Polar orbiting satellites
- (e) Use of Digital Elevation Model (DEM) in land-use planning

## SECTION B

4. (a) Using neat sketches, discuss the mechanism of emplacement of igneous intrusions. Add a note on their economic significance. 15
- (b) Give a detailed account of the measurement of strain in deformed rocks. Briefly write the significance of such measurements. 15
5. Write notes on each of the following : 5×6=30
- (a) Formation of Duplex structure
  - (b) Superposed folding
  - (c) Brittle – ductile deformation of the lithosphere
  - (d) Landforms associated with faults
  - (e) Stress regime during formation of Bowdinage

### SECTION C

6. (a) How do the earthquakes help us in understanding the internal structure of the Earth? 15
- (b) Describe the driving mechanism for lithospheric plate motion, using suitable illustrations. 15
7. Write notes on each of the following : 5×6=30
- (a) Palaeomagnetism
  - (b) Submarine Volcanism and its geological impact
  - (c) Characteristic features of Island Arc
  - (d) Pull-apart basins
  - (e) Geophysical anomalies in mid-oceanic ridges

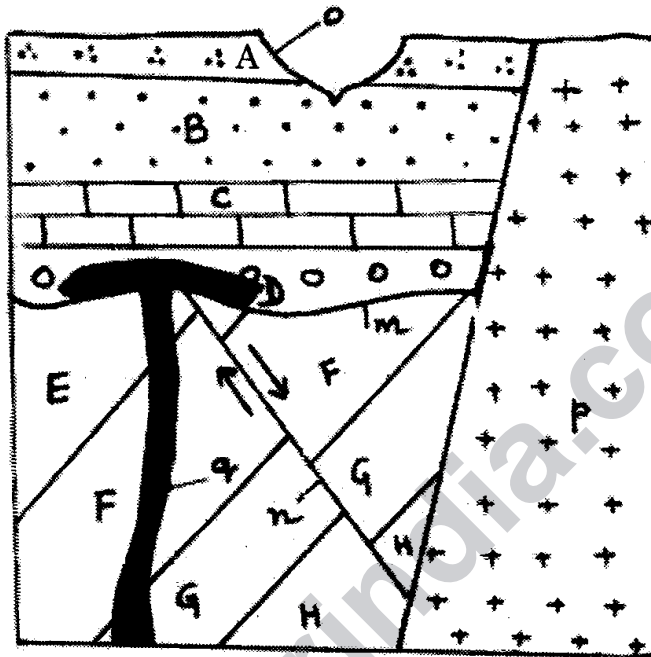
## SECTION D

8. (a) Name the Cretaceous basins of the western coast of India and describe their salient features.

15

- (b) Using the features A – H and m – q in the given geological cross-section, describe the sequence of geological events.

15



9. Write notes on each of the following :

6×5=30

- (a) Ariyalur Formation
- (b) Permo-Carboniferous Stratigraphy of Kashmir
- (c) Holocene climatic changes
- (d) Ophiolites of the Himalaya
- (e) Banded Gneissic Complex
- (f) Lameta Formation

## SECTION E

10. (a) Discuss the use of Foraminifera in biostratigraphy. 15
- (b) Discuss the concept "Ontogeny recapitulates phylogeny" in case of Ammonoidea. 15

11. Write notes on / Answer each of the following : 6×5=30

- (a) Biostratigraphic classification of Gondwana Supergroup based on floral records.
- (b) Discuss the evolutionary trend of reptiles during the Mesozoic and Tertiary. Add notes on the role of plate tectonics on it.
- (c) Enumerate the various factors which help in the intercontinental migration of animals and plants.
- (d) Mention the characteristic features of placental mammals.
- (e) What is iterative evolution ? Give examples from Cephalopods.
- (f) Evolutionary trend in Apical disc of Palaeozoic echinoids.