

**JL – 17/14**

**Geology**

**Paper – I**

*Time : 3 hours*

*Full Marks : 200*

*The figures in the right-hand margin indicate marks.*

*Answer all questions.*

1. Describe the morphology of drainage basin and highlight (i) Bifurcation ratio, (ii) Circularity ratio and (iii) Stream elongation ratio. 25+5+5+5 = 40

**OR**

Describe the use of photo-geology in the interpretation of major structures. Add a note on Geostationary Satellite and Sun-synchronous satellite. 25+15 = 40

2. Define tectosilicates. Describe the main characteristic of quartz group at different pressure and temperature conditions. 5+35 = 40

**OR**

ZK – 17/1

(Turn over)

Write notes on the following :

8×5 = 40

- (i) Birefringence
- (ii) Twin laws of crystals
- (iii) Minerals of Carbonate group
- (iv) Paired substitution
- (v) Principles of X-ray diffraction

3. What is Thrust ? Classify it based on the presence/absence of roof thrust and sequence of thrusting. Give an account of the significance of ramps and flats in the development of Thrust.

5+20+15 = 40

OR

Write notes on the following :

8×5 = 40

- (i) Mohr's diagram for failure
- (ii) Interference patterns
- (iii) Geometric classification of fold
- (iv) Unconformity
- (v) Disharmonic folding

4. Discuss the experimental study on peritectic crystallisation behaviour of magma. 40

OR

Write notes on the following : 8×5 = 40

- (i) ACF diagram
  - (ii) Eclogites
  - (iii) Kimberlites
  - (iv) Metamorphism in relation to plate tectonics
  - (v) Texture of igneous rocks
5. Discuss how the "Facies Models" are used for interpreting the sedimentary environment of a depositional basin. 40

OR

Write notes on the following : 8×5 = 40

- (i) Intracratonic basin
- (ii) Composition of meteorites
- (iii) Oxygen isotope
- (iv) Troposphere
- (v) Palaeocurrent

