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(February)

GEOLOGY

(Elective/Honours)

(**Structural Geology and Geotectonics**)

[GELH-301]

Marks : 56

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

Answer **four** questions, selecting **one** from each Unit

UNIT—I

(**Introduction to Structural Geology and Fold**)

1. (a) Discuss with examples, the difference between primary and secondary sedimentary structures. 6
- (b) Describe the outcrop pattern of non-plunging and plunging folds with the help of suitable diagrams. 4+4=8

2. (a) With the help of neat sketches, define the elements of folds. 8
- (b) Write brief notes on any *two* of the following : 3×2=6
- (i) Criteria for recognition of unconformities in the field
 - (ii) Antiform and Anticline
 - (iii) Recumbent fold and Reclined fold
 - (iv) Bending and Buckling

UNIT—II

(**Fault, Foliation and Lineation**)

3. (a) Distinguish between joints and faults. With neat sketches, give the classification of faults on the basis of net slip. 2+6=8
- (b) Distinguish between any *two* of the following : 3×2=6
- (i) Hanging wall and Foot wall
 - (ii) Columnar joints and Release joints
 - (iii) Heave and Throw
 - (iv) Fault zone and Shear zone
4. (a) Discuss the differences between foliation and lineation. Write a brief note on the use of lineation in structural analysis. 3+5=8

(3)

- (b) Differentiate between the terms 'foliation', 'cleavage' and 'schistosity'. 6

UNIT—III

(**Rock Deformation**)

5. (a) What is the difference between 'stress' and 'strain'? Write a note on the stress ellipsoid. 3+5=8
- (b) What are the different stages of deformation? 6
6. Write short notes on any *four* of the following : $3\frac{1}{2} \times 4 = 14$
- (a) Stress acting at a point
- (b) Stress tensor
- (c) Strain states
- (d) Homogeneous and heterogeneous strain
- (e) Variation of strain with increasing temperature
- (f) Pure shear and simple shear

UNIT—IV

(**Geotectonics**)

7. (a) Discuss the concept of Plate Tectonics theory. 4

(4)

- (b) Describe the different types of plate boundaries and their characteristic features. 10

8. (a) Describe the Wilson cycle. 5
- (b) Write notes on any *three* of the following : $3 \times 3 = 9$
- (i) Palaeontological evidence in support of continental Drift
- (ii) Benioff zone
- (iii) Island arcs
- (iv) Convection current

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