

Subject: STRUCTURAL GEOLOGY

INT. B.S.C. 1ST SEMES.2019 (OLD)

Time: Two Hours

Full Marks: 50

Group-A

Use separate answer scripts for each group

(Marks: 25)

Answer any FIVE questions

- Q. 1. Why do shear fractures not form at 45° to σ_1 , where the resolved shear stress is at its maximum? 5
- Q. 2. What are the different modes of fractures (describe with suitable figures)? What is cataclasite? 5
- Q. 3. Write short note on (*any two*): a) Fault damage zone b) Wing crack c) "Vorticity" 5
- Q. 4. What is the difference between a fault propagation fold and fault bend fold? 5
- Q. 5. Write short note on "rigid domino model" 5
- Q. 6. What is meant by the term Griffith cracks, and how do they affect rock strength and fracture propagation? 5
- Q. 7. What is the difference between shear fracture and fault? 5
- Q. 8. Describe the following terms with proper figures: a) Dip-Slip b) Net-slip c) Strike slip d) vertical throw and e) Stratigraphic throw. 5

BACHELOR OF SCIENCE EXAMINATION, 2019
(2ND Year, 1ST Semester)
GEOLOGICAL SCIENCES
Structural Geology
Paper – VI H

Time: Two hours

Full Marks: 50

Use separate answer script for each group

GROUP – B (25 Marks)

Answer any *five* questions.

1. a) How would define a continuum? b) What is the fundamental difference between the two terms: dynamics and kinematics? c) Is the gradient in a displacement field a vector quantity? Explain.
 $1+2+2 = 5$
2. a) Explain the transitional motion of a fault block. b) What are the differences in the effects of surface and body forces?
 $2+3 = 5$
3. a) What is 'stress vector'? b) How would you derive the normal and the shear stress components from the stress vector?
 $2+3 = 5$
4. a) What do you mean by the principal axes of stress? b) Show that the shear stress will be a maximum on a plane at an angle of 45° to the principal compression direction.
 $2+3 = 5$
5. What are the characteristic features of homogeneous deformations? What is the difference between rotational and irrotational deformations?
 $3+2 = 5$
6. Express the stress versus strain relation for linearly elastic substances. What are the differences between an elastic solid and a fluid?
 $2+3=5$
7. a) Define the following terms: fold axis and fold hinge. b) With the help of sketches explain the outcrop patterns of the following structures on horizontal ground surface: horizontal fold; plunging upright fold; reclined fold; and upright plane noncylindrical fold.
 $2+3=5$
8. a) Explain how dip isogons are constructed on a fold profile. b) What will be the difference in dip isogon patterns on Class 1B and Class 3 fold profiles.
 $3+2 = 5$