B. STAT-II yr.
End Semester 2025-26
Date of Examination: 27.11.2025

Subject: Geology (E) | **Time: 2 hours** | Answer all questions | **Full Marks: 50**

Q. 1.

i) σ_2 is vertical in case of
a) Reverse fault
b) Normal fault
c) Strike-slip fault
d) Oblique-slip fault
1

ii) Buckle folding involves
a) Layer parallel shortening
b) Layer parallel extension
c) Later perpendicular shortening
d) Later perpendicular extension
1

iii) Mean stress is
a) Isotropic stress
b) Anisotropic stress
c) Deviatoric stress
d) Radial stress
1

iv) The Wilson Cycle describes:
a) The evolution of rift-to-drift basins
b) The opening and closing of ocean basins
c) The evolution of a forearc basin
d) Cyclic volcanic eruptions
1

v) If a plane has strike N30°E and dip amount 45°SE, its dip direction is:
a) 120^0
b) 130^0
c) 110^0
d) 100^0
1

vi) Which of the following is a primary rock:
a) Sandstone
b) Basalt
c) Gneiss
d) Marble
1

vii) Which mass extinction event is related to non-avian dinosaur mortality?
a) Permian-Triassic Extinction Event
b) Ordovician-Silurian Extinction Event
c) Cretaceous-Tertiary Extinction Event
d) Triassic-Jurassic Extinction Event
1

viii) Which of the following is NOT a Triassic index fossil:
a) *Lystrosaurus*
b) *Homo sapiens*
c) *Hyperodapedon*
d) *Metoposaurus*
1

ix) Smallest unit of lithostratigraphy is —

a) Bed
b) Group
c) Formation
d) Member

1

x) Quadrupedal erect posture is seen in:

a) *Endothiodon*
b) *Paracyclotosaurus*
c) *Barapasaurus*
d) *Parasuchus*

1

Q. 2. Plot the following planes on a lower hemisphere equal-area (Schmidt) net, and determine the positions of their poles. Also calculate the angle between the two planes.

Plane 1: Strike = 80°, Dip = 70°, Dip Direction = NNW

Plane 2: Strike = 100°, Dip = 40°, Dip Direction = ESE

10

Q. 3 In a given fault plane, the principal stress magnitudes σ_1 and σ_3 are recorded as 50 MPa and 30 Mpa at zero pore pressure. The angle between normal to fault plane and σ_1 is 70°. Determine the normal stress and shear stress using Mohr circle.

The rock has preexisting fractures and angle of internal friction is 30°. The injection of water into the rock creates a pore pressure of 30 Mpa. Show the position of new Mohr circle.

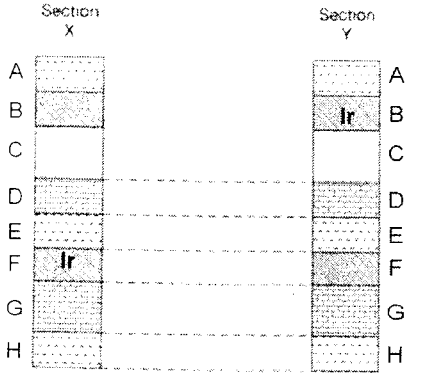
5+5=10

Q.4

What is lithostratigraphy?

What is the significance of marker bed in lithostratigraphic correlation?

In the figure, two lithological successions X and Y are subjected to lithostratigraphic correlation where each section contains eight horizons. Ir in the figure denotes Iridium anomaly. Is the correlation between the two sections correctly shown in the above figure? Justify your answer with supportive diagram.



2+2+6=10

Q.5 Define fossil. How is Reworked Fossil different from the Infiltrated/Introduced fossil? How does Assemblage Zone help in biostratigraphic correlation?

3+4+3=10