NEW

Part–III 3-Tier

2018

GEOLOGY

(Honours)

PAPER—VII

(PRACTICAL)

Full Marks : 100

Time : 6 Hours

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

Candidates are required to give their answers in their own words as far as practicable.

Answer *all* questions.

Group—A

(60 Marks)

1. (a) Carefully describe the textures of the given thin section of igneous rock. Draw labelled sketches identify the textures and also identify the rock. 7

(b) Calculate the CIPW norm for an igneous rock whose wt % chemical oxides are given below. 8

SiO_2 = 49.95, TiO_2 = 1.36, Al_2O_3 = 13.16, Fe_2O_3 = 4.33, Feo = 8.04, MnO = 0.20, Mgo = 7.17, CaO = 10.67, Na_2O = 2.38, K_2O = 0.47, P_2O_5 = 0.18, H_2O = 2.56.

(c) The end member of a given pyroxene compositions are as follows :

WO = 35.35%, En = 45.17%, FS = 19.48%

Plot the given pyroxene composition in the Wo–En–Fs triangle. 5

2. (a) Describe the petrography of the given thin section of metamorphic rock. Draw sketches to illustrate the texture / Structure of the rock under the microscope. Identify the rock with reason. 12

(b) (i) Calculate the AKF values (%) of the following two minerals from the respective chemical analysis is given below : 8

	M_1	M_2
SiO_2 =	43.27	39.02
Al_2O_3 =	19.88	21.40
TiO_2 =	2.11	0.48
FeO =	18	31.80
MnO =	0.03	1.69
MgO =	7.00	2.90
CaO =	0.01	2.71
K_2O =	9.70	0.0
Total =	100	100

(ii) Plot the above two minerals in the AKF diagram (take 5 cm long base of the AKF diagram).

(iii) Give the name of the minerals.

3. Describe the petrography of the given thin sections (two) of sedimentary rocks. Draw sketches to illustrate the texture of the rock under the microscope. Identify the rock. 20

Group—B

(40 Marks)

4. (a) Interprete the given geological map properly and construct a structural cross section. Give the proper depositional sequence. *[Map attached]* 6

(b) Solve the following structural problem with the help of stereographic net : 5

Given two limb attitudes — (i) N72°W, 40°NE and (ii) N70°E, 80°NW—find out the attitude of axial plane and plunge of hinge line, interlimb angle and classify the fold.

(c) A fault dips 60° due east. A displaced bed with altitude N60°E. 40°S. Shows 400 m of left separation. Slickenlines on the fault plane plunge toward N75°E. Determine the amount and sense of slip. 4

5. Field Report. 20

6. Laboratory Note Book (Gr. A and B). 5