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C/19/BSc/Part-3/GELH/7 (Prac)

NEW

Part-III 3-Tier

2019

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.

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

SiO₂ = 50.14, TiO₂ = 1.12, Al₂O₃ = 15.48, Fe₂O₃ = 3.01,
 FeO = 7.62, MnO = 0.12, MgO = 7.59, CaO = 9.58, Na₂O
 = 3.29, K₂O = 0.93, P₂O₅ = 0.24, CO₂ = 0.07. 8

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

Wo = 42.19%, En = 20.5%, Fs = 37.31%

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 ACF values (%) of the following two rocks from the respective chemical analysis is given below :

	R_1	R_2
$\text{SiO}_2 =$	67.57	30.93
$\text{TiO}_2 =$	0.01	0.22
$\text{Al}_2\text{O}_3 =$	15.52	15.93
$\text{Fe}_2\text{O}_3 =$	1.38	2.04
$\text{FeO} =$	2.70	8.71
$\text{MnO} =$	0.10	0.53
$\text{MgO} =$	1.11	5.16
$\text{CaO} =$	3.39	12.26
$\text{Na}_2\text{O} =$	5.20	3.06
$\text{K}_2\text{O} =$	1.55	0.94
$\text{P}_2\text{O}_5 =$	0.16	0.22

(ii) Plot the above two rocks in the ACF diagram (take 10 cm long base of the ACF diagram) & Draw the tie lines.

(iii) Give the mineral assemblages of the rock.

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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 rocks.

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Group—B

(40 Marks)

4. (a) Interpret 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 :
- A chevron fold has a west limb attitude of N20W, 30NE and as east limb attitude of N50E, 60NW. If the hinge of the fold is formed by the intersection of these two planar limbs, what is the plunge and bearing of the hinge? Determine the dip of axial plane and interlimb angle and classify the fold. 5
- (c) A fault (N10E, 25W) has associated subhorizontal quartz vein (N34W, 6E). Determine the principle stress axis directions, the angle of the internal friction and the direction and sense of slip. 4
5. Field Report. 20
6. Laboratory Note Book (Gr. A & B). 5



