

Name:

Enrolment No:



UPES

End Semester Examination, May- 2023

Course Name: Igneous Petrology

Programme Name: B. Sc, Geology (Hons)

Course Code: PEGS 1010

Instruction: Attach the CIPW Sheet with Answer script

Semester: II

Time: 03 hrs

Max. Marks: 100

SECTION A

(5Qx 4M = 20 Marks)

Q 1	a. Sills linked by relatively short dike-like segments known as ----- b. Volcanic glass is otherwise known as ----- c. Anhedral grains give rise to -----texture. d. Transformation of glass to crystalline matter is known as -----	04	CO1
Q 2	Mark True/ False a. CIPW classification means volcanic/ glassy rock. b. Fluidity of magma is determined by magma polymerization. c. Picritic magma contains the least amount of mafic minerals. d. Presence of incompatible minerals govern rate of partial melting	04	CO1
Q 3	Discuss the special case of Ophitic Texture.	04	CO2
Q 4	“Bysmalith is modified Laccolith” Analyze the same	04	CO3
Q 5	Using CIPW norm, Classify Igneous rocks based on order.	04	CO2

SCETION B

(4Qx10M = 40 Marks)

Q 6	Explain Modal and Normative minerals and discuss their significance in CIPW classification.	10	CO3
Q 7	Examine & validate the statement “Uni-component system should have a maximum of two degree of freedoms”.	10	CO4
Q 8	Differentiate between Peritectic and Eutectic point	10	CO3
Q 9	With Neat sketch, label the various zones of a Eutectic System Or Assimilation can be well observed in Xenoliths, Validate the same	10	CO2

SECTION C
(2Qx20M = 40 Marks)

Q 10	Condition of Congruency is applicable to closed systems only. Examine the same using the principle of Lever rule. OR With neat schematic, demarcate the potential sites of Magma generation with due justification.	20	CO3
Q 11	Using CIPW Norm, find out the Salic and Femic minerals, their abundance and the rock class. The spread-sheet is attached below.	20	CO4

Constituents Of Rock Percentages(analysis)	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	Na ₂ O	K ₂ O	H ₂ O	CO ₂	TiO ₂	P ₂ O ₅	SO ₂	S	MnO	Molecular Proportions	Molecular Weights	Percentage NORM	Group of standard mineral
	60	102	160	888	113	0.79	0.25	0.32	18	44	80	32	355	19	71				
Quartz	SiO ₂																60		Q
Orthoclase	K ₂ O, Al ₂ O ₃ , 6SiO ₂																556		
Albite	Na ₂ O, Al ₂ O ₃ , 6SiO ₂																524		
Anorthite	CaO, Al ₂ O ₃ , 2SiO ₂																278		F
Leucite	K ₂ O, Al ₂ O ₃ , 4SiO ₂																436		
Nepheline	Na ₂ O, Al ₂ O ₃ , 2SiO ₂																284		L
Corundum	Al ₂ O ₃																102		C
Actinite	Na ₂ O, Fe ₂ O ₃ , 4SiO ₂																462		
	CaO, SiO ₂																116		
	MgO, SiO ₂																100		
Diopside	FeO, SiO ₂																132		
	CaO, SiO ₂																116		
Wollastonite	MgO, SiO ₂																100		
	FeO, SiO ₂																132		
Hypersthene	2MgO, SiO ₂																140		P
	2FeO, SiO ₂																204		O
Olivine	FeO, Fe ₂ O ₃																232		
Magnetite	Fe ₃ O ₄																160		
Haemattite	Fe ₂ O ₃																152		M
Ilmenite	FeO, TiO ₂																120		
Pyrite	FeS ₂																336		
Apatite	3CaO, P ₂ O ₅ , 13CaF ₂																100		A
Calcite	CaO, CO ₂																100		A

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