

This question paper contains 2 printed pages]

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S. No. of Question Paper : 812

Unique Paper Code : 219303

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Name of the Paper : Igneous Petrology (GEHT-302)

Name of the Course : B.Sc. (Hons.) Geology

Semester : III

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all.

Question no.1 is compulsory

1. (i) The size and arrangement of crystal grains in igneous rocks is called : (1×13+2=15)
- (a) density (b) texture
- (c) hardness (d) luster
- (ii) An igneous rock with a mixture of large and small grains is :
- (a) a porphyry (b) an intrusion
- (c) an extrusion (d) a breccia
- (iii) Magma that cools deep below the earth's crust forms what type of rock ?
- (a) clastic (b) intrusive
- (c) stratified (d) extrusive
- (iv) The texture of igneous rock is determined by the rate at which magma :
- (a) flows from a volcano (b) cools
- (c) melts (d) compresses
- (v) The intrusive compositional equivalent of rhyolite is
- (vi) The extrusive compositional equivalent of gabbro is
- (vii) The intrusive compositional equivalent of andesite is

P.T.O.

- (viii) An intrusive igneous rock composed of crystals that are large enough to see with the naked eye is said to exhibit a texture.
- (ix) An extrusive igneous rock composed of crystals that are so small that you can not detect them with the naked eye is said to exhibit a/an texture.
- (x) The general term for fragmental material erupted from a volcano is
- (xi) X_{Plg} moves towards with cooling and progress of the reaction $Liq_1 + Plg_1 \rightarrow Liq_2 + Plg_2$.
- (xii) Partially melting mantle rock produces a liquid with a composition.
- (xiii) Melting wherein a phase melts to a liquid with the same composition as the solid is
- (xiv) At peritectic takes place and it is a/an point.
2. Write a concise account of magmatism at divergent plate tectonic setting. (15)
3. Write short notes on the following (any three) : (3×5=15)
- Inequigranular and equigranular textures
 - Tholeiitic basalts
 - Orogenic andesites
 - Binary eutectic system
4. Briefly explain magmatic differentiation. 15
5. With the help of suitable sketches explain how in a three component Forsterite-Anorthite-Silica system final assemblage of Enstatite-Anorthite-Silica be obtained ? 15
6. Briefly describe IUGS classification of igneous rocks. Draw suitable diagrams. 15
7. Discuss about the mechanisms of crystal fractionation. 15
8. Describe how the mineral textures of an igneous rock be used to infer its origin. 15