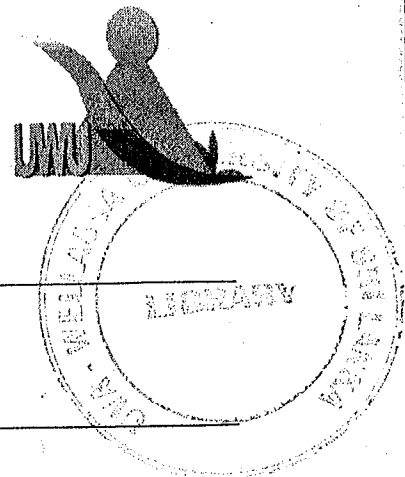


Uva Wellassa University, Sri Lanka  
End Semester Examination – January 2010  
MRT 211-1 Mineralogy and Petrology I

Time: One (01) hour



Total 06 Questions

Answer **four (04)** questions only

Draw sketch diagrams where necessary

1. (i) What are the diagnostic properties of minerals? Describe five of them in detail with appropriate examples.  
  
(ii) By definition, a mineral is a substance having a *highly ordered atomic arrangement*. Explain this.  

(25 marks)
  
2. (i) Giving one example for each common class, write down the classification of minerals based on their chemical composition.  
  
(ii) Write short notes on the following:  
(a) Structures of the two carbon polymorphs and their properties  
(b) Gold Group of metals  

(25 marks)
  
3. Describe the chemical composition, crystallography, physical properties, uses and mode of occurrence of following minerals.  
  
(a) Calcite  
(b) Corundum  
(c) Quartz  
(d) Gypsum  
(e) Apatite  

(25 marks)
  
4. Describe the seven silicate classes formed by polymerization of  $\text{SiO}_4^{4-}$  tetrahedra. Illustrate your answer with schematic diagrams. Give an example for each class.  

(25 marks)

5. (i) Explain the process of magmatic differentiation and illustrate the *Bowen's Reaction Series* schematically.
- (ii) Sketch a simple classification scheme for igneous rocks based on mineralogical composition.
- (25 marks)
6. (i) Define *metamorphism* and write a brief account on different types of metamorphism.
- (ii) List metamorphic facies in the increasing order of grade with characteristic mineral assemblage of each facies.
- (25 marks)