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**B.E / B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATION, APR / MAY 2011**  
**AGRICULTURAL AND IRRIGATION ENGINEERING BRANCH**  
**VIII SEMESTER – (REGULATIONS 2004)**  
**AG 096 – GEOLOGY FOR IRRIGATION ENGINEERS**

Time : 3 hours.

Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. What is meant by Hardness of a mineral?
2. Write important characteristics of muscovite.
3. What are the different types of soils found in India?
4. What are the common rock forming minerals?
5. Differentiate between soil and subsoil.
6. Why does the Aridisols soil is not suitable for Agricultural purpose?
7. 'Sedimentary rocks are the best aquifers' Discuss the statement in the context of groundwater storage.
8. 'How springs are formed? What is artesian spring?
9. What is Bouguer's anomaly?
10. What are the advantages and uses of geophysical prospecting?

Part – B (5 x 16 = 80 Marks)

11. i) Give a salient features and mention the properties of Felspars. (6)  
 ii) What is granite and mention their composition and types? (5)  
 iii) What is meant by colour and streak in Minerology? (5)
12. a i) How do weathering converts the rocks into soils? Explain briefly about the chemical weathering of rocks? (12)  
 ii) Give a brief account on weathering products of rocks. (4)  
 or  
 b. i) What are the factors affecting the weathering of the rocks? (8)  
 ii) Explain about soil profile with a neat sketch? (8)
13. a i) What are the role of primary and secondary nutrients on plant growth? (10)  
 ii) What are the deficiency symptoms of nutrients on the plants? (6)  
 or  
 b i) What are the different types soils in Tamil Nadu? Briefly explain the characteristics of each group, particularly in references to the engineering properties of the available soils. (16)
14. a i) Write short notes on the following:  
 a) Meteoric water b) Connate water c) Juvenile water (6)  
 ii) Describe the chemical quality of groundwater. (10)

or

- b. i) What is meant by groundwater? Briefly explain the confined and unconfined types of groundwater aquifers with a neat sketch. (12)
- ii) For evaluation of water quality of a given place, the water samples were collected and laboratory analysis was made. By which the following constituents were found:  $\text{Ca}^+ = 50$  mg/l,  $\text{Mg}^{2+} = 15$  mg/l,  $\text{Na}^+ = 80$  mg/l,  $\text{CO}_3^{2-} = 20$  mg/l,  $\text{HCO}_3^- = 245$  mg/l,  $\text{SO}_4^{2-} = 40$  mg/l,  $\text{Cl}^- = 80$  mg/l. Calculate the following parameters SAR, Na% and RSC (4)
15. a. Describe and explain briefly the seismic methods of geophysical prospecting with a neat sketch. What are the applications and limitations of seismic refraction studies? (16)
- or
- b. i) Discuss in detail the various methods that are employed for groundwater exploration. (16)