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Rol Tot Tim	No. Total No. of Pages : 02 al No. of Questions : 08 M.Tech.(Geo Technical Engineering) (2013 Batch) (Sem.–2) CLAY MINEROLOGY Subject Code : CESE-11 Paper ID : [A2667] e : 3 Hrs. Max. Marks : 100		
 INSTRUCTIONS TO CANDIDATES : 1. Attempt any FIVE questions in all, selecting atleast one question from each unit. 2. Each question carries TWENTY marks. 			
1.	a) Explain clearly about the following processes involved in physical weathering : (12)		
	i) Exfoliation		
	ii) frost wedging		
	iii) mineral crystallization		
	iv) slaking		
	b) Explain in detail : (8)		
	i) A-horizon		
	ii) B- horizon		
	iii) O-horizon		
	iv) C-horizon		
2.	a) What is mineral ? Explain the basic structural units with which clay minerals are formed in detail. (10)		
	b) Describe in detail with neat sketches the structure of : (10)		
	i) kaolinite		
	ii) montmorillonite		
	iii) Illite		

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	e) Colloids zeta potential	(5×4=20)
	d) Adsorbed water in soil	
	c) Flocculent and dispersive structure in clays	
	b) Mineralogy of cohessionless soils	
	a) Zonal, azonal and intra-zonal soils	
8.	Soll pH value? Write short notes on :	(10)
	b) How do you calculate the percentage base saturation of colloid? What is its related as it will make 2	tion with
7.	a) What do you mean by diffuse double layer? How it is formed? What is its various properties of soil?	effect on (10)
	b) Explain the types of soil cements. Explain the factors affecting the cement soils	stabilized (10)
6.	a) What is the effect of addition of lime in soils? Explain the design procedure of stabilization.	soil-lime (10)
	e) sensitivity.	(5×4=20)
	d) Shear strength	
	c) swelling and shrinkage potential	
	b) plasticity characteristics	
	a) compressibility	
5.	Discuss in detail the effect of clay minerals on following properties of soil :	
	b) What do you mean by differential thermal analysis ? How it is done? What ar in clay mineralogy?	e its uses (10)
4.	a) Explain the principle of X-ray diffraction and how it is used for identification mineral. Discuss with the help of an example.	n of clay (10)
	b) Explain about hydrogen bond and vanderwaals bonding in soils.	(8)
3.	a) What is isomorphous substitution? Explain briefly the isomorphous substitutates place in various clay minerals.	ution that (12)