

Roll No.

Total No. of Pages : 02

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M.Tech. (Soil Mechanics & Foundation Engineering) (Sem.-3)

CLAY MINEROLOGY

Subject Code : CESF-11

M.Code : 71580

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

1. a) Discuss the elements of symmetry and forms in the normal class of Hexagonal system. Name atleast three minerals crystallizing in this system. (16)
- b) Define
 - (i) Lustre
 - (ii) Cleavage
 - (iii) Fracture
 - (iv) Streak. (4)
2. Discuss the formation of clay minerals in detail. (20)
3. a) Draw a diagrammatic sketch showing structure of Smectile. (13)
- b) What is meant by Primary Valence Bond and Secondary Valence Bond? Which is more important & Why? (7)
4. Explain the process of Dehydration and phase changes on heating (along with Rehydration) in respect of
 - (i) Halloysite
 - (ii) Allophane. (20)
5. a) Define the following (4)
 - (i) SAR
 - (ii) CEC

- b) Distinguish between Acid soil & Alkaline Soil. (8)
- c) Discuss relationship of base saturation with pH of soil. (8)
6. a) Define the terms (6)
- i) Free swell
 - ii) Differential free swell
 - iii) Equilibrium moisture content.
- b) Discuss the effect of clay minerals on plasticity and Permeability of soil. (14)
7. a) What is cement stabilization? What are the factors that affect the stability of soil cement? Discuss construction methods. (12)
- b) What are different types of chemicals used in soils? Name them. (8)
8. Write short notes on :
- a) pH Isohydric (6)
 - b) X-ray Diffraction (8)
 - c) Zeta potential. (6)

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.