G 1716 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2016

Eighth Semester

Branch : Civil Engineering

ENVIRONMENTAL GEOTECHNIQUES (Elective III) (CE)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries **3** *marks.*

1. Differentiate between flocculated and dispersive soil-mass structure in clay soils.
2. Explain the classification of soils based on its sensitivity.
3. Explain advective transport of contaminants in groundwater.
4. How is high level radioactive waste disposed ?
5. Differentiate between rigid liners and flexible liners.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries **5** *marks.*

6. Discuss the role of Diffused Double Layer on clay surface-water interaction.
7. How the soil properties are affected by exchangeable cations and pH value.
8. Explain dispersion of pollutants in groundwater and the reasons for it.
9. Elaborate on the waste management philosophy of '*concentrate and contain*'.
10. What is the need for engineering ground improvement ? Briefly explain.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*
Each full question carries **12** *marks.*

11. Explain the following :
    (a) Soil-mass structure in sandy soils
    (b) Inter layer bonding ; and
    (c) Isomorphous substitution.

Or

12. Discuss the Kaolinite and Montmorillonite mineral structures with the help of neat schematic diagrams.

13. Discuss in detail the effects of drying on the Atterberg's limits of various soils.

Or

14. Develop the relation between types of soil, pressure and void ratio. Also list the causes of sensitivity of clay soils.

15. Explain the sources, characteristics and disposal of municipal solid wastes.

Or

16. (a) When is waste characterized as hazardous ? Explain. (6 marks)

(b) What are the problems associated with land disposal of wastewater ? (6 marks)

17. What are the criteria for selecting waste disposal sites ? Explain in detail.

Or

18. Draw the cross-section of a typical solid waste landfill and label the parts. What are the properties and requirements of landfill cover and liner ?

19. What are the objectives of compacting soil ? Explain the various methods of compaction and the applicability of each.

Or

20. Explain the use of geotextiles and geo-membranes for ground improvement highlighting their applicability under various field conditions.

(5 × 12 = 60 marks)