Second Semester M.Tech Degree Examination

Model Question Paper

CGD 2001 Geoenvironment and Landfill (Departmental Elective)

Answer any **2** questions from **each module**

Time 3hrs Marks 60

MODULE I

1) a) Enumerate the geotechnical problems due to soil –water environment interaction

   b) How are waste classified (10 marks)

2) Write short note on

   a) Geotechnical reuse of flyash,.

   b) Geotechnical characterization of waste (10 marks)

3) a) Explain the process governing the transport of contaminant in saturated soil.

   b) Compute the total dissolved contaminant transport due to advection and diffusion through a liner of thickness one meter with a coefficient of permeability $1x10^{-7}$cm/sec and effective diffusion coefficient $1x10^{-8}$cm/sec for total dissolved solids. Porosity of clay is 0.35. Total dissolved solids in leachate above liner is 2500mg/liter and below the liner is negligible. Leachate head above liner is 15cm (10 marks)

MODULE II

4) a) Write the guidelines for selection of site for landfill

   b) Estimate the life of a above land landfill for a user population of 10,000, available area for landfill is 50,000 m^2 Water table is at 5m below ground level. Height of landfill restricted to 8m. Assume that soil occupies 20% of the compacted volume. Assume suitable data if required (10 marks)

5) a) Draw a typical cross section of a landfill and explain the functions of each

b) Explain different types of liners with figures (10 Marks)

6) a) Explain the criteria for selection of soil for clay liner

b) What are the functional difference between a liner and a cover (10 Marks)

MODULE III

7 Write in detail the different methods of remediation of soil? (10 marks)

8) Explain how Atterberg and shear strength of soil varies due to soil contamination

(10 marks)

9) Explain the different remedial measures for waste dump (10 Marks)