

Printed Pages : 3



ECE-033

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 100753

Roll No.

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B. Tech.

(SEM. VII) (ODD SEM.) THEORY
EXAMINATION, 2014-15

ENVIRONMENTAL GEOTECHNOLOGY

Time : 3 Hours]

[Total Marks : 100

- Note :**
- (1) Attempt all the questions.
 - (2) All questions carry equal marks.

1 Attempt any FOUR parts of the following : **5×4=20**

- (a) Comment on the current concepts and approaches of soil mechanics related to ground pollution problems.
- (b) Define the term ecosystem and how the ecosystem relates to environmental geotechnology.
- (c) Explain the pollution process mechanism in the soil water system.
- (d) Distinguish between toxic wastes and hazardous wastes.
- (e) How does the acid water affect the concrete mixture ?
- (f) What are environmental cycles and how they are interacted with geotechnology ?

- 2 Attempt any TWO parts of the following : $10 \times 2 = 20$
- (a) What do you understand by ion exchange ? Explain some ion exchange resins and what are the causes of resin fouling ?
 - (b) What do you understand by ion exchange capacity ? Also discuss various factors affecting this capacity. How can you measure this ?
 - (c) How can you detect sub surface contamination in site ? Discuss in detail.
- 3 Attempt any TWO parts of the following : $10 \times 2 = 20$
- (a) Discuss in detail, the mechanism between soil – structure and structure – soil interaction. What are the various factors involved in this ?
 - (b) Justify the use of piles for reducing the consolidation settlement. Also explain the statement that, "Misuse of piles may cause more foundation problems than if piles were not used at all".
 - (c) Define the following :
 - (i) Presumptive bearing pressure.
 - (ii) Factor of safety.
 - (iii) Environmental load.
- 4 Attempt any TWO parts of the following : $10 \times 2 = 20$
- (a) What is slurry ? How can you dispose it off ? Explain its operation in detail.
 - (b) Justify this statement with any four examples; 'Grout used for controlling hazardous wastes'.
 - (c) How will the spatial variation of hydraulically deposited waste differ in the following cases for a ringed pond ?
 - (i) Inflow is from single point only on the peripheral embankment.
 - (ii) Inflow is from double point only on the peripheral embankment.

5 Attempt any TWO parts of the following : **10×2=20**

- (a) What are the basic criteria for selection of land for landfill ? Discuss in detail.
 - (b) Explain about the operation procedure of sanitary landfill including various steps like site preparation and maintenance.
 - (c) What is liner and how they are designed ? Also discuss, how they are installed ?
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