

**Roll No.**

**Total No. of Pages : 02**

**Total No. of Questions : 08**

**M.Tech. (Civil Engineering) / (Geotechnical Engineering) (Sem.-1)**

## GROUND IMPROVEMENT TECHNIQUES

**Subject Code : MTGT902-18**

**M.Code : 93272**

**Date of Examination : 23-01-23**

**Time : 3 Hrs.**

**Max. Marks : 60**

**INSTRUCTIONS TO CANDIDATES :**

**1. Attempt any FIVE questions out of EIGHT questions.**

**2.Each question carries TWELVE marks.**

1.
  - a) List factors affecting selection of ground Improvement technique.
  - b) Discuss issues concerned with dynamic compaction of ground improvement in soils.
2. Why Dewatering is necessary? You are required to lower surface water table upto 10m depth in fine sandy soil which method will you suggest explain with figure.
3.
  - a) Explain soil improvement by admixtures naming few admixtures with commonly used application areas.
  - b) Discuss procedure for grouting in foundation stabilization.
4. Explain with figures the basic functions of Geosynthetics in Geotechnical Engineering?.
5. Justify the ground improvement by thermal treatment with proper explanation and example.
6.
  - a) Differentiate Geotextile, Geomembrane and Geocell.
  - b) Write note on soil nailing applications.
7.
  - a) How mechanism of reinforced earth works?
  - b) Give the difference between Reinforced backfill and Reinforced earth retaining wall.
8. Design a 12.0 m high wall with inclined back retaining horizontal backfill with reinforcement as strips of GI, carrying a uniformly distributed load of  $30 \text{ kN/m}^2$ . Inclination of wall back is  $12^\circ$  with vertical. The other data is as follows :

- a) Unit wt. of backfill soil =  $18 \text{ kN/m}^3$
- b) Angle of internal friction =  $30^\circ$
- c) Angle of wall friction =  $20^\circ$
- d) Cohesion = 0
- e) Coeff. of sliding for foundation - soil interface = 0.5
- f) Allowable bearing pressure of soil =  $300 \text{ kN/m}^2$
- g) Unit wt of masonry =  $22 \text{ kN/m}^3$ . Take factor of safety against sliding and overturning = 1.5 and 2.0 respectively.

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