B.TECH.
(SEM VII) THEORY EXAMINATION 2022-23
GEOSYNTHETICS AND REINFORCED SOIL STRUCTURE

Time: 3 Hours   *Total Marks: 100*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   **Attempt *all* questions in brief.**   **2 x 10 = 20**

   (a) State and explain various latest trends in geosynthetics.
   (b) Define geomembrane.
   (c) Explain the role of polymers in geosynthetics.
   (d) Explain the various functions performed by geosynthetics.
   (e) Explain the various types of Geosynthetics.
   (f) List the major raw materials that are used for the manufacture of soil reinforcements
   (g) State and explain the surface treatments of slopes.
   (h) Write possible modes of failure of a soil-reinforcement system?
   (i) Define earth pressure.
   (j) Enlist the different types of erosion control products.

SECTION B

2.   **Attempt any *three* of the following:**   **10 x 3= 30**

   (a)   List the basic functions that the geosynthetics perform.
   (b)   Which manufactured style of geotextile is best suited for its application as a drainage medium.
   (c)   What are the different mechanism for soil reinforcement ? Explain in brief.
   (d)   Explain shear strength of reinforced soil. Compare it with theoretical strength.
   (e)   With the help of neat sketch explain the various modes of failure of retaining walls.

SECTION C

3.   **Attempt any *one* part of the following:**   **10 x 1= 10**

   (a) Explain the role of geosynthetics in Landfills.
   (b) What are natural geosynthetics? What are their advantages? Explain the typical situations wherenatural geosynthetics can be employed

4.   **Attempt any *one* part of the following:**   **10 x 1= 10**

   (a) Explain the economical aspect of reinforced earth.
   (b) Explain foundation stability and bearing capacity failure while construction of the steep slope.

5.   **Attempt any *one* part of the following:**   **10 x 1= 10**

(a)   Explain the use of geomembrane for lining application.
(b)   State and explain the different types of Fibres used to improve properties of soil.

6.   **Attempt any *one* part of the following:**   **10 x 1= 10**

(a)   Explain the procedure for improving the load capacity of the stone columns.
(b)   Explain and draw Mohr's circle for Equivalent Confining stress Concept andPseudo Cohesion Concept.

7.   **Attempt any *one* part of the following:**   **10 x 1= 10**

(a)   Explain with sketches the various modes of stability of retaining walls.
(b)   Explain the Slip circle analysis (Bishop's method) in detail.