Code No: **RT42012A** **R13** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2019

ENGINEERING WITH GEO-SYNTHETICS

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A *(22 Marks)*

1. a) Write a note on estimated utility of geosynthetics in India. [3]
   b) Draw a typical load–strain curve for geotextiles. [4]
   c) What is the fastest growing application area in geosynthetic engineering? Write a brief note. [4]
   d) Write the principles of soil reinforcement. [4]
   e) What are the usual sizes of bamboo fibres used in road works? Discuss. [4]
   f) Write the applications geocomposites. [3]

PART–B *(3x16 = 48 Marks)*

2. a) What do you mean by geosynthetics and geonaturals? Explain these two terms making a point-wise comparison. [8]
   b) Explain the process of polymerization and its role in improving the characteristics of polymer fibres. [8]

3. a) Make a list of mechanical properties of a geotextile that are of greatest importance when using it as a separator in an unpaved road at the interface of a stone base and relatively soft foundation soil. [8]
   b) Suggest some field situations showing puncturing and bursting of geosynthetics. [8]

4. What are the different mechanisms of crack propagation in asphalt overlays? How can geosynthetics be beneficial in preventing such cracks? [16]

5. Discuss in detail with clear illustrtaions the external and internal stability of a reinforced earth wall? Also comment on reasons of failure of reinforced earth walls. [16]

6. a) Describe the structure of a drainage geocomposite. [8]
   b) What is the effect of stiffness of the geosynthetic on the discharge capacity of the geosynthetic drain? [8]

7. a) What is jute fibre? Write various applications of it in civil engineering works. [8]
   b) Discuss the importance of jute fibre and coir geotextile in the improvement of subgrade characteristics. [8]