



**Question 1 (25 marks)**

1. Talk about the shape, applications, and advantages of Geofabric?
2. Discuss with drawings the stress distribution in pavement layers for both reinforced section with Geosynthetic sheet and unreinforced section?
3. Discuss this sentence "Geogrid sheets make confinement in subgrade soil"?
4. Illustrate the functions, advantages, and shape of Geocells?

**Question 2 (25 marks)**

1. Differentiate between single layer non-woven method and two layers-woven method by using suitable sketch?
2. Compare between Geotextiles and Geogrids according to (definition, shape, usage, application and advantages)?
3. What are the reasons which lead the designers to use the geosynthetic material in road construction?
4. What are the advantages and disadvantages of using Geosynthetic?

**Question 3 (25 marks)**

1. Illustrates with suitable sketch how a geotextile acts to separate and stabilize soil on a roadway?
2. Compare between Geomembranes and Geocomposites according to (definition, shape, usage, application and advantages)?
3. Talk about the usage of Geosynthetic for drainage purposes? And what are the Geosynthetic types suitable for drainage purpose?
4. How can Geosynthetic be used in erosion and sediment control? And what are the types suitable for this purpose?

**Question 4 (25 marks)**

1. List the steps for Geosynthetic interlayer installation?
2. Explain the Geosynthetic fundamental reinforcement mechanisms?
3. Mention the tests which can be carried out on Geosynthetic materials and explain briefly Permeability test?
4. In placing a geotextile beneath railroad ballast, the materials can serve in four different functions. Describe and illustrate these functions?

*With my best wishes  
Dr. Ahmed Abu El-Maaty*

This exam measures the following ILOs (Intended Learning Outcomes)

Question No.	ILOs
1	A-1, A-2, B-3, C-2, D-4, D-2
2	A-3, B-4, B-5, C-1, C-2, D-3, D-6
3	B-4, B-5, A-4, D-4, C-1
4	A-2, C-3, B-4, D-5, C-2