Code No: C8709 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I - SEMESTER EXAMINATIONS APRIL/MAY-2012
GROUND IMPROVEMENT TECHNIQUES
(HIGHWAY ENGINEERING)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks

\- - -

1.a) Explain the practical situations which necessitate the ground improvement and write the objectives of ground modification.
b) Discuss the soil properties and their limits which govern the ground improvement in cohesionless and cohesive soils.

2. Explain with neat sketches the principles involved in densification of granular soil by 'Blasting' and 'Dynamic consolidation'. Also, write their effectiveness in improvement of soil.

3. How do you dewater the site, where highway construction is planned has full of water. Explain the following methods of dewatering: (i) open sumps and ditches and (ii) well-point system.

4. Discuss the principles and mechanisms in 'soil cement' and 'soil bitumen' stabilization techniques. Also, write the construction procedure of soil cement stabilized roads.

5. What is grouting? Explain in detail with clear illustrations the methods of grouting. Discuss various fields of applications of grouting in soil engineering.

6.a) What are the components of reinforced earth? Explain any four engineering applications of reinforced earth with neat sketches.
b) Discuss the internal and external stability aspects of reinforced earth wall.

7. Discuss the usefulness of soil confinement systems. Explain the concept of the following confinement systems:
a) Gabion walls
b) Crib walls and
c) Sand bags.

8. Explain the design, construction and applications of stone columns in improvement of soft clay deposits.

* * * * * *