	Utech
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Invigilator's Signature :	

# CS/B.Tech (CE-NEW)/SEM-8/CE-802/1/2010 2010

# SOIL STABILISATION & GROUND IMPROVEMENT

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

#### **GROUP - A**

## ( Multiple Choice Type Questions )

Cho	ose	the	correct	alterna	tives	for	any	ten	of	the
follo	wing	g :						10	× 1 =	10
i)	Standard proctor test is done to determine									
	a)	com	paction		b)	cons	solida	tion		
	c)	she	ar streng	th	d)	none	e of th	iese.		
ii)				paction,	whic	h of	the	follo	wing	į is
	a)	A vi	brofloat		b)	A ro	ller			
	c)	Geo	-syntheti	cs	d)	San	d pile			
iii)			0.0	-	0	•	•	eting t	fluid	like
	follo i) ii)	following i) Sta a) c) ii) In nee a) c) iii) The	following:  i) Standard  a) com  c) shed  ii) In surfate the surface of the surfa	following:  i) Standard proctor  a) compaction  c) shear streng  ii) In surface companeeded?  a) A vibrofloat  c) Geo-syntheti  iii) The technology to	following:  i) Standard proctor test is do  a) compaction  c) shear strength  ii) In surface compaction, needed?  a) A vibrofloat  c) Geo-synthetics  iii) The technology to improve	following:  i) Standard proctor test is done to a) compaction b)  c) shear strength d)  ii) In surface compaction, which needed?  a) A vibrofloat b)  c) Geo-synthetics d)  iii) The technology to improve grounds.	following:  i) Standard proctor test is done to determant and compaction by constant compaction, which of needed?  a) A vibrofloat by A roughly and Compaction and Compacti	following:  i) Standard proctor test is done to determine  a) compaction b) consolidate  c) shear strength d) none of the strength of the stre	following:  i) Standard proctor test is done to determine  a) compaction  b) consolidation  c) shear strength  d) none of these.  ii) In surface compaction, which of the following the	<ul> <li>i) Standard proctor test is done to determine</li> <li>a) compaction</li> <li>b) consolidation</li> <li>c) shear strength</li> <li>d) none of these.</li> <li>ii) In surface compaction, which of the following needed?</li> <li>a) A vibrofloat</li> <li>b) A roller</li> <li>c) Geo-synthetics</li> <li>d) Sand pile.</li> <li>iii) The technology to improve ground by injecting fluid</li> </ul>

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b)

d)

vacuuming

compacting.

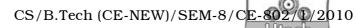
grouting

heaping

a) c)

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1V)		conesive soil which of silization is applicable?	t the	following methods of	
	a)	Compaction	b)	Stone column	
	c)	Vibroflotation	d)	Blasting.	
v)	Vibr	oflotation is an efficient	tech	nique to stabilized	
	a)	highly compressive soi	1		
	b)	cohesion less soil			
	c)	clay			
	d)	none of these.			
vi)	Preloading is the method of stabilization in which pore water pressure is increased so the effective pressure is				
	a)	decreased	b)	remaining same	
	c)	increased	d)	none of these.	
vii)	Capacity of soil to transmit a fluid to pass through its interconnected void is known as				
	a)	seepage	b)	shear	
	c)	permeability	d)	none of these.	
viii)	For	spacing of sand pile	e S/	d is in the range of	
is applicable with accuracy.					
	a)	2 to 6	b)	1.5 to 4	
	c)	1.5 to 3	d)	2.5 to 4	
ix)	Geo-synthetics-soil reinforcement may be applied in				
	a)	roads	b)	earth retaining wall	
	c)	slopes	d)	both (b) & (c).	
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- x) Rock & cable anchor is used in
  - a) lowering the water table
  - b) slope stabilization
  - c) pavement
  - d) sandy soil stabilization.
- xi) Well point systems are installed in
  - a) compaction
- b) consolidation
- c) drainage & dewatering d) preloading process.
- xii) The aim of soil stabilization is to increase the
  - a) seepage
- b) bearing capacity
- c) shear strength
- d) both (b) & (c).

#### **GROUP - B**

#### (Short Answer Type Questions)

Answer any *three* of the following.

 $3 \times 5 = 15$ 

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- 2. Explain the term 'Reinforced Earth'. Enumerate the advantages of reinforced earth.
- 3. Write short notes on soil improvement by thermal treatment.
- 4. What do you meant by the term 'Dewatering'? Discuss briefly.
- 5. Write short notes on 'Cement Stabilization'.
- 6. Discuss various compaction equipments for surface compaction in field.
- 7. Can one use a geomembrane as a spearator instead of a geotextile beneath a road?

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#### **GROUP - C**

#### (Long Answer Type Questions)

Answer any three of the following.



8. From given figure

### Compute:

- a) the time for 90% consolidation of the soft clays without sand wicks
- b) the time for 90% consolidation with sand wicks

  Given that the spacing of sand wicks is 1 m on a triangular grid and diameter of sandwicks is 100 mm.
- 9. What is grouting? Describe one method of grouting with neat sketch.
- 10. What is soil reinforcement? How does it stabilized the soil?
- 11. What are vertical drains? Describe with neat sketch.
- 12. What is chemical stabilization of soil? Why is it used? How many types of chemical are generally used?
- 13. Compare the use of Sheep's foot and vibratory rollers in the surface compaction of granular soils.

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