Total No. of Questions :12]

SEAT No. :

P1680

[Total No. of Pages :2

[4859]-8
B.E (Civil)
e:ADVANCED GEOTECHNICAL ENGINEERING
(2008 Pattern) (Elective - I) (Semester - I)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answer 3 questions from section I and 3 questions from section II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Your answers will be valued as a whole.***
5) ***Use of logarithmic tables electronic pocket calculator tables is allowed. Is codes are not allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Discuss 'soil identification & classification'. **[8]**

b) Discuss 'soil structure & clay minerals'. **[8]**

Q2) a) Explain the use of A-line chart, step by step, giving sample calculations. **[8]**

b) Discuss 'Diffuse double layer' & 'granular soil fabric'. **[8]**

Q3) a) Explain the steps for 'Poncelet's construction'. **[9]**

b) Discuss 'timbering & bracing for open cuts'. **[8]**

Q4) a) Explain the steps for 'design of gravity retaining wall' using 'Rankine's theory' by giving sample calculations. **[9]**

b) Explain the steps for 'Anchored sheet pile design' with suitable example. **[8]**

Q5) a) Discuss 'geosympatics & their functions'. **[8]**

b) Explain, slope stabilization using 'soil nailing'. **[8]**

Q6) a) Explain 'RE wall', different components & functions. **[8]**

b) Discuss 'Binquette & Lee' theory. **[8]**

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SECTION - II

Q7) Explain the following: **[16]**

a) Free & forced vibrations.

b) Barken's method.

c) Pauw's analysis.

d) Soil structure interaction.

Q8) a) Discuss the design criteria for 'Impact' type machines as per IS-2974-pt-II-1966. **[8]**

b) Resonance occured at a frequency of 25 cycles/sec in a vertical block vibration test on a block of 1m x 1m x 1m. Determine Cu if the wt of oscillator is 700 N & the force produced by it at 15 cycles/sec is 1200N. **[8]**

Q9) a) Explain 'Bored compaction piles' & 'stone columns'. **[9]**

b) Discuss 'Pecker grouting' & 'sand drains'. **[8]**

Q10)a) Explain the stages of inserting reinf. in 'vibro-expaned pile'. **[8]**

b) Explain the steps for design of 'sand chains', for **[9]**

i) $kx = ky$

ii) $kx = 5ky$

Q11)a) Discuss 'Rheology &its utility'. **[8]**

b) Explain different 'Rheological models'. **[8]**

Q12)a) Differentiate between 'Basic & composite' Rheological models. **[8]**

b) Explain the following: **[8]**

i) Secondary consolidation

ii) Creep, with ref. to Rheology.

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