Total No. of Questions : 10]

SEAT No. :

P3235

[Total No. of Pages : 3

[4859] - 1013

B.E. (Civil)

ADVANCED GEOTECHNICAL ENGINEERING (Elective - II)

(2012 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Answer Q. 1 or Q. 2, Q. 3 or Q. 4, and Q. 5or Q. 6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Answer to the two sections should be written in separate books.***
3) ***Figures to the right indicate full marks.***
4) ***Use of logarithmic tables, slide rule, Mollies charts, electronics pocket calculator and steam tables is allowed.***
5) ***Assume suitable data if necessary.***
6) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Enlist different 'Clay minerals' & explain the role of 'montmorillonite'. **[5]**

b) Discuss any one of the following : **[5]**

i) HRB classification

ii) Textural classification

OR

Q2) a) Discuss 'Binquet & lee'theory for reinforced soil foundations. **[5]**

b) Explain Ka, Kp & Ko with examples. **[5]**

Q3) a) Explain the different types of Geosynthetics along with functions. **[5]**

b) A wall with a smooth vertical back, 10m high, supports a purely cohesive soil with c = 9.81 KN/m^2, & γ = 17.66 KN/m^3. Determine **[5]**

i) total Rankin's active pressure against the wall;

ii) position of zero pressure;

OR

P.T.O.

Q4) a) Compute the active earth pressure at a depth of 4.5 m in sand whose angle of friction is 37°, and density of 15.60 KN /m^2 in dry state. **[5]**

b) What is soil nailing'? Under which situations it's applicable? **[5]**

Q5) a) Explain the following : **[4×3=12]**

i) Forced vibrations.

ii) Braken's method.

iii) Pauw's Analysis.

iv) Elastic half space method.

b) What are the different types of machine foundations? **[4]**

OR

Q6) a) Discuss the design criteria for impact type machines as per IS- 2974 (pt-II) - 1966. **[8]**

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

Q7) a) Explain the following : **[4 × 3 = 12]**

i) Bored compaction piles.

ii) Sand drains.

iii) Grouting.

iv) Vibroflotation.

b) Discuss the different methods for 'Grouting'. **[6]**

OR

Q8) a) Explain the steps for design of sand drains with following soil cases. **[10]**

i) Isotropic

ii) Anisotropic

b) Explain the stages of inserting reinforcement in vibro-expanded pile. **[8]**

Q9) a) Discuss the basic and composite Rheological models. **[6]**

b) Explain creep with the help of Rheological model. **[6]**

c) Explain 'Saint - Venants' model. **[4]**

OR

Q10) a) Discuss the following in details : **[4 × 3 = 12]**

i) Rheology &Rheological models.

ii) Compound Rheological models.

iii) Viscous models with spring & dashpot.

iv) Creep.

b) Explain in detail 'Maxwell model'. **[4]**

⌘⌘⌘