

Total No. of Questions : 10]

SEAT No. :

P2961

[5154]-513

[Total No. of Pages : 2

T.E. (Civil)

ADVANCED GEOTECHNICAL ENGINEERING

(2012 Pattern) (401005 E) (End Semester) (Semester - I) (Elective - II)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q9 or Q10.*
- 2) *Neat diagrams must be drawn whenever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary and mention it clearly.*
- 5) *Use of non-programmable calculator is allowed.*

Q1) a) Discuss different soil classification system. **[6]**

b) Discuss, role of 'montmorillonite'. **[4]**

OR

Q2) a) Explain different 'clay minerals'. **[6]**

b) Discuss, 'Diffuse Double layer'. **[4]**

Q3) a) Explain: **[6]**

i) AEP

ii) PEP

iii) EP at rest

b) Explain Culman's graphical method. **[4]**

OR

Q4) a) Discuss the following: **[6]**

i) Different types of geosynthetics & their functions.

ii) Properties & functional requirements of geogrid.

b) Explain - 'geosynthetics in geoenvironment'. **[4]**

P.T.O.

Q5) Explain the following: [16]

- a) Free & forced vibrations.
- b) Barken's method.
- c) Pauw's analysis.
- d) Elartic half space method.

OR

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

b) State the design procedure for a block foundation for cyclic loading. [8]

Q7) Explain the following:

- a) Bored compaction piles. [4]
- b) Stone columns. [4]
- c) Pecher grouting. [5]
- d) Sand drains. [5]

OR

Q8) a) Explain the steps for design of sand drains, for following cases, [9]

- i) Isotropic soil.
- ii) Anisotropic soil.

b) Explain the stages of inserting reinforcement in vibro-expanded pile. [9]

Q9) a) Discuss different 'Rheological Models'. [8]

b) Explain the utility of 'Rheological Models'. [8]

OR

Q10) a) Write a note on following soil phenomena. [8]

- i) Secondary consolidation
- ii) Creep

b) Discuss the 'basic & composite', 'Rheological Models'. [8]

