

B.E. Eighth Semester (Civil Engineering) (C.B.S.)
Elective - III : Advanced Geotechnical Engineering

P. Pages : 2

Time : Three Hours



NKT/KS/17/7541

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Illustrate your answers whenever necessary with the help of neat sketches.
 11. Use of non programmable calculator is permitted.

1. a) Enlist different 'soil structure' & 'clay minerals' and explain the role of 'montmorillonite' ? **8**
b) What are the causes of moisture changes in soils ? **5**
- OR**
2. a) Define swelling potential ? How would you classify expansive soil based on swelling potential ? **6**
b) What are the various methods of modification of an expansive soil to improve its characteristics. **7**
3. a) Explain in brief grain morphology ? **6**
b) Explain stress-strain behaviour of soil ? **7**
- OR**
4. a) What are effects of grain morphology. **6**
b) What are effects of size, shape of sand on engineering properties of soil ? **7**
5. a) Explain the working of a single stage well point system. What are its limitation ? **7**
b) What is the purpose of drainage & Dewatering in soil ? **7**
- OR**
6. a) Write a short note on **any two**. **7**
i) Multi - Stage well point system.
ii) Vacuum well points.
iii) Deep Well system.

- b) What is electro-osmosis ? What are the advantages and disadvantages as compared with the conventional drainage system ? 7
7. a) Discuss Terzaghi's Theory of consolidation, stating the various assumption and their validity ? 7
- b) Explain the phenomenon of secondary consolidation ? Differentiate between the secondary consolidation Index and the coefficient of secondary consolidation ? 6

OR

8. a) Describe sand drains. How are these designed ? Discuss their uses. What is the effect of smear ? 7
- b) Discuss Schmertmann's method for determination of pre consolidation pressure field consolidation curve. 6
9. a) What is Mohr's strength theory for soil ? Discuss its important characteristics ? 7
- b) Explain strength of cyclically loaded soil ? 6

OR

10. a) What is stress path ? Sketch different types of stress path that can be obtained in a triaxial test ? 7
- b) Discuss stress-strain behavior of cyclically loaded soil ? 6
11. a) What is liquefaction of sands ? How can it be prevented ? 7
- b) What are the factors affecting liquefaction susceptibility ? 7

OR

12. a) Write a note on Evaluation of liquefaction potential ? 7
- b) Liquefaction occur in dense sand ? Why ? 7
