Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech (Structural Design EL-IV) (2016 & Onwards) (Sem.–3)

ADVANCED FOUNDATION DESIGN AND GEOTECHNICS

Subject Code : MTSD-307

Paper ID : [74809]

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions in all, out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

Q1 a) Write the design steps for designing a retaining wall (with saturated backfill) with surcharge loads. Draw typical sketch of reinforcement of each component of retaining wall. (12)

b) What do you mean by Land Reclamation? Discuss in briefs the methods for land reclamation. (8)

Q2 a) How does the structural design of rectangular combined footing and Trapezoidal footing differ? Explain. (10)

b) For a sedimentary soil deposit, which solution is more appropriate-Boussinesq's or Westergaard's? Why? State the assumptions involved in Westergaard's theory. (10)

Q3 a) Discuss in detail about '*Reese and Matlock Approach*' for laterally loaded piles. (12)

b) What are the limitations of Dynamic Pile load formulae? (8)

Q4 a) Comment on the behavior of a group of piles in sand as compared to that of a single pile, in terms of group efficiency factor. (10)

b) What are Batter piles? Under what circumstances, these are used? (10)

Q5 a) Show the different components of a well foundation with the help of a neat sketch. Explain briefly their functions. (12)

b) What considerations govern the fixing of the depth of a well foundation? (8)

Q6 a) Discuss the procedure to compute four basic soil spring constants used in analysis of foundations subjected to dynamic loads. (10)

b) Explain Pauw's Analogy in reference to machine foundations. (10)

Q7 a) Explain application of Tshebotarioff's method in Geotechnical engineering. (10)

b) Sketch the mode of deflection, distribution of lateral pressure and bending moment diagrams for various types of sheet pile walls. (10)

Q8 Write short notes on :

a) Site Investigations. (10)

b) Negative Skin Friction. (10)