Code No.: **50133**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

IV B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, NOVEMBER-2019

Subject: **FOUNDATION ENGINEERING**

Branch: **CE**

Time: 3 hours   Max. Marks: 60

PART – A

Answer ALL questions of the following   5x2M=10 M

1. Enumerate the methods of boring.

2. Write expression for Taylor stability number.

3. State the factors affecting location of footing.

4. Write converse Labarre formula and Seiler Keeney formula

5. What is meant by well steining and dredge hole?

PART-B

Answer any FIVE questions of the following   5x10 M= 50M

1. a) Describe the salient features of a subsoil investigation report and explain the importance
   of a boring log.

   b) Explain the stability of retaining wall against overturning, sliding and bearing capacity.

2. a) Describe the procedure to conduct the plate load test with a sketch.

   b) Explain types of sampler with neat diagram

3. Critically comment about the conditions that are to be carried out for stability analysis of earthen
   dam.

4. a) What are the modes of failure of slopes? Illustrate with sketches.   [4M]

   b) Derive FOS for infinite slope of cohesionless soil.   [6M]

5. a) A loading test was conducted with a 300 mm square plate at depth of 1 m below the ground
   surface in pure clay deposit. The water table is located at a depth of 4 m below the ground level.
   Failure occurred at a load of 45 kN. What is the safe bearing capacity of a 1.5 m wide strip
   footing at 1.5 m depth in the same soil? Assume g= 18 kN/m^3 above the water table and a factor
   of safety of 2.5. The water table does not affect the bearing capacity in both cases. For $\phi = 0°$,
   Terzaghi's factors are Nc= 5.7, Nq = 1, and $N\gamma$= 0   [6 M]

   b) Explain types of foundations and factors to be considered in their location.   [4 M]

6. Explain in detail about the various types of pile foundations with neat sketch and mention their
   functions.

7. a) Explain different dynamic formulae to determine pile loading capacity

    b) A group of 16 piles of 50 cm diameter is arranged with a centre to centre spacing of 1.0 m. The piles are 9 m long and are embedded in soft clay with cohesion 30 kN/m2. Bearing resistance may be neglected for the piles. Negative adhesion factor is 0.6. Determine the ultimate load capacity of the pile group.

8. a) Briefly explain the procedure adopted in well sinking and bring out the problems that are encountered in open sinking.   [6 M]

    b) Differentiate between Box caisson and open caissons.   [4 M]

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IV B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, NOVEMBER-2019

Subject: <u>PRESTRESSED CONCRETE STRUCTURES</u>

Branch: CE

Time: 3 hours   Max. Marks: 60

PART – A

Answer ALL questions of the following   **5x2M=10 M**

1. What are the advantages of prestressed concrete?

2. List the codal provisions for the loss of stress due to relaxation of stress in steel.

3. Discuss the codal provisions for shear as per IS: 1343-2012.

4. Sketch the distribution of stresses in the anchorage zone.

5. What is the influence of differential shrinkage on composite prestressed concrete members?

PART-B

Answer any FIVE questions of the following   **5x10 M= 50M**

1. a) Differentiate between full pre stressing and partial pre stressing.

   b) What are the assumptions made in PSC?

2. a) Write about magnel's system of prestressing with sketches.

   b) What are the advantages of freyssinet system in PSC.

3. a) Discuss the measures to be adopted for counteracting elastic loss and friction loss in case of post tensioned member.

   b) A beam of size 500mm x 1000mm is used on simply supported span of 10m. It is provided with a bent tendon having an eccentricity of 100mm at centre and an eccentricity of 50mm upwards at the ends. The dead load of the beam is 10kN/m. Compute the stresses at ends and at mid span.

4. a) How will you improve the shear resistance of structural concrete members by applying prestressing technique?

   b) A rectangular concrete beam 250mm wide and 600mm deep is prestressed by means of 4 14mm diameter high tensile bars located 200mm from the soffit of the beam. If the effective stress in the wires is 700N/mm^2. What is the maximum bending moment that can be applied to the section with out causing tension at the soffit of the beam?

5. a) Discuss briefly the IS-1343 code provisions regarding transmission length

   b) Write a note on end zone reinforcement in end block.

6. Sketch some typical cross section of a composite bridge decks with precast prestressed elements.

7. a) Distinguish clearly between short term and long term deflection of prestressed concrete beams.   [4]

b) A composite T-beam up of a per-tensioned rib 100 mm wide and 200 mm deep, and a cast in situ slab 400 mm wide and 40 mm thick having a modulus of elasticity of 28 kN/mm^2. If the differential shrinkage is 100 x10-6 units, determine the shrinkage stresses developed in the precast and cast in situ unit. [6]

8. Write short notes on any two of the following

    a) Draw the variation of stress in steel in bonded and unbounded beams

    b) What are the ways of improving shear resistance of structural concrete member by prestressing techniques

    c) What is the necessity of providing anchorage zone reinforcement?