USN ☐☐☐☐☐☐☐☐☐☐   **10CV62**

Sixth Semester B.E. Degree Examination, Aug./Sept.2020
Design and Drawing of RC Structures

Time: 4 hrs.   Max. Marks:100

Note: *1.Answer any TWO full questions from Part-A and any ONE question from Part-B.*
2.Use of IS456-2000, SP-16 is permitted.

PART – A

1 A two way fixed slab over a room of 6m × 4.5m having wall thickness 300mm slab thickness 180mm steel for shorter span 8mm ϕ @ 130mm c/c longer span 8mm ϕ @ 180mm c/c corner steel 8mm ϕ @ 170mm c/c. Draw to a suitable scale following view:
  a. Plan   **(08 Marks)**
  b. C/s along longer span and shorter span.   **(08 Marks)**
  c. Bar bending schedule.   **(04 Marks)**

2 A dog legged stair case is provided with in a room of internal dimension 4.5m × 2.5m width of stair 1.2m thickness of waist slab 150mm. Rise 150mm, Tread 250mm, Floor height 3m wall thickness 230mm main steel 10mm diameter @ 150mm c/c Dist. Steel 8mmϕ @ 250mm c/c. Draw to a suitable scale
  a. Plan   **(08 Marks)**
  b. C/s of ground flight and second flight.   **(12 Marks)**

3 A column and footing is to be provided with following details column size 300×300mm main steel for column 8 - 12mm ϕ lateral ties 8mm diameter @ 300mm c/c column height 4m above the ground footing 1.9m × 1.9m steel for footing 10mm ϕ @ 100mm c/c both ways. Depth of footing at column face 450mm and 250mm at edge depth of excavation 1.2m. Draw to a suitable scale.
  a. Plan showing details of reinforcement   **(08 Marks)**
  b. Sectional elevation showing details of reinforcement.   **(08 Marks)**
  c. Bar bending schedule.   **(04 Marks)**

PART – B

4 Design a counterfort retaining wall for the following requirements. Height of wall above GL 5.5m, SBC of soil 160 kN/m^2, Angle of repose 30°, Density of soil 16 kN/m^3, Spacing of counterfort 3m c/c. Adopt M20 concrete and Fe 415 steel.
  a. Design the retaining wall.   **(40 Marks)**
  b. Draw to a suitable scale.
    (i) Cross section midway between counter forts   **(06 Marks)**
    (ii) Cross section at counter forts   **(06 Marks)**
    (iii) Sectional elevation   **(04 Marks)**
    (iv) Sectional plan.   **(04 Marks)**

5 A hall 10m wide 20m long portal frame are to be provided at 4m c/c portal frame are fixed at base, height 6.5 m. Live load 1.5 kN/m^2 finishing 0.75 kN/m^2. SBC 120 kN/m^2 M20 concrete Fe 415 steel.
  a. Design the slab, Portal, T-beam, Column and foundation.   **(40 Marks)**
  b. Draw to a suitable scale :
    (i) Cross-section of frame   **(10 Marks)**
    (ii) Section showing details of reinforcement in slab (continuous slab)   **(05 Marks)**
    (iii) Details of reinforcement in beam (beam longitudinal section)   **(03 Marks)**
    (iv) Plan of hall showing position of beam and columns.   **(02 Marks)**

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