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

Time: 4 hrs.

AVGALORE

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

- A two way fixed slab over a room of 6m × 4.5m having wall thickness 300mm slab 1 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:
 - (08 Marks) a.
 - (08 Marks) b. C/s along longer span and shorter span.
 - (04 Marks) Bar bending schedule.
- 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 8mm @ 250mm c/c. Draw to a suitable scale
 - (08 Marks)
 - C/s of ground flight and second flight. (12 Marks)
- A column and footing is to be provided with following details column size 300×300mm 3 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 \$\phi\$ @ 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) (08 Marks) b. Sectional elevation showing details of reinforcement.
 - (04 Marks) Bar bending schedule.

PART - B

- 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 $^{\circ}$, Density of soil 16 kN/m 3 , Spacing of counterfort 3m c/c. Adopt M20 concrete and Fe 415 steel.
 - (40 Marks) a. Design the retaining wall.
 - b. Draw to a suitable scale.
 - (06 Marks) (i) Cross section midway between counter forts
 - (06 Marks) (ii) Cross section at counter forts (04 Marks)
 - CMRIT LIBRARY (iii) Sectional elevation BANGALORE - 560 037 (04 Marks) (iv) Sectional plan.
 - A hall 10m wide 20m long portal frame are to be provided at 4m c/c portal frame are fixed
- 5 at base, height 6.5 m. Live load 1.5 kN/m² finishing 0.75 kN/m². SBC 120 kN/m² M20 concrete Fe 415 steel.
 - Design the slab, Portal, T-beam, Column and foundation. (40 Marks)
 - b. Draw to a suitable scale:
 - (10 Marks) (i) Cross-section of frame (ii) Section showing details of reinforcement in slab (continuous slab) (05 Marks)
 - (iii) Details of reinforcement in beam (beam longitudinal section) (03 Marks)
 - (02 Marks) (iv) Plan of hall showing position of beam and columns.