

No. of Printed Pages : 4

Roll No.

170751

5th Sem./ Civil Engg.

Subject : Reinforced Concrete drawing

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Objectives questions. All questions are compulsory
(10x1=10)

(Course Outcome/CO)

- Q.1 If the ratio of long span to short span is _____, then slab is referred as two way slab. (CO-1)
- Q.2 Main steel is provided along short span in _____ slab. (CO-1)
- Q.3 Maximum diameter of the reinforcing bars in a slab should not exceed _____ of overall thickness of slab. (CO-1)
- Q.4 Tension in cantilever beam is at _____ (CO-2)
- Q.5 Upto 10m span, span to effective depth ratio for the singly supported beam is _____ (CO-2)
- Q.6 Unit weight of P.C.C. may be taken as _____ (CO-2)
- Q.7 Minimum numbers of longitudinal bars provided in a rectangular column is _____ (CO-3)
- Q.8 CAD stands for _____ (CO-5)
- Q.9 A footing that covers entire area beneath structure is known as _____ (CO-3)
- Q.10 Overlapping of bars may be taken as _____ times diameter of bar. (CO-3)

SECTION-B

Note: Very Short answer type questions. Attempt any ten parts
10x2=20

- Q.11 Why steel is preferred as reinforcing material for concrete? (CO-1)

(1)

170751

- Q.12 Define two way slab. (CO-1)
- Q.13 Why distribution steel is provided in one way slab? (CO-1)
- Q.14 Define singly reinforced beam. (CO-2)
- Q.15 Define over reinforced beam. (CO-2)
- Q.16 Define long column. (CO-3)
- Q.17 Define effective length of column. (CO-3)
- Q.18 Write the two condition for use of mat foundation. (CO-3)
- Q.19 Define portal frame. (CO-4)
- Q.20 What are the factors to be considered while selecting a steel frame? (CO-4)
- Q.21 Write any four advantage of AutoCAD. (CO-5)
- Q.22 Define transverse reinforcement. (CO-3)

SECTION-C

Note: Short answer type questions. Attempt any five questions.
5x8=40

- Q.23 As per I.S. specifications, write the permissible deflection in two way slab. (CO-1)
- Q.24 Calculate the length of distribution bars for simply supported one way slab with following data :- (CO-1)
Size of room=3.57x7.5m, Thickness of slab=150mm
Bearing on wall=300mm, Thickness of wall=500mm
Reinforcement details of HYSD bars
Distribution Steel = 10 mm Ø bars @ 200mm c/c
- Q.25 Calculate the length of main bars for simply supported RCC beam having a clear span of 7m with 350 mm bearing on wall and also show effective span in diagram. (CO-2)
- Q.26 What is the role of AutoCAD in civil engineering? (CO-5)
- Q.27 Write a short note on framed construction. (CO-4)

(2)

170751

- Q.28 Classify the column depending upon the line of action of load. (CO-3)
- Q.29 Write the comparison between one way slab and two way slab. (CO-1)
- Q.30 What is reinforcement splicing? Explain its I.S. specifications for design of beams. (CO-2)
- Q.31 Design the lateral ties for rectangular column of size 440 x 600 mm with 8-20mm \bar{A} E bars as longitudinal bars and draw the neat sketch also. (CO-1)
- Q.32 Explain the five major commands used in AutoCAD for drawing. (CO-5)

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.33 Draw the plan and cross section of restrained two way slab with the following data: (CO-1)
 Size of room=6m x 4.5m, Thickness of wall=400mm, Thickness of slab=150mm
 Reinforcement along shorter span=10mm \bar{O} bars @ 110 mm c/c
 Reinforcement along longer span=10mm \bar{O} bars @ 180 mm c/c
 Torsion reinforcement at all four corners in the form of mesh of 10 mm bars @ 10 \bar{O} mm c/c both ways extended up to shorter span over 5.
- Q.34 Draw the L-section and two cross section (one at mid span and other near the support) of doubly reinforced beam with following data: (CO-2)
 Clear span=4.5m
 Bearing on wall = 400mm
 Thickness of Wall = 300 mm
 Size of the beam = 300mm x 500 mm

(3)

170751

Main reinforcement = 3-20 mm \bar{O} bars (one bar bent up at 1/7)

Stirrups = 8mm 2 legged @ 200 mm c/c throughout.

- Q.35 Draw a suitable scale, the sectional plan and elevation of a circular column from the following data: (CO-3)

Column details:

Diameter of circular column=500mm

Depth above G.L. =1.0 m, Height of column=4.0m

Plinth level above G.L.=400 mm, Reinforcement longitudinal bar = 8-20 mm

Lateral Ties=8 mm @300mm c/c

Footing details

Size of Footing=3.0 m x 3.0 m

Thickness of footing = 300mm

Base reinforcement = 12 mm @ 300mm c/c both ways.

Assume that the main bars of the are going into 150mm thick slabs. HYSD Fe 415 grade of steel used.

- Q.36 Draw to suitable scale cross section of a head connection of two beams on both sides of a columns as per following data: (CO-4)

Column:

Size=450mm x 450mm

Main bars - 8-16 mm

Lateral ties = 8mm \bar{O} @ 200 mm c/c (double ties)

Beam :

Size = 250mm x 400 mm (including 100 mm thick slab)

Main bars = 5-20 mm \bar{O} (2 bars bent-up at 1/7)

Stirrups = 8mm 2 legged stirrups @ 250 mm c/c

Anchor bar = 2-12 mm

Also show plan of column.

(Note: Course outcome/CO is for office use only)

(3080)

(4)

170751

No. of Printed Pages : 4
Roll No.

170753

5th Sem./ Civil

Subject : Construction Management & Accounts

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Objective type questions. All questions are compulsory (10x1=10)

(Course Outcome/CO)

- | | |
|------------------------------|---------|
| Q.1 Define Engineer. | (CO-1) |
| Q.2 Define pre tender stage. | (CO-2) |
| Q.3 What is rescheduling? | (CO-4) |
| Q.4 Define PERT. | (CO-4) |
| Q.5 Define Event. | (CO-4) |
| Q.6 Define float. | (CO-4) |
| Q.7 What is SMB? | (CO-7) |
| Q.8 What is free float? | (CO-4) |
| Q.9 Define aquittance roll. | (CO-10) |
| Q.10 What is hand receipt? | (CO-10) |

(1)

170753

SECTION-B

Note:Very Short answer type questions. Attempt any ten parts 10x2=20

- | | |
|--|---------|
| Q.11 Define Construction Management. | (CO-1) |
| Q.12 Define Muster Roll. | (CO-10) |
| Q.13 Define Material Schedule. | (CO-4) |
| Q.14 Define work break down structure. | (CO-4) |
| Q.15 What is organisation? | (CO-7) |
| Q.16 Explain real wages. | (CO-6) |
| Q.17 Explain inspection. | (CO-8) |
| Q.18 Define time rate system. | (CO-1) |
| Q.19 Define log book. | (CO-10) |
| Q.20 What is cash book? | (CO-10) |
| Q.21 Define Survey report. | (CO-10) |
| Q.22 Define completion certificate. | (CO-10) |

(2)

170753

SECTION-C

Note: Short answer type questions. Attempt any five questions out of ten Questions. 5x8=40

- Q.23 Explain Significance of Construction Management. (CO-1)
- Q.24 Discuss resources of Construction Industry. (CO-1)
- Q.25 What are advantages and disadvantages of line and staff organisation? (CO-7)
- Q.26 What is need for inspection and quality control? (CO-1)
- Q.27 What are safety measures for drilling and blasting? (CO-9)
- Q.28 Discuss principles of inspection. (CO-8)
- Q.29 What is difference between bill and voucher? (CO-10)
- Q.30 Explain analysis of progress through operational analysis. (CO-7)
- Q.31 Explain cost time optimisation. (CO-7)
- Q.32 Differentiate between PERT & CPM. (CO-4)

(3)

170753

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.33 Explain stages in Construction. (CO-1)
- Q.34 Explain different stages of construction planning. (CO-1)
- Q.35 Write a short note on [a] Location of equipment. [b] Organizing labour at site. (CO-5)
- Q.36 Write a short note on [a] conditions of construction workers in India. [b] Minimum wages act 1948. (CO-6)

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(2800)

(4)

170753

No. of Printed Pages : 4

Roll No. 170754/120754/30743

5th Sem. / Civil
Subject : Soil Mechanism and
Foundation Engineering

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Objective type questions. All questions are compulsory (10x1=10)

- Q.1 Define Darcy's law.
- Q.2 Define Consistency limits.
- Q.3 Define relative Density.
- Q.4 Describe sieve analysis.
- Q.5 Define specific gravity.
- Q.6 Define soil profile.
- Q.7 Define soil engineering.
- Q.8 Define effective stress.
- Q.9 Define Heaving.
- Q.10 Define settlement.

(1) 170754/120754/30743

SECTION-B

Note:Very short answer type questions. Attempt any ten questions out of twelve questions. 10x2=20

- Q.11 Describe the Engineering classification of soils.
- Q.12 Differentiate between sand and clay.
- Q.13 What is soil water.
- Q.14 Differentiate between void ratio and porosity.
- Q.15 Define Index properties of soil.
- Q.16 Define seepage velocity.
- Q.17 Define Confined Aquifer.
- Q.18 Define co-efficient of permeability.
- Q.19 Define laminar and Turbulent flow.
- Q.20 Define shear strength of soil.
- Q.21 State the principle of effective stress.
- Q.22 Define Consolidation.

(2) 170754/120754/30743

SECTION-C

Note: Short answer type questions. Attempt any five questions out of ten. 5x8=40

Q.23 Explain the principle of consolidation, with the help of soil spring analogy.

Q.24 A fully saturated sample of soil has volume of 25 cc and a weight of 40g. After drying in the oven its weight is 28 gm. With the help of a phase diagram calculate:-

1. e
2. W
3. n
4. S
5. r_{sat}

Q.25 With the help of a three phase diagram in terms of void ratio, prove that

$$r_d = \frac{r}{1 + W}$$

Q.26 Write a short note on the Textural classifications.

Q.27 Differentiate between confined and unconfined, Aquifer.

Q.28 Differentiate between Initial consolidation and primary consolidation.

(3) 170754/120754/30743

Q.29 Explain rate of settlement.

Q.30 Explain direct shear test for determining the shear strength of soil in laboratory.

Q.31 Discuss the method used in determining the load carrying capacity of piles. Explain any one of them in detail.

Q.32 Define Isobar and Pressure Bulb.

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. 3x10=30

Q.33 Describe plate load test for determining the settlement and its limitations.

Q.34 Describe the settlement and its types and different causes of settlement.

Q.35 Explain the particle size distribution curve and its characteristics features.

Q.36 The falling head permeability test was conducted on a soil sample of 4cm diameter and 18 cm length. The head fell from 1.0m to 0.40m in 20 minutes. If the cross-sectional area of the stand pipe was 1cm^2 , determine the coefficient of permeability.

(4800)

(4) 170754/120754/30743

No. of Printed Pages : 4

Roll No. 180751/030751/753

5th Sem. / Civil Engineering

Subject : Reinforced Cement Concrete Design and Drawing

Time : 6 Hrs. M.M. : 150

SECTION-A

Q.1 One word / Fill in the blanks / Very short answer type questions. All questions are compulsory.

(10x1=10)

(Course Outcome/CO)

- a. The arrangement of T-beam in which web lies above is called..... (CO-7)
- b. In stress- strain diagram, the curve for concrete is parabola up-to a strain of..... (CO-4)
- c. The minimum grade of concrete for pre-tensioned work shall not be less than (CO-11)
- d. IS: 456-2000 recommends that..... beam sections should be redesigned. (CO-5)
- e. Partial safety factor for steel is..... (CO-4)
- f. In RCC, steel reinforcement takes up stresses. (CO-1)
- g. The shear reinforcement provided in the form of vertical bars is known as..... (CO-3)
- h. Doubly reinforced beams are provided when the dimensions of the beam are..... (CO-6)
- i. When the length of slab is less than twice its width, it is said to be spanning directions. (CO-9)
- j. As per IS 456-2000 Concrete grades lower than should not be used for RCC work. (CO-1)

SECTION-B

Q.2 Very Short answer type questions. Attempt any ten parts.

(10x2=20)

- i. Define balanced reinforced beams. (CO-5)
- ii. Define neutral axis. (CO-1)

(1) 180751/030751/753

- iii. Define doubly reinforced beam. (CO-6)
- iv. Define pre-stressed concrete. (CO-11)
- v. Write the purposes of distribution steel in one-way slab. (CO-8)
- vi. Write the limit states considered in design (CO-4)
- vii. Define unrestrained slabs. (CO-9)
- viii. Write the formula for the calculation of the depth of neutral axis (X_u) of a doubly reinforced beam. (CO-6)
- ix. Write the curtailment of main reinforcement. (CO-8)
- x. Define characteristic Load. (CO-4)
- xi. How cracks are prevented at the corners of restrained slabs? (CO-9)
- xii. Define nominal shear stress. (CO-3)

SECTION-C

Q.3 Short answer type questions. Attempt any five questions.

5x8=40

- i. Differentiate between one-way slab and two-way slab. (CO-9)
- ii. Define lever arm and how it is determined in a T-beam (CO-7)
- iii. A beam 250mm X 400mm (overall) reinforced is with 4-20mm \varnothing bars placed at a distance of 50mm from the bottom of beam. Find out the moment of resistance. Use M 20 grade of concrete and fe 415 steel. (CO-5)
- iv. Write the different classification of columns. (CO-10)
- v. Differentiate between WSM and LSM. (CO-2)
- vi. A T-beam has flange width 1000mm, flange thickness 190mm, web thickness 230mm, effective depth 450 mm and reinforced with 3128 mm² tension reinforcement. Calculate the ultimate moment of resistance of the T-beam. Use M 20 grade of concrete and Fe 500 steel. (CO-7)
- vii. Write the disadvantages of pre-stressed concrete. (CO-11)
- viii. Write the function of bent-up bars. (CO-3)

(2) 180751/030751/753

- ix. Calculate the depth of slab and effective spans of an R.C.C. slab simply supported on all the four sides of a room of size 4m X 5m (Clear size). The slab has to carry a live load of 3500 N/m². Take width of bearing as 300 mm. The corners of the slab are not held down, use M 20 grade of concrete and Fe 415 steel. (CO-9)
- x. Why the main steel is provided along the shorter span in one way slabs? (CO-8)

SECTION-D

Note: Long answer type questions. Attempt any three questions.
3x10=30

- Q.4 An R.C.C. beam 230mm X 460 mm (effective) is reinforced with 2-16 mm Ø bars as compression reinforcement and 4-20 mm Ø bars as tensile reinforcement receptively. Find the ultimate moment to resistance. Effective cover 40 mm. Use M20 grade of concrete and Fe 415 steel. (CO-6)
- Q.5 a) Draw the stress- strain curve for concrete in flexure compression (as per LSM). (CO-4)
- b) A reinforced concrete column of diameter 500 mm is reinforced with 6-25 mm Ø bars and held in position at both ends (but not restrained against rotation) having unsupported length of 4 m. Find the safe load the column can carry. Use M20 grade of concrete and Fe 415 steel. (CO-10)
- Q.6 A simply supported R.C.C. slab over a room of size 3.5 X 7 m is supported on 230 mm thick masonry walls. Design the slab, if it is carrying a live load of 5 KN/m². Use M20 grade of concrete and Fe 415 steel. (CO-8)
- Q.7 a) Write the design steps of two-way slab. (CO-9)
- b) Write a short note on over-reinforced beam section. (CO-5)

Note: Attempt any two questions (25x2=50)

- Q.8 Draw the sectional plan and sectional elevation (Assume suitable scale) for a rectangular column with isolated footing of uniform thickness with the following data:

Size of Column= 300 mm X 50 mm
 Size of Footing= 1500 mm X 2000 mm
 Thickness of footing = 500 mm
 Depth below ground level = 1000 mm
 Plinth level above ground level= 300 mm
 Height of ceiling above plinth level= 3000 mm

Footing reinforcement:

reinforcement parallel to longer side = 12 mm Ø 250 mm c/c

reinforcement parallel to Shorter side = 16 mm Ø 200 mm c/c

Column reinforcement:

Main longitudinal bars in column = 6-20 mm Ø

Lateral ties in column= 8 mm Ø @ 250 mm c/c

- Q.9 Draw the sectional plan and sectional elevation (assume suitable scale) of a simply supported one-way slab with the following data:

Size of room= 3.5m x 7.0 m

thickness of slab=125 mm

Thickness of walls = 230 mm

Bearing on walls = 230 mm

main reinforcement= 12 mm Ø bars @ 180 mm c/c alternate bars bent up

Distribution steel = 10 mm Ø bars @ 230 mm c/c

- Q.10 Draw the sectional plan and sectional elevation (assume suitable scale) of a RCC beam with the following data:

Size of beam = 300 mm x 500 mm

Clear span = 6500 mm

Bearing on walls= 230 mm

Main reinforcement = 4 - 20 mm Ø

Anchor bars = 2-12 mm

Shear stirrups = 8 mm Ø 2 legged @ 210 mm c/c

Side face reinforcement= 1-10 mm Ø on each face

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(3) 180751/030751/753

(4680)

(4) 180751/030751/753