

Diploma in Civil Engineering

Term-End Examination

June, 2010

00515

BCE-045 : CONSTRUCTION DRAWING

Time : 2 hours

Maximum Marks : 70

Note : Part 'A' is to be attempted on answer script and Part 'B' on drawing sheet. Use of calculator is allowed. Assume suitable data wherever necessary.

PART-A

Attempt *any five* questions from the following :

1. Why standard abbreviations are used in drawings ? 7
Give abbreviations for the following terms :
 - (a) With respect to
 - (b) Checked
 - (c) Centre to centre
 - (d) etcetra
 - (e) Flooring
 - (f) country cut teak wood and
 - (g) Constant

2. (a) Describe different types of lines with their applications. 3½
(b) What are standard categories of scales. 3½

3. Design a lime concrete footing for a 250 wall carrying a load of 100 kN/m run. Safe bearing capacity of soil = 110 kN/m² Angle of repose of soil = 28° and Unit weight of soil = 17 kN/m³. 7
4. (a) What is a strap footing ? Explain it's function when one of the column lies on the property line and is lightly loaded as compared to other interior column. 3
- (b) Show the reinforcement details of slab and beam separately in above mentioned footing of Q 4 (a) with the help of neat Drawings. 4
5. (a) What is a pile foundation ? Explain when pile foundations are provided. 3½
- (b) Show the specifications of dimensioning of a double under reamed footing. 3½
6. Sketch the plan and elevation of a dog legged stair case. 7
7. Define welds and mention their various types. Draw/sketch all types of welded joints. 7
8. (a) Why a steel truss is preferred to wooden trusses ? 3½
- (b) Write differences between Howe Truss and Pratt truss. 3½

PART-B

Attempt Q No. 9 which is compulsory and attempt *any one* question from the remaining. Adopt suitable scale and mention clearly.

9. Draw the sectional elevation of a strip footing for an external concrete wall of thickness 300 mm. The footing is provided at a depth of 1.80 m below the ground level. Plinth level is 0.50 m above the Ground. The Design details are as under : 10
- Width of footing = 2.50 m
 - Overall depth of footing = 475 mm
 - Depth of footing at edges = 175 mm
 - Tensile reinforcement in footing – 12 ϕ HYSD Bars @ 120 c/c
 - Distribution reinforcement in footing 10 ϕ HYSD Bars @ 200 c/c
10. A combined rectangular footing with a strap beam connects two RCC columns of size 300 mm square which carry equal loads. Design, details are as under :
- Size of footing = 1.5 \times 6.0 m
 - Overall depth of footing = 300 mm
 - Main Tensile reinforcement – 10 ϕ HYSD @ 200 c/c
 - Distribution reinforcement – 10 ϕ HYSD @ 200 c/c
 - Overall depth of beam – 600 mm
 - Width of beam – 400 mm
 - Tension reinforcement of beam – 4 nos. – 22 ϕ HYSD

- Tension reinforcement in cantilever portion
- 2 nos.-22 ϕ HYSD
- Shear reinf. throughout beam – 8 ϕ 4 legged stirrups @ 250 c/c

Prepare the following structural working drawing for the combined rectangular footing.

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|-----|--|----|
| (a) | Plan of rectangular combined footing | 5 |
| (b) | L – section of strap beam | 10 |
| (c) | Cross section of footing | 10 |
| 11. | (a) A doubly reinforced rectangular beam is provided over a door opening of clear size 3×2.5 m. Draw the longitudinal and cross section of the beam with the following details : | 10 |
| | <ul style="list-style-type: none"> • Clear span of beam – 3.00 m • Overall depth of beam – 250 mm • Width of beam – 500 mm • Tensile reinforcement 4 – 12 ϕ • Compression reinforcement 2 – 10 ϕ • Shear reinforcement 4 nos. 6 ϕ – 2 legged stirrups @ 100 c/c at each end and nominal shear reinforcement in remaining part. | |
| | (b) A single leaf double panelled wooden door of size 1.20×2.15 m with plywood panel inserts of 12 mm thickness is provided in a room of a residential building. | |
| | (i) Draw the elevation of door | 10 |
| | (ii) Draw the sectional plan of door | 5 |