

Diploma in Civil Engineering

Term-End Examination

December, 2007

BCE-045 : CONSTRUCTION DRAWING

Time : 2 hours

Maximum Marks : 70

Note : Part A is to be attempted on answer scripts 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. Describe the standard layout of a drawing sheet for complete visualisation of the drawing. 7

2. (a) Why are standard abbreviations used in drawings ?
Are these abbreviations written in capital or italic letters ? 2
- (b) Give the standard abbreviations for the following :
Approved, Auxiliary, Centre to Centre, Checked,
Horizontal, Miscellaneous, Left Hand Side, Indian
Standard, Internal, Foundations. 5

3. Design the foundation for a 250 mm thick brick masonry wall carrying a load of 120 kN/m run with lime concrete base. Given the following data :
Safe Bearing Capacity of soil = 110 kN/m²

- Angle of repose of soil = 28°
- Unit weight of soil = 17 kN/m^3 7
4. (a) Show through a neat sketch the critical section for punching shear for an isolated column footing. 3
- (b) Explain the general specifications for isolated and combined footings. 4
5. Sketch the various types of framing joints for the construction of doors and window frames. 7
6. Mention the various types of staircases. Explain the features of any one type of staircase with the help of neat sketches in plan and elevation. 7
7. Why are steel roof trusses preferred to wooden trusses? Mention the various types of steel roof trusses with the help of neat line diagrams. 7
8. Define a two way reinforced concrete slab. Show the details of its typical reinforcement in plan and sectional elevation of such a slab. 7

PART B

Attempt question number 9 which is **compulsory** and any **one** question from the remaining. Adopt suitable scale.

9. Draw the sectional elevation of a strip footing for an external masonry wall 345 mm thick provided at a depth of 1.2 m below the ground level. Plinth level is 0.5 m above the ground. The design data is given below : 10
- Width of the footing 1.6 m
 - Depth of the footing 240 mm
 - Depth of footing at the edges 150 mm
 - Tensile reinforcement 12 ϕ HYSD bars @ 90 c/c
 - Distribution reinforcement 8 ϕ HYSD bars @ 300 c/c
10. (a) A singly reinforced rectangular beam is provided over the door opening of size 4.25 m \times 2.5 m (clear) of a Garage. Draw the longitudinal and cross-section of the beam for the following data : 10
- Clear span of the beam 4.25 m
 - Overall depth of the beam 350 mm
 - Width of beam 250 mm
 - Tension reinforcement 3 – 20 ϕ HYSD bars
 - Shear reinforcement 4 Nos – 8 ϕ HYSD – 2 legged stirrups @ 150 c/c at each end and 225 c/c in the remaining part.
- (b) A double leafed fully glazed wooden window of size 0.9 m \times 1.2 m is provided in the kitchen of a house.
- (i) Draw the elevation of the window. 10
 - (ii) Draw the sectional plan of the window. 5

11. (a) A T-beam floor is provided over the library of a college building. Draw the longitudinal and cross-section of the T-beam given the following data : 10
- Effective span of the beam 5.0 m
 - Overall depth of the beam 400 mm
 - Width of the beam 230 mm
 - Depth of flange of the T-beam 110 mm
 - Tensile reinforcement 4 – 16 ϕ HYSD bars
 - Shear reinforcement 8 ϕ – 2 legged stirrups @ 160 c/c upto 0.5 m at each end and 250 c/c in the remaining part.
- (b) A double panelled wooden casement window of size 1.0 m \times 1.2 m is provided in the store of a house.
- (i) Draw the elevation of the window. 10
 - (ii) Draw the sectional plan of the window. 5