

**DIPLOMA IN CIVIL ENGINEERING DCLE(G) /
DCLEVI**

Term-End Examination

00765

December, 2014

BCE-045 : CONSTRUCTION DRAWING

Time : 2 hours

Maximum Marks : 70

Note : *Part A is to be attempted on the answer script and
Part B on the drawing sheet. Use of calculator is
allowed.*

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. Give the symbols for the following : 7×1=7
 - (i) Brick work
 - (ii) Concrete
 - (iii) Wood in cross-section
 - (iv) Wood in horizontal section
 - (v) Ground level
 - (vi) Earth
 - (vii) Stone

3. Design a lime concrete footing for a 250 mm thick brick masonry wall carrying a load of 100 kN/m. 7

Given :

Safe bearing capacity of the soil = 1100 kN/m²

Angle of repose of the soil = 28°

Unit weight of the soil = 17 kN/m³

4. Show by means of neat sketches the critical section for bending moment, one way shear and punching shear in case of an isolated column footing. 7
5. Explain by means of neat sketches the various types of framing joints and mention where they are used. 7
6. Mention the various types of wooden roof trusses. Show any two by means of neat line sketches and name the various members of both these trusses and also mention the maximum recommended span in both the cases. 7
7. Why are curved roofs sometimes preferred to flat roofs ? 7

PART B

Attempt question number 8 which is **compulsory** and attempt any **one** question from the remaining. Adopt suitable scale and any missing data wherever required.

8. Prepare a spread foundation for a brick masonry external wall with cement concrete base for the following data : 12

Thickness of the masonry wall = 230 mm

Width of the footing = 1.400 m

Depth of the footing below G.L. = 0.4 m

9. (a) Draw the Sectional elevation of a rectangular R.C.C. footing of size 2.0 m × 2.2 m for a rectangular R.C.C. column of size 300 mm × 400 mm provided at a depth of 1.4 m below the ground level for the following design data :
- Longitudinal bars of the column 8 – 20 ϕ HYSD
 - Lateral ties of the column 8 ϕ HYSD @ 250 c/c
 - Overall depth of the footing 450 mm
 - Depth of the footing at the edges 150 mm
 - Reinforcement of the footing 12 ϕ HYSD @ 175 mm c/c both ways. 12

(b) A doubly reinforced rectangular beam is provided over a door opening of size 4.0 m \times 2.5 m clear. Draw the longitudinal and cross-section of the beam for the following data :

- Clear span of the beam : 4.0 m
- Overall depth of the beam : 350 mm
- Width of the beam : 250 mm
- Tension reinforcement : 4 bars 16 ϕ HYSD
- Compression reinforcement : 2 bars 12 ϕ HYSD
- Shear reinforcement : 6 ϕ – 2 legged vertical stirrups @ 120 c/c in outer one-fourth lengths and @ 250 mm c/c in the middle portion. 11

10. The size of an office floor is 3.3 m \times 5.8 m effective. The floor is designed as a two-way reinforced slab simply supported on all its four edges with the corners prevented from lifting up. The design data is as below :

- Depth of the slab – 110 mm
- Reinforcement along short span – 10 ϕ HYSD bars @ 200 c/c
- Reinforcement along long span – 8 ϕ HYSD bars @ 250 c/c

Prepare the structural drawing for the floor as follows :

- (a) Section of the floor along short span
- (b) Section of the floor along long span 23