BCE-045

Diploma in Civil Engineering

Term-End Examination

June, 2008

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. Show the different formats of dimensioning on a drawing by means of neat sketches. 7

2. (a) Give the symbols for the following electrical installations : $3\frac{1}{2}$

Socket outlet 2 pin 5 Amp.

Two Way Switch

Earth point

Double Fluorescent Light

Exhaust Fan

Ceiling Fan

Batten Lamp Holder

(b) Give the symbols for the following sanitary installations : $3\frac{1}{2}$

Shower Head

Pedestal Lavatory Basin

Corner Lavatory Basin

Kitchen Sink with single drain board

Indian Type W.C.

Urinal stall

W.C. low tank

3. Design the foundation for a 250 mm thick brick masonry wall carrying a load of 150 kN/m run with cement concrete base. Given the following data : 7

Safe bearing capacity of soil = 125 kN/m^2

Angle of repose of the soil = 30°

Unit weight of soil = 17 kN/m^3

4. (a) What is a strap footing ? Explain its function when out of the two columns one lies on the property line and is very lightly loaded as compared to the other interior column. 3

(b) Show the reinforcement details of slab and beam separately in case of the above strap footing. 4

5. Mention the various types of wooden lengthening joints. Explain the features of any one such joint in which metal fish plates are used. 7

6. Mention the various types of wooden trusses. Give the line diagram of each one mentioning various members and spans upto which it can be used. 7

7. Define a one way reinforced concrete slab. Show the details of its typical reinforcement in plan and sectional elevation of such a slab. 7

8. Show by a neat sketch sectional plan of a double leafed fully glazed wooden window 0·90 m in width. 7

PART B

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

9. Draw the sectional elevation of a strip footing for an internal concrete wall of 300 mm thickness provided at a depth of 1·25 m below the ground level. Plinth level is 0·5 m above the ground. The design data is given below :

Width of footing – 3·0 m

Overall depth of footing – 600 mm

Depth of footing at the edges – 150 mm

Tensile reinforcement in the footing – 16 ϕ HYSD bars @ 80 c/c

Distribution reinforcement in the footing – 12 ϕ HYSD bars @ 160 c/c *10*

10. The size of an office floor is 3·5 m × 6 m effective. The floor is designed as a two-way reinforced slab simply supported on all its four edges with corners prevented from lifting up. The design data is given below :

Overall depth of slab – 160 mm

Reinforcement along short span – 10 ϕ HYSD bars @ 190 c/c

Reinforcement along long span – 8 ϕ HYSD bars @ 220 c/c

Prepare the working structural drawing for the floor as follows :

(i) Section of floor along short span *8*

(ii) Section of floor along long span *8*

(iii) A plan of the floor showing torsional reinforcement at corners in the plan. *9*

11. A T-beam floor of effective size 5 m × 10 m of an office building consists of an R.C.C. slab spanning between ribs spaced at 2·5 m c/c. The effective span of the beam is 5 m. Design data is given below :

overall depth of floor slab	110 mm
tensile reinforcement of the slab	8 ϕ HYSD bars @ 160 c/c
distribution reinforcement of slab	6 ϕ bars @ 330 c/c
overall depth of beam	400 mm
width of beam	250 mm
tensile reinforcement of beam	4 – 20 ϕ HYSD bars
shear reinforcement of beam	8 ϕ HYSD-2 legged stirrups @ 160 c/c 5 Nos. at each end, and nominal shear reinforcement in the remaining part

Prepare the working structural drawing of the T-beam floor as follows :

(i) Plan of the floor. *5*

(ii) Longitudinal section of the T-beam. *10*

(iii) Longitudinal section of the floor such that the cross-section of the beams is seen. *10*