4623

BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2018
DCE—FIFTH SEMESTER EXAMINATION

CIVIL ENGINEERING DRAWING—II

Time : 3 hours]   [*Total Marks* : 60

PART—A   4×5=20

Instructions : (1) Answer **all** questions.

(2) Each question carries **four** marks.

(3) Any missing data may be assumed suitably.

(4) This part need not be drawn to scale.

1. Draw the cross-section of an RCC slab culvert to the given particulars :

Width of vent way = 2 m

Width of CC foundation bed = 1·5 m

Thickness of foundation bed = 0·45 m

Bottom level of abutment = top of CC bed = +58·00 m

Top level of abutment = +60·40 m

Bottom width of abutment = 0·9 m

Both sides vertical and height upto stream
bed level of RL = +59·00

Top width of abutment = 0·6 m

Water face is vertical and earth filling side has batter
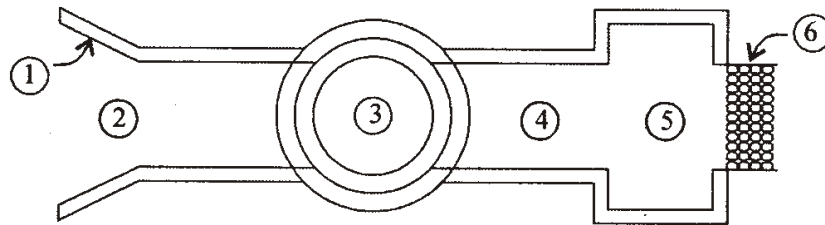
Thickness of RCC slab = 0·4 m

2. Name the parts numbered from 1 to 6 of the following figure (tank sluice with tower head) :

3. Draw the cross-section of a wash basin fixed to wall at a height of 750 mm with the following data :

    Height of the room = 3000 mm

    Slab thickness = 150 mm

    Size of wash basin = 600 mm × 400 mm

4. Draw the elevation of wing wall with return wall to the abutment of a bridge :

    Bed level = +54·00 m

    Road level = +58·00 m

    Top level of return = +56·00 m

    Natural ground level = +55·00 m

    Projected horizontal length of wing wall from
                         the end of abutment = 3000 mm

    Length of return wall = 2000 mm

    Splay of wing wall = 1 : 1

    Width of wing wall = 550 mm uniform

5. Draw the LS of a canal drop as a sketch to show at least five components.

PART—B   25+15=40

Instructions : (1) Answer **all** questions.

(2) Figures in the margin indicate marks.

(3) Any missing data may be assumed suitably.

(4) This part needs to be drawn in given scale.

6. Draw the following views of a surplus weir for a tank with the given specifications to a suitable scale :

(a) Half plan at foundation and half plan at top   10

(b) Half sectional elevation and half front elevation   15

(1) Hydraulic particulars :

TBL = +106·20 m

Width of tank bund = 1·20 m

MWL = +104·20 m

FTL = +103·50 m

GL on U/s of weir = +103·00 m

GL on D/s of weir = +102·50 m

Side slopes of tank bund = 2 : 1 on both U/s and D/s

(2) Weir wall/Body wall :

Length in between abutments = 40 m

Crest level = @ FTL

Width at bottom = 1·20 m

Width at top = 0·60 m with equal batter on both

the sides

Width of CC bed = 1·80 m with equal offset on

either side

Top level of CC foundation = +101·80 m

Bottom level of CC foundation = +101·20 m

CC foundation for abutments, wing walls and returns both on U/s and D/s shall be provided at the same level (top level and bottom level) as that of CC foundation for weir wall.

(3) Abutments :

       Width at bottom = 1·80 m

       Width at top = 0·6 m

       Water face vertical and battered on earthen side

       Length of abutment = width of tank bund = 1·2 m

       CC foundation at top level = +101·80 m

       CC foundation at bottom level = +101·20 m

       Concrete offset = 300 mm

       Top level of abutment = TBL = +106·20 m

(4) Wing walls :

Upstream side :

       Projected length = 4·0 m from bottom of weir wall

       Splay = 1 in 5

       Width at bottom = 1·80 m at the junction with the abutment and rear face of wing wall gradually narrows so that the width at bottom is 0·9 m at the junction with return walls

       Top width = 600 mm with water face vertical and battered on earthen side

Downstream side :

       Projected length = 5·0 m from bottom of weir wall

       Splay = 1 in 4

       Width at bottom = 1·8 m and the rear side is parallel to front side (thickness of bottom is uniform throughout wing wall and return on D/s)

       Width at top = 600 mm with water face vertical and battered on earthen side

       CC foundation top level = +101·80 m

       CC foundation bottom level = +101·20 m

       Concrete offset = 300 mm

(5) Return walls :

Upstream side :

Length = 3·20 m as measured on the outer face of the wall

Top level = +104·50 m

Width at bottom = 900 mm

Width at top = 600 mm with water face vertical and battered on earthen side

Downstream side :

Length = 3·20 m as measured on the outer face of the wall

Top level = +104·00 m

Width at bottom = 1·80 m

Width at top = 600 mm with water face vertical and battered on earthen side

Foundation concrete for return walls is same as that of wing walls

i.e., top level = +101·80 m; bottom level = +101·20 m with 300 mm offset

(6) Revetment :

A slope of 1½ : 1 is adopted to connect bund from top of return walls to GL both on U/s and D/s at the end of returns.

Horizontal stone masonry apron with 300 mm size boulders is provided on the D/s over the length of wing wall.

7. Draw the plan of a sanitary block consisting of 4 nos. of water closets; 5 nos. of bowl-type urinals; 5 nos. of bathrooms; 4 nos. of wash basins to a scale of 1 : 50 with the following specifications : 15

Inside dimensions of sanitary block = 11·28 m × 6·55 m

Thickness of wall all round the sanitary block = 300 mm

Size of bathrooms = 1400 mm × 2000 mm

Size of water closet = 1500 mm × 1200 mm

Width of each urinal = 450 mm

Thickness of walls for bathrooms and water closets = 100 mm

Size of door for bath and WC = 700 mm × 1700 mm

Size of window = 750 mm × 1000 mm

Size of main door = 1000 mm × 1800 mm

Size of ventilator = 600 mm × 250 mm

Provide ventilators for each bath, water closet and 2 nos. for urinal block.

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