



c09-c-407

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BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2017

DCE—FOURTH 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. Sketch the cross-section of pipe along with bedding and benching of a pipe culvert with the following data :

Internal diameter of CC pipe 1·2 m

Thickness of pipe 0·1 m

No. of pipes 1

Thickness of bedding for the pipe 250 mm CC

Width of concrete bed 2000 mm

Thickness of concrete benching 350 mm

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2. Draw the cross-section of abutment of an RCC bridge from the following data :

Bottom level of CC foundation bed +49.30

Top level of CC foundation bed +49.70

Bed level of canal +50.00

Bottom level of RCC slab +53.00

Width of bed block 600 mm

Thickness of bed block 150 mm

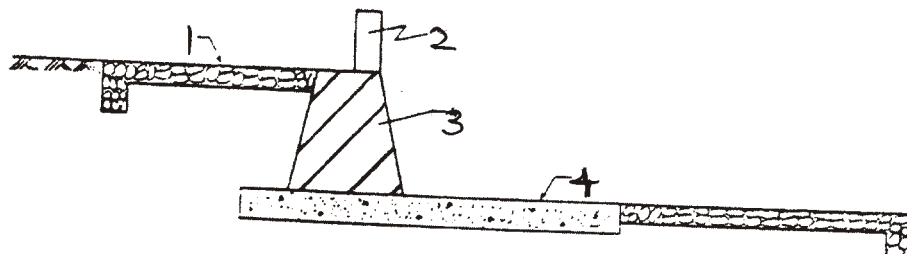
Bottom width of abutment 1300 mm (same width up to BL)

Top width of abutment 600 mm at bed block level with water face vertical

Width of CC bed 1700 mm

3. Draw the cross-section across a bowl-type urinal fitted to wall 230 mm wide and 2.10 m high. Assume standard size for bowl of urinal is at a height of 610 mm from floor level. At bottom of the urinal outlet horn is provided for connecting the urinal to the soil pipe through a floor trap. Urinals shall be flushed with hand operated cistern.

4. The longitudinal section of canal drop is shown in figure below. Name the parts numbered from 1 to 4 :



5. Draw the cross-section of a homogeneous earthen bund with the following specifications :

Top width of bund 1.5 m

TBL +57.00

General ground level +50.00

Stripped ground level +49.70

Side slopes $1\frac{1}{2} : 1$ on U/S and $2 : 1$ on D/S

Key trenches 1.2 m wide and 0.6 m deep at 4.0 m C/C

Protection of upstream face of bund 300 mm rough stone revetment is provided on upstream face over gravel backing of 150 mm thick, stone revetment supported on 1.0 m wide and 1.0 m deep.

PART—B

25+15=40

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

(2) Any missing data may be assumed suitably.

(3) This Part need not be drawn to given scale.

6. Draw the sectional elevation of a square RCC overhead tank to a scale of 1 : 50 with the following specifications :

Height of the tank 9.00 m

(From GL to bottom of the tank, i.e., top of floor slab)

Size of tank 5.00 m 5.00 m 1.75 m

Thickness of RCC sidewalls 200 mm

Thickness of RCC base/floor slab 200 mm

Thickness of RCC roof slab 110 mm

Size of RCC column 400 mm 400 mm

No. of RCC column 4 numbers (one at each corner)

Size of RCC brace beams 400 mm 350 mm

Spacing of brace beams 3.00 m C/C

Depth of RCC footing below GL 2.00 m

Size of footing at base 1.60 m 1.60 m
 Thickness of footing at column face 500 mm
 Thickness of footing at the end 200 mm
 Thickness of levelling course below footing 200 mm (1:4:8)
 plain concrete
 Size of ring beam below base slab 400 mm 450 mm
 Diameter of inflow pipe 100 mm
 Diameter of outflow pipe 75 mm
 Size of manhole cover 600 mm 450 mm

Show the pipe connections, ladder, water level indicator, ventilating arrangements, etc. 25

7. Draw the half-plan at foundation and half-plan at top of a surplus weir to a scale of 1:50 with the following specifications : 15

(a) Hydraulic particulars :

TBL 56 20
 Width of tank bund 1 20 m
 MWL 54 20
 FTL 53 50
 GL on U/S of weir 53 00 (in the tank)
 GL on D/S of weir 52 50
 Side slopes of tank bund 2:1 on both U/S and D/S

(b) Weir/body wall :

Length in between abutments 40 m
 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

CC foundation for abutments, wing walls and returns both on U/S and D/S shall be provided at the same level at that of CC foundation for weir wall.

(c) 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 20 m

Concrete offset 300 mm

(d) Wing walls :

Upstream side :

Projected length 4 0 m from bottom weir wall

Splay 1 in 5

Width at bottom 1 8 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 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 the wing and return on D/S

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

Foundation offset 300 mm

(e) Return walls :

Upstream side :

Length 3 20 m as measured on the outer face of the walls

Top level 54 00

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 54 00

Width at bottom 1 80 m

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

Foundation offset 300 mm

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

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