C09-C-407

3428

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

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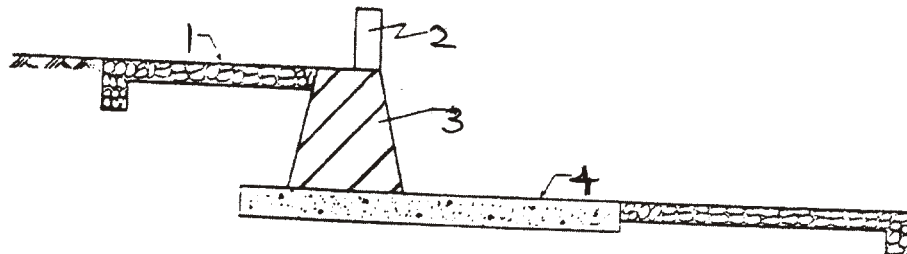
5. Draw the cross-section of a homogeneous earthen bund with the following specifications :

Top width of bund   1·5 m

TBL   +57·00

General ground level   +50·00

Stripped ground level   +49·70

Side slopes   1½ : 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   60 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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