6625

BOARD DIPLOMA EXAMINATION, (C-16)

JUNE/JULY—2022

DCE - FIFTH SEMESTER EXAMINATION

CIVIL ENGINEERING DRAWING - III

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 suitably assumed.

(4) *Part—A* need not to drawn to scale.

1. Draw the plan of two span (3·0 m) RCC T-beam bridge and label the components.

2. Draw a plan of a water closet of size 1·5 m × 1·2 m with squatting in type provide suitable ventilators and door.

3. Draw the cross-section of an empty soak pit :

   Diameter (internal) = 1000 mm

   Circular lining = 230 mm thick brick lining with dry joints

   Total depth of pit = 1·8 m

   General GL = 450 mm below roof slab

   Inlet pipe with bent = 75 mm diameter and kept at 250 mm below GL

   Roof covering = covered with removable precast concrete slab 70 mm thick

4. Sketch the cross-section of homogenous earth bund and label any four parts.

5. Draw the cross-section of body wall of surplus weir with following data :

Crest level = at FTL

FTL = +54·50

Top level of cc bed = +52·80

Bottom level of the cc bed = +52·20

Body wall bottom width = 1·2 m

Body wall top width = 0·6 m with equal batter on both sides

An offset of 300 mm is provided to the CC bed on both sides of the body wall.

PART—B 25+15=40

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

(2) Any missing data may be suitably assumed.

(3) *Part—B* must be drawn to scale.

6. Draw the plan and longitudinal section of a septic tank to a scale of 1 : 50 from the given specifications. 10+15

Specifications :

Internal dimensions =2000 mm × 6000 mm

Height of tank = 2·5 m including free board of 300 mm

Brick masonry wall thickness = 400 mm, 1·5 m height from bottom and 300 mm for the remaining height. (Off set on outer side of wall)

Thickness of C.C bed (1 : 3 : 6) = 500 mm

Thickness of R.C.C roof panels = 100 mm and width 450 mm fitted with bent handles for lifting.

Baffle wall = RCC baffle 100 mm thick and 750 mm height is provided at a distance of 700 mm from the outlet end

Scum board = R.C.C scum board of 100 mm thick and 800 mm height is provided at a distance of 1000 mm from the inlet end and 200 mm clearance at top

Inflow and outflow pipes = 100 mm diameter tee shaped pipes

Vent pipe = 50 mm diameter AC pipe with CI cowl extending to a height of 2 m above GL

Masonry pedestal = 450 mm diameter circular brick masonry pedestal shall be provided around the vent pipe up to GL

General ground level = 300 mm above top of RCC precast roof panels.

7. Draw the longitudinal section of a tank sluice with tower head to a scale of 1 : 50   15

(1) Tank bund :

Top width = 1·8 m

TBL = +164·500 m

MWL = +163·000

FTL = +162·300

Bed level = +160·100

Side slopes = 1½ : 1 and U/s and 2 : 1 on D/s

(2) Tower head :

Internal diameter = 1·2 m

Top level RCC slab = +163·000

Thickness of RCC slab = 200 mm

Thickness of well steining = 450 mm from top to a depth of 2 m and 600 mm for the remaining height

Opening = 600 mm diameter opening is provided in the CC diaphragm 75 mm thick for allowing water into the barrel

Shutter = Wooden shutter 750 mm wide, 1500 mm depth and 50 mm thick is provided for regulating water

Foundation for well = 3·0 m diameter and 600 mm thick

(3) Sluice barrel :

Internal dimensions = 750 mm wide × 1000 mm height

Roof of barrel = RCC roof slab 150 mm thick at +161·250

Side walls of the barrel = 450 mm thick at top and 600 mm thick at bottom with water face vertical

CC foundation = 450 mm thick and 2550 mm wide is laid under barrel

(4) Lead chamber :

Length of wing walls = 1·8 m (horizontal distance)

Distance between wing walls inside to inside at receiving end = 2·0 m

Thickness of walls = 450 mm at the top and 600 mm at bottom with water face vertical

Profile of wing walls = Wing walls start from + 161·250 (top of barrel slab) at the entrance of the barrel and slopes down to the bed level +160·10. The slopes from GL to bed level are 1½ : 1.

(5) Stilling cistern :

Internal dimensions: 3·0 m × 3·0 m

Side walls = All the side walls including the outer wall having an opening of 600 mm for discharging water into field channel are 600 mm thick at bottom and 450 mm thick at top, having batter on rear side. These walls are taken to canal bund level +161·75.

(6) Retaining walls on barrel roof slab to protect earthen bunds :

Masonry retaining walls of uniform thickness 450 mm are constructed on either side of barrel roof so as to protect the slopes of earthen bunds and to prevent any possibility falling earth into lead chamber on U/S side and into stilling cistern on D/S side.

Top level of retaining wall on U/S = +161·50 and on D/S = +161·75.

4

(7) Canal particulars :

Bed width = 600 mm

Slide slopes = 1 : 1 on water side and 1½ : 1 on rear side up to GL

Bed level = +160·10

Width of canal bund = 900 mm

Canal bund level = +161·750

(8) Rough stone revetment :

   (i) 450 mm rough stone revetment is provided on U/s over 150 mm thick gravel backing from bed level to TBL

  (ii) Slides of canal are provided with 300 mm thick rough stone revetment over 150 mm thick gravel backing for a length of 1·5m. Bed pitching is also provided in canal to a length of 1·20 m with 300 mm size rough stone and a toe is provided at its end and taken to a depth of 600 mm below bed level of canal

     Width of toe = 300 mm.

(9) General ground level at the site = +160·50

★ ★ ★