3428

BOARD DIPLOMA EXAMINATION, (C–09)

JUNE—2019

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) Part—A need not be drawn to a scale.

1. Draw the plan of a square RCC overhead tank with the following data :

     Size of tank = 4·0 m × 4·0 m × 2·0 m

     Thickness of RCC side walls = 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 No. (one at each corner)

     Size of RCC brace beams = 400 mm × 350 mm

     Size of ring beam = 400 mm × 400 mm

     Size of footing at base = 1·6 m × 1·6 m

2. Sketch the cross-section of T-beam bridge of two spans showing CC bed, pier, T-beam, deck slab and wearing coat.

3. Draw the half bottom plan of slab culvert showing abutment, splayed wing wall with straight returns.

4. Sketch the cross-section of the tank bund which has top width 2·5 m, TBL = +58·00 and bottom level of bund i.e. stripped level = +48·00; GL = +48·50; side slopes = 2 : 1 on either side.

5. Name the parts numbered 1 to 4 of the tank sluice whose plan is shown below :
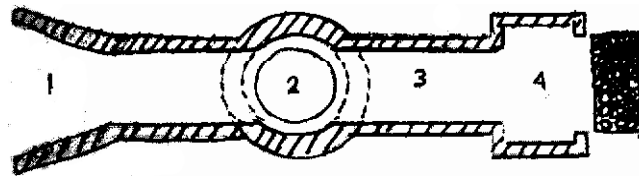
PART—B

Instructions :   (1) Answer **all** questions to a scale.

(2) Any missing data may be assumed suitably.

6. The following are the particulars for a pipe culvert. Read the particulars along with the specifications and draw the longitudinal section along pipe to a convenient scale :   25

  (i) Drain particulars :

  Bed level = +51·350
  Bed width near the pipe culvert = 1200 mm
  Side slopes of drain = 1 : 1
  General GL near the drain = +52·550

  (ii) Pipe details :

  Internal dia. of CC pipe = 1000 mm
  External diameter = 1200 mm
  Bedding for the pipe = 250 mm CC
  Benching for the pipe = 300 mm CC
  Width of both bedding and benching = 1800 mm
  Bottom level of CC bedding = +51·00
  No. of pipes = One

(iii) Head walls :

Length of head wall = 7200 m

Bottom level of head wall = +50·10

Level of CC bed provided under head walls = +50·10

Bottom level of CC bed provided under head walls = +49·80

Width of CC bed = 1800 mm

Bottom width of head wall = 1200 mm

Profile of head wall = Outer surface vertical and earth fill face
having a batter so that the top width =
450 mm; top level of head wall = +53·00

(iv) Earth fill and embankment :

Formation width = 10000 mm

Side slopes = 2 horizontal to 1 vertical

Formation level = +55·00

(v) Bed pitching :

200 mm rough stone bed pitching to a length of 1200 mm on
both U/S and D/S. A toe wall of same width to be taken to a
level of +51·00 at the end of bed pitching.

(vi) Side slope rivetment :

200 mm rough stone revetment along slopes to a length of
1200 mm on both U/S and D/S from bed level to general
ground level.

(vii) Guide stones on both the sides of formation :

450 mm × 450 mm square guide stones are provided at a
distance of 450 mm from extreme edges of formation. these
stones are taken to a depth of 600 mm below formation level
and extend to a height of 700 mm above formation level at
3000 mm C/C.

7. Draw the longitudinal section of a canal drop to a scale of 1 : 50 from the following specifications : 15

(i) Canal particulars

	U/S	D/S
Ground level at the site	+121·600	+121·600
Bed level	+121·000	+119·600
FSL	+121·500	+120·100
Canal Bund Level (CBL)	+122·100	+122·100
Canal bed width	1·60 m	1·30 m
Canal bund width	1·00 m	1·00 m
Canal slopes in cutting	1 : 1	1 : 1
Level of 1·0 m wide berm	+121·600	+121·600
Slopes in embankment :		
Water face	1·5 : 1	1·5 : 1
Rear face to connect GL	2 : 1	2 : 1

(ii) Body wall :

Top level = +121·000

Bottom level = CC foundation top level = 119·600

CC foundation level = +118·850

Top width = 600 mm

Bottom width = 120 mm with U/S face vertical

Length = 8·5 m

Width of CC foundation = 1·8 m with equal offset

(iii) Notch wall or notch pier :

Thickness of notch wall = 450 mm

Top level of notch wall = CBL =+122·100

No. of notches = 1 no.

Shape = Rectangle

Sill level of notch = U/S bed level

Width of notch = 1·0 m

(iv) CC apron on D/S of drop :

CC apron shall be provided in continuation with CC bed under body wall with same thickness. Length of CC apron from the edge of CC bed under body wall is 2·75 m. Top level of CC apron = +119·600, bottom level of CC apron = +118·850.

(v) Rough stone bed pitching :

On U/S : Bed pitching consists of 300 mm size stone boulders to a length of 1·5 m including toe.

On D/S : Bed pitching consists of 300 mm size stone boulders to a length of 3·5 m including toe.

(vi) Revetment to canal slopes :

U/S : Revetment is provided to the sides of canal from bed level to FSL to a length of 2·8 m. A slope of 1 : 1 is given at the end of revetment to connect the revetment with bed level.

D/S : Revetment starts from canal bund level at the notch wall and is taken to a level of +121·500 (FSL on U/S) at the end of CC apron in an inclined direction. From the end of CC apron, revetment is continued at the same level (+121·500) upto the end of rough stone bed pitching and vertically dropped to the level of +120·50. From this point revetment is continued at the same level for a distance of 3·0 m. Rough stone boulders of size 300 mm are used for revetment to canal slopes.

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