C16–C–506

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BOARD DIPLOMA EXAMINATION, (C–16)

NOVEMBER—2020

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 cross section of a pipe culvert from following data :
Diameter of pipe = 1·0 m
No. of Pipes = 2
Distance between centre of pipes = 1·7 m
Thickness of concrete bed = 150 mm
Concrete offset on either side = 200 mm
Thickness of concrete benching = 450 mm

2. Sketch cross section of an abutment of a T-beam and slab bridge with following data :
Road formation level = +102·50 m
Bottom level of RCC slab = +102·30
FSL = +101·50
BL = +100·000

Top level of CC bed for abutment = +99·00

Thickness of RCC slab = 200 mm

Depth of T-beam = 500 mm

Size of CC bed block = 600 mm × 600 mm × 150 mm

Top width of abutment = 700 mm

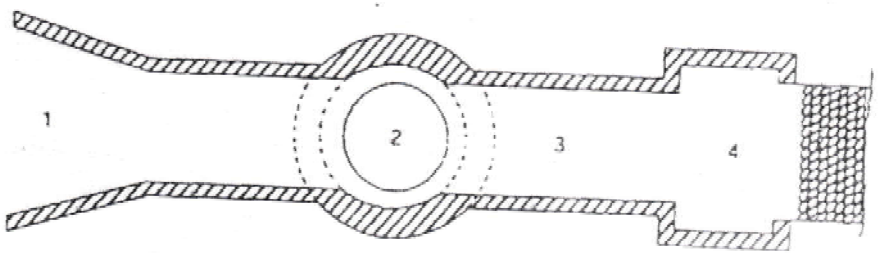
Bottom width of abutment = 1200 mm

Abutment batter on rear side above bed level and uniform width below bed level, width of CC bed = 1600 mm

Thickness of CC bed = 500 mm

3. Draw the plan of a septic tank from the following specifications.
Internal dimensions = 2 m × 1 m × 1·5 m
Brick masonry wall thickness = 230 mm
CC offset for masonry walls = 300 mm
Scum board and baffle wall of 100 mm thick are provided at 900 mm from the inlet and outlet end walls respectively.

4. Plan of Tank sluice is shown in the figure. Write the name of the parts from 1 to 4.



5. The abutment of a surplus weir has a top width of 0·75 m. TBL is +62·000. Top and bottom level of cc bed are +57·800 and +57·350 respectively. The abutment has a batter of 1 in 4 at water face and 1 in 6 at rear face. Offset of cc bed is 0·30 m on either side. Draw the cross section of the abutment.

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 sectional elevation of RCC over head tank to a scale of 1:50 with following details. 25

Height of tank above GL up to the bottom of the tank = 9 m

Size of tank = 5 m × 5 m × 2 m

Thickness of sidewalls = 200 mm

Thickness of base slab = 200 mm

Thickness of roof slab = 100 mm

Size of columns = 400 mm × 400 mm (4 nos)

Size of brace beams = 300 mm × 300 mm

Spacing of brace beams = 3 m C/C

Size of ring beams below the base slab = 300 mm × 350 mm

Size of RCC footing = 1·6 m × 1·6 m

Depth of RCC footing = 1·5 m below GL

Thickness of footing at column face = 500 mm

Thickness of footing at the end = 200 mm

Thickness of leveling course with CC (1 : 4 : 8) = 200 mm

CI Inlet pipe = 200 mm dia and outlet pipe = 150 mm dia

Diameter of washout pipe = 100 mm

Ventilating pipe = 200 mm dia

Overflow pipe at the bottom of the roof slab = 100 mm dia

Size of manhole cover = 600 mm × 400 mm

Also show the inlet pipe, outlet pipe, water level indicator, manhole, ladder, ventilating pipe, over flow pipe and wash out pipe etc.

7. Draw the cross section of a homogeneous earthen bund with the following specifications to a scale of 1:50. 15

Top width of bund = 2·0 m

TBL = +56·00

General ground level = +49·00

Stripped ground level = +48·70

Slide slopes 1½ : 1 on U/S and 2 : 1 on D/S

Key trenches = 1·2 m wide and 0·6 mm deep at 4·0 m C/C.

Protection to the upstream face of the bund :

The upstream face of the bund is provided with 300 mm thick rough stone revetment over 150 mm thick gravel backing. This revetment is founded on rough stone wall 1·0 m wide and 1·0 m deep.

Protection to a D/S toe of the bund :

A rock toe with 300 mm rough stone boulders is provided with 900 mm top width and top level being at +50·20.

Slope of rock toe = 1 : 1

Sand filter = 200 mm thick on rear side and at the bottom of the rock toe.

Toe drain = a longitudinal drain is provided with bottom width 1·0 m and slide slopes 1 : 1. This is in line with the outer surface of the rock toe and taken to a level of +48·00.

Rough stones of 300 mm thick are used for side revetment and bed pitching of toe drain.

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