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C14–C—507

# 4623

## BOARD DIPLOMA EXAMINATION, (C–14)

## OCT/NOV—2018

## DCE—FIFTH 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 section at support of an RCC slab bridge showing bed block and abutment cross-section and name the parts.

**2.** Draw the cross-section of a pipe in pipe culvert with the following data :

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 = +50·00

No. of pipes = one.

**3.** Draw the plan of a septic tank from the following specifications :

Internal diameter = 3·50 m × 1·20 m × 1·20 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.** The support wall of a canal regulator has a width of 0·45 m at top and 1·5 m at bottom. This wall is constructed over an RCC beam 300 mm thick. The top of the shutter is at +145·00 and the bottom of RCC working platform is at +147·00.

Thickness of RCC working platform is 200 mm.

Width of platform = length of pier = length of abutment = 2·0 m.

Assuming suitable gearing arrangements and guard rails, sketch the cross-section of supporting wall.

Bottom level of RCC beam under support wall = +142·70

Top level of concrete floor = +141·50 m

**5.** Draw the section across the barrel of a tank sluice with the following specifications :

Vent way : Width = 750 mm (internal)

: Height = 1000 mm (internal)

Side walls of barrel

in brick masonry : Thickness at top = 450 mm
Thickness at the bottom = 600 mm
(the water face is vertical)

Foundation : CC bed = 480 mm thick and 2550 mm wide

RCC roof slab for barrel = 150 mm thick.

## PART—B

25+15=40

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

(2) Figures in the margin indicate marks.

(3) Any missing data may be assumed suitably.

(4) This part needs to be drawn to the given scale.

**6.** Draw the following sectional views of a septic tank to a scale of 1 : 20 from the given specifications : 25

*(a)* Plan

*(b)* Longitudinal section

*Specifications :*

Internal dimensions = 900 mm × 2750 mm

Brick masonry wall thickness = 230 mm

Thickness of CC bed = 500 mm

CC offset of masonry walls = 300 mm

Depth of water = 1000 mm

Free board = 300 mm

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

Scum Board = RCC precast slab 75 mm thick fixed at a height of 300 mm from floor level and extending up to a height 150 mm below roof. This shall be fixed at a distance of 900 mm from inside of wall at inflow end into a groove of 75 mm deep.

Standing baffle = RCC precast slab 75 mm thick kept on floor at a distance of 600 mm from inside of wall at outflow end. The top of baffle shall be 150 mm below water level.

Inflow and outlet pipes = 100 mm dia tee-shaped pipes.

Vent pipe = 50 mm dia AC pipe with a cowl extending to a height of 2·0 m above GL.

Masonry pedestal = 450 mm dia circular brick masonry pedestal shall be provided around the vent pipe up to G.L.

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

**7.** Draw the longitudinal section of a 'Canal Drop' with the following specifications :

Canal particulars :

| | *Upstream side* | *Downstream side* |
|---|---|---|
| Ground level at site | +133·750 | +133·750 |
| Bed level | +133·20 | +132·00 |
| FSL | +133·65 | +132·45 |
| Canal bund level | +133·10 | +134·10 |
| Side slopes in cutting | 1:1 | 1:1 |
| Level of 1·0 m wide berm | +133·75 | +133·75 |
| Canal bed width | | |
| Slopes in embankment | 1·5 m | 1 : 2 m |
| water face | 1½ : 1 | 1½ : 1 |
| Rear face | 2 : 1 | 2 : 1 |

*Body wall* :

Top level = +133·200

Bottom level = CC foundation top level = +132·00

CC foundation bottom level = +131·25

Top width = 600 mm

Bottom width = 1000 mm with U/S face vertical

Width of CC foundation = 1·6 m with equal offset on either side

*Notch wall* :

Thickness of notch wall = 450 mm

Top level of notch wall (CBL) = + 134·00

*CC Apron on D/S drop* :

CC apron shall be provided in continuation with CC bed under body wall with same thickness (750 mm). Length of CC apron from the edge of CC bed under body wall is 3·0 m. Top level of cc apron = Bed level of canal on D/S = + 132·00

*Rough stone bed pitching* :

Upstream side : Bed pitching consists of 300 mm size stone boulders to a length of 1·5 m including toe.

Downstream side : Bed pitching consists of 300 mm size stone boulders to a length of 3·40 m including toe.

*Revetment to canal slopes* :

*(a)* Length on U/S side : Revetment is provided to the sides of canal from bed level to FSL for a length of 3·0 m with 300 mm size stone boulders. A slope of 1:1 is given at the end of side revetment to connect FSL and bed level.

*(b)* Downstream side : Revetment of D/S canal side slopes starts from canal bund level at the notch wall is taken to a level +133·65 (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 (+133·65) up to the end of rough stone pitching and vertically dropped to the level of +132·75.

From this point, revetment is continued at the same level for a distance of 3·40 m. 300 mm size rough stone boulders are used for revetment. The end of revetment is given a slope of 1:1 in order to reach canal bed on D/S.

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