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C09–C–407

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2016

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. Sketch the plan showing the pier of a bridge with semicircular cut and ease waters.

2. Draw the half-sectional elevation of the slab culvert of single span showing the abutment, deck slab, wearing coat, parapet, etc.

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

Size of tank = 4 m × 4 m × 1·5 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 (one at each corner)
Size of RCC brace beams = 400 mm × 350 mm
Size of ring beam = 400 mm × 400 mm
Spacing of brace beams = 3·0 m C/C
Size of footing at base = 1·6 m × 1·6 m

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. Draw the cross section of a barrel of the tank sluice with the following data :

Vent way = 0·90 m wide × 0·75 m deep
Width of the masonry side wall = 0·50 m at top
= 0·75 m at bottom
Foundation : Thickness of CC bed = 0·45 m with 0·3 m offset
Covering slab thickness = 0·15 m

PART—B

25+15=40

Instructions : (1) Answer **all** questions.
(2) Any missing data may be assumed suitably.
(3) Part—B need to be drawn to a scale.

6. Draw the longitudinal section of a septic tank to a convenient scale from the given specifications : 25

Internal dimensions = 2750 mm × 900 mm
Brick masonry wall thickness = 230 mm
Thickness of CC bed = 300 mm
CC offset for 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 the roof. This shall be fixed at a distance of 900 mm from inside of wall at inflow end into a grove 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 out flow 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. 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 GL
General ground level = 300 mm above top of RCC precast roof panels

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

1. *Canal particulars* :

	U/S	D/S
Ground level at the site	+120·600	+120·600
Bed level	+120·000	+118·600
FSL	+120·500	+119·100
Canal bund level (CBL)	+121·100	+121·100
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	+120·600	+120·600
Slopes in embankment :		
Water face	1·5:1	1·5:1
Rear face to connect GL	2:1	2:1

2. *Body wall* :

Top level	= +120·000
Bottom level	= CC foundation top level = +118·600
CC foundation level	= +117·850
Top width	= 600 mm
Bottom width	= 120 mm with U/S face vertical
Length	= 8·5 m
Width of CC foundation	= 1·80 m with equal offset

3. *Notch wall or Notch pier* :

Thickness of notch wall	= 450 mm
Top level of notch wall	= CBL = +121·100
No. of notches	= 1
Shape	= Rectangle
Sill level of notch	= U/S bed level
Width of notch	= 1·0 m

4. *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	= +118·600
Bottom level of CC apron	= +117·850

5. *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.

6. *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 +120·500 (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 (+120·500) up to the end of rough stone bed pitching and vertically dropped to the level of +119·50.

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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