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C09–C–**407**

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2015

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) This part need not be drawn to scale.

1. Sketch the cross-section of a pipe culvert with the following data :

Internal diameter of the pipe = 1·00 m

Thickness of pipe = 0·10 m

No. of pipes = 1

Thickness of concrete bed = 250 mm

Width of concrete bed = 1800 mm

Thickness of concrete benching = 300 mm

2. Draw the cross-section of an abutment of an RCC bridge from the following data :

Abutment :

Bottom level of CC foundation bed = +102·60
Top level of CC foundation bed = +103·100
Bed level = +104·00
Bottom level of RCC slab = 107·50
Width of bed block = 600 mm
Thickness of bed block = 250 mm
Bottom width of abutment = 900 mm
(same width up to bed level)
Top width of abutment = 600 mm at bed block level with water face vertical.

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

Internal dimensions = 3·50 m × 1·20 m × 1·20 m
Brick masonry wall thickness = 230 mm
CC offset for masonry walls = 300 mm

4. Draw the cross-section of a canal drop with the following specifications :

Specifications :

Ground level at site : +133·750
Bed level : +132·000
Canal bund level : +134·100
Canal bed width : 1·2 m
Side slopes in cutting : 1 : 1
Level of 1·0 m wide berm : +133·750
Side slopes in embankment :
Water face : 11/2 : 1
Rare face : 2 : 1

5. Sketch the longitudinal section of the body of wall of a canal drop with the following data :

Length of body wall = 8·0 m
Top of notch pier = +50·00
Top of body wall = +49·00
Top of CC foundation = +47·80
Bottom of CC foundation = +47·20

Notch = Trapezoidal shape with bottom with 0·6 m and side slopes 1 : 1.

PART—B

25+15=40

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

(2) Any missing data may be assumed suitably.

6. Draw the sectional at elevation and plan of a square RCC overhead tank to a scale of 1:100 with the following data :

Height of the tank = 9·0 m
(from GL to bottom of the tank i.e., top of floor slab or base slab)

Size of tank = 5 m × 5 m × 1·75 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

Nos. of RCC columns = 4

Size of RCC brace beams = 400 mm × 350 mm

Spacing of brace beams = 3·0 m C/C

Depth of RCC footing = 2·0 m below ground level

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

Thickness of footing at column face = 500 mm

Thickness of footing at the end = 200 mm

Thickness of leveling course below the footing = 200 m,
(1:4:8) plain concrete

Size ring beam below base slab = 400 mm × 450 mm

Dia. of inflow pipe = 100 mm

Dia. of outflow pipe = 75 mm

Size of manhole cover = 600 mm × 450 mm

Show the pipe connections, ladder water level indicator, ventilating arrangements, etc. Assume any other data suitably if needed.

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

Specifications :

Canal particulars :

	Upstream side	*Downstream side*
Ground level at site	+133·750	+133·750
Bed level	+133·200	+132·000
FSL	+133·650	+132·450
Canal bund level	+134·100	+134·100
Side slopes in cutting	1:1	1:1
Level of 1·0 m wide berm	+133·750	+133·750

Body wall :

Top level = +133·200

Bottom level (CC foundation top level) = +132·000

CC foundation bottom level = +131·250

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) = +134·000

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 = +132·000

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 sideslopes starts from canal bund level at the notch wall is taken to a level +133·650 (FSL on U/S) at the end of CC apron an inclined direction.

From the end of CC apron, Revetment is continued at the same level (+133·650) up to the end of rough stone pitching and vertically dropped to the level of +132·750.

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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