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C14-C–507

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BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2021

DCE - FIFTH SEMESTER EXAMINATION

CIVIL ENGINEERING DRAWING - II

Time : 3 hours] [*Total Marks* : 60

PART—A

5×4=20

Instructions : (1) Answer *any* **four** questions.

(2) Each question carries **four** marks.

(3) Need not be drawn to scale.

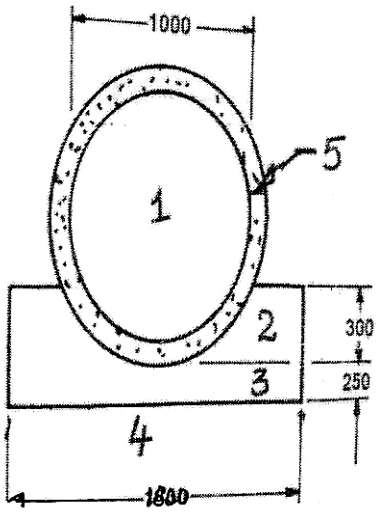
(3) Any missing data may be assumed suitably.

1. Draw the plan of a two-span (each 3·0 m) RCC T-beam bridge and label the components.

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. Name the parts numbered from 1 to 5 of the pipe culvert as shown in figure.



5. Draw the longitudinal section of a canal drop and name the parts.

6. Sketch the barrel of a tower head sluice from the following data :

Vent way	=	0·90 m wide × 0·75 m deep
Width of barrel side wall	=	0·5 m at top and 0·75 m at bottom
Foundation with CC	=	– 0·45 m thick with 0·3 m offset
RCC slab over barrel	=	150 mm thick

7. Draw the cross-section of a wash basin fixed to the wall at a height of 750 mm with the following data :

Height of the room	=	3000 mm
Slab thickness	=	150 mm
Size of wash basin	=	600 mm × 400 mm

PART—B

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

(2) Figures in the margin indicate marks.

(3) Any missing data may be assumed suitably.

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

8. Draw the sectional elevation of a square RCC overhead tank with the following data to a scale of 1: 50. 25

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

Size of tank = 4 m × 4 m × 2 m

Thickness of RCC side walls = 200 mm

Thickness of RCC base slab = 200 mm

Thickness of RCC roof slab = 100 mm

Size of RCC column = 400 mm × 400 mm

No. of RCC columns = 4 Nos (one at each corner)

Size of RCC brace beams = 300 mm × 300 mm

Spacing of brace beams = 3·0 m/cc

Depth of RCC footing below ground level = 1·5 m

Size of footing at base = 1·5 m × 1·5 m

Thickness of footing at column face = 500 mm

Thickness of footing at the end = 200 mm

Thickness of levelling course below the footing = 200 mm

Dia. of inflow pipe = 200 mm Dia. of outflow pipe = 150 mm

Dia. of scour pipe = 100 mm, Size of manhole cover = 600 mm × 450 mm

Overflow pipe at the bottom level of roof slab =100 mm. Show the pipe connections, ladder and ventilating arrangements.

OR

9. Draw the following views of a septic tank to a scale of 1 : 20 from the given specifications : 10+15=25

(a) Plan

(b) Longitudinal section

Specifications :

Internal dimensions	=	900 × 2750 mm
Brick masonry wall thickness	=	230 mm
Thickness of CC bed	=	500 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 roof. This shall be fixed at a distance of 900 mm from inside of wall at inflow and 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 outflow end. The top of baffle shall be 150 mm below water level.

Inflow and outlet pipes = 100 mm dia. T-shaped pipes Vent pipe = 50 mm dia. A.C pipe with cowl extending to a height of 2·0 m above G.L.

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.

10. Draw the longitudinal section of canal drop showing the following parts (need not be drawn to scale) 15

(a) Notch wall/pier

(b) U/S revetment to canal slopes

(c) CBL & GL U/S

(d) U/S & D/S toe walls

(e) Body wall

(f) CC apron D/S

(g) Rough stone bed pitching D/s

(h) CC bed under body wall

(i) FSL on both sides

(j) Bed level and ground level D/S

OR

11. Sketch the section of a homogeneous tank bund with the following data : 15

Top width	=	1.2 m
T.B.L	=	+ 62·00
G.L	=	+ 58·00
Stripped G.L	=	+ 57·60
Free board	=	1 m
Side slopes	=	11/2 : 1 on U/S & 2 : 1 on D/S
Key trenches	=	0·6 m × 1·2 m @ 4·0 m C/C
Revetment	=	300 mm size rough stone over 150 mm thick Gravel backing.
Toe drain	=	l m bed width and l m below GL with 1 : 1 side Slopes.

Toe wall under revetment = 1·0 m wide and 1·2 m deep

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