C16–C–**407**

5620

BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2018

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) This part need not be drawn to a scale.

(4) Assume suitable data, if necessary.

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

   Diameter of pipe = 1·0 m

   Thickness of pipe = 100 mm

   Number of pipes = 1

   Thickness of concrete bed = 200 mm

   Concrete offset on either side = 300 mm

   Thickness of concrete benching = 400 mm

2. Sketch the section at support of an RCC slab bridge showing bed block and abutment cross-section. Name the parts.

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

> Internal dimensions = 4 m×1·8 m×1·8 m
>
> Scum board = 75 mm thick precast slab at a distance of 900 mm from inflow end
>
> Brick masonry wall thickness = 300 mm
>
> Standing baffle = 75 mm thick precast slab at a distance of 600 mm from outflow end
>
> CC offset for masonry walls = 400 mm
>
> Inflow and outflow pipes = 100 mm T-shaped pipe

4. Draw the cross-section of barrel of a sluice to the given specifications :

> Sluice barrel = Internal dimensions
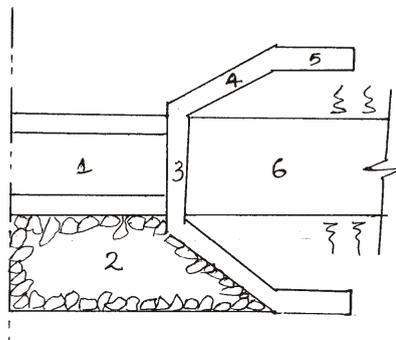>
> 600 mm wide×1200 mm height
>
> Roof for barrel = RCC roof slab 120 mm thick
>
> Side walls of the barrel = 600 mm thick at bottom and 450 mm thick at top.
>
> The water face is vertical
>
> Thickness of foundation : CC bed 500 mm thick and 3000 mm wide is provided under barrel

5. Half-plan at top of a surplus weir is shown in the figure below :

Name the parts numbered 1 to 6.

Instructions : (1) Answer **all** questions to a scale.

(2) Assume suitable data, if necessary.

6. Draw the sectional elevation and plan at tank level of an RCC overhead tank to scale of 1 : 100 with the following data : 20

Height of tank = 9 m

(From GL to bottom of tank, i.e., top of floor slab or base slab)

Size of tank = 5·50 m×5·50 m×1·60 m

Thickness of RCC side walls = 230 mm

Thickness of RCC base/floor slab = 220 mm

Thickness of RCC roof slab = 120 mm

Size of RCC column = 400 mm×400 mm

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

Size of RCC brace beams = 400 mm×400 mm

Spacing of brace beam = 3 mm c/c

Depth of RCC footing below GL = 2·20 m

Size of footing at base = 1·60 m×1·60 m

Thickness of footing at column face = 600 mm

Thickness of footing at the end = 200 mm

Thickness of leveling course below footing =
200 mm (1 : 4 : 8 PCC)

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

Diameter of inflow pipe = 100 mm

Diameter of outflow pipe = 75 mm

Size of manhole cover = 600 mm×450 mm

Show the pipe connections, ladder, water level indicator and ventilating arrangements.

7. Draw the longitudinal section of 'canal drop' from the following data to a scale of 1 : 50 :   20

(1) *Canal Particulars* :

	U/S	D/S
Ground level	+140·60	+140·60
Bed level	+140·00	+138·60
FSL	+140·500	+139·10
Canal bund level	+141·100	+141·00
Canal bed width	1800 mm	1500 mm
Side slopes in cutting	1 : 1	1 : 1
Level of 1 m side beam	+140·60	+140·60
Slopes in embankment		
water face	1½ : 1	1½ : 1
Rear face to connect GL	2 : 1	2 : 1

(2) *Body Wall* :

Top level	140·00
Bottom level	CC foundation top level +138·60
	CC foundation bottom level +137·850
Top width	600 mm
Bottom width	1200 mm, U/S face vertical
Length	8·50 m
Width of CC foundation	1900 mm with equal offset

(3) *Notch Pier* :

(i) Thickness = 450 mm

(ii) Top level of notch pier = TBL + 141·100

(iii) One no. of stepped notch is provided at center

Sill level = Bed level of canal of U/S

(iv) Notch dimensions

0·55 m   +141·100

0·55 m

0·6 m   +140·100
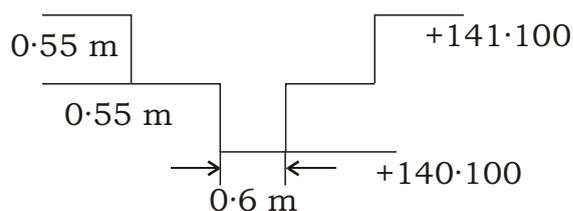
(4) *CC Apron on D/S* :

Provided in continuation of CC bed of body wall with same thickness :

Length of CC apron   2·75 m

Top level of CC apron   +138·60 m

Bottom level of CC apron +137·850 m

(5) Rough stone bed pitching on U/S with 300 mm size stone boulders to a length of 1·5 m including toe wall of depth of 600 mm.

Rough stone bed pitching on D/S with 300 mm size stone boulders to a length of 4 m including toe wall of depth of 600 mm.

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 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) Length on D/S side : Revetment for downstream canal side slopes starts from canal bund level at the notch wall and is taken to a level +140·500 at the end of CC apron in an inclined direction. It continuous at the same level till end of rough stone pitching and dropped vertically to a level of 139·500 from this point. It is continued at the same level for 3 m distance. 300 mm boulders are used for revetments. At the end of revetment is given a slope of 1 : 1 to reach canal bed level on D/S.

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