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BOARD DIPLOMA EXAMINATION, (C-16)

MAY/JUNE—2023

DCE - FIFTH SEMESTER EXAMINATION

CIVIL ENGINEERING DRAWING—III

Time : 3 Hours]

[Total Marks : 60

PART—A

5×4=20

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **four** marks.
(3) Part-A may be drawn not to scale.
(4) Assume suitable data if missing.

1. Draw the cross-section of an RCC slab culvert to the given particulars :

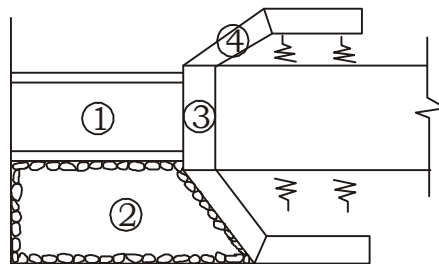
Width of vent way	= 2 m
Width of CC foundation bed	= 1.5 m
Thickness of foundation bed	= 0.45 m
Bottom level of abutment	= top of CC bed = +58.00 m
Top level of abutment	= +60.40 m
Bottom width of abutment	= 0.9 m
Both sides vertical up to stream bed level of RL	= +59.00
Top width of abutment	= 0.6 m,
Water face is vertical and earth filling side has batter	
Thickness of RCC slab	= 0.2 m

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2. Draw the section across the Barrel of Tank Sluice with the following specifications :

Sluice barrel	=	Internal dimensions 600 mm wide × 900 mm height
Roof for barrel	=	R.C.C. roof slab 150 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	=	C.C. bed 450 mm thick and 2400 mm wide

3. Draw the plan of two spans (each 3.0 m) RCC - T-Beam Bridge with Straight returns and label the components.
4. Draw the plan of a sanitary block (General Layout) consisting of 4 No. of water closets; 5 No. of bowl type urinals; 5 No. of Bathrooms and 4 No. of wash basins not to a scale.
5. Half plan at top of a Surplus weir is shown (below figure). Name the parts numbered 1 to 4.



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PART—B

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- Instructions :** (1) Answer **all** questions.
(2) Any missing data may be assumed suitably.
(3) To be drawn by the given scale.

- 6.** Draw the plan and longitudinal section along AB of a 'Pipe Culvert' to a scale of 1 : 50 with the following specifications : 10+15=25

Drain particulars :

Bed level	=	+50.350
Bed width near the pipe culvert	=	1200 mm
Side slope of drain	=	1 : 1
General G.L. near the drain	=	+51.55

Bed pitching and side slope revetment on both U/S and D/S = 200 mm rough stone bed pitching to a length of 1200 mm shall be provided both on U/S and D/S. A toe of same width shall be taken to a level of +50.00 at the end of bed pitching.

Side slope revetment shall be with 200 mm size, rough stone along the slopes to a length of 1200 mm both on both U/S and D/S from B.L. to General G.L.

Pipe details :

Internal diameter of pipe	=	1000 mm
External diameter	=	1200 mm
Bedding for pipe	=	250 mm CC thick
Benching for pipe	=	300 mm CC thick
Width of both bedding and benching	=	1800 mm
Bottom level of C.C. bedding	=	+50.00
No. of pipes	=	One

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Head wall :

At the end of the pipe, two head walls are provided with brick masonry with the following details :

Length of head wall = 7200 mm

Bottom level of head wall = +49.10

Top level of C.C. bed provided under head walls = +49.10

Bottom level of C.C. bed provided under head walls = +48.80

Width of C.C. bed = 1800 mm

Bottom width of head wall = 1200 mm

Profile of head wall = outer surface vertical and earth fill face having a batter so that the top width is 450 mm

Top level of head wall = +52.00

Earth fill and embankment :

Formation width = 10000 mm

* Side slopes = 2 H : 1 V

Formation level = +54.00

Height of earth fill = $54.00 - 51.45 = 2.55$ m

Guide stones on both sides of formation = 450 mm × 450 mm, square guide stones are provided at a distance of 450 mm from extreme edges of formation. These stones are taken to a depth of 450 mm below formation level and extended to a height of 600 mm above formation level at 3000 mm c/c.

7. Draw the Longitudinal Section of 'canal drop' to a scale of 1 : 50 with the following specifications :

Canal Particulars :

	U/S	D/S
Ground level	+120.60	+120.60
Bed level	+120.00	+118.60
F.S.L.	+120.50	+119.10
Canal bund level (CBL)	+121.10	+121.10
Canal bed width	1.60 m	1.30 m
Side slopes in cutting	1 : 1	1 : 1
Slope of rear face to connect G. land CBL	2 : 1	2 : 1

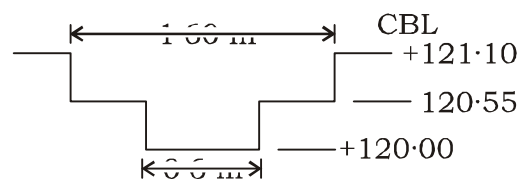
Body wall :

Top wall level	=	+120.00
Bottom level	=	C.C. foundation top level = +118.60
	=	C.C foundation bottom level = +117.85
Top width	=	600 mm
Bottom width	=	1200 mm with U/S face vertical
Width of C.C. foundation	=	1.80 m with equal offset
Length	=	8.50 m

Notch wall :

Thickness of notch wall	=	450 mm
Top level of notch wall	=	C.B.L = +121.10

Notch wall is constructed over body wall and one no. stepped notch is provided at the centre with its sill level at bed level of canal of U/S.



Stepped Notch

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C.C. apron on D/S :

Provided in continuation with C.C. bed under body wall with same thickness

Length of C.C. apron = 2.75 m
Top level of C.C. apron = +118.60
Bottom level C.C. apron = +117.85

Rough stone bed pitching on U/S :

With 300 mm size stone boulders to a thick of 300 mm and 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 thick 300 mm and length of 3.5 m including toe wall of depth of 600 mm.

Revetment on U/S :

Is provided to the sides of canal from B.L to F.S.L. for a length 2.8 m a slope of 1 : 1 given at the end of revetment to connect it with B.L.

Reverent on D/S :

The revetment starts from C.B.L. at notch wall and is taken to a level of +120.50 at the end of C.C. apron in an inclined direction. From the end of C.C. apron, the revetment is continued at the same level 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 of canal slopes.

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