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**BOARD DIPLOMA EXAMINATION, (C-20)
OCTOBER/NOVEMBER—2023
DCE – FOURTH SEMESTER EXAMINATION
CIVIL ENGINEERING DRAWING—II**

Time : 3 Hours]

[Total Marks : 60

PART—A

10×2=20

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

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

(3) All parts must be drawn to scale.

(4) Any missing data may be assumed suitably.

- 1.** Draw the cross-section of empty soak pit with lining to a scale of 1 : 20 with the following specifications.

Diameter (internal) : 900 mm

Circular lining : 230 mm thick brick lining with dry joints

Total depth of pit : 1.7 m

General ground level : 450 mm below roof slab

Inlet pipe with bend : 75 mm dia and kept at 250 mm below G.L.

Roof covering : Covered with removable precast concrete slabs of 70 mm thick.

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

Vent way = 0.9 m wide × 0.75 m deep, width of the masonry side wall is 0.5 m at top and 0.75 m at bottom, foundation. Thickness of CC bed = 0.45 m with 0.3 m offset cover slab thickness = 0.15 m.

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **twenty** marks.
(3) All parts must be drawn to scale.
(4) Any missing data may be assumed suitably.

- 3.** Draw the cross-section of homogeneous earthen bund with the following specifications to a scale of 1 : 50

Top width of bund = 1.5 m

T.B.L +57.00

General ground level = +50.00

Stripped ground level = +49.70

Side slopes 1.5 : 1 on U/S and 2 : 1 on D/S

Key trenches = 1.2 m wide and 0.6 m deep at 4.0 m C/C.

Protection to the upstream face of the bund :

The upstream face of the bund is provided with 300 mm thick rough stone revetment over 150 mm thick gravel backing. This revetment is founded on rough stone wall 1.0 m wide and 1.0 m deep.

Protection to the downstream face of the bund :

Rock toe with 300 mm rough stone boulders are provided with 900 mm top width and top level being at +51.20 m.

Slope of rock toe = 1 : 1

Sand filter = 200 mm thick on rear side and at the bottom of the rock toe. Toe drain = a longitudinal drain is provided with bottom width 1.0 m and side slopes 1 : 1. This is in line with the outer surface of rock toe and taken to a level of +49.00.

Rough stones of 300 mm thick are used for side revetment and bed pitching of toe drain.

4. Draw the longitudinal sectional elevation and half plan at bottom half plan at top of the RCC slab culvert to the scale of 1 : 50 with the following specifications :

(a) **Foundations**

Foundations for abutments and wing wall are taken to the same level

Bottom level of leveling course	=	+50.80
Top level of leveling course	=	+51.10
Width of leveling course	=	1.5 m
Thickness of CC foundation bed	=	0.5 m
Width of CC foundation bed	=	1.5 m
Top level of CC foundation bed	=	bottom level of abutment and wing walls = +51.60
Bottom width of abutment	=	bottom width of the wing wall = 0.9 m
Bed level	=	+52.60

(b) **Super structure :**

Profile of abutments and wing walls : width of abutment and wing walls is 0.9 m up to bed level. From bed level the water face is kept vertical and the rear (earth retaining side) side has a batter such that top width is equal to 0.6 m (at bed block level)

Thickness of bed block	=	250 mm
Width of bed block	=	600 mm
Bottom level of RCC slab	=	+54.20
Thickness of slab	=	200 mm
Thickness of wearing coat	=	100 mm
Top level of wearing coat	=	+54.50
Kerb width	=	200 mm
Top level of kerb	=	+54.75
Thickness of parapet wall	=	400 mm
Top level of parapet wall	=	+55.25
Length of abutment	=	8.6 m
Width of road way	=	7.4 m
Length of wing wall	=	2.8 m

(c) **Vent way and other protection works :**

Width of vent way = 2.0 m
Height of vent way = 1.6 m
Bed pitching = 200 mm

Rough stones boulders are provided as bed pitching in the vent way

Cutoff walls = 200 mm thick are provided at the ends of vent way

Top level of cut off wall = BL = +52.60

Bottom level of cut off wall = +52.00

CC bed for cut off wall : Foundation for cut off walls consists of CC bed 800 mm wide and 300 mm depth.

(d) **Side slope revetment :**

The side slopes of the stream are provided with 200 mm size rough stone boulders at a slope of 1 : 1 from bed level to formation level.

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