C14–C–**507**

4623

BOARD DIPLOMA EXAMINATION, (C–14)
SEPTEMBER/OCTOBER - 2020
DCE—FIFTH SEMESTER EXAMINATION

CIVIL ENGINEERING DRAWING—II

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

PART—A   4×5=20

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

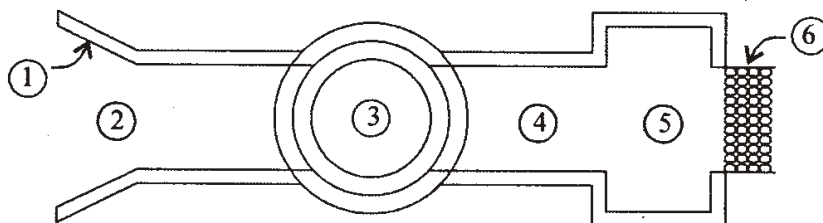   (2) Each question carries **four** marks.

              (3) Any missing data may be assumed suitably.

              (4) The part need not be drawn to scale.

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

2. Name the parts numbered from 1 to 6 of the following figure (tank sluice with tower head) :

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. Draw the cross-section of any empty soak pit with lining with the following specifications :

Diameter (internal) = 900 mm

Circular lining = 230 mm thick brick lining with dry joints

Total depth of pit = 1·70 m

General ground level = 450 mm below roof slab

Inlet pipe with bend = 75 mm dia and kept at 250 mm below GL

Inside cement plastering = The inside of the wall is plastered with CM (1 : 3) to a thickness of 13 mm from top of the level of inflow (inlet) pipe

Roof covering = Covered with removable precast concrete
slabs 70 mm thick

Casing around the circular lining on outer side = 75 mm thick

Outer casing is provided with coarse aggregate from bottom of the lining to the level of inlet pipe.

Ordinary soil may be provided around the pit to form sloped connection with the ground and it may be turfed.

5. Draw a sketch for the central section of the well of a tower head sluice from the following :

Internal dia = 1 m

Height of well = 4·2 m

Thickness of well steining = 0·45 m from top to
a depth of 2·0 m and 0·60 m
for the remaining

CC foundation = 0·5 m thick with 0·3 m offset

Thickness of slab = 150 mm

Wooden shutter = 0·70 m wide × 1·2 m deep

Provide suitable rod and gearing rearrangement for the wooden shutter.

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

(2) Any missing data may be assumed suitably.

6. Draw the sectional elevation and plan of a square RCC overhead tank with the following data to a scale of 1 : 50 :

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

Size of tank = 5·0 m × 5·0 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

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

Size of RCC brace beams = 400 mm × 350 mm

Spacing of brace beams = 3·0 m c/c

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

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 mm, (1 : 4 : 8) plain concrete

Size of 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. 20+5=25

7. Draw the longitudinal section of a 'Canal Drop' with the following specifications : 15

Canal particulars :

	Upstream side	*Downstream side*
Ground level at site	+133·750	+133·750
Bed level	+133·20	+132·00
FSL	+133·65	+132·45
Canal bund level	+134·10	+134·10
Side slopes in cutting	1 : 1	1 : 1
Level of 1·0 m wide berm	+133·75	+133·75
Canal bed width slopes in embankment	1·5 m	1·2 m
Water face	1½ : 1	1½ : 1
Rear face	2 : 1	2 : 1

Body wall :

     Top level = +133·200

     Bottom level = CC foundation top level = +132·00

     CC foundation bottom level = +131·25

     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) = +134·10

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 = +132·00

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 :

(1) 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.

(2) Downstream side : Revetment of D/S canal side slopes starts from canal bund level at the notch wall is taken at a level +133·65 (FSL on U/S) at the end of CC apron in an inclined direction.

From the end of CC apron, revetment is continued at the same level (+133·65) up to the end of rough stone pitching and vertically dropped to the level of +132·75.

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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