C09–C–**407**

3428

BOARD DIPLOMA EXAMINATION, (C–09)

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) Part—A may be drawn not to scale.

(4) Assume suitable data if missing

1. Sketch the section of head wall of pipe culvert with the following data :

    Bottom level of head wall = +49·00
    Bottom width of head wall = 1200 mm
    Top level of CC bed provided under head wall = +49·00
    Bottom level of CC bed provided under head wall = +48·00
    Width of CC bed = 1800 mm
    Profile of head wall = Outer surface vertical and earth
    Fill face having a batter so that the top width = 450 mm
    Top level of head wall = +52·00

2. Draw the plan of two spans (each 3·0 m) RCC-T beam bridge with straight returns and label the components.

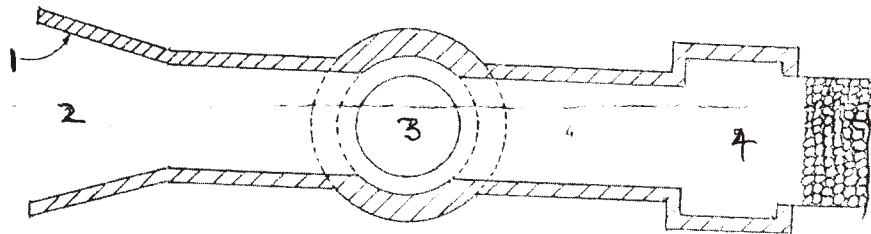**3.** Draw the plan of an overhead tank from the given specifications :

Size of tank = 5 m   5 m   1 75 m
Thickness of RCC side wall = 200 mm
Size of RCC column = 400 mm   400 mm
Size of footing at base = 1 6 m   1 6 m

4. Plan of tank sluice with tower head is shown in the figure below. Name the parts numbers 1 to 4.

5. 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 = RCC 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 = CC bed 450 mm thick and
                              2400 mm wide is provided
                              under barrel

PART—B   25+15=40

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

(2) Any missing data may be assumed suitably.

(3) This Part need not be drawn in given scale.

6. Draw the plan and longitudinal section of septic tank to a scale of 1:25 with the following specifications :   25

Internal dimensions	=	3000mm 1000mm
Brick masonry wall	=	230 mm thick
Thickness of CC bed	=	500 mm
CC offset for walls	=	150mm
Depth of water	=	1200 mm
Free board	=	300 mm
Thickness of RCC roof panels	=	120 mm thick width 450 mm fitted with bent handles for lifting
Scum board	=	RCC precast slab 100 mm thick fixed at height 300 mm from floor level and extending to a height 150 mm below the roof. This shall be fixed at a distance of 900 mm from inside of wall at inflow end into a grove 75 mm deep
Baffle wall	=	RCC precast slab 100 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 outflow pipes	=	100 mm dia tee shaped pipes.
Vent pipe	=	50 mm dia AC pipe with a cowl extending to a height of 2·0 m above GL
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

7. Draw the cross-section of non-homogeneous (zonal section) earthen dam with the following data (scale 1:100) :   15

Top width of bund   = 2·5 m
Tank Bound Level (TBL)   = +57·00
Full Tank Level (FTL)   = +59·50
Maximum Water Level (MWL)   = +59·20
General ground level   = +50·00
Stripped ground level   = +49·25
Side slopes   = 1 ½:1 on U/S and 2:1 on D/S

Hearting :
Top width = 1·75 m
Side slope = 1:1
Top level = +59·20 (MWL)

Cut-off Trench :
Bottom width = 2·5 m
Side slope = 1:1 (both sides)
Bottom level = +46·00

Sand Chimney :
Thickness = 1·25 m
Slope = 1:1

Casing or horizontal casing or sand blanket :
Thickness = 1·0 m and laid over longitudinal filter with its top level at = +51·40

Rock toe :
Top width = 1·5 m out of total width 2·5 m at the level = +52·20
Side slopes= 1:1 on both sides
Composition = Rock toe is filled with broken stones of varying size ranging from 200 mm to 500 mm

On the earthen bund side, rock toe is provided with 150 mm thick fine sand and below that 250 mm thick coarse sand.

Longitudinal filter :
Bottom level of longitudinal filter is taken 400 mm below stripped ground level, in order to accommodate 250 mm thick coarse and 150 mm thick fine sand below it. It consists of rough stone of varying size from 250 mm to 300 mm are laid to a depth 0·75 m and same fine and coarse sand layers are laid over stones on which

casing of 1·0 m thick is provided. Bottom width of longitudinal filter = 1·5 m with 1:1 side slopes and same size filter media is provided in the cross filter and extended into the rock toe.

Toe Drain :
Bottom level = +49·55
Bottom width = 1·0 m
Side slopes = 1:1 on both sides
Bed pitching and side revetment = 300 mm thick of

rough stones

Protection on upstream face :

450 mm thick rough stone revetment over 250 mm thick gravel backing. This revetment is founded on rough stone toe wall of 1·2 m wide and 1·5 m deep.

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