C-20-C–406

7429

BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—2022

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 longitudinal section of a septic tank to a convenient scale from the given specifications :

Internal dimentions = 2750 mm×900 mm, brick masonry wall thickness = 230 mm, thickness of CC bed= 300 mm, CC offset for masonry walls= 300 mm, depth of water =1000 mm, free board = 300 mm, thickness of RCC roof panels = 100 mm and width 450 mm fitted withy bent handles for lifting. Scum board = RCC precast slab 75 mm thick fixed at a height of 300 mm from floor level and extending up to a height 150 mm below the roof. This shall be fixed at a distance of 900 mm form inside of wall at inflow end into a groove 75 mm deep, standing baffle = RCC precast slab 75 mm thick kept on floor at a distance of 600 mm form inside of wall at out flow end. The top of baffle shall be 150 mm below water level inflow and outlet pipes = 100 mm dia. tee shaped pipe. Vent pipe = 50 mm dia. 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 groung level = 300 mm above top of RCC precast roof panels.

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

Vent way = 0·90 m wide × 0·75 m deep, width of the masonry side wall = 0·50 m at top = 0·75 m at bottom foundation. Thickness of CC bed = 0·45 m with 0·3 m offset. Covering slab thickness = 0·15 m below GL with 1:1 side slopes. Also provide rock toe and toe wall below revetment.

PART—B

20×2=40

Instructions : (1) Answer all questions.

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

(3) All parts must be drawn scale.

(4) Any missing data may be assumed suitably.

3. Draw the longitudinal sectional elevation and Half plan at bottom and 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 walls are taken to the same level
Bottom level of levelling course (CC)= +50·80
Top level of levelling course = 51·10
Width of levelling course = 1·5m
Thickness of CC foundation bed =0·5m
Top level of CC foundation bed = bottom level of abutment and wing walls = +51·60
Bottom width of abutment = bottom width of wing wall = 0·9m
Bedlevel = + 52·60

(b) **Super Structure :**

Profile of abutments and wing walls = width of abutment and wing walls is 0·9m upto 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 0·6m (at bed block level)

Thickness of bed block = 250mm
Width of bed block =600mm
Bottom level of RCC Slab = +54·20
Thickness of slab = 200mm
Thickness of wearing coat = 100mm
Top level of wearing coat= +54·50
Kerb width= 200mm
Top level of kerb= +54·75
Thickness of parapet wall = 400mm
Top level of parapet wall = +55·25
Length of abutment = 8·6m
Width of road way = 7·4m
Length of wing wall = 2·8m

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

Width of vent way = 2·0m
Height of vent way = 1·6m
Bed pitching = 200mm
Boulders are provided as bed pirching in the vent way
Cutoff walls = 200mm 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 CC bed 800mm wide and 300mm depth.

(d) **Side slope revetment :**

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

4. Draw the cross-section of a non-homogneous earthen bund (Zoned type) with the given specifications to a scale of 1:100.
T.B.L=+60·50
F.T.L=+58·50
M.W.L=+59·20
General ground level at site= +50·00
Stripped ground level = +49.25
Top width of bund= 2·5m
Side slopes of bund = 2H to 1V on both water face and rear face.

Hearting :

Top width = 1·75m
Side slopes = 1H to 1V on both sides
Top level = + 59·20 (M.W.L).

Cut-off trench :

Botton width = 2·5m
Side slopes = 1:1 on both sides
Bottom level = + 46·00

Sand chimney :

Thickness= 1·25m
Slopes = 1:1 (parallel to side slope of hearting)

Horizontal casing or sand blanket :

Thickness = 1m and laid over longitudinal filter with its top level at +51·40.

Rock toe :

Top level = +52·20
Top width = 1·5m out of total width 2·5m at the level+52·20
Side slopes= 1:1 on both sides and rock toe is filled with broken stones of varying size from 200 to 500mm on earthen bund side, rock toe is provided with 150mm thick fine sand and below that 250mm thick coarse sand.

Longitudinal filter :

Bottom level of longitudinal filter is taken 400mm below stripped ground level+48·55 in order to accommodate 250mm thick coarse sand and 150mm thick fine sand below that. Stones of varying size from 250 mm to 300 mm are laid to a depth of 0·75m and same fine and coarse sand layers.

Laid over stones on which casing of 1m thick is provided, bottom width = 1·5m with side slopes of 1:1 and same size filter media is provided in the cross filter and extended into the rock toe.

Toe drain :

Bottom level = +48·55
Bottom width = 1m
Side slopes = 1:1 on both sides
Bed pitching and side revetment = 300mm rough stones are used.
The U/S face of the bund is provided with 450mm thick rough stone revetment over 250mm thick gravel backing.

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