

TED (10)–4015

Reg. No.

(REVISION—2010)

Signature

SIXTH SEMESTER DIPLOMA EXAMINATION IN CIVIL ENGINEERING—
OCTOBER, 2013

STRUCTURAL AND IRRIGATION ENGINEERING DRAWING
(Common to CE, EN and WR)

[Time : 3 hours

(Maximum marks : 100)

- [Note : 1. Missing data if any can be suitably assumed.
2. Steel tables are permitted.
3. A2 size drawing sheet to be supplied.
4. Drawing shall be neat and fully dimensioned.
5. Answer one full question from each unit.]

Marks

UNIT—I

- I A circular column of 250 mm diameter has the following details :
Footing : Diameter—1.30 m, Depth at edge—0.3m, depth at face of column—0.9 m
Base course : P.C.C. 1:4:8, 1.50 m diameter, 0.15 m thick.
Reinforcement for footing : 12 mm ϕ bars @ 150 mm c/c on both ways.
Reinforcement for column : 6 nos., 16 mm ϕ bars as longitudinal bars, laterals of
8 mm ϕ @ 200 mm c/c.

Draw :

- (i) Plan showing reinforcement of footing. 10
(ii) Sectional elevation showing details of reinforcement of column. 15

OR

- II (a) Draw the longitudinal sectional view and a cross sectional view of a sunshade projection from the lintel with the following details :

Cleaning width of opening	—	1.80 m	
Bearing on either side of wall	—	200 mm	
Width of brick wall	—	300 mm	
Depth of lintel	—	200 mm	
Depth of sunshade near lintel	—	75 mm,	
At edge	—	50 mm	
Main bars for lintel	—	3 nos., 10 mm ϕ	
Stirrups	—	8 ϕ , 150 mm c/c	
Projection of sunshade	—	750 mm from wall	
Main bars for sunshade	—	8 ϕ @ 150 mm c/c.	15

(b) Draw the longitudinal section of a simply supported RCC beam with the following details :

Width	:	250 mm
Depth	:	450 mm
Bearing	:	250 mm
Clear span	:	3500 mm
Main bars	:	4 nos., 16 mm ϕ (2 nos. bent up at support)
Stirrups	:	8 mm ϕ @ 200 c/c, 2 nos. 10 mm ϕ at top.

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UNIT—II

III The details of an RCC open well staircase are given below :

Room size	:	4.0 m \times 3.0 m
Head room	:	290 cm
Slab thickness	:	10 cm
Wall thickness	:	23 cm
Waist slab	:	12 cm
Width of landing	:	100 cm
Main bar	:	10 mm ϕ @ 120 mm c/c
Distributors	:	8 mm ϕ @ 200 mm c/c

Provide suitable hand rails.

Draw : (i) Cross section showing reinforcement details along length of first flight. 15
(ii) Plan showing arrangements of steps. 10

OR

IV A circular RCC water tank has the following details :

Diameter of the tank	:	6 m inside
Thickness of RCC wall	:	150 mm
Thickness of RCC floor slab	:	200 mm
RL of floor of tank	:	+ 65.00 m
RL of top of cover slab	:	+ 73.00 m
RL of the ground	:	+ 53.00 m
RCC column	:	6 nos, 300 \times 250 mm
Brace beams	:	3 nos, 200 \times 250 mm
Ring beams	:	300 \times 450 mm
Slab projection from ring beam	:	1000 mm
Hand rails	:	800 mm height
MWL	:	+70.00 m

Inlet 400 mm ϕ , outlet 300 mm ϕ

Draw the sectional elevation showing all details.

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UNIT—III

V A double laced built up steel column has the following details :

Steel stanchion	:	500 mm with 2 channels ISLC 250@ 50 kg placed to back to back.
Lacing	:	MS flat 100 mm × 6 mm
Rivets	:	12 mm ϕ (single riveted)
Tie plate	:	500 mm × 200 mm × 12 mm thick (single row rivets 12 mm ϕ @ 50 mm c/c)

Draw : (i) Elevation of the column for 1 meter from bottom.

(ii) Plan to suitable scale.

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OR

VI A steel stanchion ISHB 300 × 250 @ 58.80 Kg/m is strengthened by a cover plate 360 × 12 mm on each flange. It is fixed to the foundation bearing plate of 750 × 750 × 12 mm. Anchor bolts -4 Nos., 20 mm ϕ , 400 mm long. Foundation footing 1200 × 1200 × 650 mm using M 15 grade concrete. Provide cleat angle ISA 150 × 125 × 12 mm, gusset plate 16 mm thick.

Draw to suitable scale : (i) Front view

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(ii) Top view (sectional)

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UNIT—IV

VII A tank sluice with tower head has the following details :

Bed level	:	+34.50 m
Full tank level	:	+37.00 m
Maximum water level	:	+38.00 m
Rivetment level	:	+38.50 m
Bund top level	:	+40.00 m
Tail channel level	:	+34.50 m
Branch bund top level	:	+35.00 m
Still basin top level	:	+35.50 m
Main bund top width	:	+2.50 m
Side slope	:	+1 in 2 on both faces
Tower head well	:	Masonry wall 40 cm thick, Diameter 1.20 m
Rectangular Barrel	:	1.00 m × 0.60 m
Barrel foundation	:	PCC 1 : 4 : 8, 40 cm thick
Plug diameter	:	250 mm
Still basin	:	Masonry wall 50 cm thick, 2.50 m × 4.50 m

All missing data assume suitably.

Draw : The sectional view through barrel.

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OR

VIII Draw the plan and sectional elevation of a septic tank of internal dimensions 5.00 m × 2.00 m and average liquid depth 1.80 m, free board 0.50 m and RCC cover 15 cm thick, CC walls of 0.30 m thick. Baffle wall of size 2.0 m height and 5cm thick. Floor PCC 1 : 3 : 6, 20 cm thick. Provide suitable inlet and outlet chambers.

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