

7620

BOARD DIPLOMA EXAMINATION, (C-20)

DECEMBER—2022

DCE – FIFTH SEMESTER EXAMINATION

QUANTITY SURVEYING – II

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Calculate the quantity of brick for one flight. Given no. of steps = 12, tread = 250 mm, rise = 150 mm and width of flight = 1000 mm.
2. Write an expression for crank bar length whose straight bar length is l (crank is on both sides).
3. Mention the approximate percentage of steel in RCC elements for (a) Beams, (b) columns and (c) slabs.
4. Prepare the detailed estimate of granular shoulders, on either side of the WBM road of 1 km length. The width of shoulder is 1.00 m. The compacted thickness is 100 mm and loose thickness is 160 mm.

5. Calculate the following quantities for abutment of culvert whose length is 8 m, shown in Figure-A :

(a) CC bed under abutment

(b) RR Masonry

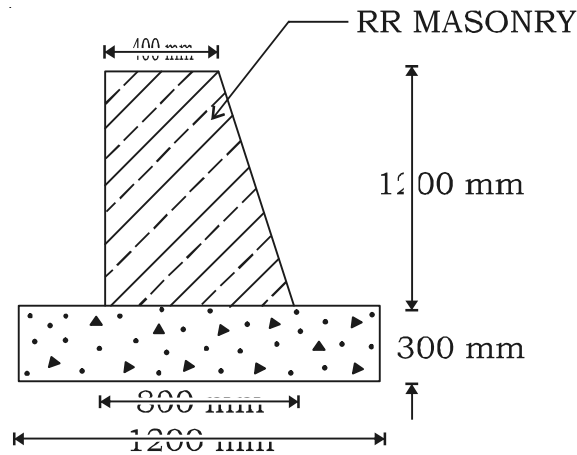


Figure : A

6. An RCC square footing (1.0 m × 1.0 m) of an over head tank is shown in Figure-B, calculate :

(a) Quantity of RCC (1 : 2 : 4) for square portion of footing

(b) Quantity of RCC (1 : 2 : 4) for trapezoidal portion of footing

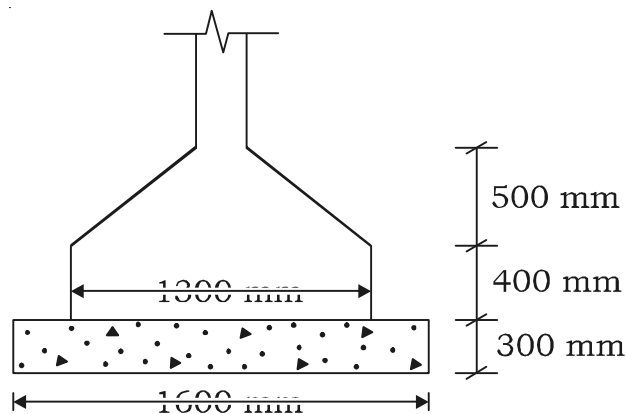


Figure : B

7. Calculate the quantity of plastering for baffle wall and scum board of each size $1 \text{ m} \times 0.75 \text{ m} \times 0.1 \text{ m}$ in a septic tank.
8. Define the terms 'Scrap Value' and 'Salvage value'.
9. State the methods of depreciation calculation.
10. Define the term 'Outgoing' and mention its types.

PART—B

8×5=40

- Instructions :**
- (1) Answer either (a) **or** (b) questions.
 - (2) Each question carries **eight** marks.
 - (3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) Work out the quantities of HYSD steel and prepare bar bending schedule of steel for RCC one-way slab simply supported over walls :

Shorter clear span = 2.5 m;

Longer clear span = 6 m;

Bearing of slab = 230 mm into the walls;

Thickness of slab = 100 mm.

Take end cover 25 mm. Bottom and top cover each is 15 mm.

Main steel diameter is 12 mm and alternate bar is bent up on both sides at 120 mm c/c.

Distribution steel is 6 mm dia at 160 mm c/c at the bottom and 3 Nos. at the top at both ends of bent up main bars are bent at a distance of $1/7$ from the face of wall.

Weight of steel : 12 mm – 0.89 kg/m, 6 mm – 0.22 kg/m.

(OR)

(b) Calculate the quantities of steel of RCC simply supported beam of clear span 3.6 m. The walls supporting the beam are 230 mm with full bearing on both sides. Size of the beam is 230 mm × 300 mm. Concrete cover at end of bars and sides 40 mm and that of top and bottom 30 mm each. The Reinforcement details of the beam are given below :

- (i) Main straight bars at bottom—12 mm-2 Nos.
- (ii) Main bent up bars—12 mm-2 Nos.
- (iii) Top anchor bars—12 mm-2 Nos.
- (iv) Stirrups are 6 mm dia at both 1 m long and including bearing on either side at 150 mm centre to centre and middle 1.6 m length at 210 mm centre to centre.

Given weight of bars : 12 mm—0.9 kg/m, 6 mm—0.22 kg/m.

12. (a) Prepare the detailed estimate for the cement concrete road of 1 km length with the following components Figure-C.

- (i) Base course of CC (1 : 4 : 8) with 40 mm size HBG metal 150 mm thick.
- (ii) Wearing coat with CC (1 : 2 : 4) with 20 mm size HBG metal 100 mm thick.

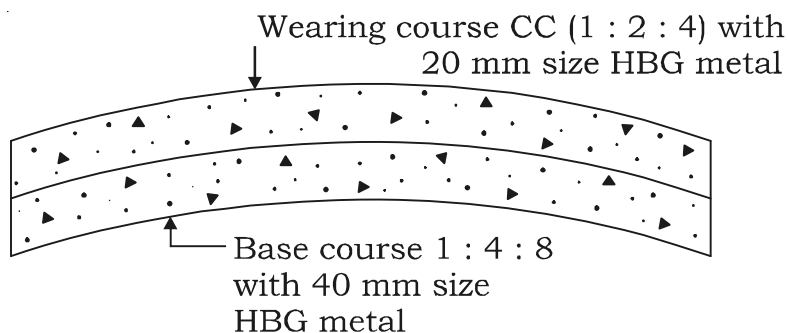


Figure : C

(OR)

(b) Calculate the following quantities of WBM road shown in the Figure-D for a length of 1.50 km :

- (i) Collection of 65 mm HBG for base course.
- (ii) Spreading of 40 mm HBG for wearing course.

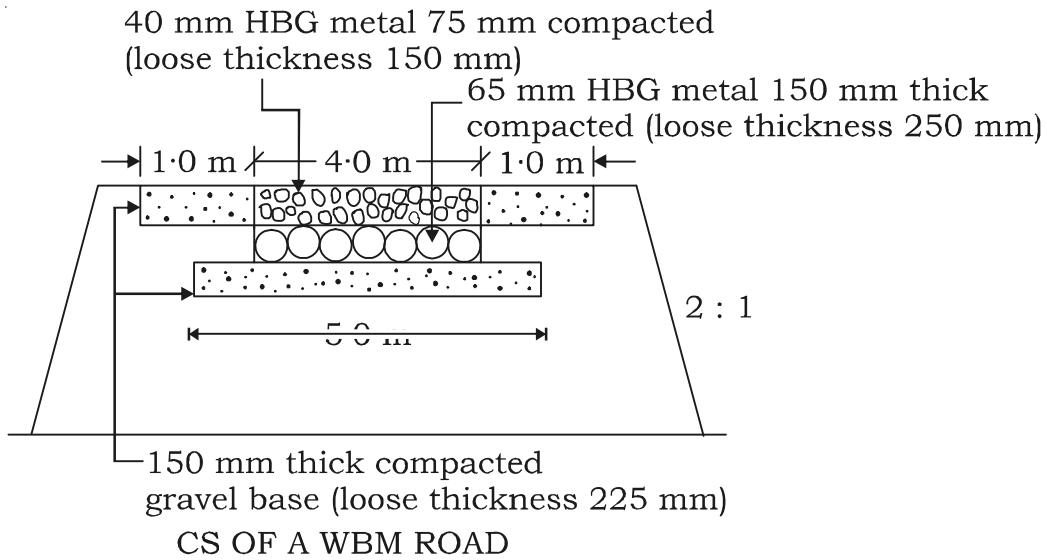
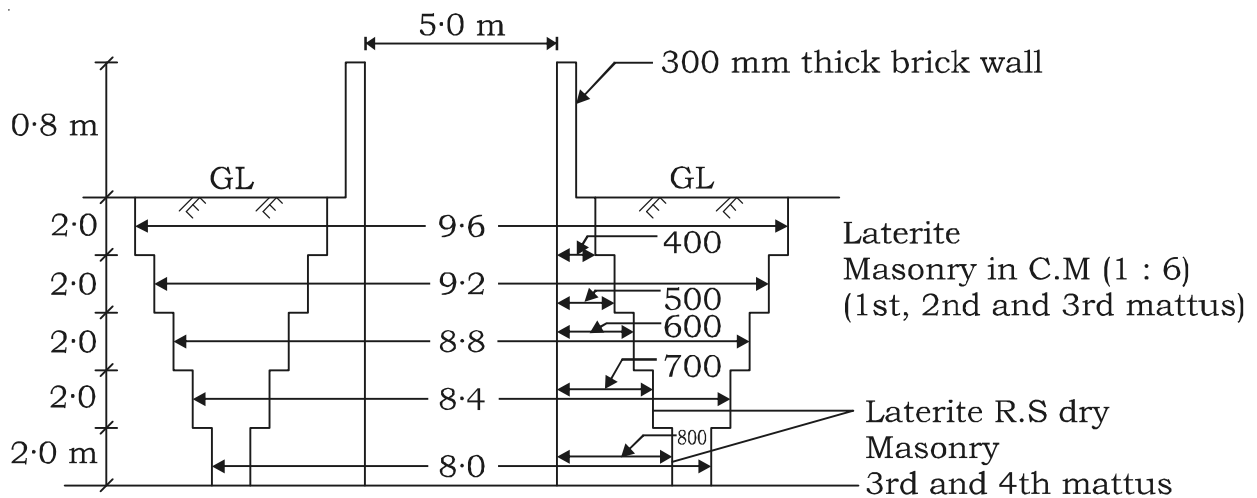


Figure : D

13. (a) Calculate the following quantities of an open well shown in Figure-E :

- (i) Quantity of earthwork excavation in 1st, 2nd and 3rd mattus.
- (ii) Quantity of masonry in 3rd and 4th mattus.



Open well section through well

Figure : E

(OR)

(b) Calculate the following quantities of an RCC overhead tank shown in the Figure-F :

- (i) R.C.C (1 : 2 : 4) for columns up to the bottom of ring beam
- (ii) R.C.C (1 : 2 : 4) for side Walls (Square Tank)

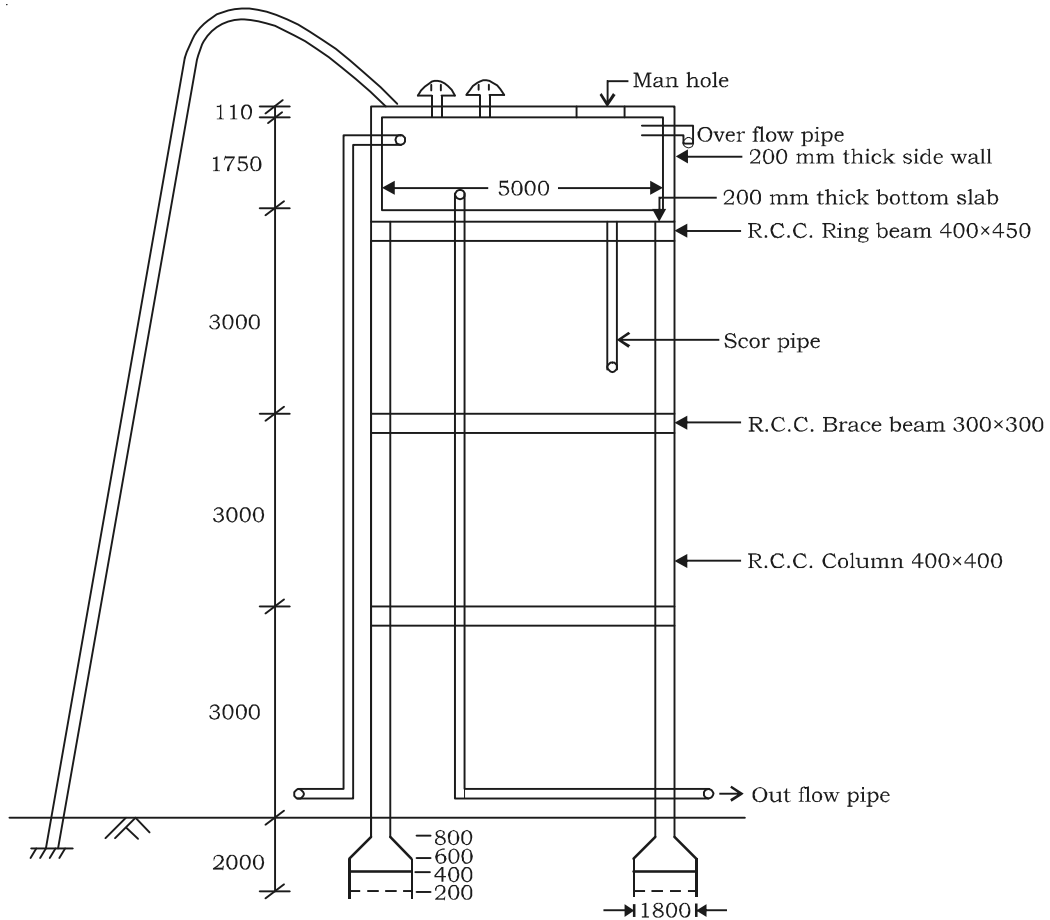


Figure : F

14. (a) List and explain the different methods of valuation.

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(OR)

(b) A residential building of 220 sqm plinth area is situated on a plot measuring 450 m². The building is let out for a rent of ₹ 1,100 per month. The cost of the land is ₹ 950 per m². The following data pertaining to the outgoings :

- (i) Municipal taxes – 20% of Gross rent
- (ii) Repairs, maintenance insurance expenses – 10% of Gross rent
- (iii) Sinking fund is to be 49% of compound interest

Calculate the capitalised value of the property for 66 net yields assuming useful life of building as 80 years and cost of construction as ₹ 9,500 per m².

15. (a) A residential building constructed on a plot measuring 500 m². The construction cost of the building is ₹ 10,00,000. The owner purchased the land at ₹ 1,450 per m². The total outgoings including sinking fund is ₹ 15,000. Workout the gross and net rent of the property, if the owner expects 7% return on construction and 5% on the value of the land.

(OR)

(b) The present value of the property is ₹ 25,00,000 out of which the cost of land is ₹ 3,00,000. The owner of the property expects 7.5% return on the cost of construction and 6.5% return on the cost of land. If the future life of the building is estimated as 75 years and at the end of its useful life, ₹ 20,00,000 will be required for replacing the construction. Calculate the standard rent of the property assuming :

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- (i) Rate of interest for sinking fund is 6%
- (ii) Annual repair cost is 1% of the cost of construction
- (iii) All other outgoing taxes shall be 25% of the net annual income of the property.

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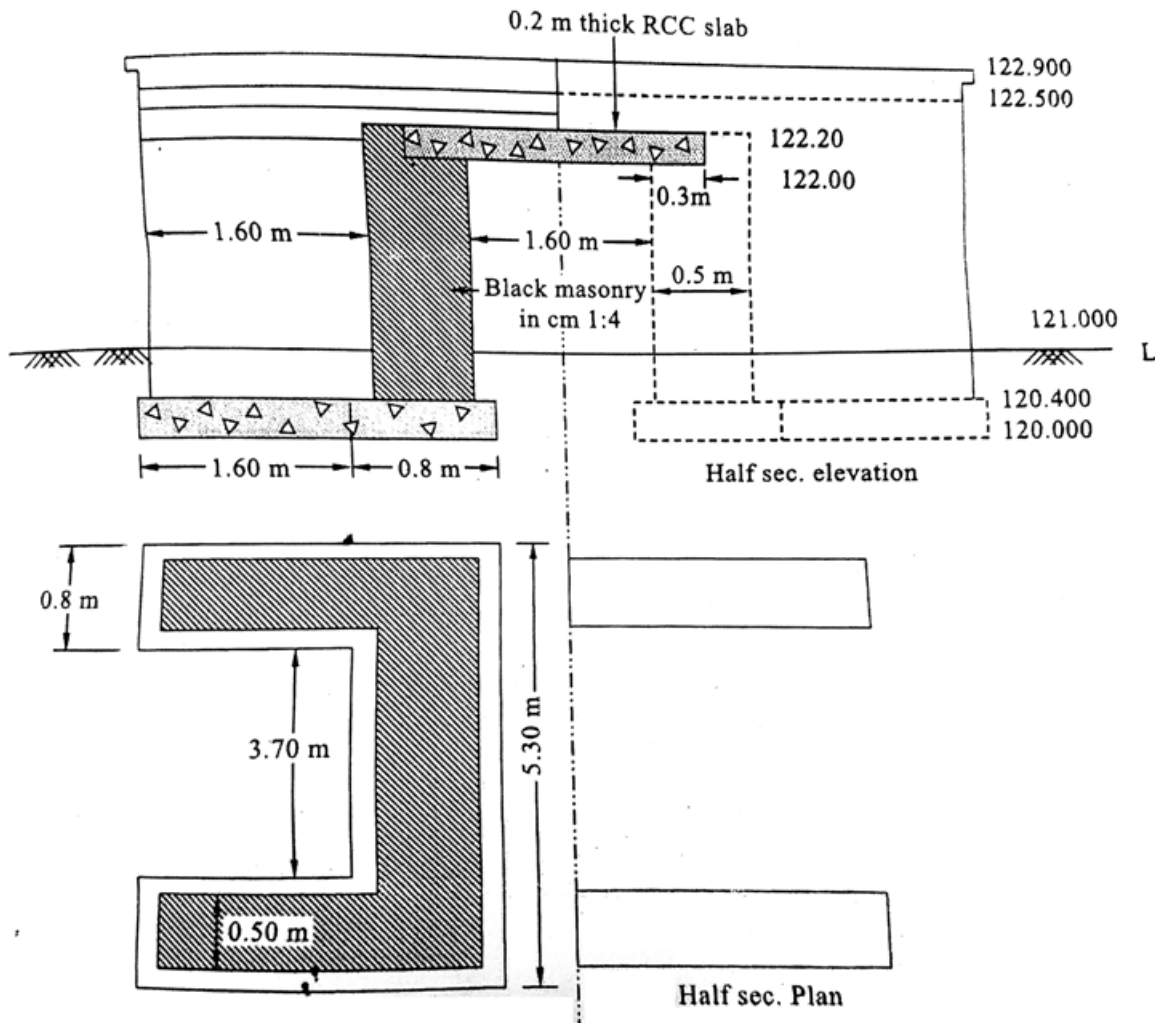
PART—C

10×1=10

- Instructions :** (1) Answer the following question.
 (2) The question carries **ten** marks.
 (3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Prepare the detailed estimate of following items of work from drawing 1 of RCC slab culvert :

- (a) CC bed (1 : 4 : 8) for foundation under abutment and returns
- (b) RR masonry for abutment and returns
- (c) RCC (1 : 2 : 4) deck slab for vent way



DRAWING 1

