12526

4 Hours / 70 Marks   Seat No.

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:**   **10**

a) Define estimating in construction.

b) State the main data required for preparing a detailed estimate.

c) Define bar bending schedule.

d) Draw measurement sheet format for detailed estimate.

e) Define the terms lead and lift.

f) List the different categories of labors used in construction projects.

g) State the role of a valuer in property valuation.

Marks

2. **Attempt any <u>THREE</u> of the following:** 12

a) State the roles and responsibilities of estimator.

b) State the modes of measurement for following item of work:

   i) Earthwork excavation

   ii) Waterproofing

   iii) Railing

   iv) Brick wall (100 mm thick)

c) Explain the procedure of the preparation of the approximate estimate for a water supply project.

d) Prepare approximate estimate of a bridge having five spans of 40 m each using following data :–

   i) Cost of existing bridge 1.4 cr.

   ii) Existing bridge having 3 span of 50 m each.

3. **Attempt any <u>THREE</u> of the following:** 12

a) Prepare the approximate estimate for a building with the following data :–

   i) Plinth area : 120 sq.m

   ii) Plinth area rate : 60,000 ₹/sq.m.

   iii) Cost of water supply : 8% of the cost of building.

   iv) Sanitary and electricity charges : 9% of the cost of the building. The contingencies are taken 5% and supervision charges may be taken 8.5% of cost of building. Calculate the overall cost of the building project.

b) Differentiate between revised estimate and supplementary estimate.

c) Explain the long wall and short wall method for taking out quantities.

d) Explain the necessity of following provisions in detailed estimate with their percentage :–

   i) Contingencies

   ii) Work charged establishment.

Marks

4. **Attempt any __THREE__ of the following:** 12

a) The following data is given. Calculate quantity of main steel for a column :–

Length of column = 3 meters

Diameter of reinforcement bar = 12 mm.

Number of bars per column = 6

Total number of columns = 10.

Calculate the total steel requirement in kg for all the columns in the project.

b) Work out the quantity of concrete and steel in footing for RCC column given in Figure No. 1 using following data :–

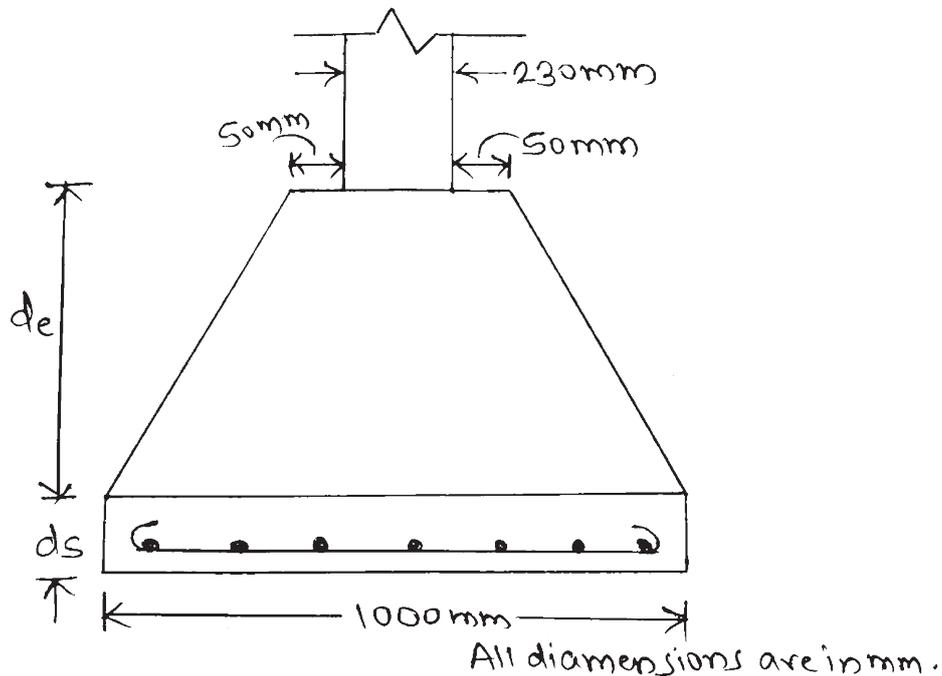| Column	No.	Column size	Footing size	de/ds	Footing Reinforcement
C1	01	230 × 300 mm	1000 × 1200 mm	300/100	12φ@150 c/c bothway

Fig. No. 1

c) Explain four factors affecting task work.

d) Explain precautions to be taken while making mortgage.

e) Explain the procedure for the fixation of rent for government buildings as per PWD norms.

Marks

5. Attempt any <u>TWO</u> of the following: **12**

  a) Find out total quantity of steel for slab and prepare bar bending schedule from following data :–

    i) Size of room = 5 m × 3 m

    ii) Thickness of slab = 120 mm

    iii) Main bars bent up alternatively = 12 mm diameter along shorter span @ 120 mm c/c.

    iv) Distribution bars = 8 mm diameter along longer span @ 150 mm c/c.

  b) Workout quantities of any two items of work for Figure No. 2

    i) Earthwork in excavation

    ii) P.C.C. (1:2:4)
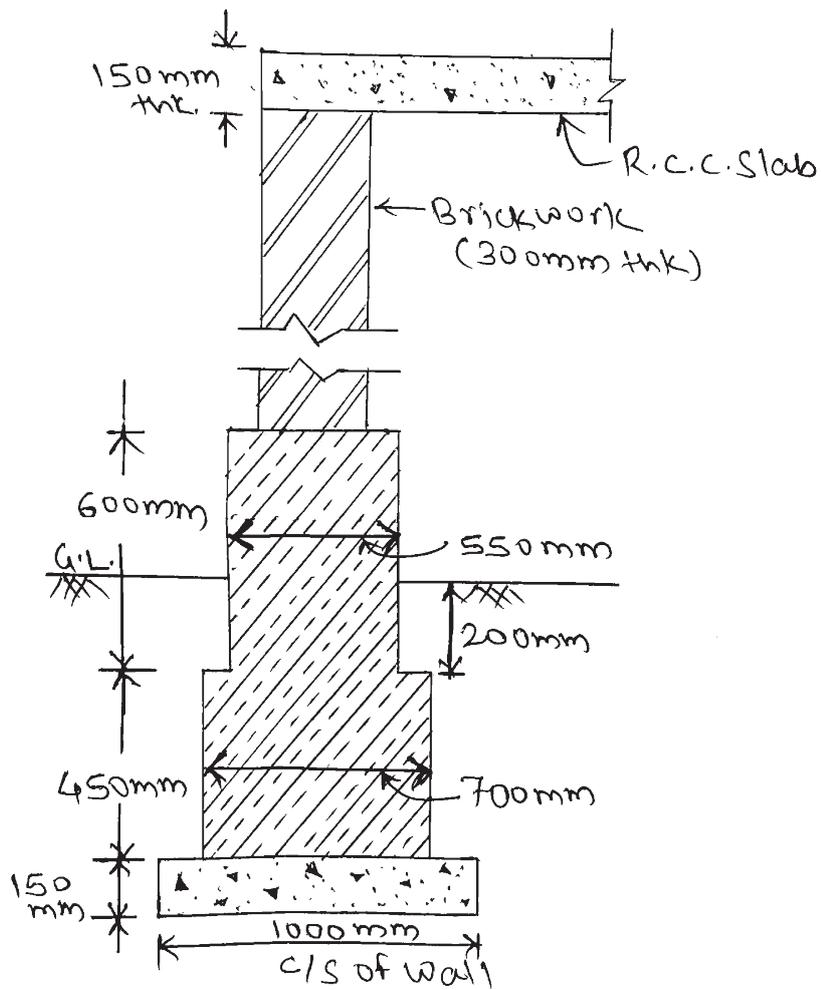
    iii) U.C.R. Masonry in foundation.
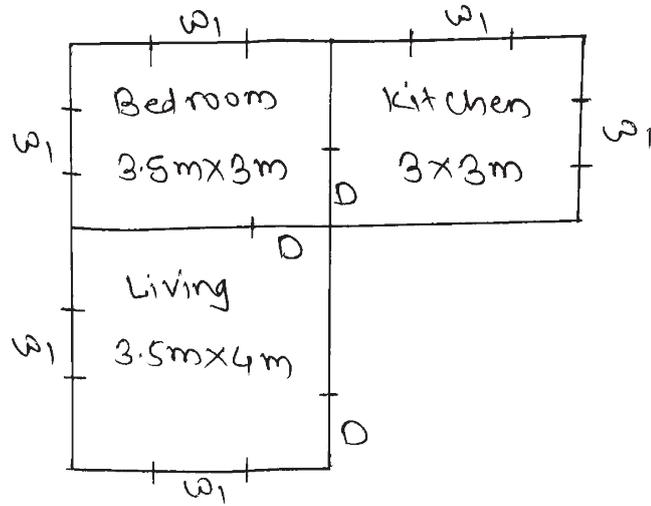
Line Plan.

Fig. No. 2

   c) Calculate the volume of earthwork for a proposed road having formation width 12 m and side slopes 2:1 using mid sectional area method. Assume formation level as 218.5 m with no longitudinal slope.

Chainage (m)	0	20	40	60	80	100
R.L. of ground (m)	218.50	218.80	219.10	219.50	219.70	220.10

6. **Attempt any TWO of the following:** 12

   a) Prepare rate analysis for 12 mm thick cement plastering in cement mortar (1:4).

   b) Prepare rate analysis for brick work in superstructure (1:6) proportion.

   c) Explain salvage value, scrap value and book value.

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