

# 22503

**12223**

**3 Hours / 70 Marks**

Seat No. 

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Figures to the right indicate full marks.  
(3) Assume suitable data, if necessary.  
(4) Use of Non-programmable Electronic Pocket Calculator is permissible.  
(5) 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 :
    - i) Administrative Approval
    - ii) Technical Sanction
  - b) Prepare a format for face sheet
  - c) Mention the unit of measurement as per IS1200 for following
    - i) Partition wall 100 mm thick
    - ii) Wood work for door frame
    - iii) Kitchen sink
    - iv) Iron Railing (height and type specified)
  - d) state the data required for detailed estimate

P.T.O.

- e) Mention service units for following
  - i) Polytechnic building
  - ii) Hospital
  - iii) Hostel
  - iv) Cinema Theatre
- f) State four factors affecting task work
- g) State four methods of calculating earthwork.

**2. Attempt any THREE of the following: 12**

- a) State the rules for deduction in masonry work as per IS1200
- b) State four types of detailed estimate. Mention the use of each.
- c) Prepare checklist of items of work in framed structure.
- d) Prepare approximate of proposed building from following data
  - i) Plinth area of proposed building = 375 sq.m
  - ii) The cost of construction for similar structure is Rs. 18,35,000 having Plinth area 200 sq.m.

**3. Attempt any THREE of the following: 12**

- a) Describe the procedure of preparing approximate estimate for water supply project
- b) Describe in brief
  - i) Prime cost
  - ii) Provisional sum
- c) Explain the necessity of following provisions in detailed estimate with their percentage
  - i) Contingencies
  - ii) Work charge establishment
- d) Work out the external plaster for room size  $5.5 \times 3.2$ m (internal dimension) with wall thickness 230mm. The plinth height is 450mm and height of ceiling is 3200 mm. The slab thickness is 120mm
  - D = Door -  $1.0 \times 2.1$  - 01 No.
  - W = Window -  $1.5 \times 1.2$  - 2 No.
  - V<sub>1</sub> = Venlilation -  $0.45 \times 0.6$  - 2 No.

4. Attempt any THREE of the following:

12

- a) Calculate the quantity of UCR masonry in CM 1:4 in foundation and plinth. Enter the quantities in standard measurement steel. (Ref. fig. No. 1)

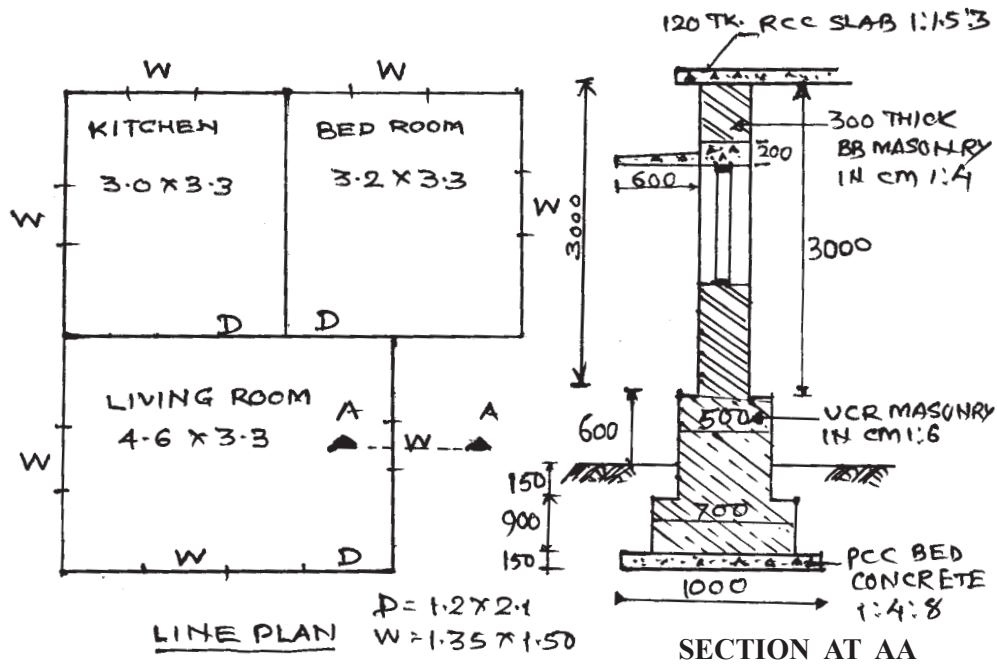


Fig. No. 1

NOT TO SCALE

Note:- All dimensions are in mm in section and in meter in plan.

- b) Calculate the quantity of P.C.C. in footing. Enter the quantities in standard measurement steel. (Ref. fig. No. 1)
- c) State the steel requirement for following:
- Column
  - Beam
  - Footing
  - Slab
- d) Calculate the quantity of cement, sand and coarsed aggregate for  $80\text{m}^3$  cement concrete having proportion 1:1.5:3
- e) Enlist the different software used for preparation of detailed estimate.

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

- a) A RCC beam  $300 \times 450$ mm of length 4000 mm is reinforced with 4 bars of 12 mm  $\phi$  placed in one row, out of which 2 bars are bent up. In addition to this 2 anchor bar of 10mm  $\phi$  are provided at top. Stirrups of 6mm  $\phi$  are provided at  $150^{\circ}$ c. The overall cover is 25 mm. Calculate quantity of steel. Prepare bending schedule.
- b) Calculate the quantity of brickwork in cm 1:4 in superstructure. Enter the quantities in standard measurement steel (Ref. fig. No. 1)
- c) Prepare rate Analysis for uncoursed rubble masonry in cm 1:6 in plinth and foundation

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

- a) Define rate analysis and state the factors affecting rate analysis.
- b) Calculate the quantity of earthwork for a road between the chainage 0.00 to chainage 210m. The formation width of road is 10.0 m. The side slopes are 1.5:1 in cutting and 2:1 in banking. Assume formation level 106.00m with no longitudinal slope. Use mid sectional area method

CH.	0	30	60	90	120	150	180	210
G.L	108.60	109.25	109.40	108.85	108.50	107.25	106.80	107.15

- c) Workout the quantity of following items for septic tank having internal size  $1.8\text{m} \times 4.2\text{m}$  and depth 1.6 m. The top of slab of septic tank is 20 cm above ground level.
  - i) Earthwork in excavation
  - ii) B. B. masonry in c.m. 1:6 (300 mm thick)
  - iii) RCC Slab (1:1.5:3) on septic tank 120 mm thick.

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