22503

12223

3 Hours / 70 Marks Seat No. | | | | | | | | |

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

Marks

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 <u>THREE</u> of the following: **12**

a) State the rules for deduction in masonary 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 <u>THREE</u> 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 × 3.2m (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 × 2.1 - 01 No.

   W = Window - 1.5 × 1.2 - 2 No.

   V_1 = Venlilation - 0.45 × 0.6 - 2 No.

Marks

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)

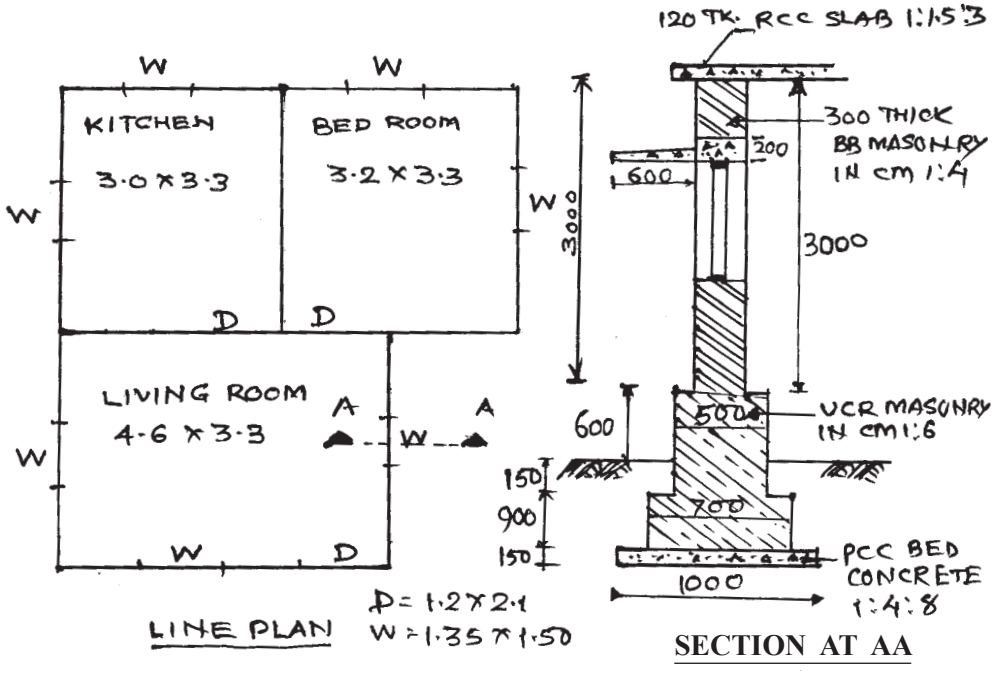

Fig. No. 1

NOT TO SCALE

Note:- All diamensions 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:

i) Column

ii) Beam

iii) Footing

iv) Slab

d) Calculate the quantity of cement, sand and coarsed aggregate for $80m^3$ cement concrete having proportion 1:1.5:3

e) Enlist the different software used for preparation of detailed estimate.

P.T.O.

Marks

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

a) A RCC beam 300 × 450mm of length 4000 mm is reinforced with 4 bars of 12 mm ϕ placed in one row, out of which 2 bars are bent up. In addition to this 2 anchor bar of 10mm ϕ are provided at top. Stirrups of 6mm ϕ are provided at $150^{c}/_{c}$. 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 1.8m × 4.2m 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.