

22503

23242

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers 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) State mode of measurement for following items of work as per I.S. 1200.
 - i) R.C.C.
 - ii) Brick work for 20 cm thick wall
 - iii) Formwork
 - iv) Dado work
 - b) Prepare a format for Abstract sheet.
 - c) State any four purposes of preparing approximate estimate.
 - d) Enlist detailed estimate.
 - e) What is Prime cost and provisional sum?
 - f) Define task works.
 - g) List any four software's used for estimation in Civil Engineering.

P.T.O.

2. Attempt any THREE of the following: 12

- a) State the rules for deduction in plastering work as per IS1200.
- b) Prepare approximate estimate of a town hall building having plinth area equal to 1500 m².
 - i) Plinth area rate Rs. 4,000 per m².
 - ii) Water supply and sanitary installation - 5% of cost of building.
 - iii) Electric installation - 10% of cost of building.
 - iv) Other services - 5% of cost of building.
 - v) Contingencies - 3% of overall cost of building.
 - vi) Supervision charges - 8% of overall cost of building.
- c) Prepare check list of load bearing structure.
- d) Explain in brief revised estimate and supplementary estimate.

3. Attempt any THREE of the following: 12

- a) The cost of construction of college building is 3 crores for the capacity of 600 students and area of construction about 2500 m². Prepare approximate estimate of a new proposed college building for 3500 students with the area 14000 m². Use service unit method.
- b) State the steel requirements for-
 - i) Footing
 - ii) Beam
 - iii) Column
 - iv) Slab
- c) Explain the necessity of following provisions in detailed estimate with their percentage.
 - i) Work charge establishments
 - ii) Centage Charges
- d) Workout quantity of 6 mm, 10 mm and 16 mm ϕ reinforcement for a rectangular beam of size 230 $\times$ 500 mm. The beam is reinforced with 2 No's - 10 mm ϕ at top, 2 No's 16 mm ϕ at bottom, 2 No's - 16 mm ϕ bent up, 6 mm ϕ two legged stirrups are provided at 150 mm c/c throughout the length. Length of beam is 4.5 m. Assume clear cover 25 mm all side.

4. Attempt any **THREE** of the following:

12

- a) Calculate the quantity of excavation and P.C.C.(1:2:4) for structure shown in Fig. No. 1

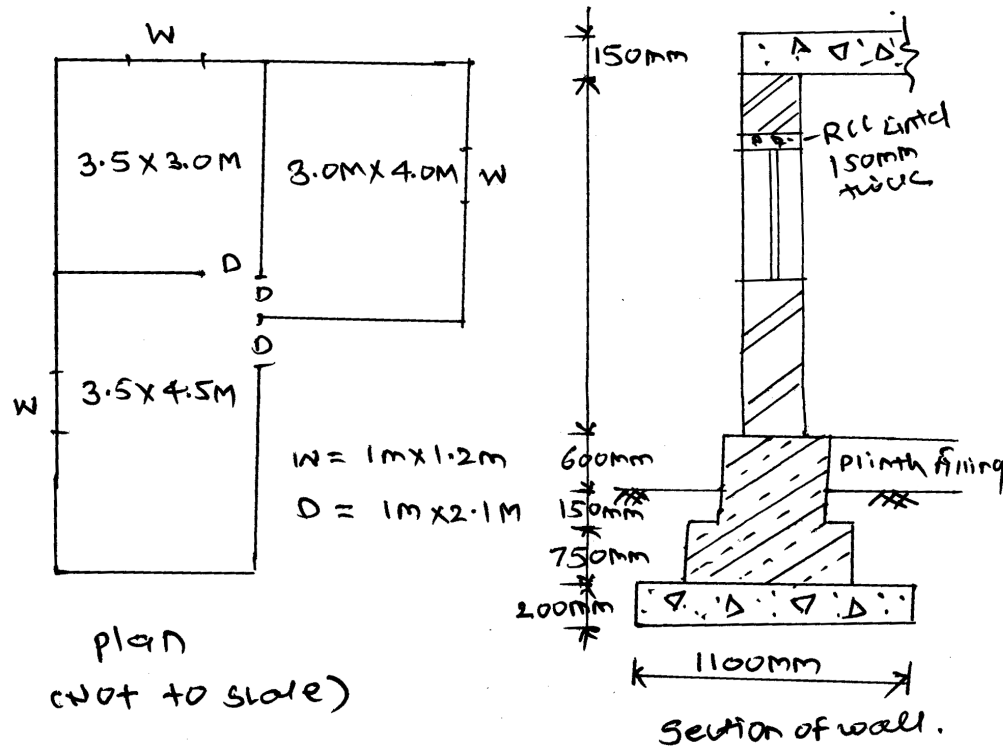


Fig. No. 1

- b) Calculate the quantity of internal plaster in cm 1:4 for structure shown in refer fig. No. 1.
- c) Explain in brief unit quantity method and total quantity method.
- d) State factors affecting of rate analysis.
- e) Calculate the quantities of earthwork in cutting and in banking for a portion of road with following data:-
- Formation width of road is 12 m.
 - Formation level of starting chainage is 51.50 m.
 - The road surface shall be given falling gradient of 1 in 200.
 - Side slopes are 1v:2H BANKING and 1V:1.5H in cutting. Use mid sectional area method.

Chainage in 'm'	0	30	60	90	120	150	180
G.L. in m	50.80	50.60	50.70	51.20	51.40	51.30	51.00

5. Attempt any TWO of the following:

12

- a) Figure No. 2 shows c/s of a square column footing work out the quantities of following items.

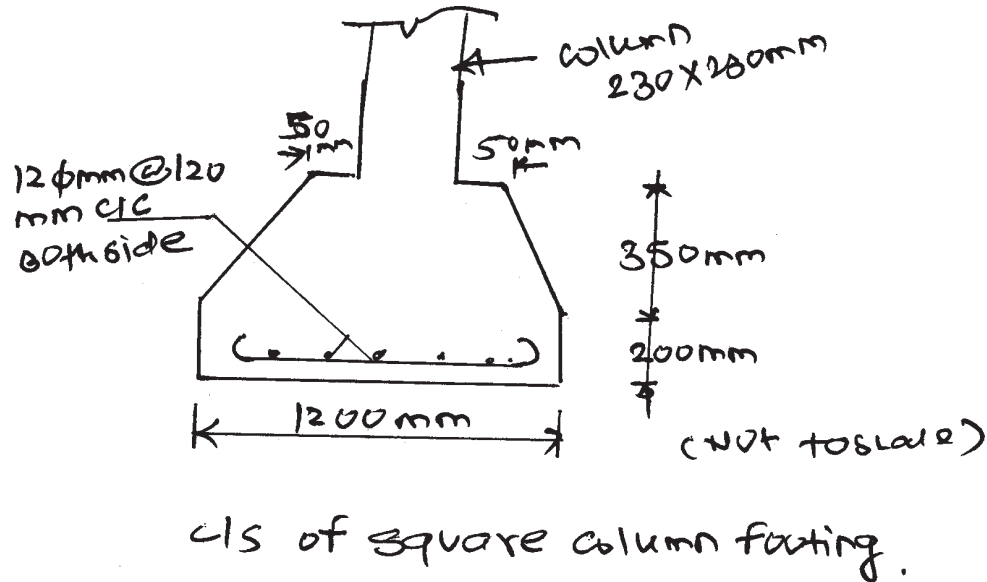


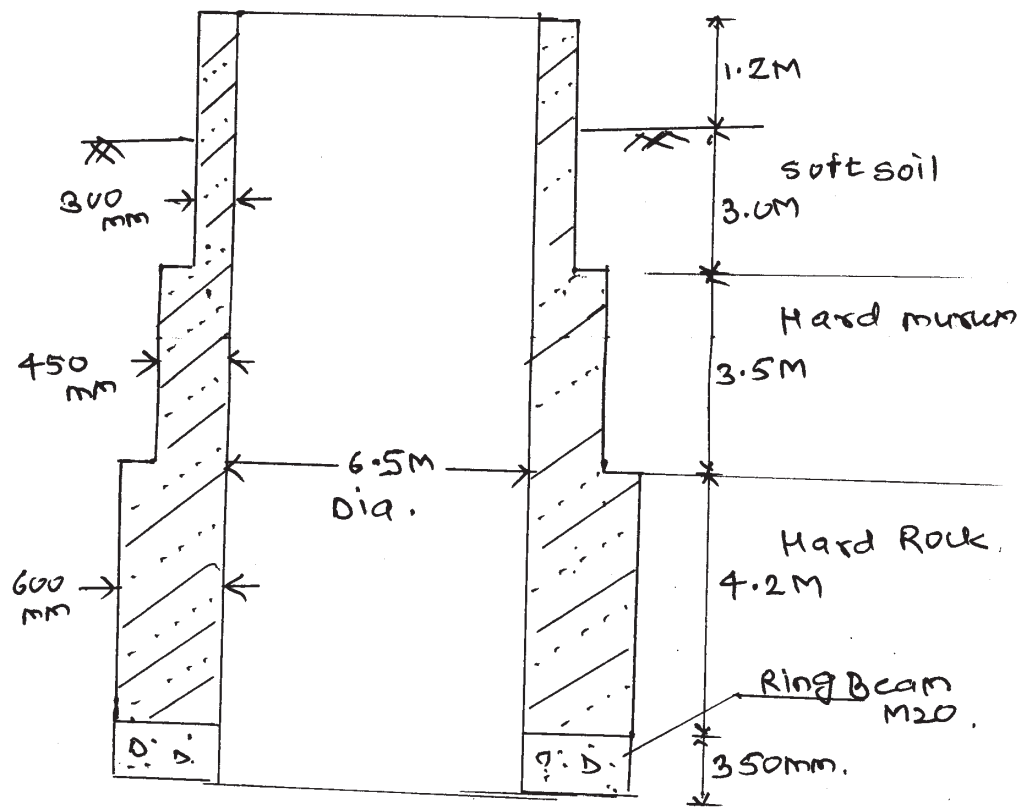
Fig. No. 2

- Quantity of concrete M20 in footing.
 - Quantity of steel in footing prepare bar bending schedule.
- b) An RCC roof slab of overall size 4500 mm × 2000 mm and thickness 150 mm is provided with 12 mm diameters main bars bent up alternately and placed at 150 mm c/c the distribution steel of 8 mm diameters is provided of 200 mm c/c. The all round cover is 20 mm. Find out the total quantity of plain steel. Prepare bar bending schedule.
- c) Prepare rate analysis of materials for 12 mm thick in cement mortar 1:4.

6. Attempt any TWO of the following:

12

- a) Calculate the quantities of materials required for-
 - i) 80 Cu.M Brick masonry in CM (1:6)
 - ii) 30 Cu.M UCR Masonry in CM (1:4)
- b) Calculate the quantity of excavation in standard measurement sheet with brief description of item for community well shown in Figure No. 3



C/S of community Well.
(not to scale)

Fig. No. 3

- c) Find quantity of brickwork, bed concrete and excavation for underground water tank. Shown in Figure No. 4.

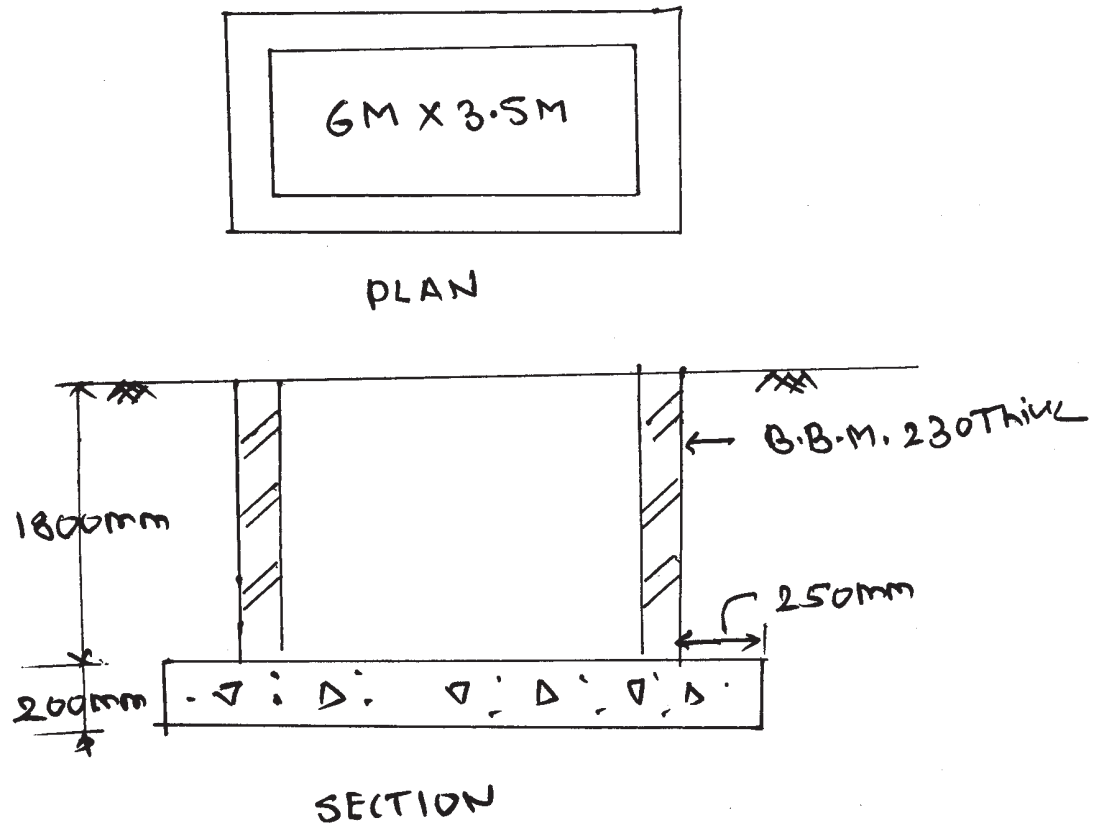


Fig. No. 4