22503

23242

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

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.

Marks

2. Attempt any <u>THREE</u> 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 <u>THREE</u> 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.

Marks

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

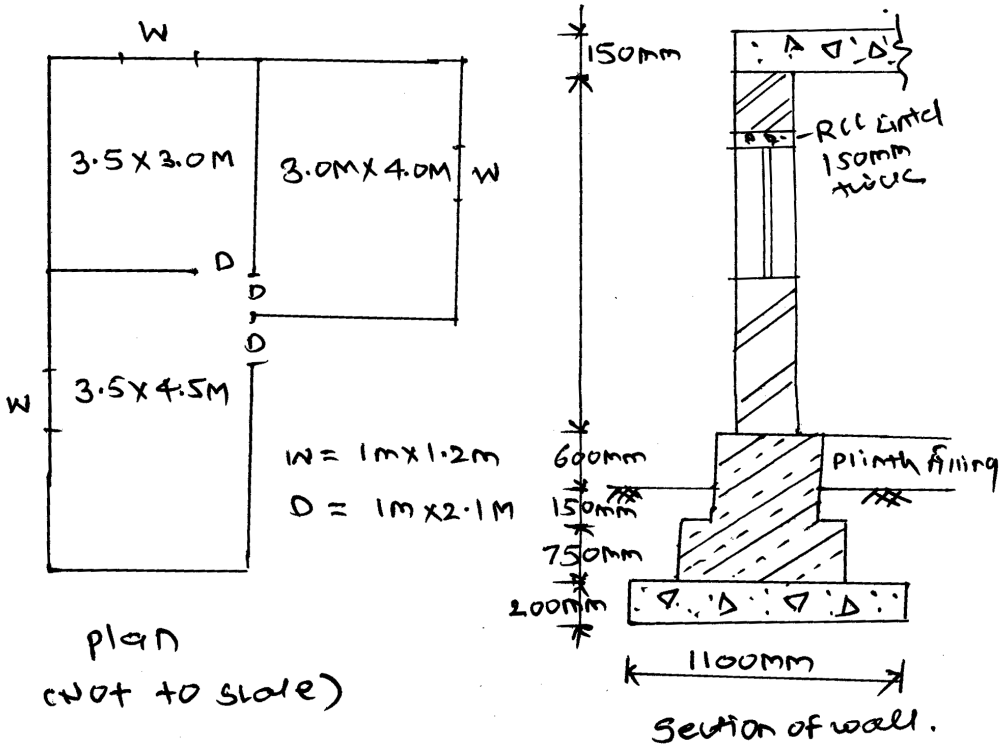

Fig. No. 1

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:-

i) Formation width of road is 12 m.

ii) Formation level of starting chainage is 51.50 m.

iii) The road surface shall be given falling gradient of 1 in 200.

iv) 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

Marks

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.

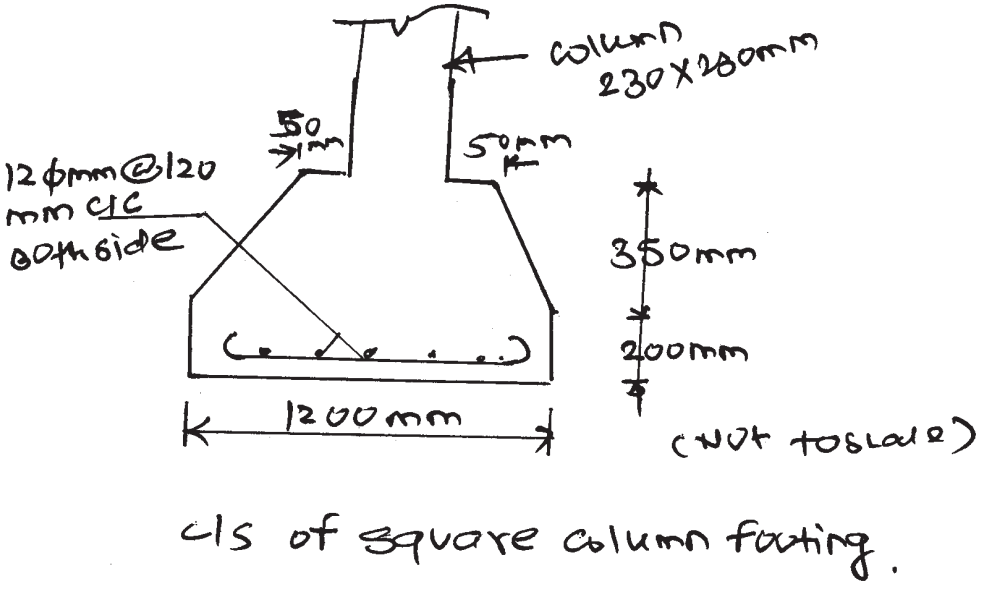

Fig. No. 2

i) Quantity of concrete M20 in footing.

ii) 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 mmc/c the distribution steel of 8 mm diameters is provided of 200 mmc/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.

Marks

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

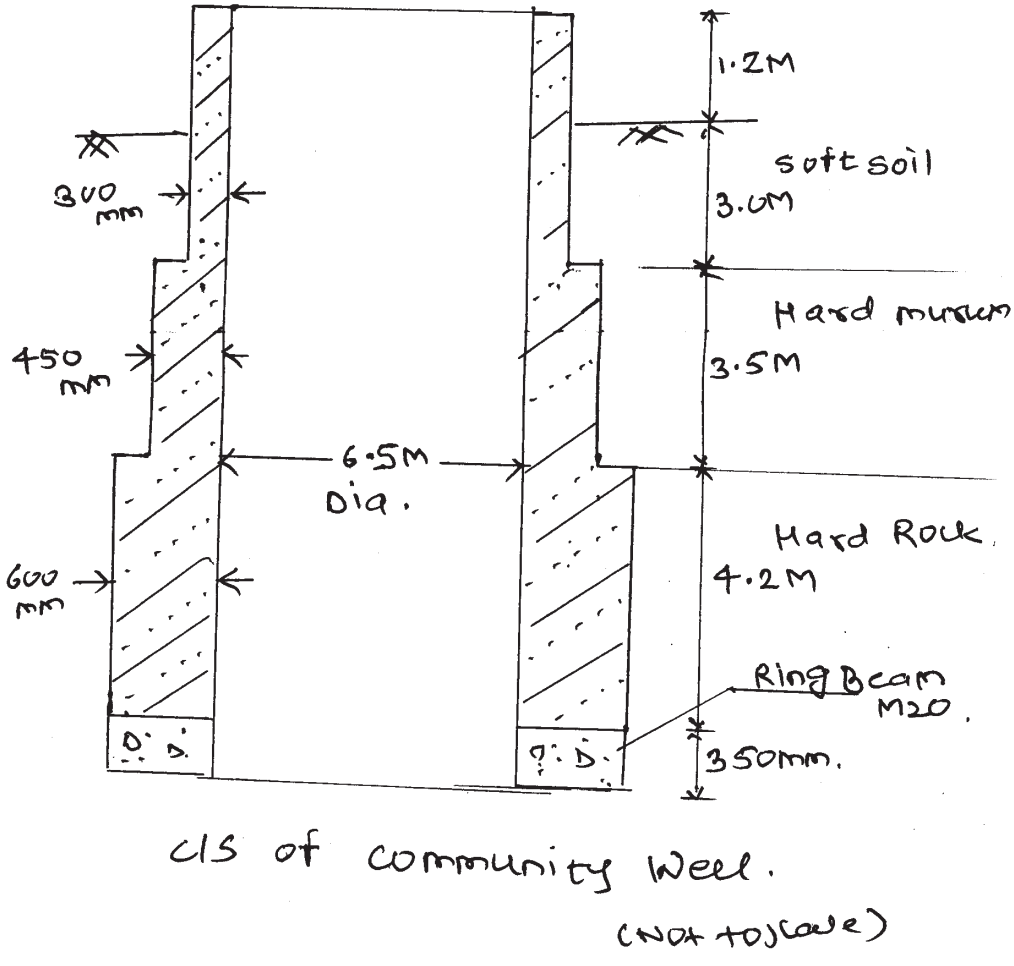

Fig. No. 3

Marks

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

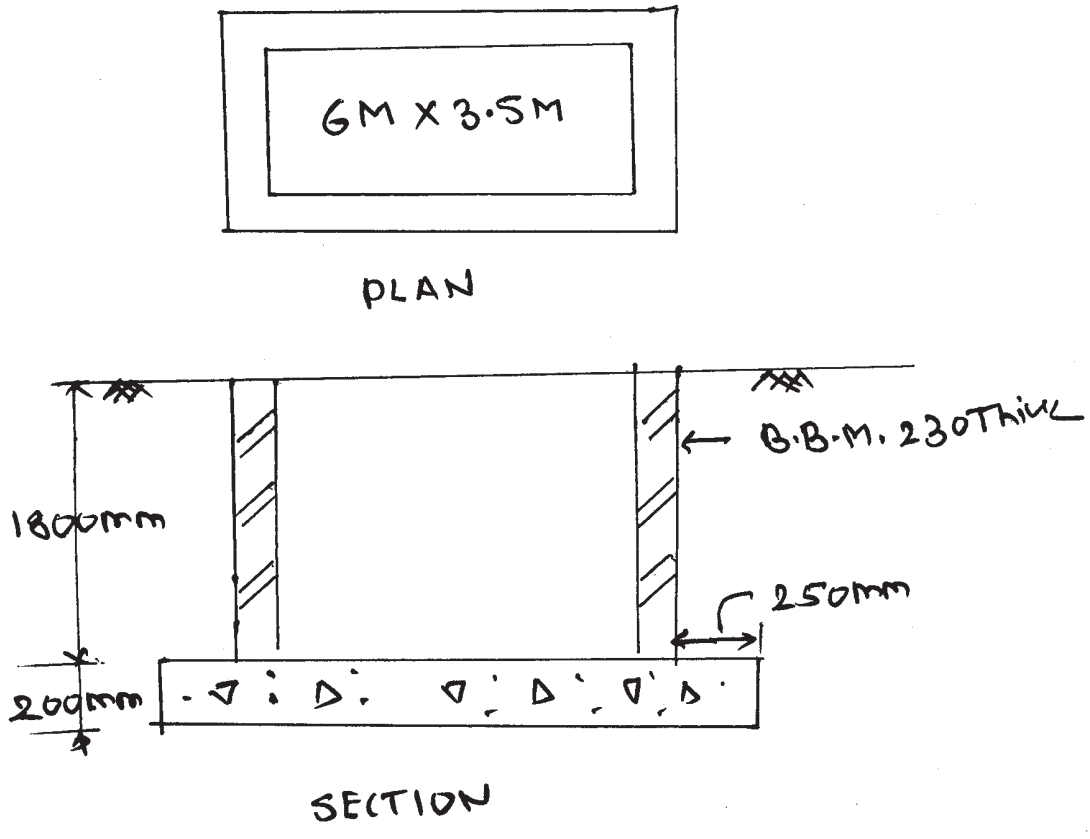

Fig. No. 4