22503

21222

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

15 minutes extra for each hour

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

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(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 estimate and state its importance.

b) State purpose and types of approximate estimate.

c) Differentiate between revised estimate and supplementary estimate.

d) State rules for deductions of openings for masonary as per IS 1200.

e) State data required for preparation of detailed estimate.

f) State factors affecting task work.

g) List any four softwares used for estimation in Civil Engineering.

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

a) Prepare the approximate estimate of a bridge having 4 spans of 42 m each using following data cost of existing bridge Rs. 1.5 or existing bridge having 3 spans of 50 m each.

Marks

b) Write the rules for desired accuracy in taking measurements as per IS 1200.

c) Draw standard formats of measurement sheet, abstract sheet and face sheet.

d) State the rules for deduction in plastering work as per IS 1200.

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

a) Prepare a face sheet for the detailed estimate of residential building with following data

i)	Civil construction cost	Rs. 1165300 = 00
ii)	Contingencies	5%
iii)	Work charged established	2%
iv)	Electrification	8%
v)	Water supply arrangement	5%
vi)	Sanitary arrangement	5%

b) Explain the center line method for taking out quantities of two room building.

c) State significance of check list while preparing detailed estimate.

d) Work out quantity of steel for a circular column with following data.

i) column : diameter - 600 mm

ii) height = 4500 mm

iii) main steel : 8 bars - 12 mmϕ (Tor steel)

iv) Links : 6 mmϕ (ms steel) @ 125 mm c/c.

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

a) Calculate the quantity of following items of work by entering the same in standard format of measurement sheet. Use long wall short wall method (Refer Fig. No. 1)

i) P.C.C (1:4:8) in foundation and plinth

ii) U.C.R masonry in CM (1:6) in foundation and plinth

Marks

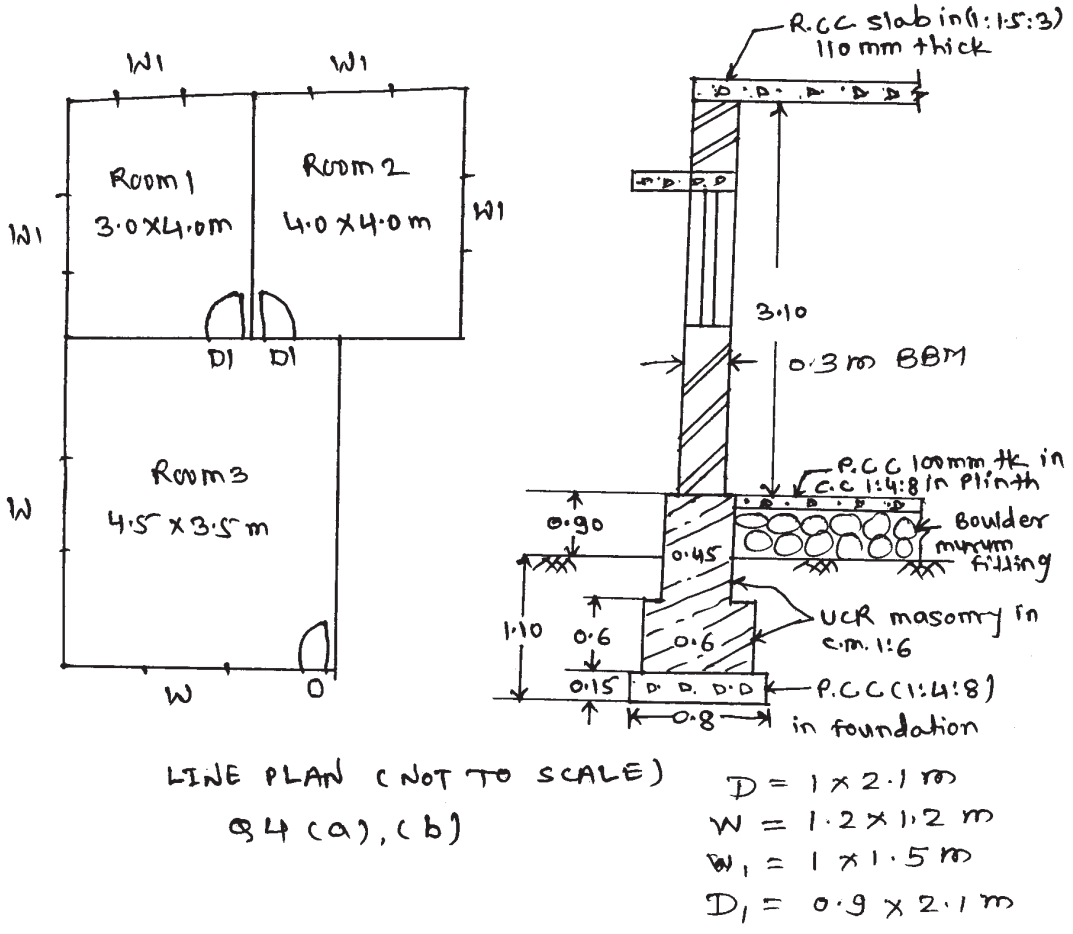


Fig. No. 1

b) Calculate the quantity of following items of work from Fig. No. 1. Brick masonry in cm 1:6

c) A RCC simply supported beam of side 300 mm × 650 mm is reinforced with four, 20 mm diameters bars. The main bars are placed in one row and two are bent-up. Two anchor bars of 12 mm diameters are provided to top and 6 mm diameter stirrups are provided at 150 mm c/c. The span of beam in 5.6 m and end bearing is of 30 cm. Calculate total quantity of mild steel reinforcement. Also prepare schedule of bars.

Marks

d) Calculate quantities of earth work for a road with following data.

Formating width - 10m

Slope in cutting - 1.5 : 1

Slope in banking - 2 :1

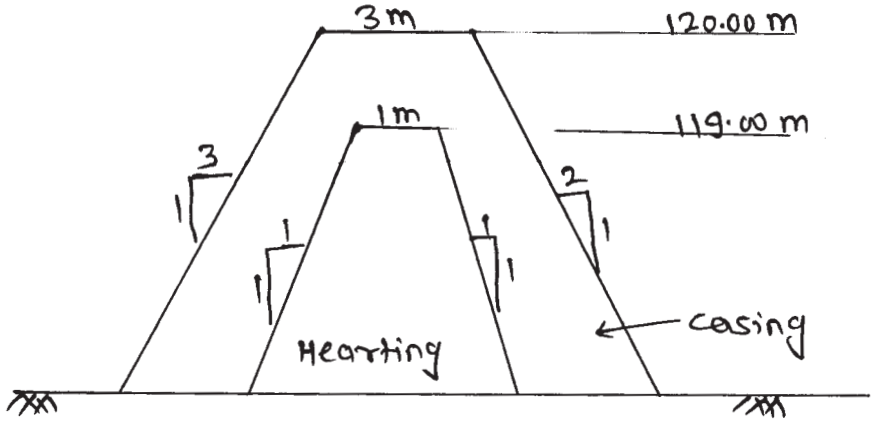
Chainage in m	0	50	100	150	200
Ground level	500.00	499.30	498.45	494.90	494.00
Formation level	496.50	496.00	495.50	495.00	494.50

e) State factors affecting rate analysis. Explain any one.

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

a) Work out the quantity of earth work in hearting and casing for earthen dam section given in Fig. No. 2. Use the data from table given below.

Chainage	30.00 m	60.00 m
Ground level	116.00 m	114.50 m



<u>Fig. No. 2</u>

b) Prepare the rate analysis for U.C.R. masonry in CM(1:4) in foundation.

c) An RCC roof slab of overall size 6600 mm × 2200 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 6 mm diameters is provided of 200 mm c/c. The all round cover is 15 mm. Find out the total quantity of plain steel. Prepare bar bending schedule.

Marks

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

a) 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 51-40 m

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

iv) Side slope are 1V : 2 H in banking and 1V : 1.5H in cutting.

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

b) Calculate the quantity of cement and sand for the following

i) 25 cu.m. of P.CC (1:3:6)

ii) 170 sq.m of cement plaster 20 mm thick in cm. (1:4)

c) Find quantity of excavation and concrete for community well (Refer Fig. No. 3.)

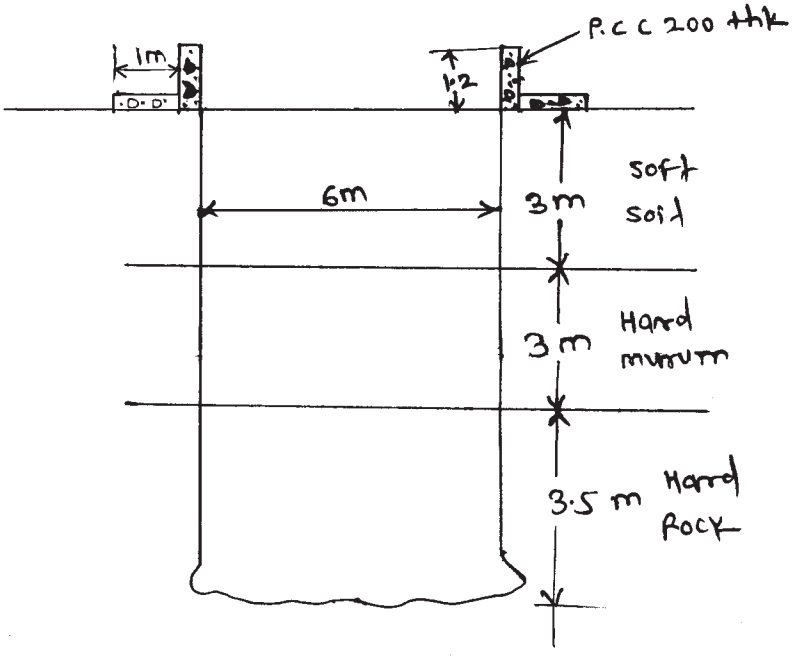


Fig. No. 3