

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 masonry 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 42m each using following data cost of existing bridge Rs. 1.5 or existing bridge having 3 spans of 50m each.

P.T.O.

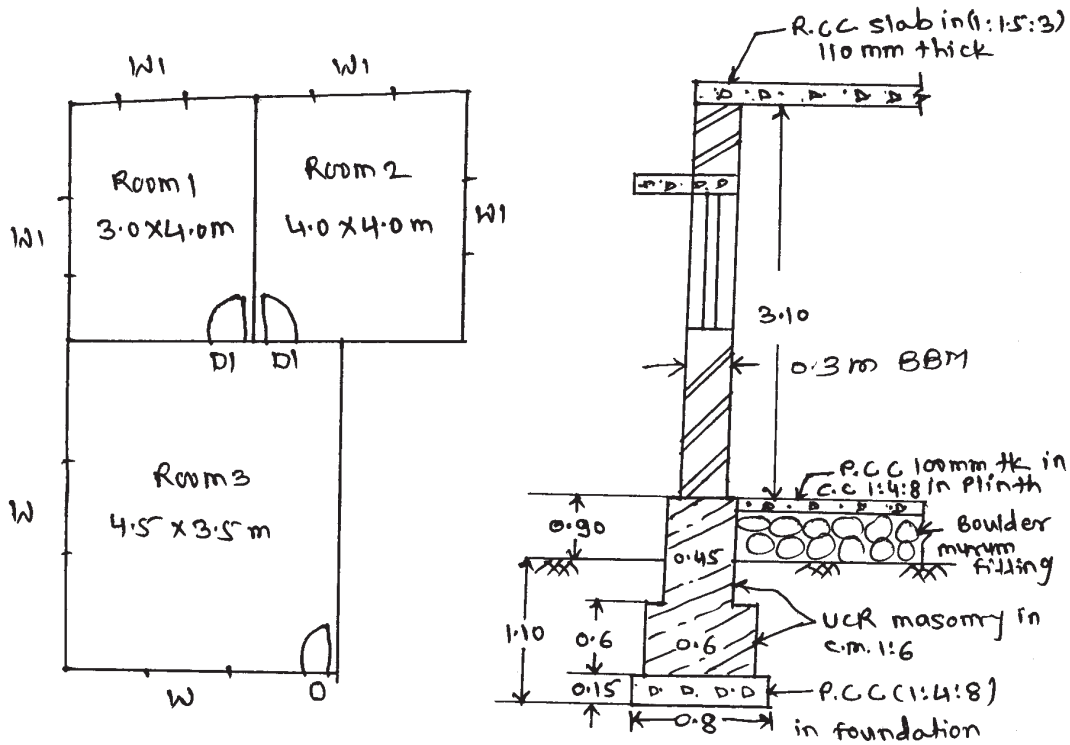
- b) Write the rules for desired accuracy in taking measurements as per IS 1200.
- c) Draw standard formats of measurement sheet, abstract sheet and face sheet.
- d) State the rules for deduction in plastering work as per IS 1200.

3. Attempt any THREE 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 mm ϕ (Tor steel)
 - iv) Links : 6 mm ϕ (ms steel) @ 125 mm c/c .

4. Attempt any THREE 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



LINE PLAN (NOT TO SCALE)

Q4 (a), (b)

$$\begin{aligned}
 D &= 1 \times 2.1 \text{ m} \\
 W &= 1.2 \times 1.2 \text{ m} \\
 W_1 &= 1 \times 1.5 \text{ m} \\
 D_1 &= 0.9 \times 2.1 \text{ m}
 \end{aligned}$$

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 $300 \text{ mm} \times 650 \text{ mm}$ is reinforced with four, 20mm diameters bars. The main bars are placed in one row and two are bent-up. Two anchor bars of 12mm diameters are provided to top and 6mm diameter stirrups are provided at $150 \text{ mm}^c/c$. The span of beam is 5.6m and end bearing is of 30cm. Calculate total quantity of mild steel reinforcement. Also prepare schedule of bars.

- 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 TWO 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	30.00m	60.00m
Ground level	116.00m	114.50m

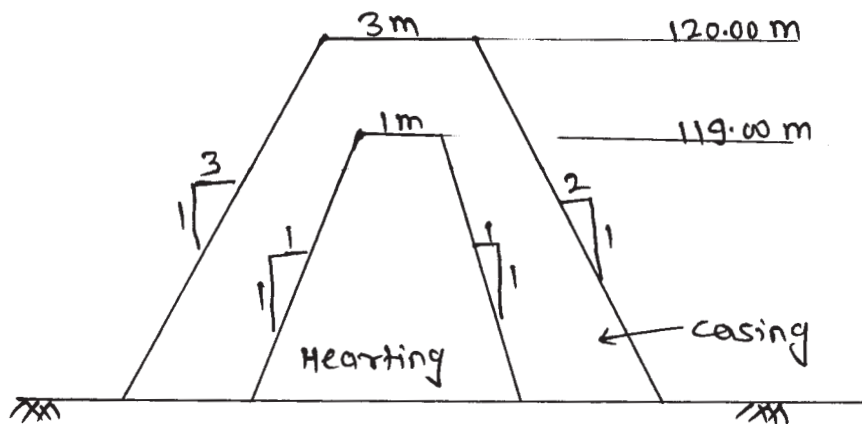


Fig. No. 2

- b) Prepare the rate analysis for U.C.R. masonry in CM(1:4) in foundation.
- c) An RCC roof slab of overall size 6600mm × 2200mm and thickness 150mm is provided with 12mm diameters main bars bent up alternately and placed at 150mm^{c/c} the distribution steel of 6mm diameters is provided of 200mm^{c/c}. The all round cover is 15mm. Find out the total quantity of plain steel. Prepare bar bending schedule.

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
- Formation width of road is 12m.
 - Formation level of starting chainage is 51-40m
 - The road surface shall be given a falling gradient of 1 in 200.
 - 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
- 25 cu.m. of P.CC (1:3:6)
 - 170 sq.m of cement plaster 20mm thick in cm. (1:4)
- c) Find quantity of excavation and concrete for community well (Refer Fig. No. 3.)

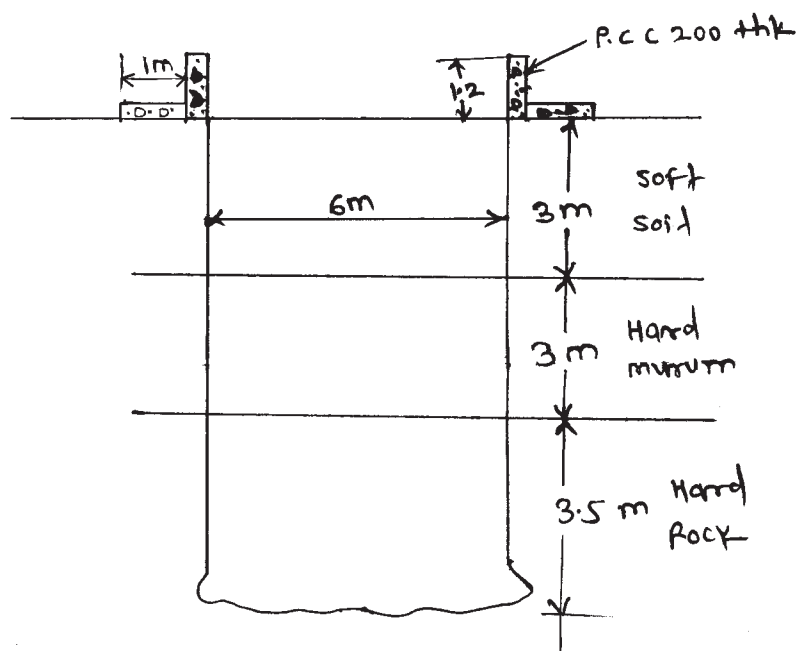


Fig. No. 3