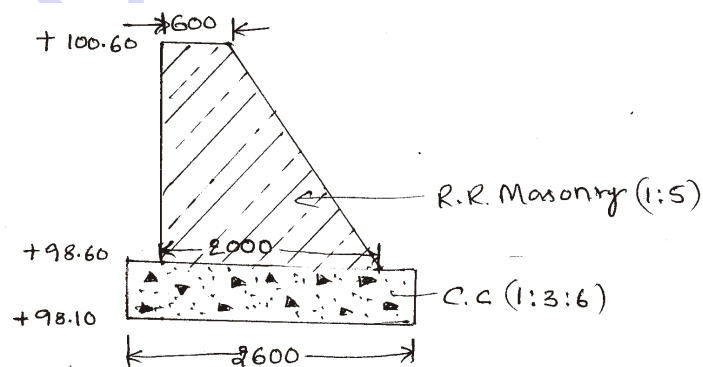
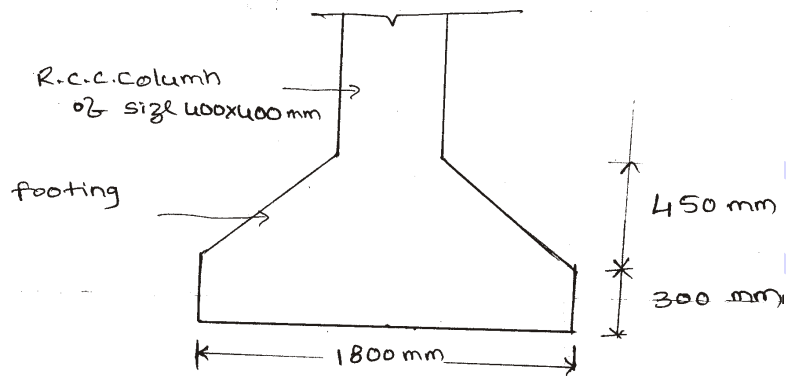


- * 4. Define analysis of rates and explain its purpose.
5. Explain the following terms :
- Blasting charges
 - Stacking charges
 - Crushing charges
6. Calculate the quantity of cement required in bags for the following items of work :
- Brick masonry in CM (1 : 5) for 12 m^3 of work, if 0.40 m^3 of CM is required for 1 m^3 of brick masonry.
 - PCC (1 : 5 : 10) using 40 mm size HBG metal for 80 m^3 .
7. A gravel road of length 1200 m and the top width of formation is 7.5 m. Side slopes 2 : 1 on either side. The height at 0.0 m is 0.50 m and at 1200 m is 0.80 m. Calculate the quantity of earth for formation.
8. Calculate the following quantities for abutment of a culvert as shown in figure. Take the length of the abutment as 3.0 m. :
- CC (1 : 3 : 6) bed under abutment
 - RR masonry used in abutment



- * 9. An RCC square column footing of a overhead tank as shown in figure. Calculate the cement concrete quantity for the footing.



10. List the various items to be included in the abstract estimate of a tank sluice with tower head.

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

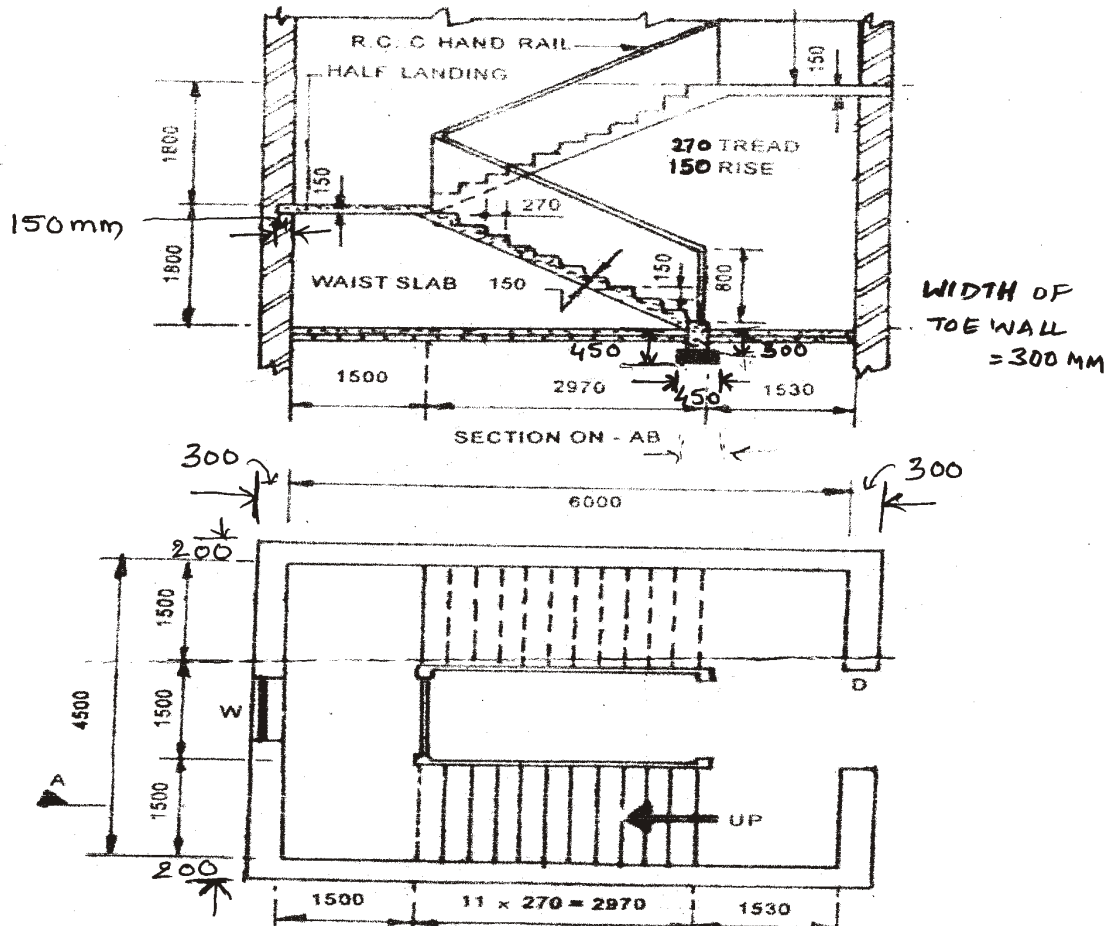
- * 11. Calculate the quantities of the following items of work for an open well staircase as shown in figure below :

(a) CC (1 : 5 : 10) with 40 mm HBG metal for toe wall

(b) RCC (1 : 1.5 : 3) with 20 mm HBG metal for toe wall, waist and landing slab

(c) Brick masonry in CM (1 : 5) for steps

(d) Plastering in CM (1 : 4) for steps and waist slab



12. Work out quantity of reinforcement for the RCC lintel of 230 mm wide and 200 mm deep is used for a clear span of 1.75 m and has bearing of 230 mm on the walls either side. Main bars in the tension zone are Fe 415 grade 3 bars of 12 mm dia. Of which one bar is cranked through 45° at L/7 from either ends. 2 no's anchor bars of 10 mm dia at top. Two-legged stirrups of 6 mm dia. at 150 mm c/c are provided throughout weight of rods are 12 mm dia-0.89 kg/m, 10 mm dia-0.61 kg/m, 6 mm dia-0.23 kg/m.

Assume all-round clear cover as 20 mm.

- * **13.** Prepare a data sheet and calculate the cost of the items given below using lead statement :

(a) CC (1 : 4 : 8) using 40 mm size HBG metal— 1 m^3

(b) Plastering with CM (1 : 6), 12 mm thick for 10 m^2

Materials and labour required for 1 m^3 :

CC (1 : 4 : 8)	Plastering with CM (1 : 6) for 10 m^2
0.92 m^3 HBG metal 40 mm size	0.15 m^3 cement mortar (1 : 6)
... m^3 sand	1.1 nos. mason
... m^3 cement	0.5 nos. man mazdoor
0.20 Nos. masons	1.1 nos. women mazdoor
1.8 Nos. man mazdoor	LS sundries
1.4 Nos. woman mazdoor	
LS sundries	

Lead statement of material :

S.no.	Materials	Rate	Per	Lead	Conveyance charges
1.	40 mm HBG metal	410-00	1 m^3	12 km	₹ 12-00/ m^3 /km
2.	Sand	120-00	1 m^3	5 km	₹ 10-00/ m^3 /km
3.	Cement	4500	1 tonne	5 km	₹ 20-00/Tonne/km

Labour charges :

Masons = ₹ 420 per day

Man mazdoor = ₹ 320 per day

Woman mazdoor = ₹ 320 per day

14. Prepare the detailed cum abstract estimate for the following items of work for building as shown in figure.

(a) Earthwork excavation for foundation

(b) CC (1 : 4 : 8) for foundation bed

(c) Brick masonry in CM (1 : 6) for footings, basement and super-structure walls

(d) RCC (1 : 1.5 : 3) for roof slab, lintels over openings

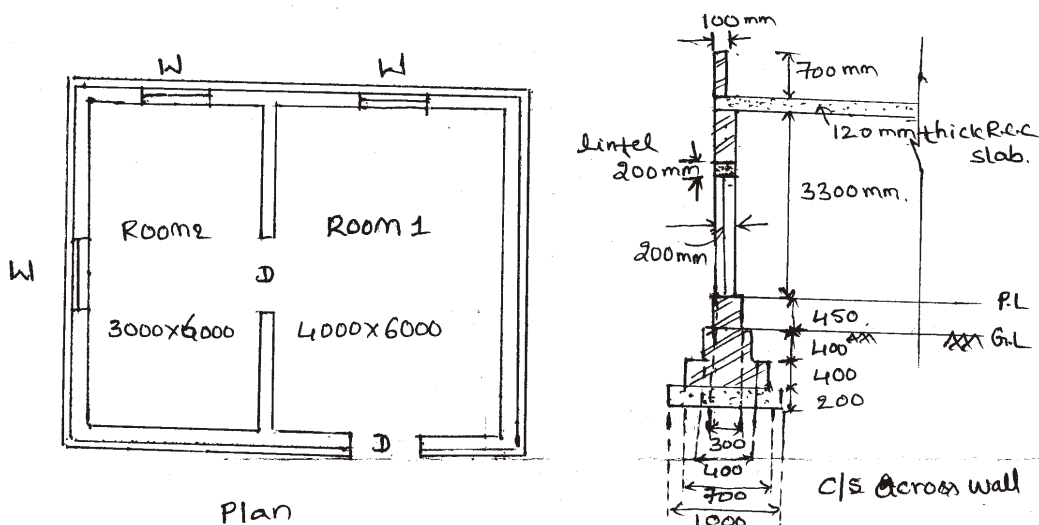
Assume bearing of lintel over the walls on either side = 150 mm

Adopt the following rates :

Sl. no.	Description of item	Rate	Per
1	Earthwork excavation	48-00	1m ³
2	Cement concrete (1 : 4 : 8)	4500-00	1m ³
3	Brick masonry in CM (1 : 6)	900-00	1m ³
4	RCC (1 : 1.5 : 3)	6030-00	1m ³

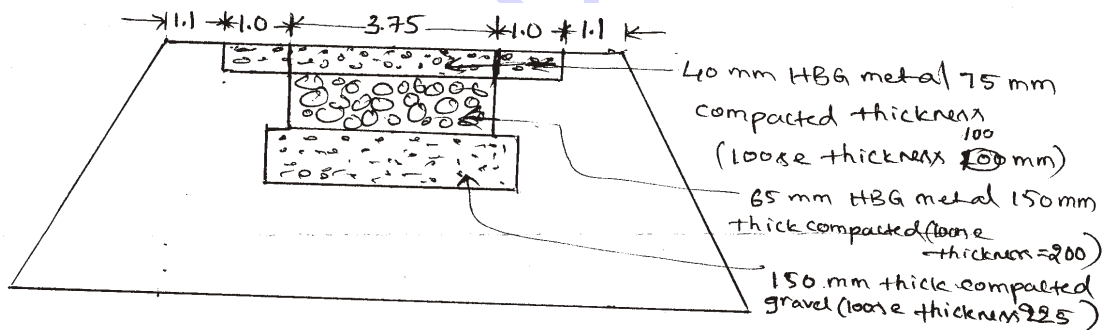
Assume $D = 1200 \text{ mm} \times 2100 \text{ mm}$

$W = 1200 \text{ mm} \times 1500 \text{ mm}$



* **15.** Prepare the detailed estimate for the following items of work of a WBM road for a length of 500 m as shown in figure :

- (a) Collection and supply of 65 mm HBG metal for base course
- (b) Collection and supply of 40 mm HBG metal for wearing course
- (c) Collection and supply gravel for base course and shoulders
- (d) Spreading of 65 mm HBG metal
- (e) Spreading of 40 mm HBG metal
- (f) Spreading gravel for base course and shoulders

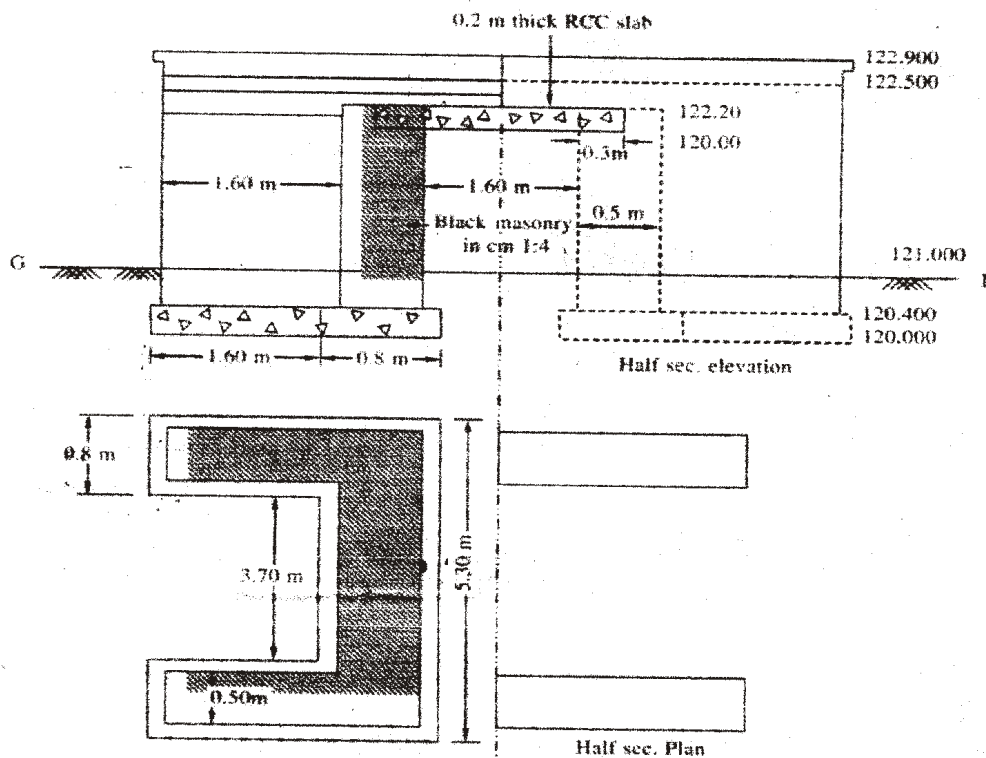


* **16.** Prepare the detailed estimate of following items of work for slab culvert from figure :

- (a) Earthwork excavation for foundations
- (b) CC (1 : 4 : 8) using 40 mm HBG metal for foundation bed

*

- (c) Brick masonry in CM (1 : 4) for abutments and returns
- (d) Plastering of abutments inside the vent
- (e) RCC (1 : 1.5 : 3) for deck slab 200 mm thick and 300 mm bearing on either side

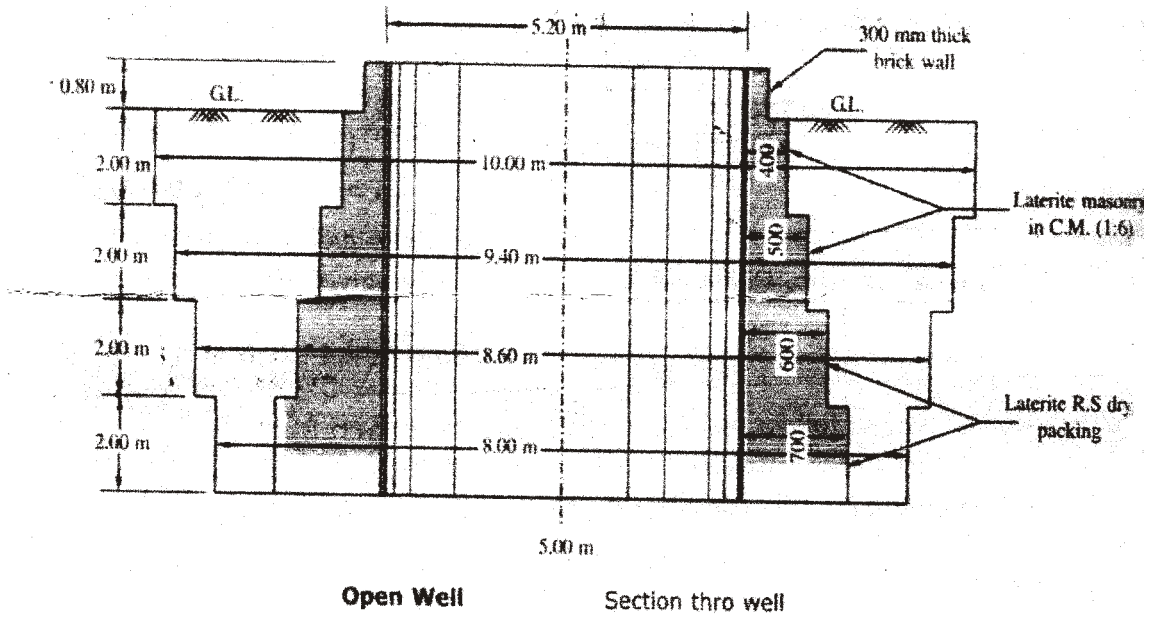


17. Calculate the quantities for the following items of work for an open well shown below :

- (a) Earthwork excavation for open well
- (b) Laterite masonry in CM (1 : 6)

*

(c) Refilling the excavated soil around the steining



030 030 030

*

18. Prepare a detailed estimate of the following items of work from the overhead tank shown in figure below :

- (a) Cement concrete (1 : 4 : 8) for column foundation
- (b) RCC (1 : 2 : 4) for columns and brace beams above ground level
- (c) RCC (1 : 2 : 4) for cover slab and bottom slab
- (d) RCC (1 : 2 : 4) for ring beam and side walls of tank

