

17501

15116**4 Hours / 100 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. (A) Attempt any THREE of the following :** **3 × 4 = 12**
- (a) State different types of estimates and explain any one in detail.
- (b) Explain lead and lift.
- (c) How will you prepare approximate estimate for roads and highways ?
- (d) Differentiate with respect to four points unit quantity and total quantity method of detailed estimates.
- (B) Attempt any ONE of the following :** **1 × 6 = 6**
- (a) Describe 'provisional quantities' and 'provisional sum'.
- (b) Explain any six factors affecting the rate analysis.
- 2. Attempt any TWO of the following :** **2 × 8 = 16**
- (a) Prepare rate analysis for brick masonry in super-structure using traditional bricks and cement mortar proportion 1 : 6.

P.T.O.

17501

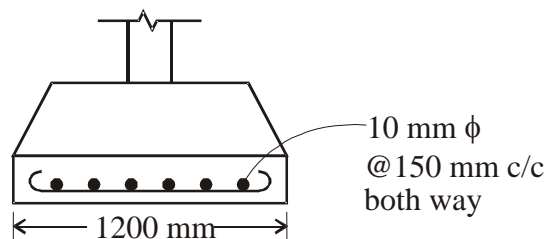
[2]

- (b) (i) The cost of construction of school building is 2.50 crores for a capacity of 600 students and area of construction is 1600 m². Prepare approximate estimate of a newly proposed school building for 1500 students with the area 5000 m². Use plinth area method.
- (ii) Describe 'typical bay' method for approximate estimate.
- (c) (i) State the desired accuracy in taking measurements of items of work as per IS-1200.
- (ii) Give the market rates for following materials :
- Cement bag
 - Reinforcing steel
 - Teak wood
 - Coarse aggregates (20 mm to 22 mm)

3. Attempt any FOUR of the following :

4 × 4 = 16

- What are the advantages of using softwares (QE – Pro) in preparation of estimates of civil engineering works ?
- Enlist any four softwares used for estimation in civil engineering.
- State any four purposes of estimating and costing.
- State the rules for deduction in plastering as per IS-1200.
- Explain PWD method of taking out quantities.
- Find quantity of 10 mm ϕ reinforcement in footing shown in Fig. No. 1 and prepare schedule of reinforcement.



Size of footing 1200 mm × 1200 mm

Fig. No. 1

17501

[3]

4. (A) Work out quantities of following any three items from Fig. No. 2 : $3 \times 4 = 12$

- (i) Excavation in foundation
- (ii) PCC 1 : 4 : 8 in foundation
- (iii) UCR Masonry in foundation and plinth
- (iv) Mosaic flooring

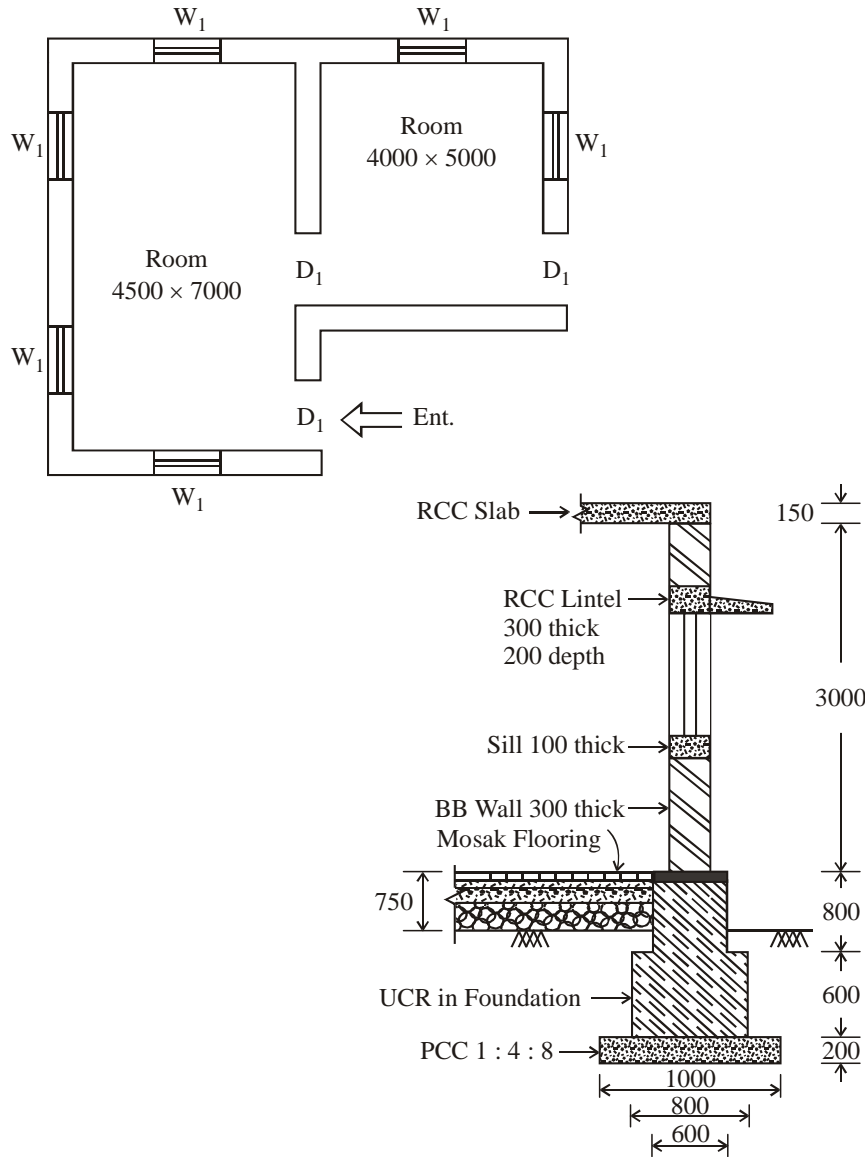


Fig. No. 2

Note :

- (1) All dimensions are in mm.
- (2) Door – D_1 – 1000 × 2100
- (3) Window – W_1 – 1000 × 1200
- (4) Internal neeru finish plaster
- (5) External sand finish plaster

P.T.O.

17501

[4]

(B) Attempt any ONE of the following :**6**

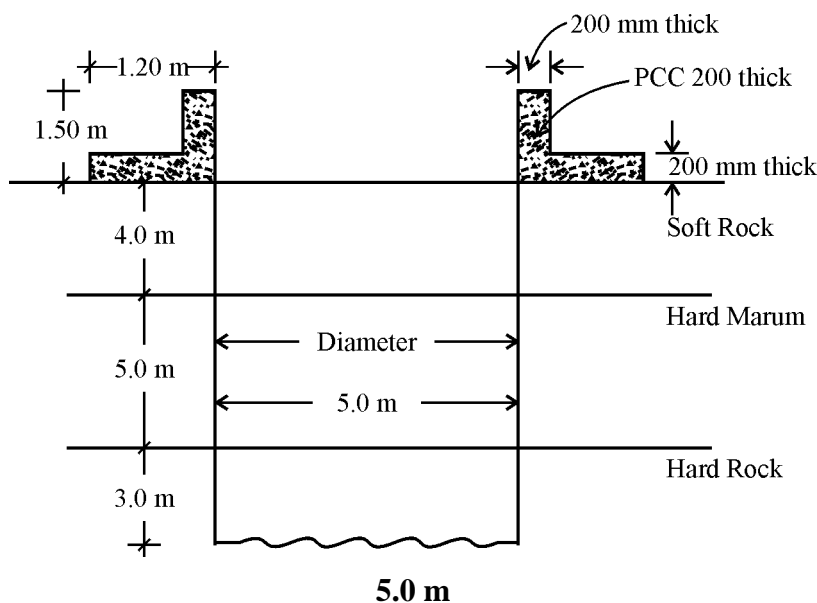
- (a) Calculate the quantities of reinforcement for the following and prepare a bar bending schedule.

Member	Overall size	Details of Reinforcement
Beam	4000 mm-length (230 mm × 400 mm section)	(a) Bottom Reinforcement 16 mm ϕ - 5 Nos. – (3 straight and 2 bent up) (b) Top Reinforcement 12 mm ϕ – 3 Nos. (c) Stirrups – 6 mm ϕ @ 150 mm c/c

- (b) Calculate the quantities of cement, sand and coarse aggregate for 40 m³, cement concrete having proportion (1 : 2 : 4).

5. Attempt any TWO of the following :**2 × 8 = 16**

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

**Fig. No. 3**

17501

[5]

- (b) Calculate the quantity for road from the following data by using mean area method :

Formation width = 12 m

Slope of banking = 2 : 1

Slope in cutting = 1.5 : 1

Chainage	0	30	60	90
Ground level	500	499.70	498.90	497.60
Formation level	497.500	497.300	497.100	496.800

- (c) Prepare rate analysis for RCC 1 : 2 : 4 including steel reinforcement for RCC slab (10 m^3 – quantity)
- (d) Calculate the quantities of following items for septic tank of size $1.80 \times 5.40 \text{ m}$ and height 2.0 m :
- Excavation
 - BB Masonry
 - PCC 1 : 4 : 8 in bed (15 cm thick)
 - M15 slab 12 cm thick

6. Attempt any FOUR of the following :

4 × 4 = 16

- Explain how will you prepare approximate estimate of an auditorium.
- Rule out the standard formats of standard measurement and abstract sheet as per PWD.
- State multiplying factors for painting works to
 - AC corrugated sheet
 - MS Grill
 - Panelled door
 - Fully glazed window

P.T.O.

17501

[6]

- (d) State service units for
 - (i) Hospital
 - (ii) Auditorium
 - (iii) Godown
 - (iv) Road
 - (e) State any four factors affecting task work.
 - (f) What is contingencies and work charged establishment ?
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17501

[7]

17501

[8]