17501

15116

4 Hours / 100 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. **(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.

(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 :

(a) Cement bag

(b) Reinforcing steel

(c) Teak wood

(d) Coarse aggregates (20 mm to 22 mm)

3. **Attempt any FOUR of the following :**   **4 × 4 = 16**

(a) What are the advantages of using softwares (QE – Pro) in preparation of estimates of civil engineering works ?

(b) Enlist any four softwares used for estimation in civil engineering.

(c) State any four purposes of estimating and costing.

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

(e) Explain PWD method of taking out quantities.

(f) Find quantity of 10 mm ϕ reinforcement in footing shown in Fig. No. 1 and prepare schedule of reinforcement.

10 mm ϕ
@150 mm c/c
both way
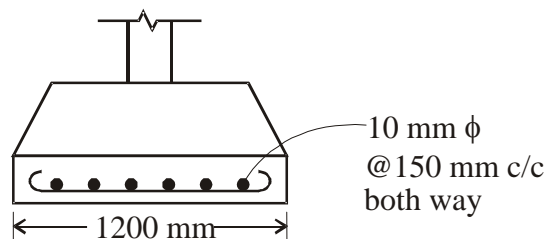
1200 mm

Size of footing 1200 mm × 1200 mm

Fig. No. 1

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

        (i)   Excavation in foundation

        (ii)   PCC 1 : 4 : 8 in foundation

        (iii)   UCR Masonry in foundation and plinth
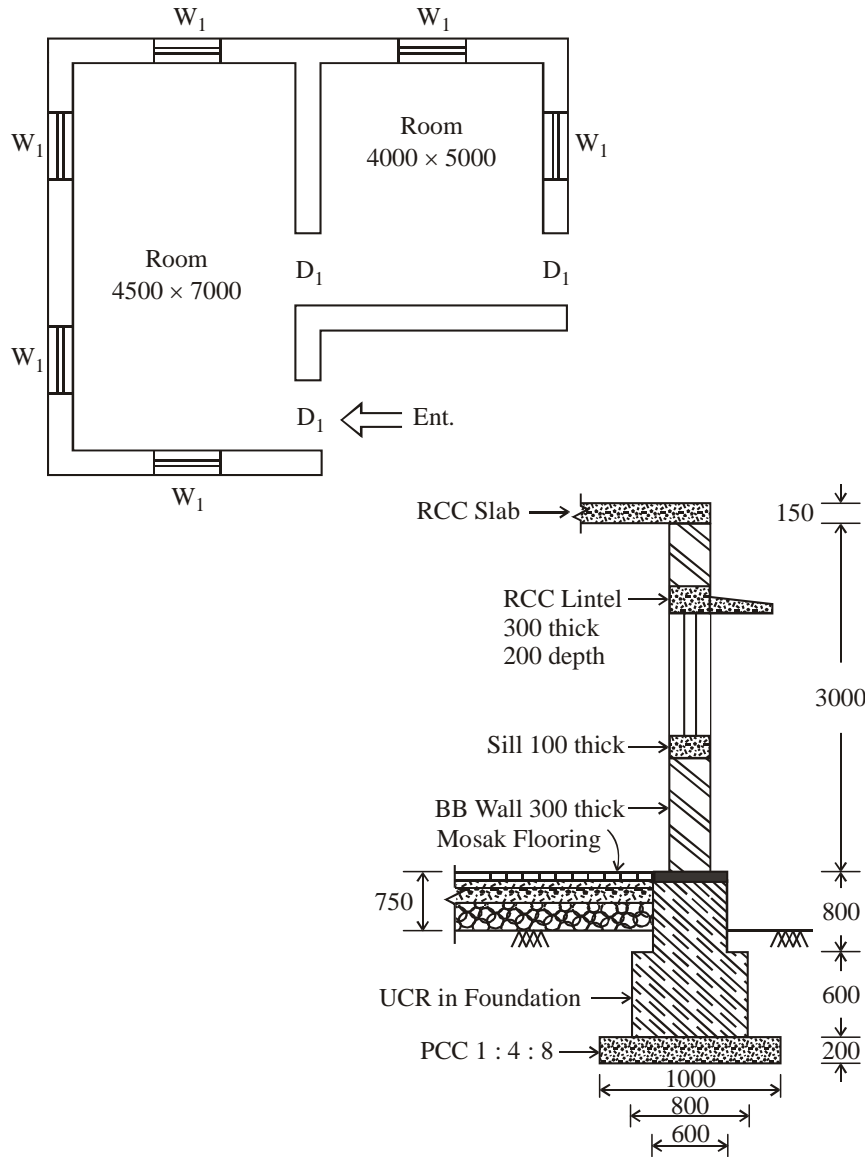
        (iv)   Mosaic flooring

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.

(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 m^3, 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)
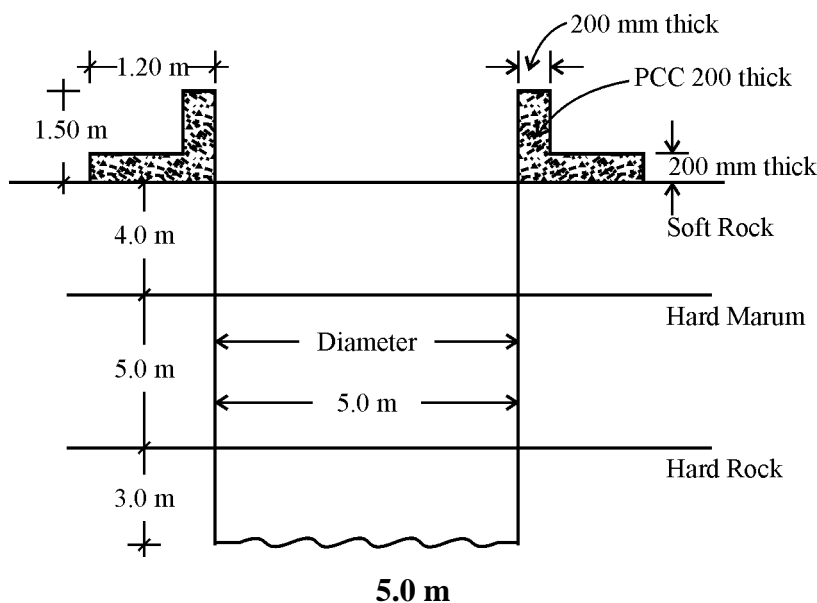

5.0 m

Fig. No. 3

(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 × 5.40 m and height 2.0 m :

  (i) Excavation

  (ii) BB Masonry

  (iii) PCC 1 : 4 : 8 in bed (15 cm thick)

  (iv) M15 slab 12 cm thick

6. Attempt any FOUR of the following : 4 × 4 = 16

(a) Explain how will you prepare approximate estimate of an auditorium.

(b) Rule out the standard formats of standard measurement and abstract sheet as per PWD.

(c) State multiplying factors for painting works to

  (i) AC corrugated sheet

  (ii) MS Grill

  (iii) Panelled door

  (iv) Fully glazed window

(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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