Jawaharlal Nehru Technological University Hyderabad
B.Tech IV Year I Semester Examinations
December - 2014
ESTIMATING AND COSTING
(Civil Engineering)

Time: 3 Hours   Max. Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1.   (a)   Explain the different types of estimates in detail.

    (b)   What are the factors to be considered during the preparation of a detailed estimate?

2.   Estimate the quantities of the following items of a two roomed building from the given plan and sections as shown in figures below. Use long wall and short wall method.

    (a)   Earthwork in excavation in foundation

    (b)   Lime concrete in foundation

    (c)   1st class brickwork in 1:6 cement mortar in foundation and plinth
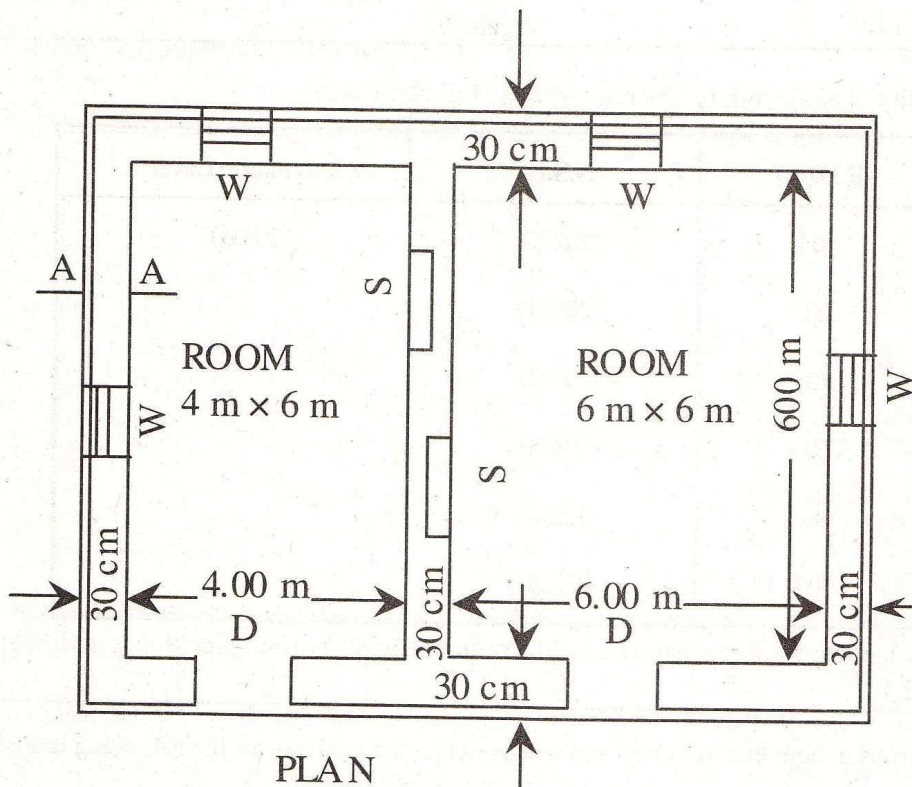
    (d)   2.5 cm thick c.c damp proof course.
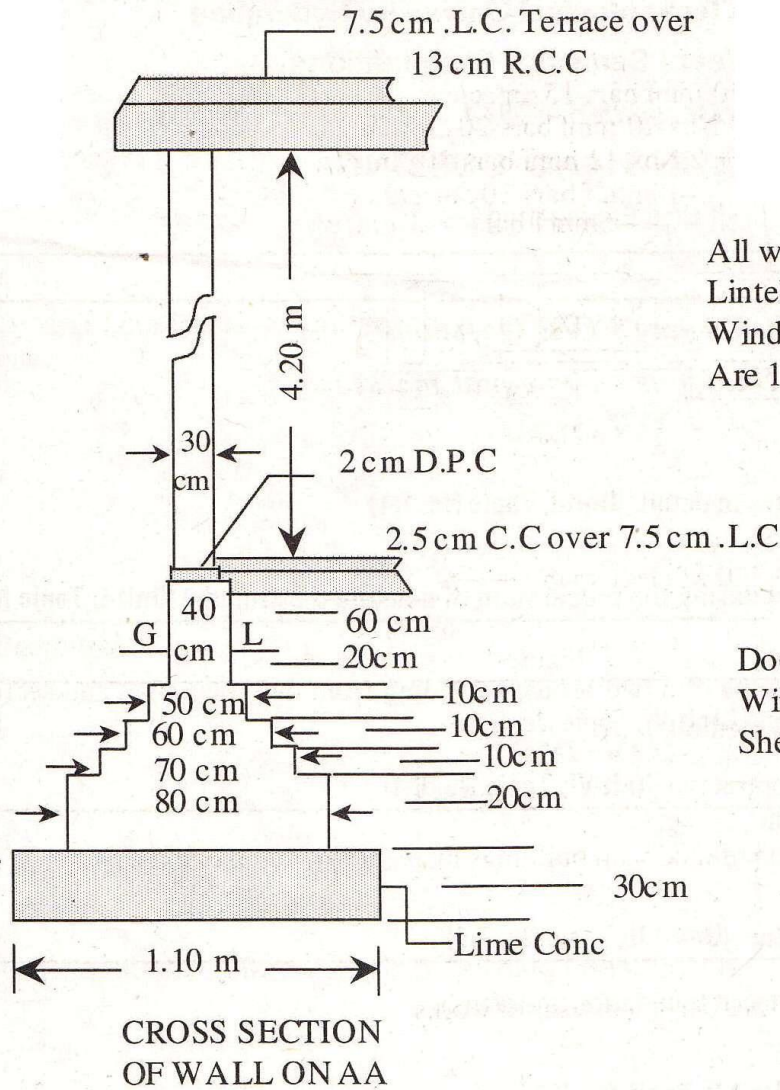

PLAN

Figure (1)

7.5 cm .L.C. Terrace over
13 cm R.C.C

4.20 m

30 cm

2 cm D.P.C

2.5 cm C.C over 7.5 cm .L.C

40 cm

G   L

60 cm
20cm

50 cm
60 cm
70 cm
80 cm

10cm
10cm
10cm
20cm

30cm

Lime Conc

1.10 m

All walls are of same section
Lintels over doors,
Windows and shelves
Are 15 cm thick R.B.

Doors D - 1.20 m × 2.10 m
Windows W - 1.00m × 1.50 m
Shelves S - 1.00 m × 1.50 m

CROSS SECTION
OF WALL ON AA

Figure (2)

3.   Calculate the quantity of earthwork for the road with the following data.

R.D.(m)	N.S.L.	Formation Level
0	202.00	203.00
20	203.20	
40	203.50	
60	204.00	
80	205.40	
100	206.60	

The road formation has a upward gradient of 1 in 20. Formation width is 10m, Side slopes in filling: 1 in 2.

4.   Calculate the materials, labour etc., required and work out the rate analysis for the following items:

(a)   2.5 cm cement concrete floor 1:2:4 per one sq.m.

5   Prepare schedule of reinforcement for a RCC beam 35 cm × 70 cm in section from the figure shown below. **[15]**

3 Nos-10 mmφ bars 15 c m. c/c
3 Nos-10 mmφ bars 20 c m. c/c
2 Nos-12 mmφ bars 20 c m. c/c
10mm φ bars 30 c m. c/c
6mm φ bars @ 40 c m. c/c
20 c m
20 c m
120c m
120c m
80c m
30 c m 80c m
20mm φ bars bent 30 c m
-up (5 Nos)
20mmφ bars straight
(5 Nos)
10 m clear span
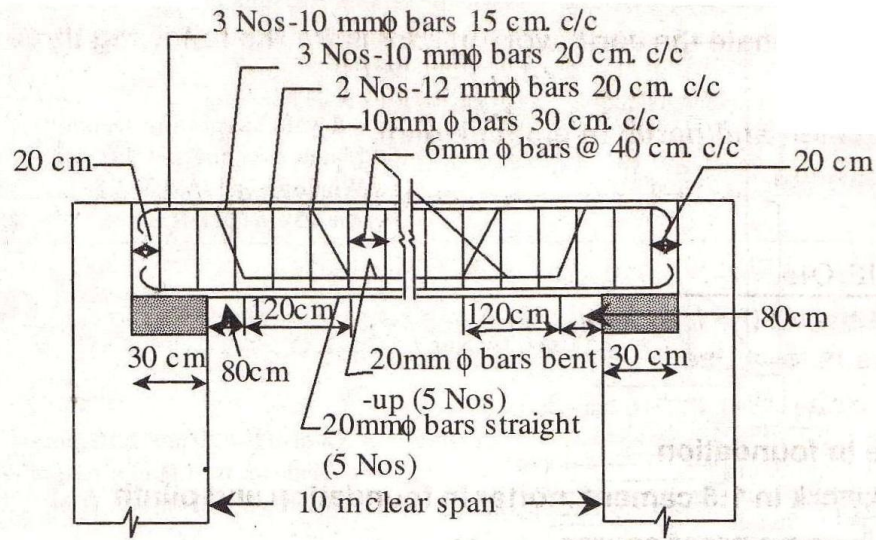
Figure

6.   List and explain the various types of contracts in detail.

7.   Calculate the standard rent of a government residential building newly constructed, from the following data.

Cost of land = ₹. 1,00,000

Cost of construction = ₹. 4,00,000

Cost of roads within the compound & fencing = ₹. 20,000

Cost of sanitary and water supply works @ 8% of the cost of the building

Cost of electric installation including fans @ 10% of the cost of building

Municipal house tax = ₹. 400 per annum

Water tax = ₹. 250 per annum

Property tax = ₹. 140 per annum. **[15]**

8.   Write down the detailed specifications of the following items of works:

(a)   Cement concrete and RCC work

(b)   Formwork. **[15]**

Code No: 09A70107

Jawaharlal Nehru Technological University Hyderabad

B.Tech IV Year - I Semester Examinations

November/December - 2012

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R09

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- - -

1. (a)   What are the main items of work in estimating a building?

    (b)   What are rules followed in estimating openings in buildings?

    (c)   What are various methods of estimating a building and explain about individual
          wall method? **[15]**

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2.   Estimate the quantities of the following items of a residential building from the given
     drawing,

     (a)   Earth work in excavation in foundation

     (b)   Lime concrete in foundation

     (c)   First class brick work in 1.6 cement sand mortar in foundation and plinth.

     (d)   2.5 cm damp proof course

     (e)   First class brick work in lime mortar in super structure.

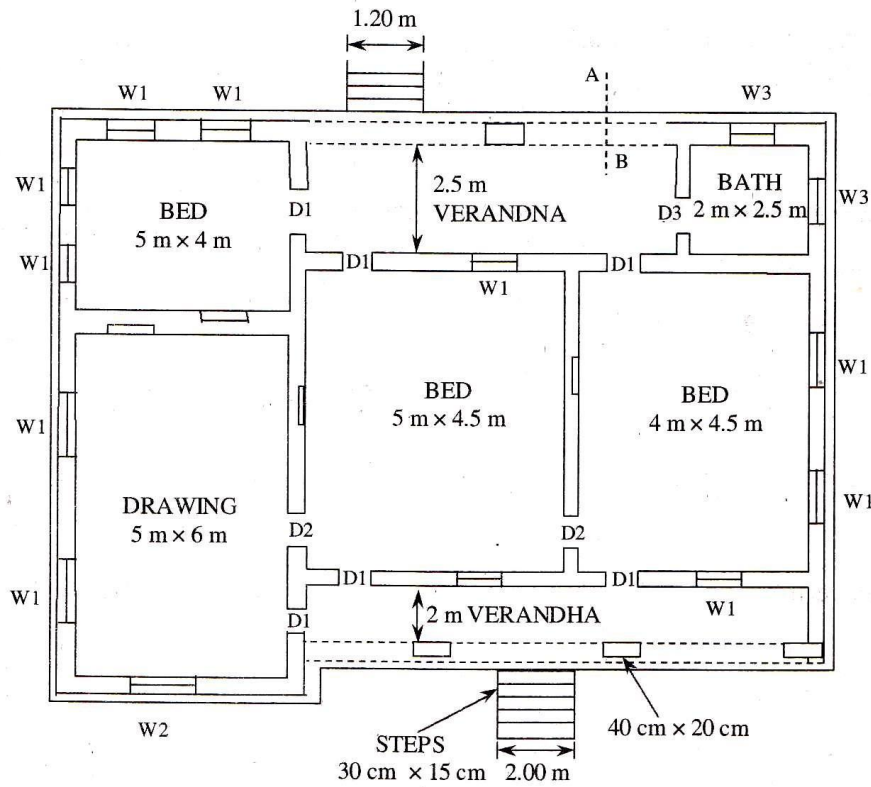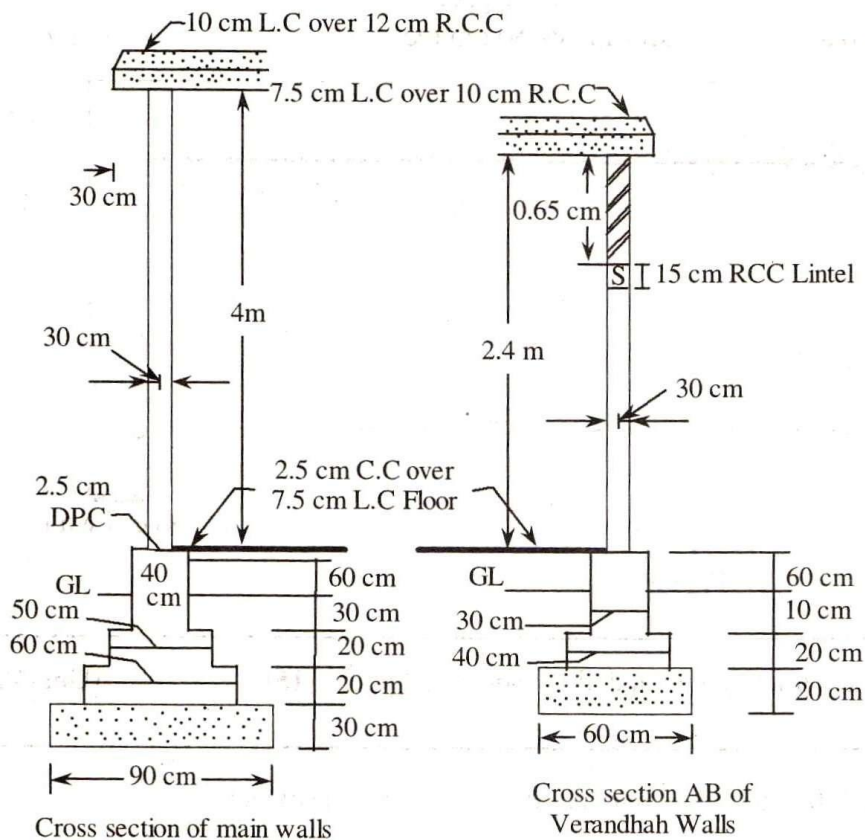   (By any center line method) **[15]**

Figure (a)

-10 cm L.C over 12 cm R.C.C

7.5 cm L.C over 10 cm R.C.C

30 cm

30 cm

4m

2.5 cm DPC

2.5 cm C.C over 7.5 cm L.C Floor

GL

50 cm
60 cm

40 cm

60 cm
30 cm
20 cm
20 cm
30 cm

|←—— 90 cm ——→|

Cross section of main walls

0.65 cm

S I 15 cm RCC Lintel

2.4 m

30 cm

GL

30 cm
40 cm

60 cm
10 cm
20 cm
20 cm

|← 60 cm →|

Cross section AB of
Verandhah Walls

Doors:
D1-120 cm × 210 cm(1.2 m × 2.1 m)
D2-100 cm × 200 cm(1.0 m × 2.0 m)
D3-75 cm × 180 cm(0.75 m × 1.8 m)
Windows:
W1-100 cm × 150 cm(1.0 m × 1.5 m)
W2-200 cm × 150 cm(2.0 m × 1.5 m)
W3-75 cm × 120 cm(0.75 m × 1.2 m)
Shelves:
S-100 cm × 150 cm(1.0 m × 1.5 m)
LINTEL OVER DOORS, WINDOWS
E.T.C 15 cm R.B.

Figure (b)

3. Prepare an estimate for the portion of a road from chainage 14 to 22 from the data given below. Draw also the longitudinal and typical cross-section for cutting and banking. The rate of earth work in cutting is ₹ 8.50/cum and embankment is ₹ 7.50/cum. The formation width of the proposed road is 12 m, side slope 1.5: 1 in cutting and 2 : 1 in banking. **[15]**

Chainage (30 m) (in m)	14	15	16	17	18	19	20	21	22
Ground RL'S	108.6	109.25	109.4	108.85	108.5	107.25	106.8	107.15	107.20

4. (a) Prepare rate analysis for the following works,

   (i) R.C.C work in slabs 1:2:4

   (ii) First class brick work in super structure with 1:6 cement mortar

   (iii) 2.5 cm cement concrete floor 1:2:4.

   (b) What is analysis of rate? Explain the purpose of rate analysis. **[11+ 4]**

5. Figure shows the longitudinal section and cross section of a simple beam of clear span 5.0 m. The thickness of supporting wall is 30 cm. Work out the total quantity of cement concrete and steel reinforcement (mild steel). **[15]**
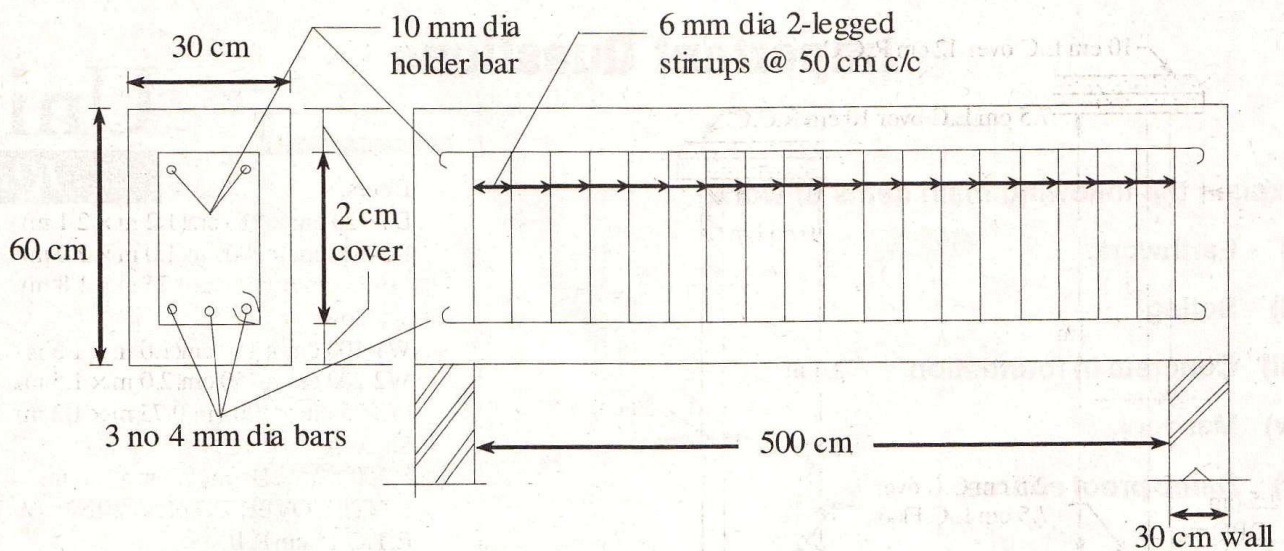
Figure

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6. What is contract? What do you mean by contract system and also explain its types? **[15]**

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7. A building is constructed at a cost of ₹ 2,50,000 on a land purchased at ₹ 50,000. The owner of the property expects a return of 9% on the cost of construction and 8% on the cost of land. The building is estimated to have future life of 60 years at the end of which it requires ₹ 3,25,000 for constructing a new building in its place. Determine the standard rent of the property given.

   (i) Rate of interest for sinking fund at 6%

   (ii) Annual repairs at 1.5% of the cost of construction

   (iii) All the other outgoings is 28% of the net income of the property

   (iv) Scrap value at the end of useful life of building as 10%. **[15]**

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8. Write the general specifications for the following items of work,

   (a) D.P.C 2.5 cm thick

   (b) Painting doors and windows

   (c) Cement-concrete in roof terracing

   (d) Reinforced brick-work. **[15]**

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1. Explain, how do you estimate the earth work in canals for the following three cases of canal c/s.

   (a) Fully in excavation

   (b) Partly in excavation and partly in embankment

   (c) fully in embankment. **[15]**

2. Estimate the quantities of the following items of a two roomed building from the plan and section as shown in figures below. Use long wall and short wall method.

   (a) Earthwork in excavation in foundation

   (b) Lime concrete in foundation

   (c) 1st class brickwork in 1:6 cement mortar in foundation and plinth

   (d) 2.5 cm thick c.c damp proof course. **[15]**

Figure (1)

7.5 cm .L.C. Terrace over
13 cm R.C.C

All walls are of same section
Lintels over doors,
Windows and shelves
Are 15 cm thick R.B.

4.20 m

30 cm

2 Cm D.P.C

2.5 Cm C.C Over 7.5 Cm .L.C

40 cm

G L

60 cm
20cm
10cm
10cm
10cm
20cm

50 cm
60 cm
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Doors D - 1.20 m × 2.10 m
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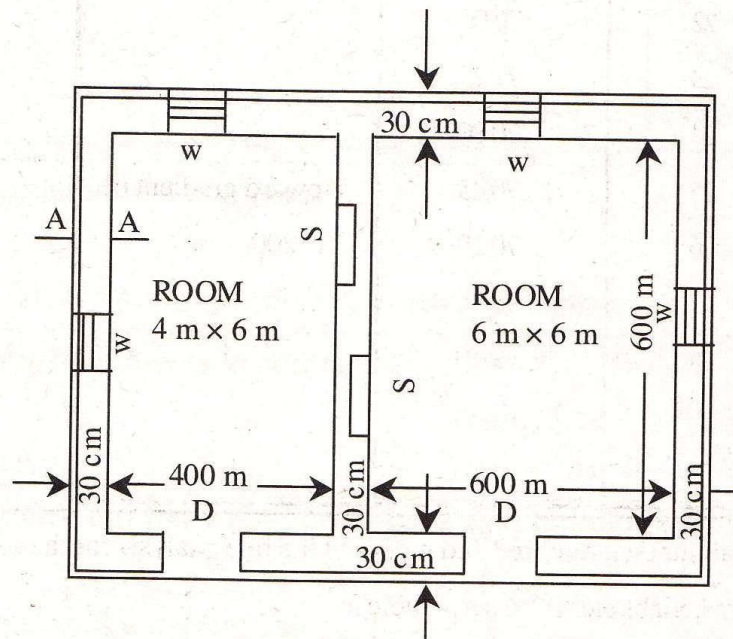
30cm

Lime Conc
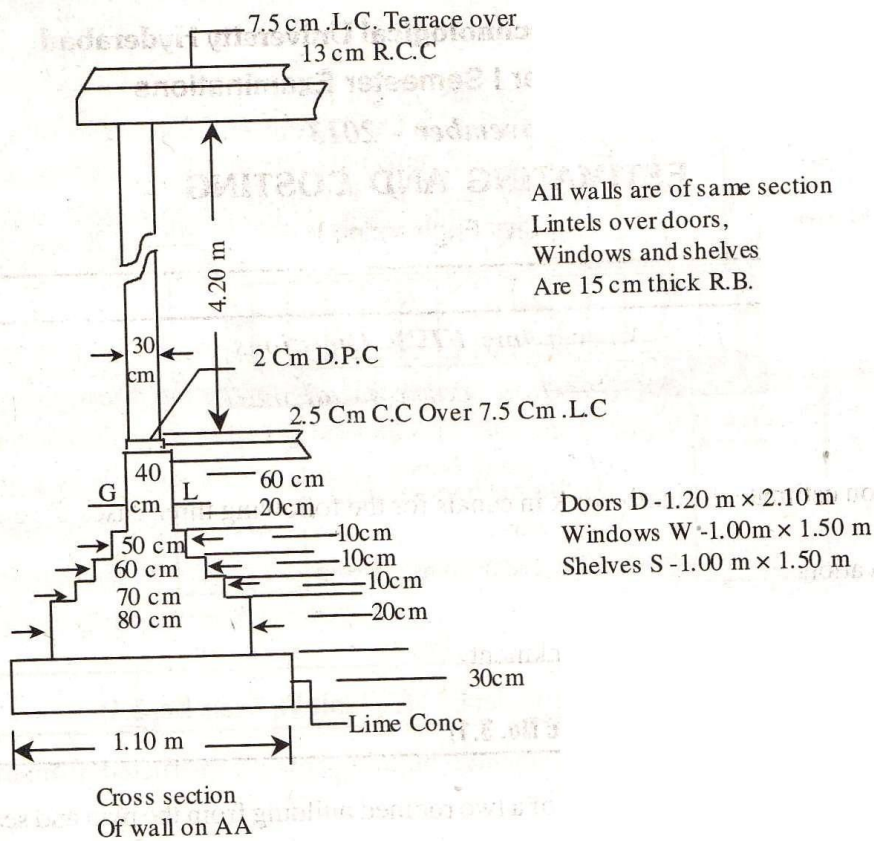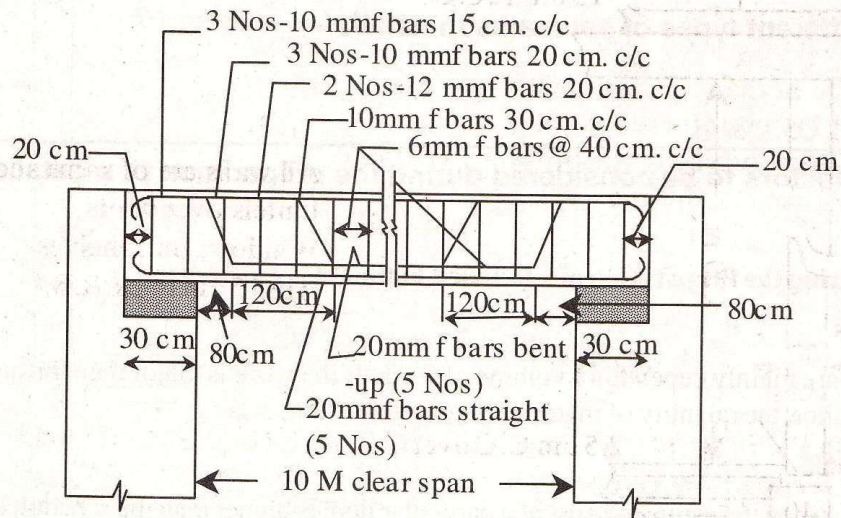
1.10 m

Cross section
Of wall on AA

Figure (2)

3.   Estimate the quantity of earth work for the portion of a road from the following data. Road width at the formation surface is 8 m. Side slopes 2:1 in banking and 1.5:1 in cutting. Length of the chain is 30 m. **[15]**

Chainage	Ground level	Formation level
20	71.20	70
21	71.25	
22	70.90	
23	71.25	
24	70.80	
25	70.45	Upward gradient of
26	70.20	1 in 200
27	70.35	
28	69.10	
29	69.45	
30	69.70	

4.   Calculate the materials, labour etc., required and work out the rate analysis for the following items:

(a)   R.C.C. work in Beams, Slabs etc. 1:2:4 per 1 cubic m.

(b)   1 class brick work in foundation and plinth with 20 × 10 × 10 cm. bricks with 1:6 cement sand mortar per 1 cubic m.
       [15]

5. Prepare schedule of reinforcement for a RCC beam 35 cm × 75 cm in section from the figure shown below.
   (Unit-V, Topic No. 5.1)

3 Nos-10 mmf bars 15 cm. c/c
3 Nos-10 mmf bars 20 cm. c/c
2 Nos-12 mmf bars 20 cm. c/c
10mm f bars 30 cm. c/c
6mm f bars @ 40 cm. c/c
20 cm
20 cm
120 cm
120 cm
80 cm
30 cm
80 cm
20mm f bars bent
-up (5 Nos)
20mmf bars straight
(5 Nos)
30 cm
10 M clear span

Figure

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6. (a) Discuss the basic element of contracts.

   (b) Discuss the various documents in contratcts.

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7. Explain, how do you carry out the valuation of land with buildings by the following methods.
   (a) Rental method
   (b) Direct comparisons of the capital value.

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8. Write down the detailed specifications for the following items of works.

   (a) Earthwork in excavation foundation

   (b) Centering and Shuttering

   (c) Painting and Polishing.