

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), April-May 2018

B. Tech in Civil Engineering, Semester VI

Roll No.....

CE609 : Estimation, Costing and Evaluation Engineering

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Objective type multiple choice questions (10 questions @ 1 mark)

10

- i. The most reliable estimate is;
(a) Detailed (b) Supplementary (c) plinth area (d) all of the above.
- ii. Pick up the incorrect statement from the following:
(a) Dimensions are measured to the nearest 0.01 m
(b) Areas are measured to the nearest 0.01 sq.m
(c) Cubic contents are measured to the nearest 0.1 cum
(d) Weights are measured to the nearest 0.001 tonnes
- iii. The correct prismoidal formula for volume is
(a) D [first area + last area + $\sum$ Even area + $2 \sum$ odd areas]
(b) $\frac{D}{3}$ [first area + last area + $4 \sum$ Even area + $2 \sum$ odd areas]
(c) $\frac{D}{3}$ [first area + last area + $2 \sum$ Even area + $4 \sum$ odd areas]
(d) $\frac{D}{6}$ [first area + last area + $2 \sum$ Even area + $4 \sum$ odd areas].
- iv. The order of booking dimensions is
(a) Length, breadth, height (b) Breadth, length, height
(c) Height, breadth, length (d) None of these
- v. Due to change in price level a revised estimate is prepared if the sanctioned estimate exceeds
(a) 2.0% (b) 2.5% (c) 4.0% (d) 5.0%
- vi. The rate of payment is made for 100 cu m (per %cu m) in case of
(a) Earth work in excavation (b) Rock cutting
(c) excavation in trenches for foundation (d) Earth work in filling the plinth
(e) All the above
- vii. The various methods of calculating depreciations are
(a) Straight line method (b) Constant percentage method
(c) sinking fund and Quantity survey method (d) All the above
- viii. The quantity of materials, proportion of mortar and workmanship which are described in.....
(a) Drawings (b) Specifications
(c) Contract (d) Measurement book
- ix. While estimating a reinforced cement structure, the omitted cover of concrete is

assumed

(a) At the end of reinforcing bar, not less than 25 mm or twice the diameter of the bar

(b) In thin slabs, 12 mm minimum or diameter of the bar whichever is more

(c) For reinforcing longitudinal bar in a beam 25 mm minimum or diameter of the largest bar which is

(d) All the above

x The floor area includes the area of the balcony up to

(a) 100% (b) 75% (c) 50% (d) 25%

Q.2 Short answer type questions (4 questions @ 2.5 marks)

10

i. An arch of 2.50 m span subtends an angle of 80° at the centre. The thickness of arch is 30 cm and the breadth of wall is 40 cm. Calculate the quantity of arch masonry work.

ii. What are the different methods to calculate quantity of earthwork for roads?

iii. What is overhead cost?

iv. Write down the different type of masonry bond with neat sketch.

Q.3 Prepare a detailed estimate for earthwork for a portion of a road from the following data :

08

Distance in m	0	100	200	300	400	500	600	700	800	900	1000	1100	1200
R.L. of ground	114.5	114.75	115.25	115.20	116.10	116.85	118.00	118.25	118.10	117.80	117.75	117.90	117.50

R.L. of formation 115 Upward gradient 1 in 200 up to 600 m → ↓ downward gradient 1 in 400.

Formation width of Road is 10 meter side slope 2:1 in banking and 1.5:1 in cutting.

Adopt suitable rates.

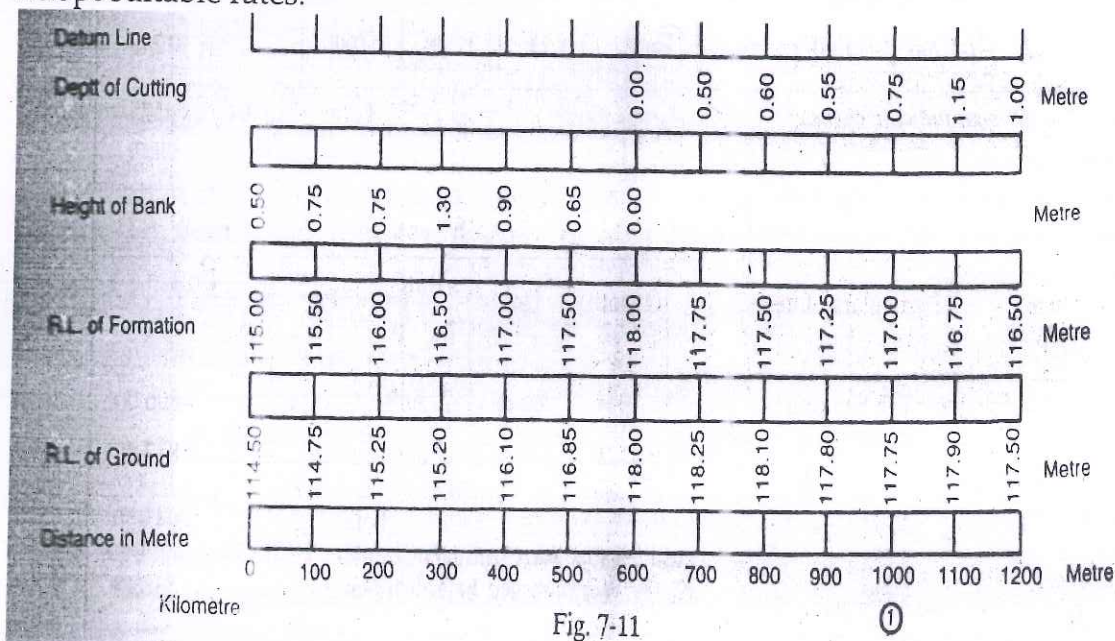


Fig. 7-11

①

Q.3B Calculate the quantity of brickwork in a 60° arch over a door of 1.20 m width. The arch is 20 cm thick and the thickness of the wall is 30 cm.

02

- Q.4A What is Analysis of Rates? What is the Purpose of Rate Analysis and factors affecting the rate analysis? 05
- Q.4B Explain the following 05
- (a) Market rate. (b) Work-charged establishment.
- (c) Lump-sum.
- Q.5A Estimate the quantities of the following items of a Two roomed building (Using long wall-short wall method)from the given plan and section (Fig. A) 05
- (1)Earthwork in excavation in foundation ,
- (2) lime concrete in foundation
- (3) 1 class brickwork in cement mortar 1:6 in foundation and plinth
- Q.5B For the same building (Fig. A) estimate the quantities of the following items 05
- Using center line method.
- (1)2.5 cm cc damp proof course and
- (2) 1 class brick work in lime mortar in super structure.

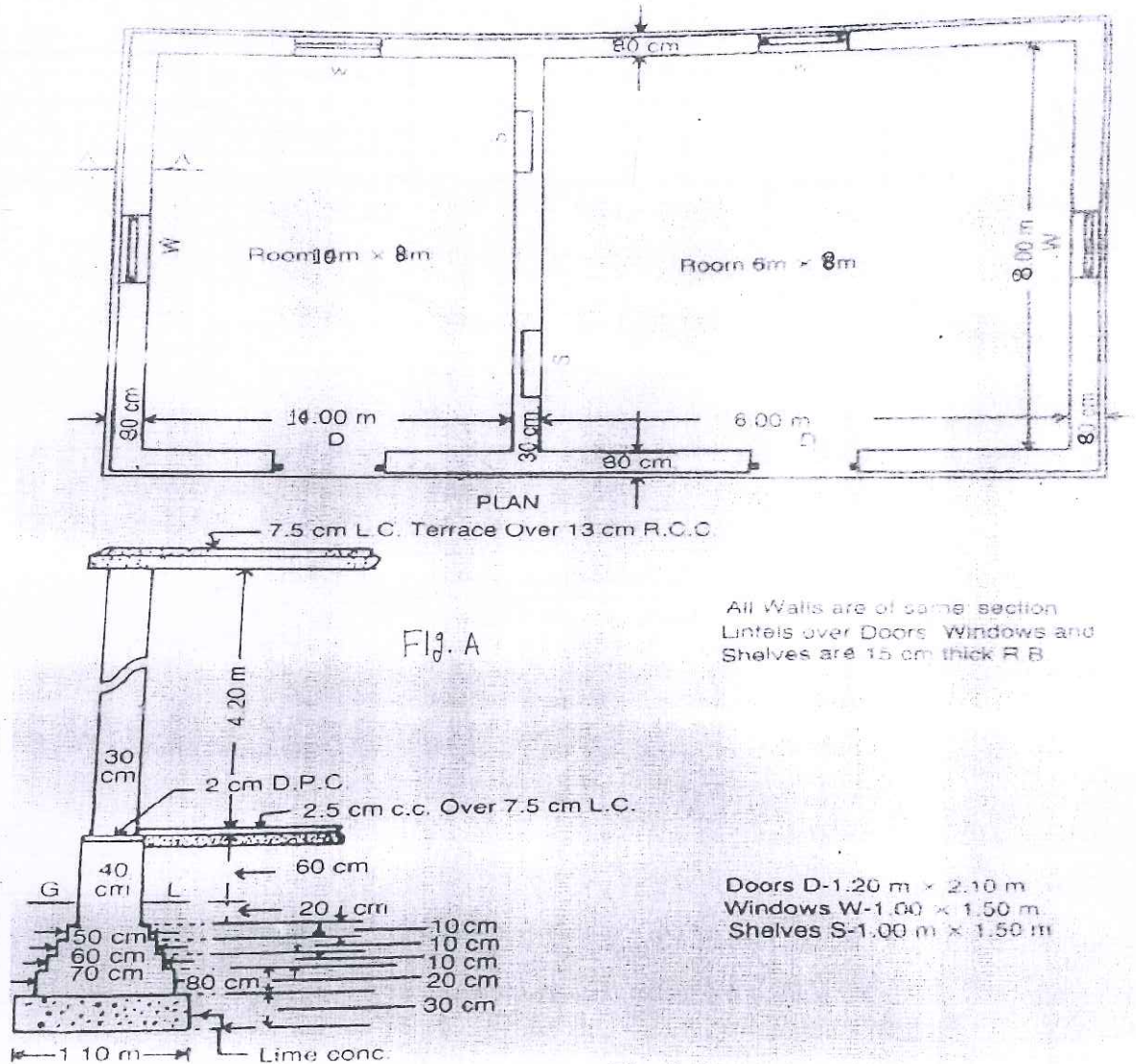


Figure :A

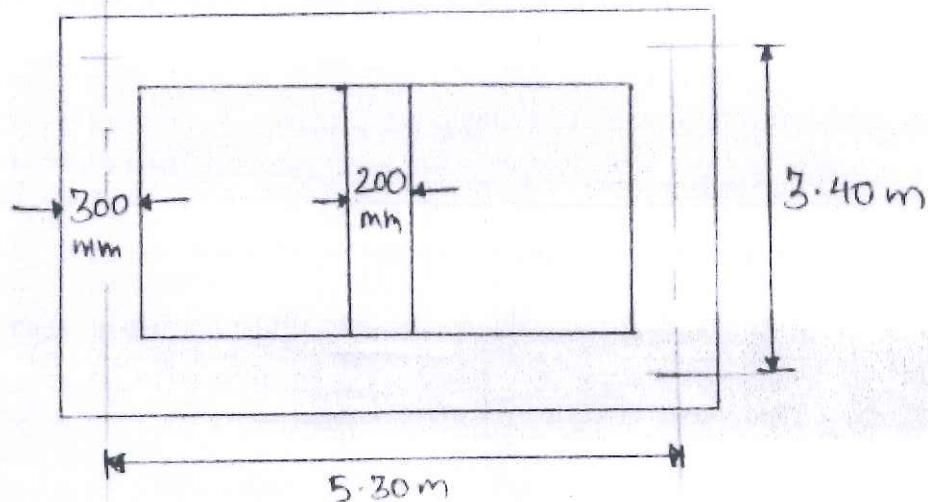
Q.6A Write explanatory notes on any four of the following:

05

- (a) Bill of quantities
- (b) profit
- (c) Overhead cost
- (d) Conditions of contract
- (e) Lead statements

Q.6B Calculate the quantity of brickwork shown in the figure by Center line method.

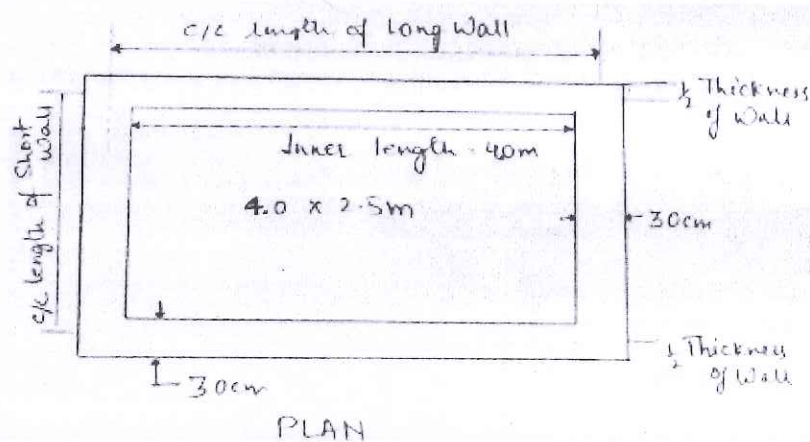
05



OR

Q.6B Calculate the quantity of brickwork shown in the figure by Long wall- Short wall method.

05



Q.7A Calculate the quantity of brickwork in a segmental arch of 2.20 m span, 50 cm rise and 30 cm thick. The Breadth if the wall is 30 cm.

05

Q.7B Draw the tabular form for the calculation of earthwork with the following methods.

05

- (a) Mid -ordinate method
- (b) Mean- sectional area method

OR

Q.7B Calculate the volume of earthwork for 100.00m length of road in a uniform ground. Height of the bank at one end is 0.75m and at the other end 1.20m.

05

Formation width is 10.00m and side slopes of embankment are 2:1. Ground does not have any cross slope. Calculate the volume of earthwork by

- Trapezoidal method
- Prismoidal method

Q.8A Estimate by center line method the quantities of following items of a residential building (Fig. B)

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- earthwork in excavation in foundation
- First class brickwork in 1:6 cement sand mortar in foundation and plinth.
- Lime Concrete in foundation

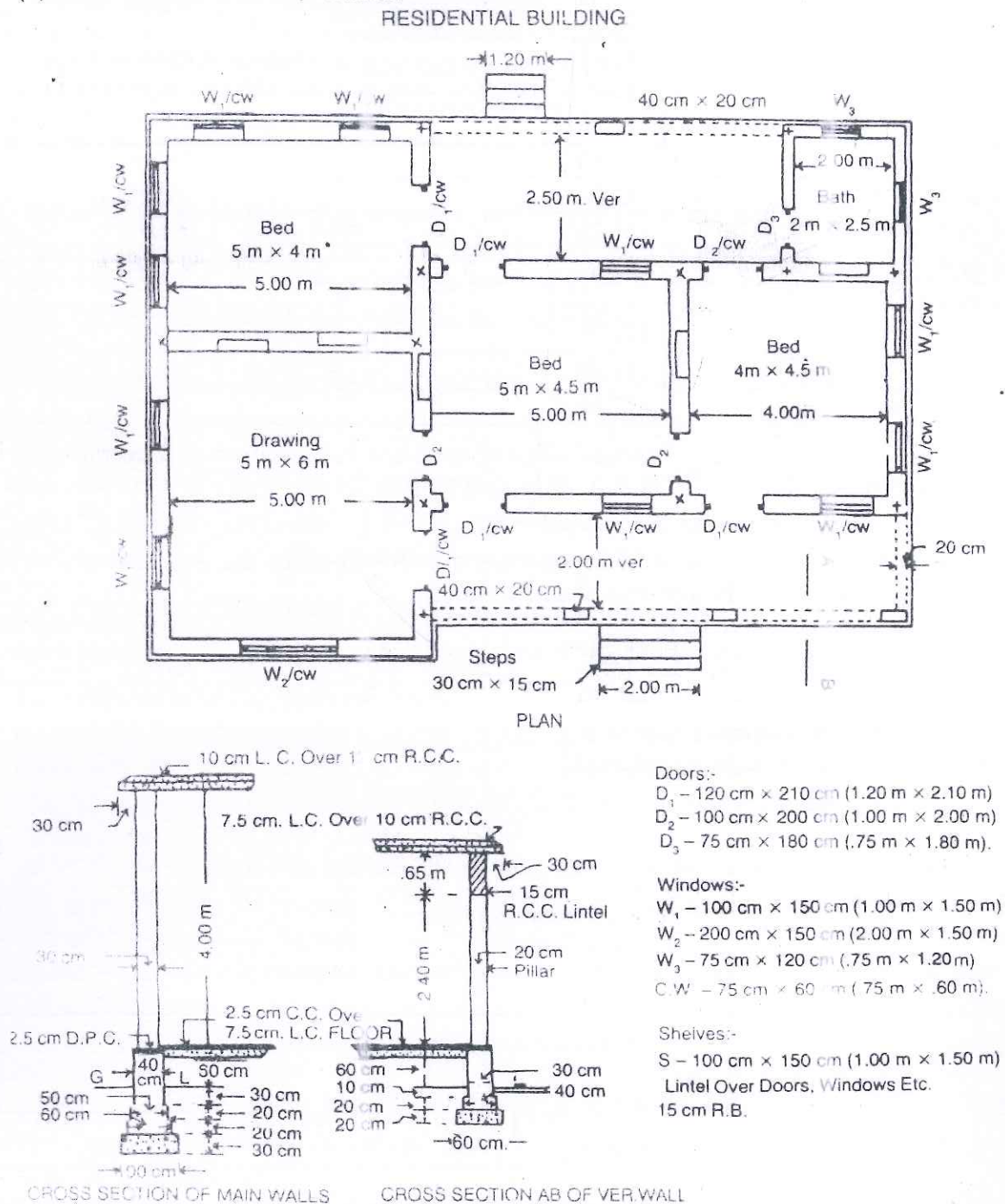


Figure :B

Q.9A Prepare a detailed estimate for earthwork for a portion of a road from the following data. 10

Distance in m	RL of ground	RL of formation
0	114.50	115
100	114.75	Upward gradient 1 in 200 up to 600 m
200	115.25	
300	115.20	
400	116.10	
500	116.85	Downward gradient 1 in 400
600	118.00	
700	118.25	
800	118.10	
900	117.80	
1000	117.75	
1100	117.90	
1200	117.50	

Formation width of road is 8m, side slopes are 2:1 in banking and $1\frac{1}{2}$: 1 in cutting. Draw L section and cross sections.

Q.9B Explain the following general items of work involved in the estimation for a building along with the process of calculations. 10

- Earthwork in excavation.
- Earthwork in filling.
- Cement concrete in foundation.
- Damp proof course.
- Masonry work in foundation.
- 10 cm thick brickwork.

OR

Q.9B Explain in detail about the preparation of tender notice and documents. 10