KATHMANDU UNIVERSITY
End Semester Examination
February, 2025

16 FEB 2025

Marks Scored:

Level : B.Arch
Year : III

Course : CIEG 342
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date :

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices

1. The unit of measurement of lime terracing on roof is_____.
   a. m b. m^2 c. m^3 d. Lump-sum

2. Of the total estimated cost of a building, the cost of electrification usually accounts for_____
   a. 8% b. 5% c. 1% d. 12%

3. The thickness of slabs and beams must be measured to the nearest_____
   a. 0.01 m b. 0.001 m c. 0.05 m d. 0.005 m

4. No deduction is made in the plastering or painting if the area of the opening does not exceed_____
   a. 0.5 m^2 b. 0.25 m^2 c. 0.15 m^2 d. 0.10 m^2

5. The unit of measurement of steel works in trusses is_____.
   a. m^3 b. m^2 c. quintal d. m

6. The annual periodic payments made for the repayment of the capital invested is known as_____
   a. salvation b. annuity c. depreciation d. sinking fund

7. The brick work is not measured in cubic meter in case of_____.
   a. one or more than one brick wall b. brickwork in arches
   c. half brickwork d. reinforced brickwork

8. The technique of finding the fair price of an existing building or property is known as_____.
   a. estimation b. costing c. valuation d. pricing

9. The unit of measurement of dressed stonework as in chajjas, jallies, shelves etc. is_____.
   a. m^3 b. m^2 c. m d. lump-sum

10. The quantity of earthwork calculated using prismoidal formula for 100m length for a portion of road in a uniform ground the height of the banks at the two ends being 1.00m and 1.60m. The formation width is 10 meters and the side slope is 2:1. Assume that there is no transverse slope_____.
    a. 1644 m^3 b. 3188 m^3 c. 3288 m^3 d. 3312 m^3

11. In the analysis of rate, the profit and over head for the contractor is generally taken as_____
a. 10% b. 15% c. 20% d. 5%

12. The net annual letting out values of a property, which is obtained after deducting the amount of yearly repairs from the gross income is known as _____.
a. Book value b. market value c. rateable value d. sinking value

13. If 'i' is the rate of interest expressed in decimal and 'n' is the number of years, then the coefficient of annual sinking fund (I_c) is _____.
a. $I_c = \frac{(1+i)^n-1}{(1+i)-1}$ b. $I_c = \frac{i}{(1+i)^n-1}$ c. $I_c = \frac{i}{(1+i)^n+1}$ d. $I_c = \frac{i}{(1-i)^n-1}$

14. The covered area of a proposed building is 150 m^2. It includes a rear courtyard of 5m x 5m. If the prevailing plinth area rate for similar building is Rs 1200 per sq. m, what is its cost?
a. Rs 1,56,250 b. Rs 1,55,000 c. Rs 2,56,250 d. Rs 1,50,000

15. In the detailed estimate, the areas are worked out to be nearest_____.
a. 0.01 m^2 b. 0.05 m^2 c. 0.001 m^2 d. 0.005 m^2

16. The plan of a building is in the form of rectangle with centerline dimension of outer walls as 10.7 m x 14.7 m. The thickness of wall in superstructure is 0.30m. Then, its carpet area is_____.
a. 165 m^2 b. 265 m^2 c. 157.29 m^2 d. 149.76 m^2

17. Work charged establishment cost is taken as_____.
a. 0 to 0.5% of estimated cost. b. 0.5 to 1% of estimated cost.
c. 1.5 to 2% of estimated cost. d. 1 to 1.5% of estimated cost.

18. The capacity of doing work by a skilled labour in the form of quantity per day is known as_____.
a. basic work b. out turn work c. target work d. daily work

19. Which of the following is known as general overhead?
a. Travelling expenses. b. Interest on investment
c. Amenities to the labour d. Losses on advance

20. An old building has a future life of 15 years. The rate of interest on capital is 7%. If the coefficient of the annual sinking fund is 0.43, then what will be value of the year's purchase?
a. 1 b. 1.36 c. 2 d. 2.36

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F. M. : 40

SECTION "B"
[4Q. × 4 = 16 Marks]

Attempt *ANY FOUR* questions. Assume suitable data wherever necessary.

1. Describe briefly various data which are required for preparing an estimate. Describe briefly how you will prepare a detailed estimate of a building. [2+2]

2. What is annual repair estimate? In a block development meeting, you are required to prepare a preliminary estimate of school building for 500 students in order to assess the amount of fund. Given that carpet area required per student is 1.20 square meter with an area of corridor, verandah, lavatories etc. to be 20% and for wall 15% of plinth area of the building. Consider following data to prepare a preliminary estimate. [1+3]
   a. Plinth area rate = Rs 1500 per square meter.
   b. Extra for water supply = 5% of the building cost.
   c. Extra for sanitation = 6% of the building cost.
   d. Extra for electrification = 12% of the building cost.
   e. Cost of approach road and boundary wall = 3% of the building cost.
   f. Contingencies = 2.5 % of the total cost.
   g. Supervision charges = 8% of the total cost.

3. Explain briefly the essential requirement of specification. Describe briefly different types of specification? [2+2]

4. Explain briefly factors affecting rate analysis. Calculate the quantities of materials required for 30 cm thick brick wall of length 10 m and height of 3 m laid using 1:4 cement sand mortar. Assume size of brick as 230 mm x 110 mm x 55 mm and thickness of mortar joint as 10 mm. [2+2]

5. Differentiate between. [2+2]
   a. Supplementary estimate and revised estimate.
   b. Depreciation and obsolescence.

SECTION "C"
[4Q. × 6 = 24 Marks]

Attempt *ALL* questions. Assume suitable data wherever necessary.

6. Write a short note on (***ANY THREE***). [3 × 2 = 6]
   a. Bill of quantities
   b. Importance of computer application in quantity estimation.
   c. Depreciation method of valuation.
   d. Methods of taking out quantities.

P.T.O.

7. List out data required for valuation of property. Explain briefly principle of valuation? A colonizer intends to purchase a land of 200000 square meter area located in the suburb of a big city to develop it into plots of 200 square meter after providing necessary roads, parks and other amenities. The current sale price of small plots in the neighborhood is Rs 50 per square meter. The colonizer wants a net profit of 20%. Work out the maximum price of the land at which the colonizer may purchase the land. Assume 30% of the total area is deducted for roads, parks and other amenities. The other details of the expenses are given below. [1+2+3]

a. The cost of improving of land levelling and dressing is Rs 0.25 per square meter.
b. Engineer's and architect's fee for surveying, planning and subdividing is 3% on the sale price.
c. Cost of providing road, drainage, water supply and electrification is Rs 3 per square meter of whole land.
d. Other miscellaneous expenses is 1% on the sale price.

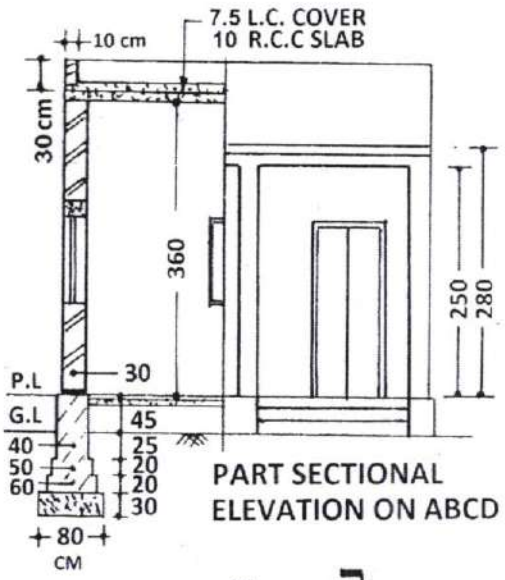
8. Calculate the quantity of earthwork for a portion of a proposed road from the following data.
Formation width is 10 m, side slope in banking is 2:1 and side slope in cutting is 1.5:1. Reduced Level of formation level at 0 m distance is 150 m and the road formation is in uniform falling gradient of 1 in 200. [6]

Distance (m)	RL of ground (m)
0	149.0
40	148.9
80	148.5
120	148.8
160	148.6
200	148.7
240	149.2
280	149.4
320	149.3
360	149.0
400	148.6

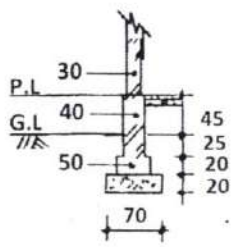
9. Calculate the quantities of following items of works from following the drawing of building (**Figure 1**) attached herewith. [2+2+1+1]

a. Lime concrete in foundation
b. First class brickwork in cement mortar (1:6) in foundation and plinth.
c. 2.5 cm thick damp proof course.
d. Sal wood for frame for door and window.

16 FEB 2025



PART SECTIONAL ELEVATION ON ABCD



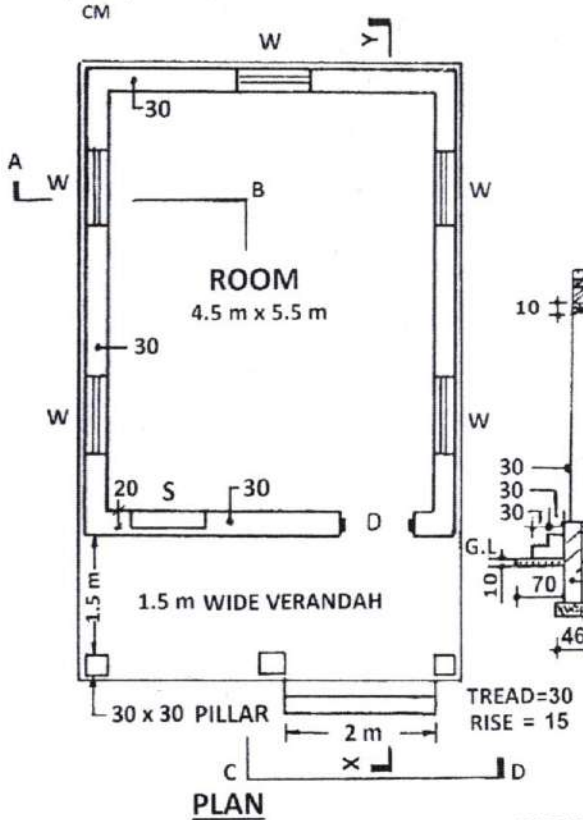
PILLAR FOUNDATION

SCHEDULE

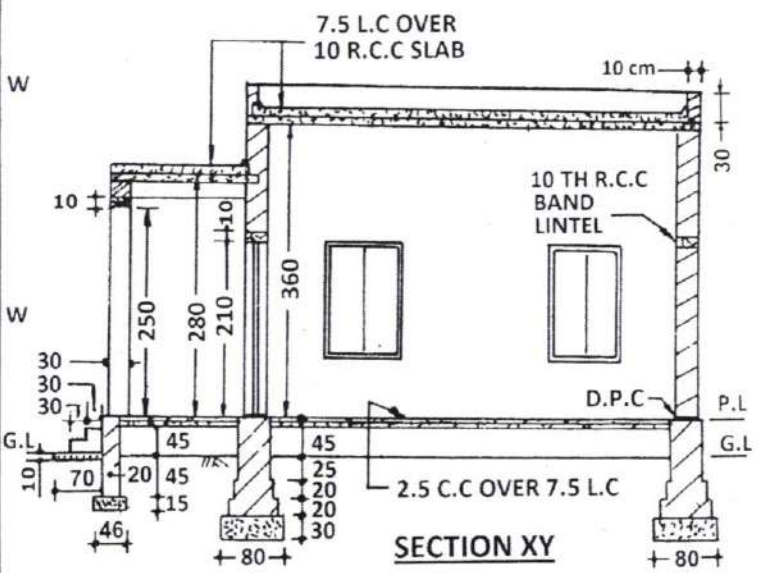
Door D = 110 x 210
Frame: 10 cm x 8.0 cm

Window W = 90 x 150
Frame: 10 cm x 8.0 cm

Shelf S = 90 x 150
20 cm Deep



PLAN



SECTION XY

(All dimensions are in cm, except otherwise mentioned)

FIGURE 1