

KATHMANDU UNIVERSITY  
End Semester Examination  
January/February 2024

Level : B.E.  
Year : III  
Time : 2 hrs. 30 mins.

16 FEB 2024

Course : CIEG 306  
Semester : I  
F.M. : 40

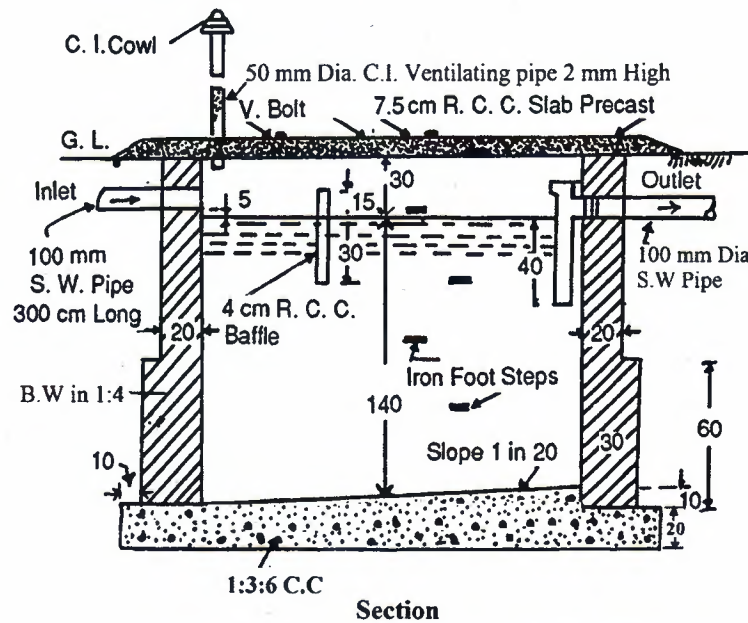
SECTION "B"

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

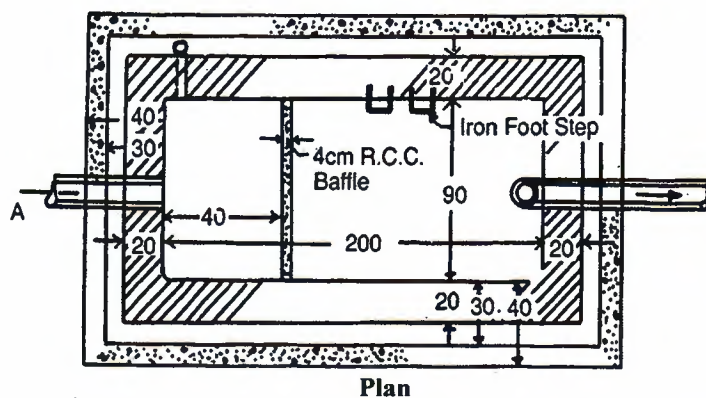
1.
  - a. Define an estimate. Explain briefly different data that are required for preparation of estimate. [1+2]
  - b. Prepare the preliminary estimate of a four storied building having carpet area 2000 m<sup>2</sup> for the administrative approval of government. It is assumed that 30% of the area will be taken by corridor, verandah, toilet etc., 10% of built up area is taken by wall. [3]  
Given that
    - i. Plinth area rate = Rs 1400 per sq.m
    - ii. Extra for water supply and sanitation = 6% of building cost.
    - iii. Extra for interior installation = 8% of building cost.
    - iv. Contingencies = 2.5%
    - v. Supervision charges = 8%
  
2. Explain briefly the various purposes of specification. Write down the general specification for brick work in superstructure and wood works in doors and windows. [2+2]
  
3. Define rate analysis. Calculate the quantities of material required for 100 m<sup>3</sup> of brick work in 1:6 cement sand mortar. Assume size of brick as 230 mm × 110 mm × 55 mm and thickness of mortar joint as 10 mm. [1+3]
  
4. An RCC framed structure building having estimated future life of 80 years fetches a gross annual rent of Rs. 2500 per month. Work out its capitalized value on the basis of 6% net yield. The rate of compound interest for sinking fund may be taken as 4%. The land plot of above building measures 1500 sq.m and cost of land may be taken to be Rs. 150 per sq.m. The outgoing per annum are as follow.
  - a. Repair and maintenance = 1/12<sup>th</sup> of gross income
  - b. Municipal tax and property tax = 25% of gross income
  - c. Management and miscellaneous charges = 7% of gross income.
 The plinth area of RCC framed structure building is 800 sq.m and plinth area rate of the above type of building may be taken as Rs. 200 per sq.m.  
Estimate the total value of whole property. [4]
  
5. Calculate the quantity of earthwork for a portion of a road from chainage 14 to 21 from the data given below. The formation width of the proposed road is 12m, side slopes in cutting and banking are 1.5:1 and 2:1 respectively. Length of one chain is 30 m. [6]

Chainage	14	15	16	17	18	19	20	21
R.L. of Ground (m)	108.60	109.25	109.40	108.85	108.50	107.25	106.80	107.15
R.L of Formation (m)	108.60	Uniform Falling Gradient 1:200						

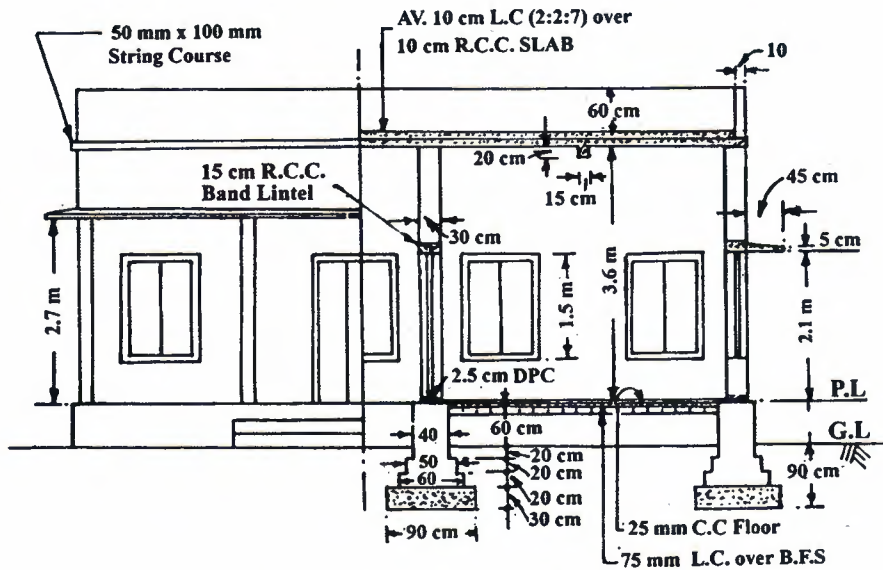
6. Work out the quantity of the following items of work from the given drawing of septic tank (Figure 1) [1+1+2+2]
- Earthwork in excavation.
  - Cement concrete (1:3:6).
  - First class brick work in 1:4 cement mortar.
  - 12 mm cement plaster (1:3) on inner face of walls.
7. Calculate the quantities of following items of works from following drawing of building (Figure 2) attached herewith [2+2+2]
- Earthwork in excavation for foundation trench.
  - First class brickwork in cement mortar (1:6) in foundation and plinth.
  - First class brick work (1:6) in superstructure walls
8. Write a short note on (ANY TWO) [2+2]
- Detailed Estimate.
  - Factors affecting value of the property.
  - Factors affecting rate analysis.



**Figure 1**



All dimensions are in centimeter unless otherwise specified



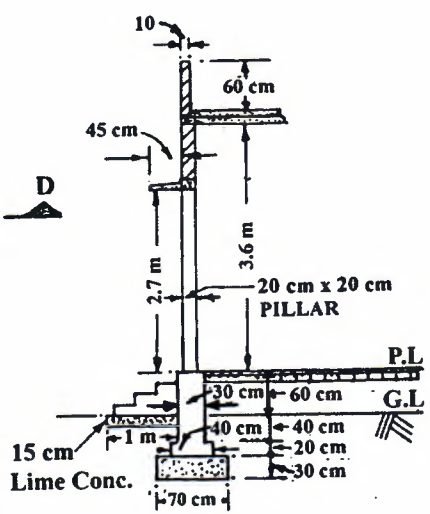
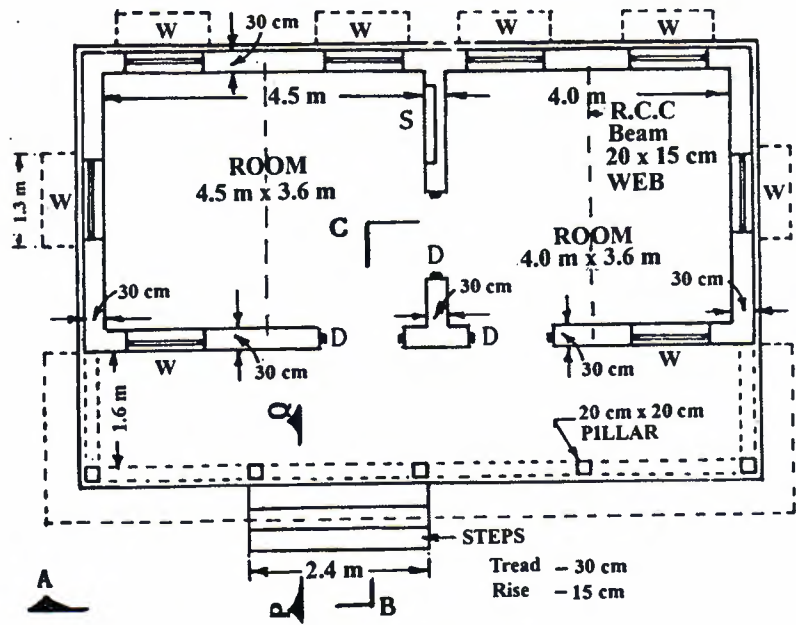
**Schedule**

**DOOR:**  
 D = 1.2 m x 2.1 m  
 FRAME = 10 cm x 8.0 cm

**WINDOW:**  
 W = 1.1 m x 1.5 m  
 FRAME = 10 cm x 8.0 cm

**SHELF**  
 S = 1.1 m x 1.5 m  
 20 cm Deep

SECTIONAL ELEVATION ON ABCD



SECTION ON PQ

PLAN

All Dimensions are in cm, except otherwise mentioned

Figure 2



KATHMANDU UNIVERSITY

End Semester Examination

January/February 2024

16 FEB 2024

Level : B.E.

Year : III

Course : CIEG 306

Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date :

SECTION "A"

[20Q. × 0.5 = 10 marks]

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

1. The unit of measurement of woodwork in door and windows frame is \_\_\_\_\_  
a. m                      b.  $m^2$                       c. lump-sum                      d.  $m^3$
2. The unit of measurement of a thin partition wall is \_\_\_\_\_  
a.  $m^3$                       b.  $m^2$                       c. lump-sum                      d. m
3. The quantity of work of any item which is the output of a skilled labour in a day is known as \_\_\_\_\_  
a. daily work                      b. basic work                      c. task work                      d. target work
4. Which of the following is the most correct estimate?  
a. Plinth area estimate                      b. Cube rate estimate  
c. Detailed estimate                      d. Building cost index estimate
5. Unit of payment of lime terracing on roof is \_\_\_\_\_  
a. m                      b. per  $m^2$                       c. per m                      d. per quintal
6. In the detailed estimate, the volumes are worked out to the nearest \_\_\_\_\_  
a.  $0.01 m^3$                       b.  $0.005 m^3$                       c.  $0.001 m^3$                       d.  $0.005 m^3$
7. In the analysis of rates, the profit and over head for the contractor is generally taken as \_\_\_\_  
a. 20%                      b. 5%                      c. 10%                      d. 15%
8. The annual periodic payment made for the repayment of the capital invested is known as \_\_\_\_\_  
a. annuity                      b. depreciation                      c. sinking fund                      d. salvation
9. The gradual accumulation of amount by the way of annual periodic deposits which is meant for replacement of the structure at the end of its useful life period is known as \_\_\_\_\_  
a. annuity                      b. sinking fund                      c. depreciation                      d. solatium
10. Which of the following is known as general overhead?  
a. Losses on advance                      b. Interest on investment  
c. Amenities to the labours                      d. Travelling expenses

11. The information which can't be included in drawing is conveyed to the estimator through \_\_\_\_\_.
- a. specification      b. cover note      c. progress chart      d. pie chart
12. The thickness of slab must be measured to the nearest \_\_\_\_\_.
- a. 0.001 m      b. 0.01 m      c. 0.005 m      d. 0.05 m
13. The plan of a building is in the form of a rectangle with centerline dimensions of outer walls as  $9.7\text{m} \times 14.7\text{m}$ . The thickness of the wall in super structure is 0.30m. Then its plinth area is \_\_\_\_\_.
- a.  $150\text{ m}^2$       b.  $145\text{ m}^2$       c.  $145.5\text{ m}^2$       d.  $135.36\text{ m}^2$
14. Brick walls are measured in  $\text{m}^2$  if the thickness of wall is \_\_\_\_\_.
- a. 40 cm      b. 30 cm      c. 20 cm      d. 10 cm
15. The covered area of a proposed building is  $150\text{ m}^2$  and it includes a rear courtyard of  $5\text{m} \times 4\text{m}$ . If the prevailing plinth area rate for similar buildings is Rs 1250 per  $\text{m}^2$ , what is its cost?
- a. Rs. 1,87,500      b. Rs. 2,12,500      c. Rs. 1,62,500      d. Rs. 3,75,000
16. When engineering departments undertake the works of other department the amount charged towards design, supervision and execution etc. is called \_\_\_\_\_.
- a. contingencies      b. service charges  
c. work charged establishment      d. centage charges
17. Capitalized value of a property fetching a net annual rent of Rs. 1000 and highest rate of interest prevailing being 10% will be \_\_\_\_\_.
- a. Rs. 1000      b. Rs. 100000      c. Rs. 10000      d. Rs. 100
18. The useful part of livable area of a building is also known as \_\_\_\_\_ area.
- a. carpet      b. circulation  
c. horizontal circulation      d. plinth
19. A detailed estimate, which is prepared to maintain the structure or work in proper order and safe condition is called \_\_\_\_\_.
- a. supplementary estimate      b. maintenance estimate  
c. item rate estimate      d. revised estimate
20. 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 \_\_\_\_\_ value.
- a. market      b. book      c. sinking      d. rateable