KATHMANDU UNIVERSITY
End Semester Examination [C]
April/May, 2023

Marks Scored:

Level : B.E.
Year : III

Course : CIEG 306
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date : 3-May-023

SECTION "A"
[20Q. × 0.5 = 10 marks]

Encircle the most appropriate option.

1. Which of the following statement is **INCORRECT**?
   a. Approximate Estimate may be prepared by different method but accurate method is prepared by detailed estimate method.
   b. Excavated earth is used in trench filling and plinth filling and usually not paid for separately, but may also be included under a separate item and paid at lesser rate.
   c. No deduction for opening is considered up to 1 square feet in masonry.
   d. For pointing in walls deductions are different than plastering.

2. Which of the following statement is **INCORRECT**?
   a. For sanitary and water supply works 8% and for electrification 8% of the estimated cost of the building works are usually provided in estimate.
   b. In general dimension should be measured to the nearest 0.01 m, area should be worked out to the nearest 0.01 sq m and cubic contents should be worked out to the nearest to 0.01 cu m.
   c. Shallow and thin surface work shall be taken in cubic meter.
   d. Piece work, job work etc. shall be taken in number.

3. Which of the following statement is **INCORRECT**?
   a. RCC is measured in cubic meter
   b. Honey combing brickwork is measured in square meter
   c. Jack arch roofing including top finishing is measured in square meter
   d. Iron work in truss is measured in cubic meter

4. Which of the following statement is **INCORRECT**?
   a. Removing of paint or varnishing is measure in square meter
   b. Dismantling of brick masonry is measured in cubic meter
   c. Tents, sholdaries (size specified) is measured in square meter.
   d. Usually supply of coal is done in tonne

5. The size of room is 3 meter by 10 meter by 5 meter (height) having one opening of (3 meter by 1 meter) for ventilation, then
   a. Total wall plaster is 130 square meter
   b. Total wall plaster is 254 square meter
   c. Total wall plaster is 260 square meter
   d. Total wall plaster is 124 square meter

6. Which of the following statement is **INCORRECT**?
   a. For Earthwork excavation , the rate of the item will be same if it is done by labor or machine
   b. For earthwork excavation, rate will be increased by 3% for tools and equipment's.
   c. Number and rate of non-skilled labor will be different for brick work either it is in ground floor or other above floor.
   d. For plastering in wall and ceiling, the number of skilled manpower will be different.

7. Which of the following statement is **INCORRECT**?
   a. Number of skilled manpower for 1 cubic meter brick work of 1:3 C:S and 1:5 C:S is same
   b. Number of brick unit required for 1 cubic meter brick work of 1:3 C:S and 1:5 C:S is same
   c. Amount of cement quantity for 1 cubic meter of brick works for 1:3 C: S and 1:5 Cement sand is same.
   d. Amount of water is more if the quantity of cement is more for mortar in brick work.

8. For 12.5 mm, 100 square meter plaster work, with C:S (1:2), the amount of sand required is
   a. 1.22 square meter
   b. 1.22 cubic meter
   c. 1.28 square meter
   d. 1.28 cubic meter

9. The size of brick considered for the rate analysis as per DUDBC norms is
   a. 224 mm by 108 mm by 57 mm
   b. 230 mm by 115 mm by 55 mm
   c. 240 mm by 115 mm by 57 mm
   d. 190 mm by 90 mm by 90 mm

10. Which of the following statement is **INCORRECT?**
   a. Steel reinforcement is calculated as per actual requirement as laid in position including over-laps, hooks, cranks etc. and it is determined from the detailed drawings.
   b. In absence of detailed estimate, approximately the percentage for steel concrete is considered as 6 to 8% for column
   c. In absence of detailed estimate, approximately the percentage for steel concrete is considered as 0.5 to 0.8% for foundation.
   d. In RCC work if it is not specified, the side and end cover may be considered as 4 to 5 cm.

11. Which of the following statement is **INCORRECT?**
   a. The length of one hook may be taken as 9 times the diameter of steel bar.
   b. For the steel bar having horizontal length L and one hook, total bar length is L+18D (D is diameter of bar)
   c. The schedule of bar is a list of reinforcement bars in a tabular form giving the particulars of bars shape of bending with sketches , length of each and total length and total weight.
   d. Clear cover, end cover, side cover, top cover, bottom cover etc. for slab will be normally less than that of beam.

12. For the plan of foundation having dimension 3 meter by 3 meter, if the 20 mm diameter bar spacing is 20 cm center to center in both directions, assuming end cover of 4 cm, what would be the length of bar with two standard end bends?
   a. 3 meter
   b. 3.1 meter
   c. 2.92 meter
   d. 3.28 meter

13. The covered area of a proposed building is 200 square meter including a rear courtyard of 5 meter by 3 meter. If the prevailing plinth area rate for similar building is NRs. 1500 per meter square, the cost of the buildings is _____ (in NRs).
   a. 277,500
   b. 300,000
   c. 322,500
   d. 2000 to 3000

14. The value of the structure at the end of 5 years (by Declining balance method), having initial cost NRs. 20,000, Scrap Value NRs. 5,000 and life expectancy 15 years is
   a. Rs. 12600
   b. Rs. 15000
   c. Rs. 13334
   d. Rs. 7400

15. For earth of road work for 200 meter length for a portion of a road in a uniform ground the heights of banks at two ends being 1 meter and 1.6 meter. The formation width is 10 meter and side slope is (H:V) 2:1 and no transverse slope then
    a. Area by mid-section method is more than mean section method
    b. Area by mid-section method is less than mean section method
    c. Area by both method is same
    d. There is no relation between quantities calculated by both the methods

16. The quantity of loose metal required for a 3.7 meter wide Macadam road for one kilometer length for one layer of 8 cm compacted thickness (volume of loose metal gets reduced by one third on compaction)
    a. 296 cubic meter
    b. 444 cubic meter
    c. 198 cubic meter
    d. 390 cubic meter

17. Incorrect statement is
    a. In booking dimension the order of dimension shall be length, breadth and height or thickness or depth
    b. Foundation to plinth level should be measured under same item of category
    c. From plinth level to second floor level should be considered as a separate item
    d. Lead shall be measured from the center of the area of excavation to the center of the area of soil heap

18. Most accurate method of estimation is
    a. Plinth area rate method
    b. Cubic content method
    c. Approximate method
    d. Revised estimate

19. Capitalized value of the property fetching a net annual rent of Rs. 1000 and the highest rate of interest prevalent being 5% is as follows
    a. Rs. 20,000
    b. Rs. 50
    c. Rs. 12500
    d. Rs. 20

20. Which is the type of specification?
    a. General Specification
    b. Detailed Specification
    c. Technical specification
    d. Supplementary specification

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SECTION "B"

Attempt *ALL* questions. Assume data suitably if required.

1. a. What are the main items of works for the estimation of RCC Building? Explain about the measurement unit and opening deduction of plastering work for quantity estimation. [1+2]
   b. Briefly describe about the principle of unit for various items of work. [1]
   c. Write the unit of measurement of the following items of works. [8 × 0.25 = 2]
      i. Quarrying of stone
      ii. Sundried brick work
      iii. Weather course
      iv. Bending of steel reinforcement
      v. Iron gates
      vi. Bituminous painting
      vii. Painting of furniture
      viii. Supply of slaked lime

2. Estimate the quantity of following items of work from the given plan and section **Figure (2)** of motor garage. (Calculate for Garage only excluding Ramp portion)
   i. Earthwork in excavation in foundation (Garage) [1]
   ii. Lime concrete in foundation (Garage) [1]
   iii. I-Class brick work in foundation and plinth (Garage) [2]
   iv. 2 cm DPC work [1]
   v. I-Class brick work in superstructure [2]

3. Workout the quantity of steel reinforcement for following component of a RCC framed structure as shown in **Figure (3),** Assume suitable covers of concrete, hook lengths etc.
   i. Foundation [1]
   ii. Column [2]
   iii. Slab [2]

4. Calculate the quantity of earthwork of a hill road in side-long ground. Tangent of traverse slope of ground ($\tan\theta$) is equal to 0.2 althrough as measured by Ghat Tracer. The length of chain is 20 meter. The formation width of road is 7 meter and slope bank is 2:1. RL of formation level and Ground level at the center of the road are as follows: [5]

Chain-age /Station	Distance (m)	RL of Ground (m)	RL of formation level (m)
5	100	200.0	201.2
6	120	199.75	201.8
7	140	200.50	202.4
8	160	201.70	203.0

5. Prepare the quantity estimate of the surface drain for 10 meter length from the given section **Figure (5).** [3]

6. a. What are the factors affection the rate analysis? [1]
   b. Prepare the rate analysis for 10 m^3 of 1:3:6 PCC work. *Assume required data suitably.* [4]

7. What are the purpose of doing valuation? Compute the depreciation charge and book value of each year by sinking fund method with following information for the property. [1+4 =5]
   - Initial cost of asset = NRs. 500, 000 & Salvage Value = NRs. 80,000
   - Life of asset = 10 years and interest rate (R) =10%

8. Write short notes. [2 × 2 = 4]
   a. Specification (types and points to be considered while writing specification)
   b. Approximate Estimate (Types)

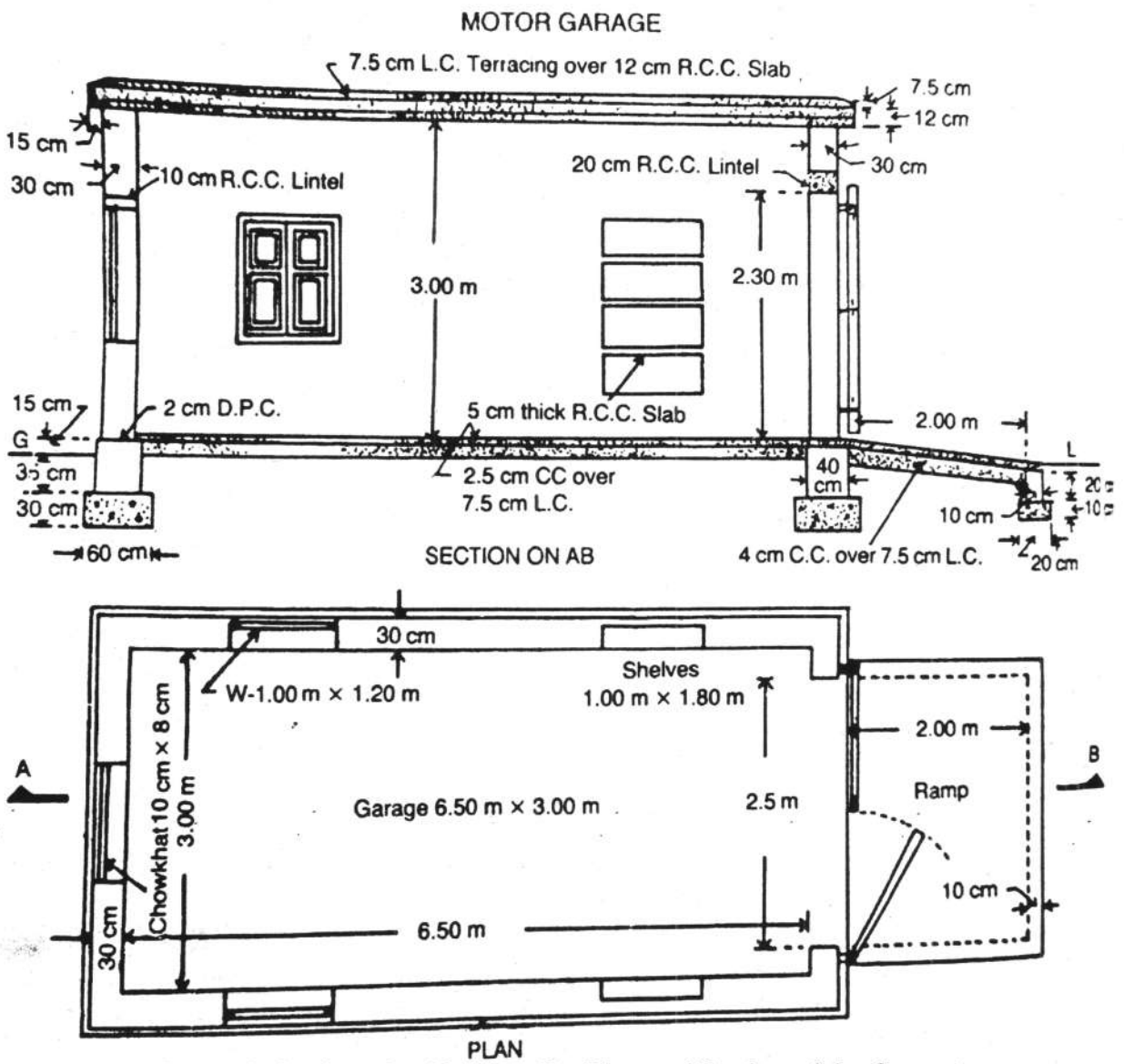
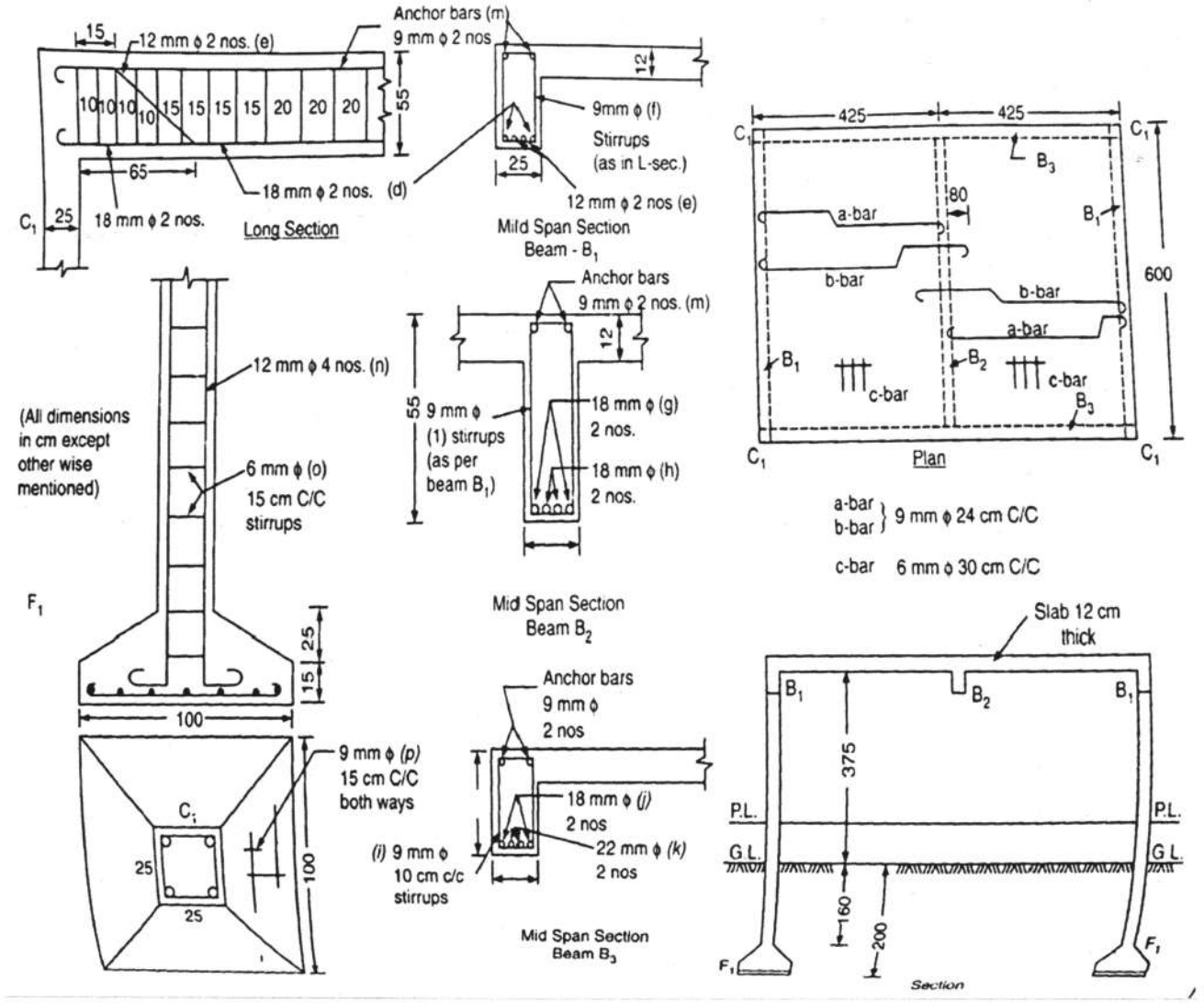


Figure (2) for Question Number (2) (Plan and Section of the Garage)



Figure(3) for Question Number (3) (Plan and Section of the building)

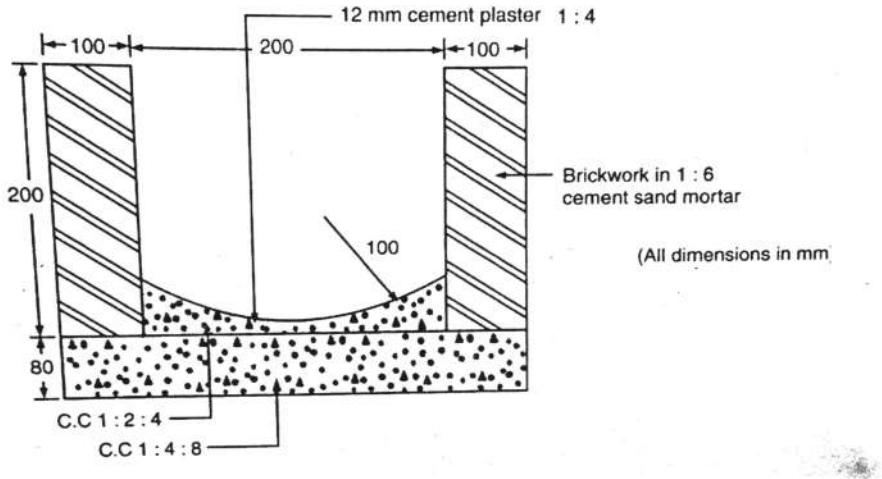


Figure (5) for Question Number (5) (cross section of a surface drain)