The Open University of Sri Lanka
Faculty of Engineering Technology

00053

Study Programmes	: Bachelor of Science Honours in Engineering
Name of the Examination	: Final Examination
Course Code and Title	**: CVX 4350– Quantity Surveying**
Academic Year	: 2024/25
Date	: 20th March 2025
Time	:1330 -1630 hrs
Duration	: **3 hours**

General Instructions

. Read all the instructions carefully before answering the questions.

1. This question paper consists **of eight (8)** questions
2. Answer **any five(05) questions**
3. Answer for each question should commence on a new page.
4. This is a Closed Book Test (CBT).
5. Answers should be in clear handwriting.
6. Do not use Red colour pen.

Question 1

1. Briefly discuss duties and responsibilities of the Quantity Surveyor of a consultancy team of a Measure and Pay contract during pre-contract phase of a contract. (05 marks)
2. Briefly describe the importance of adhering to the 'Standard Method of Measurement' when preparing a a BOQ. (05 marks)

3. It has been planned to use Unit Area method to estimate the cost of a proposed hotel construction project having a total floor area of 1500 m^2. Floor area costs of different functional areas of a recently completed similar project are given in Table 1. Percentage floor areas allocated for different functions of the proposed project are also given in the same table.

Table 1

Functional areas	Percentage floor areas allocated for each function in the proposed project	Unit cost of construction of each functional area in the completed project (Rs. per sqft)
Lobbies & corridors	19	8300
Hotel rooms	52	8600
Service areas	17	9150
Toilet & washrooms	12	9400

In addition to the costs listed in Table 1, another Rs. 5.3 million has been forecasted for the other miscellaneous work such as landscaping to complete the proposed project. Calculate the total estimated cost for the proposed project based on unit area method. (10 marks)

Question 2

1. Describe what is referred to as 'Preliminaries' of a typical civil engineering contract. Also, name three typical preliminary items of a typical civil engineering construction project. (06 marks)
2. Discuss the factors that are affecting the final material cost of a construction activity other than the basic material cost. (04 marks)

3. A contractor has deployed an excavator for an excavation work. Hiring charges of the excavator without fuel (including driver's payment) is Rs12,000 per day(8 hrs). Typical fuel consumption per hour of the excavator is 1.5 liters and the price of diesel is Rs.275 per liter. Typically, this excavator can excavate 35 m^3 during a day. Additionally, it has to hire a vehicle for the disposal of excavated soil at a cost of Rs. 8,000 including cost of fuel, operator charges and all other charges. It is assumed that the total excavated soil volume by the excavator can be disposed within the same day. Further, it is needed to utilize 1 hr of skilled labour and 2 hrs of unskilled labour for a day for neat completion of the excavation. It is necessary to allocate another 5% for the total calculated cost for other miscellaneous work. Calculate the rate for completion of excavation of 1 m^3. Skilled and Unskilled labour rates per day are Rs.3,000 and Rs.2,500 respectively. If needed, you may make any other assumptions after clearly stating such assumptions.
(10 marks)

Question 3

1. Discuss the factors to be considered when purchasing or renting out a specialized vehicle (e.g. excavator) for a construction activity by a constructor. (05 marks)
2. Briefly describe what is 'Depreciation' of a capital investment. (03marks)

3. A concrete mixture truck has an initial cost of Rs. 12 million and a salvage value of Rs.1.5 million after usage of 8 years . The fuel consumption of the vehicle is 1 liter per 4 km. The annual cost for maintenance of the truck is Rs. 200,000. This vehicle is used to transport concrete from the batching plant to sites and the average distance travelled by the vehicle is 120 km per day. The number of operating days of the concrete plant is 270 days per year and cost for operating staff of the vehicle is Rs. 5,500 per day. It has to allow 10% of fuel cost for lubricants of the vehicle. The vehicle transports 5 m^3 of concrete in each trip. Calculate the cost that should be added **as transport cost** for 1 m^3 when selling Ready mix concrete from this yard, which includes delivering concrete to each site as well. The following data are also provided;
Price of Diesel (1 liter) = Rs. 275
Average round trip distance per order of 5 m^3 = 5 km
You may assume 'Straight line depreciation' for the concrete mixture truck during lifetime.
Cleary state if you are making any other assumptions (if any). (12 marks)

Question 4

1. Name four different types of contracts used for execution of construction projects. (04 marks)
2. Briefly explain what are 'Bid bond' and 'Performance bond' of a civil engineering contract and discuss the importance of maintaining such bonds in a contract. (06 marks)
3. Briefly discuss the difference between Open tenders and Restricted tenders for a project. (03 marks)
4. It is required to construct a building to house smart classrooms at a regional center of the OUSL. The management of the OUSL expects to construct this building with all expected facilities and services through a single contract. Name the type of contract that you will propose for the execution of this project with justifications for your selection. (07 marks)

Question 5

1. Name four aspects covered by the UDA regulations relevant to building construction. (04 marks)
2. Briefly explain what Certificate of Conformity (COC) is relevant to building construction projects. (05 marks)
3. Name the types of 'wrongs' as per Sri Lankan legal system, and briefly explain each of these 'wrongs'. (05 marks)
4. Explain what breach of contract in a construction project is and explain the steps that can be taken by the party who has been affected by the breach. (06 marks)

Question 6

1. Name four major deviations that could lead to consideration of a submitted bid as a nonresponsive bid in the preliminary examination of bids. (04 marks)
2. Name three typical compensation events in a civil engineering project and briefly explain one of such events. (05 marks)
3. Explain the meaning of 'Variation' in a contract of a construction project. (05 marks)
4. Explain what 'Retention' of a contract is pertaining to a construction project and discuss the purpose of 'Retention' in a contract. (06 marks)

Question 7

1. Briefly explain Gross Domestic Product (GDP) and Gross National Product (GNP) of a country. (04 marks)

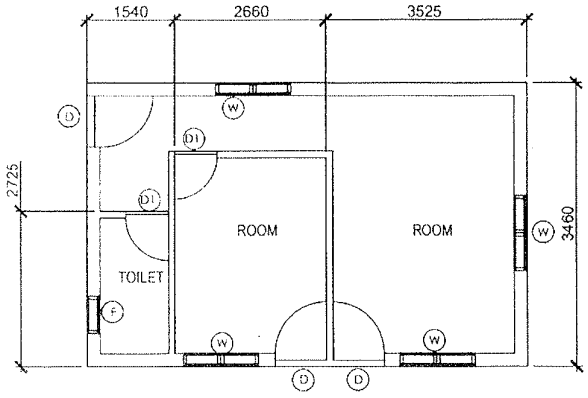
2. Name three main problems/challenges the construction and infrastructure development industry of Sri Lanka is faced with. (03marks)

3. Briefly explain the following terms in a civil engineering contract.
   (a) Day works
   (b) Provisional sums
   (c) Contingencies (06 marks)

4. A bank has agreed to pay interest under compound rate concept. A company has invested Rs. 1.2 million in this bank for two years. The annual interest rate for this investment is 10% and the interest is calculated and added twice a year (in every six months) for this investment. Calculate the interest income earned by the company through this investment. (07 marks)

Question 8

1. List three supplementary information that should be provided in a BOQ relevant to stone work as per SLS 573. (03 marks)
2. Name three items that shall not be deducted when calculating concrete volume of a concrete element as per SLS 573. (03 marks)
3. Name the standard units in which quantities of the following items are calculated as per SLS 573.
   (a) 450 mm thick Random rubble masonry
   (b) Formwork of sides of pad footing having a height of 250 mm
   (c) Damp proof course on foundation wall having a thickness of 300 mm
   (03 marks)
4. The figure given below shows a plan for a proposed small building for the accommodation for the security staff of a regional center. All perimeter walls are 225 mm thick and all internal walls are 115 mm thick. All walls are having a height of 3.1 m. Calculate the net quantities of the following items in standard units as per SLS 573.
   (a) 225 mm brick walls
   (b) 115 mm brick walls
   (c) Painting of external walls
   You may make any rational assumption (if necessary) in your calculations. but these assumptions shall be clearly stated.
   (11 marks)



PLAN (Not to scale)

SCHEDULE OF DOORS & WINDOWS			
TYPE	SIZE (WXH mm)	DESCRIPTION	NOs
D	900x2200	ALUMINIUM PANELED DOOR	03
D1	800x1900	ALUMINIUM PANELED DOOR	02
W	1300x1600	ALUMINIUM SLIDING WINDOW	04
F	600x750	ALUMINIUM FANLIGHT	01