

The Open University of Sri Lanka  
Faculty of Engineering Technology  
Department of Civil Engineering



Study Programme	: Bachelor of Technology Honours in Engineering
Name of the Examination	: Final Examination
<b>Course Code and Title</b>	<b>: CVX4538 / CEX4238 Quantity Surveying</b>
Academic Year	: 2017/18
Date	: 18 <sup>th</sup> January 2019
Time	: 0930-1230hrs
Duration	: <b>3 hours</b>

### General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Eight (8)** questions in **Three (3)** pages.
3. Answer any **Five (5)** questions only. All questions carry equal marks. If you have answered more than five questions (either partly or in full), cross out the extra answers. Otherwise, only the first five answers appearing in the answer book will be evaluated.
4. Answer for each question should commence from a new page.
5. This is a Closed Book Test (CBT).
7. Answers should be in clear hand writing.
8. Do not use Red colour pen.

Q1)

A civil engineering project may be considered as a series of related jobs directed towards a completion of a constructed facility planning of which would take into account of its expected life, operational and maintenance cost.

- (i) Identify eight (08) main members of a construction project team and describe the responsibilities of four (04) members during planning and design stage of the project.  
(05 marks)
- (ii) Describe the role played by the contractor's Quantity Surveyor.  
(05 marks)
- (iii) Explain what is meant by Bill of Quantities and how it helps to manage the financial aspects of a construction project  
(05 marks)
- (iv) The traditional system of preparation of Bill of Quantities (BOQ) involves four clearly defined steps using dimension paper or taking off sheets using four columns. Explain this method of preparation for BOQ for the volume of a cylindrical column 3 m high and of 0.6 m diameter.  
(05 marks)

Q2)

The written specifications for a project are important in defining the total project.

- (i) Define the term 'specification' and explain how specification for materials and workmanship are useful to the contractor, client and consultant.  
(04 marks)
- (ii) State the three (03) major ways in which materials and fittings are specified.  
(03 marks)
- (iii) Draft specifications for:
  - a. painting new wood work
  - b. painting old steel work
 (04 marks)
- (iv) State necessary requirements that should be included in a prescriptive specification that should be provided to a contractor to design a suitable concrete mix.  
(03 marks)
- (v) List three (03) basic properties that the designers would specify for the following items:
  - a. Drain pipes for a bathroom
  - b. A front door for a house
  - c. Steel reinforcement for a concrete slab
 (06 marks)

Q3)

A machine used on a project may be owned secured on rent or leased.

- (i) Discuss the advantages of owning plant and equipment. (04 marks)
- (ii) Explain the term 'Equipment spread'. (04 marks)
- (iii) Describe the factors that need to be considered when calculating the working cost rate of the plant per hour for small and non- mechanical plant and tools. (04 marks)
- (iv) Explain the 'straight line depreciation' method of calculation of depreciation. Also state two (02) other methods of calculating depreciation. (04 marks)
- (v) If an equipment with an initial cost of Rs. 3,500,000/ had an estimated value of Rs. 500,000/ after 10 years calculate the average annual depreciation cost of the equipment and the book value after 7 years. (04 marks)

Q4)

- (i) Explain what is meant by capital costs. (04 marks)
- (ii) Explain how risk of an investment and opportunity cost affects the interest rate of a project. (04 marks)
- (iii) Borrowing normally accounts for 20-30% of company's capital. Describe the different types of lenders to a business/ project. (04 marks)
- (iv) Discuss the interdependence of the factors cost, quality and time on a construction project. (04 marks)
- (v) Discuss the data needed to find the cost of concreting a road. Please state your assumptions. (04 marks)

Q5)

- (i) Briefly explain two (02) methods used for developing a preliminary budget and checking the economic feasibility for the construction of a building.  
(09 marks)
- (ii) There are several design variables to be aware of when attempting to optimize the cost of buildings. List three (03) major variables and discuss how the cost can be affected.  
(06 marks)
- (iii) State the aspects covered with regard to building construction covered by Building and Environmental Regulations.  
(05 marks)

Q6)

- (i) Civil engineering work is usually executed under a contract. Explain all the parties to the contract and describe the basic requirements to fulfil a contract using Bill of Quantities (Fixed Price with Quantities) Contract as an example.  
(10 marks)
- (ii) One type of liability for torts is 'Vicarious Liability'. Explain with an example from the construction industry.  
(04 marks)
- (iii) Construction Project administration requires the contractor to submit to the engineer, a monthly statement. In Measure and Value type contracts what are the details required in this statement?  
(06 marks)

Q7)

- (i) Explain the procedure with regard to the preparation of claims and list out ten types of important recorded data, which need to be carefully maintained for this purpose, with respect to the construction site.  
(10 marks)
- (ii) Discuss the procedure for the preparation of the Final Accounts, stating all information to be submitted.  
(10 marks)

Q8)

- (i) Explain the word 'procurement' and describe the process of 'Construction Bidding'.  
(08 marks)
- (ii) List all the documents to be included in a set of Construction Bidding Documents.  
(04 marks)
- (iii) Describe the 'Bid Bond' and the 'Performance Bond'.  
(08 marks)