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THE OPEN UNIVERSITY OF SRI LANKA
Department of Civil Engineering
Bachelor of Technology in Engineering - Level 4

CEX 4238 – QUANTITY SURVEYING

FINAL EXAMINATION - 2016/17

Time Allowed: Three (03) hours

Date: 2017 - 11 - 10 (Friday) Time: 0930 - 1230 hrs.

The paper consists of Eight *(08)* questions. Answer any *Five (05)* questions. All questions carry equal marks. Write down your Index Number clearly on the answer script.

If you have answered more than five questions (either partly or in full), cross out the answers. Otherwise, only the first five answers appearing in the answer book will be evaluated.

Q1) The role of the Quantity Surveyor in a civil engineering project is very important and the QS is now considered as the financial consultant in the construction industry.

1. List down the duties of a Quantity surveyor corresponding to different stages of a project. (4 marks)
2. The Bill of Quantities (BOQ) is required for a number of purposes throughout the project. List down five uses of a BOQ. (4 marks)
3. Explain the traditional system of preparation of a BOQ. (4 marks)
4. Explain the importance and relationship of Time, Cost and Quality in a project. (4 marks)
5. Use dimension paper and take off the three items listed below: (4 marks)

   Area of 8 no. of metal sheets, 2.0 mm thick square in shape having a side dimension of 1.2m each

   Volume of 4 no. of free standing pyramids 1.2m x 1.2m x2.80m

   4 rows of 0.75m long x 0.25m wide x 1.25m high free standing concrete blocks

Q2) 1. What are the different types of specifications? State the purpose of each type. (4 marks)
2. Explain how specifications are useful to the contractor, supervisor and estimator. (4 marks)
3. Write detailed specifications for :
   (a) Interior plaster on brickwork
   (b) White washing on plastered walls (4 marks)

4. List and explain the items and factors needed for scheduling of rates for costing the building of a 215mm brick wall. (4 marks)

5. Work out the preliminary estimate of materials for a concrete pavement 2.0m width, 1 km length, 200mm thick, in nominal mix 1:2:4 using 20mm size maximum aggregates. You may assume the following:

   Density of cement – 1440kg/m^3

   Density of fine aggregate – 1600 kg/m^3

   Density of coarse aggregate – 1350 kg/m^3

   Water cement ratio – 0.45

   Shrinkage of concrete – 25%

   Wastage - 5% (4 marks)

Q3) 1. Straight line method is one of the various methods of ascertaining the cost depreciation of an item. Explain this method of calculating depreciation. (5 marks)

2. A centrifugal pump was purchased in the year 2010 for Rs. 500000/=. The usable life time of pump is stated by manufacturer as 10 years. By taking scrap value as 12% of the capital cost calculate the annual depreciation amount and the book value in 2017 assuming the straight line depreciation. (5 marks)
3. Describe how the plant hire rate per hour is calculated for power driven mechanical plant. (5 marks)
4. A backhoe with a 1 cycle bucket is capable of handling four bucket loads per minute under ideal conditions. However, on a given job the average volume per bucket may be only 0.8 cycles and the backhoe may be only operating 50min/hour. For these operating conditions calculate the average output. (5 marks)

Q4) 1. Explain what is meant by discount rate. (5 marks)

2. The major problem with discounting is to decide the rate of interest to use and assess the stability of this interest rate over the life of the investment. State and describe the four factors that influence the selection of the interest rate. (10 marks)
3. Explain the term 'Breakeven Point' of a project. (5 marks)

Q5) 1. Explain the need for estimates in construction and describe the use of single purpose estimates and dual-purpose estimates. (8 marks)

2. State the specific use of Unit Rate methods of estimating in construction and explain two (02) commonly used methods of Unit Rate estimating. (8 marks)

3. Briefly describe the following for a Hospital Building Project:

   (a) Elemental Cost Planning

   (b) Comparative Cost Planning (4 marks)

Q6) 1. Describe three (03) attributes of 'Value' to the owner and user when considering a Super Market building. (6 marks)

2. State six legal requirements a builder is required to comply with when working on a construction project. (6 marks)

3. Discuss the procedures for approval of plans for a building construction as per the Building Regulations for Sri Lanka. (8 marks)

Q7) 1. State two (02) instances of where liability can occur based on negligence in the construction industry. What are the three (03) vital elements that must be proved in order to sue successfully for the tort of negligence? (8 marks)

2. Describe the following types of contracts and discuss their advantages and disadvantages.

   (a) Bill of Quantities or Fixed Price with Quantities
   (b) Design and Build contracts (8 marks)

3. The ICTAD standard Bidding Document for Procurement of Works gives the table of clauses under several major areas when dealing with disputes. What are they? (4 marks)

Q8) 1. Construction site records are very important in the settlement of disputes. Describe four (04) types of important records to be maintained at the site. (8 marks)

2. Briefly describe the three (03) broad categories of claims. (6 marks)

3. Explain six (06) factors giving rise to Contractor's claims during construction. (6 marks)