ELIZADE UNIVERSITY, ILARA-MOKIN
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
FACULTY OF ENGINEERING
FIRST SEMESTER 2019/2020 EXAMINATION
CVE 511 -CIVIL ENGINEERING MEASUREMENT AND EVALUATION -2UNITS
Instructions: A. This question paper consists of three (3) pages.
B. Each question carries equal marks of 20 each.
C. Answer **Question 1** and any other **2 Questions.** Answer **3 questions in all**
D. Write your **name** and **matric number** clearly on your answer sheets and the space provided below in your question paper
Time Allowed: $2^1/_2$ Hrs

Question 1 - (20 marks)

a) You are assigned as an engineer/quantity surveyor of a project by your state government. The project is a 4km road across Aba town. Along the route of the road, there are 7 trees of 2-3m height, 5 trees of 1-2m high, and 2 trees of which height is below 1m. Along the path of the road, we also have 2 stumps of diameter 160mm. During the construction of the road, about 10 houses will be demolished, 2 are made of brick walls, 4 are concrete buildings, while the remaining 4 are made of timber. There is a river of 3m width across the route of the roads. There is also a pipeline underground across the routes of the road. Prepare a bill of quantity taken into consideration the general items, the ground investigation and any other processes you dim fit. You are free to use your standard.
(12 marks)

b) State four (4) importance of Bill of quantity (BOQ) in the construction and building industries
(2 marks)

c) Explain the following as related to bill of quantities
  i.   Preliminaries,
  ii. Measured works and
  iii. Provisional sums
(6 marks)

Question 2 - (20 marks)

a) If you are to build up unit rate for formwork to a reinforced slab in one storey building. State the factors that you will consider in the process.
(5marks)

b) Considering a reinforced concrete beam of grade 40 (cement: 1kg, sand: 1.5kg, aggregate: 3kg) filled into formwork and parked around rod reinforcement (formwork and reinforcement measures separately). Calculate the cost per m^3 based on the present market unit rate. The data for the unit rate is as stated below;

Data for the unit rate

Cost of cement per tonne	₦ 30,000.00
Cost of sand per tonne	₦ 2,250.00
Cost of aggregates per tonne	₦ 2,900.00

Take density of cement to be 1440 kg/m^3,

density of sand to be 1602 kg/m^3,

density of aggregates to be 16800 kg/m^3 and

A 300 litres capacity mixer and is capable of mixing 3m^3 of concrete per hour for ₦10,000.00

It will also take a labourer 10 hours to place 1m^3 of concrete @ ₦ 600.00 per hour

Let the time for unloading all the cement be 1 hour @ ₦ 1, 500.00 .

Assuming you don't need the service of any craftsman here.

Let the profit and cost mark up be 15%

Wastage   10%,

Shrinkage   50%   (15marks)

Question 3 - (20marks)

a)   Explain the following types of contract briefly
   i.   Lump sum or fixed price contract
   ii.   Lump sum and scheduled contract
   iii.   Cost plus contract
   iv.   Measurement contract
   v.   Turnkey Contract   (5marks)

b)   Explain the following terms as applicable in analysis of tender;
   i.   Prequalification (mention the requirements for grading the contractors)
   ii.   Opening of tender   (4marks)

c)   Compute the overall scores of the tenderers A, B, C and D shown in Table Q3^1 and Table Q3^2 using the marking scheme and formular approach where applicable. Based on the results, recommend a tenderer in each case for the job.   (6 marks)

Table Q3^1: Results of the various tenderers

Tender	Tender price (₦)	Tender Score	The Overall score
A	415,000,000.00	74	
B	478,000,000.00	69	
C	390,000,000.00	85	
D	512,000,000.00	88	

Table Q3^2: Results of the various tenderers

Tender	Tender value	Performance rating	The Overall score
A	-18.89	54	
B	+4.17	65	
C	+3.25	59	
D	-10.95	76	

d)   Prepare a brief bill of quantity for a two bedroom flat of your choice. You can make a sketch of the plan in your answer sheet.   (5 marks)