

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2012/2013**

**FIFTH YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN CIVIL ENGINEERING**

**ECE 2501: CIVIL ENGIINEERING MANAGEMENT 1**

**DATE: AUGUST 2012 TIME: 2 HOURS**

**INSTRUCTIONS** **TO CANDIDATES:** ANSWER ANY **THREE** QUESTIONS.

**QUESTION ONE**

The activities involved in the construction of a section of a project are listed below together with their respective durations. The sequence of construction of each activity is defined by its tail activity – Table Q1

a. Draw the Bar Chart showing the start, duration and finish times for all the activities.

[10 marks]

b. Draw and activity on the arrow network for the section of the work and show on it.

i. The earliest and latest event times for all the activities.

ii. The critical path [15 marks]

Table Q1

|  |  |  |
| --- | --- | --- |
| Activity | Immediate preceding activity | Duration (weeks) |
| A | - | 4 |
| B | A | 12 |
| C | B | 12 |
| D | B | 2 |
| E | A | 6 |
| F | D, E | 6 |
| G | C, F | 4 |

c. i. State the three questions that should be asked to ensure logical relationship between activities in a network.

ii. Explain the dummy arrow in an activity-on-the-arrow network. [5 marks]

**QUESTION TWO**

Explain the following methods of financing plant acquisition and state the merits and demerits of each method

a. Outright cash purchase

b. Hire purchase

c. Leasing [20 marks]

**QUESTION THREE**

An excavator costing ksh. 15 million has an economic working life of six years at the end of which its scrap value is estimated as ksh. 2 million

Calculate and tabulate the annual book values of the equipment using the following methods of depreciation;

a. Straight line depreciation method. [4 marks]

b. Declining Balance Method. [7 marks]

c. Sinking fund method. Assume interest rate of 10%. [9 marks]

**QUESTION FOUR**

Sketch and describe the following items of construction plant

a. Typical track mounted crane

b. Scotch Derrick crane

c. Typical Tilting Drum Mixer [20 marks]

**QUESTION FIVE**

a. What are the reasons for maintenance of construction plant?

b. Explain briefly the following maintenance policies

i. Planned preventive maintenance

ii. Planned corrective maintenance

c. i. State the matters that should be covered in a maintenance inspection report.

ii. State the uses of the maintenance inspection report.

iii. Describe the recording system for monitoring maintenance activities.