# ELIZADE UNIVERSITY, ILARA-MOKIN
## FACULTY OF ENGINEERING
## DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
### FIRST SEMESTER 2020/2021 SESSION

**Course Title:** Building Technology    **Course Code:** CVE 527  **UNITS:** 3

**EXAMINATION TIME:** $2^{\frac{1}{2}}$ _HOURS_

**INSTRUCTION**: ANSWER ANY FOUR QUESTIONS. ALL QUESTIONSCARRY EQUAL MARKS.

HOD'S SIGNATURE

## QUESTION ONE (20 MARKS)

**1a.** Give a brief explanation of the four major dimensions that define the projectperformance. **(7 Marks)**

**1b.** Explain Construction Planning **(3Marks)**

**1c.** What are the steps involved in planning? **(4 Marks)**

**1d.** Define the following: Work breakdown Structure, Full Scope of Work and Work package. **(6 Marks)**

## QUESTION TWO (20 MARKS)

**2a.** Planning requires a rigorous effort by the planning team. With the use of a neat chart show what the efforts of the planning team are in the form of inputsand the resultant outputs. **(8 Marks)**

**2b.** The effective use of a work breakdown structure will outline two things which are? **(2 Marks)**

**2c.** Give the Work Breakdown Structure of the following descriptions

        Mechanical Works
        Civil Works
        Storage Tank
        Wire Conduits
        Superstructure
        Piping
        Fittings
        Substructure
        Storage tank
        Electrical Works                 **(6 Marks)**

**2d.** Differentiate between a Work Breakdown Structure (WBS) and Organizational Breakdown Structure (OBS).     **(4 Marks)**

## QUESTION THREE (20 MARKS)

**3a.** Give a brief explanation of what a project activity is.     **(3 Marks)**

**3b.** In short sentences, explain the classes of a project activity     **(4 Marks)**

**3c.** Figure 1.0 shows a double-span bridge. Break the construction works of the bridge into activities and give them in the correct order.     **(13 Marks)**
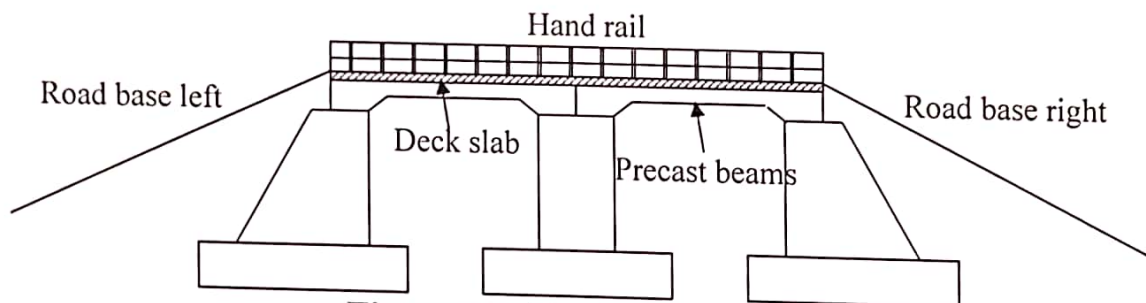


**Figure 1.0:** Double span bridge

## QUESTION FOUR (20 MARKS)

**4a.** Determine the relationships between activities of the project in question (3c) above.     **(5Marks)**

**4b.** If the daily production rate for a crew that works in an activity is 175 units/day and the total crew cost per day is ₦1800. The material needed for daily work is 4.5 units at ₦ 100/unit.

      a. Calculate the time and cost it takes the crew to finish 1400 units.

      b. Calculate the total unit cost. Consider an eight-hour work day.

**(10Marks)**

**4c.** Give the basic patterns of an AOA (Activity on Arrow) and AON (Activityon Node) diagrams. **(5 Marks)**

## QUESTION FIVE (20 MARKS)

**5a.** Give a brief explanation of Activity Cost Estimate listing all the factors that are considered when estimating Duration. **(5 Marks)**

**5b.** Show a typical organogram of a public building project team members identifying the financier in the team. **(5 Marks)**

**5c.** Travel Tours are planning on implementing a travel booking system. In the past they were using a completely manual system, which caused errors and delays for their customers. The project manager is confident that the implementation will be completed in 6 weeks, with a most optimistic estimatebeing 4 weeks, and the worst case scenario might take it to 11 weeks. What must be the three-point estimate for this travel booking system implementation? **(5 Marks)**

**5d.** Give a brief explanation of what the states of the queuing system are **(5 Marks)**

# QUESTION SIX (20 MARKS)

**6a.** 11 work packages are involved in a project: A and B (civil work, substructure), C, D, E, and F (civil work, superstructure), G (electrical, interior), H (electrical, exterior), I (mechanical, HVAC), J (mechanical, elevator), and K (mechanical, plumbing).

Substructure is supervised by Ahmed (activity A), and Ali (activity B).
Superstructure is supervised by Hossam (activities C and F) and Mona (activities D and E).
All electrical work is supervised by George.
and plumbing are supervised by Adam; elevator work is supervised by Samy.
Activities E and F follow activity B.
Activity C precedes activity G.
Activity I follows the completion of activity E.
The predecessors to activity K are activities H and I.
Activity D follows activity A and precedes activity H.
Activity J is preceded by activities F and G.

From the available information, create a relationship table and draw a network diagram using AON network.                                **(5Marks)**

**6b.** From question 6a above, determine the early start, early finish, late start and late finish for the set of activities.                                 **(8Marks)**

**6c.** Write out all the paths, identifying the critical path        **(4 Marks)**

**6d.** Give a brief explanation of a queue theory        **(3 Marks)**