

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF INDUSTRIAL TECHNOLOGY
DEPARTMENT OF CIVIL AND WATER ENGINEERING
BACHELOR OF ENGINEERING (HONOURS) DEGREE
PART III SECOND SEMESTER EXAMINATIONS MAY 2006
CONSTRUCTION MANAGEMENT AND TECHNOLOGY—TCW 3207

INSTRUCTIONS

Answer ALL questions. Illustrate your answers, where appropriate with clearly labeled sketches. Each question carries 20 marks.

Total marks: 100

Time: 3 hours

QUESTION 1

- a). State and briefly explain any **five** factors considered when setting out a site layout. [15 marks]
- b). Explain how dampness gets into the buildings and the technologies for its remedy. [5 marks]

QUESTION 2

- a). Discuss the differences between roof types [2 marks]
- b). Give the prime functions of roofs [3 marks]
- c). Give and explain any five measures of controlling ground water in subsurface excavations /construction. [15 marks]

QUESTION 3

a). Compare the bar chart method and network analysis in project planning and specify in which types of projects you would use them. [6 marks]

b). Below is a network without event numbers but showing durations for each activities in days.

i). Number the events [2 marks]

Use the **separate** network diagram provided to indicate your answer.

ii). Calculate the earliest and latest event times. [5 marks]

iii). Identify the activities that are critical. [3 marks]

iv). Calculate the total float and free float of the non-critical activities. [4 marks]

Indicate your solution on the separate network diagram provided **separately**.

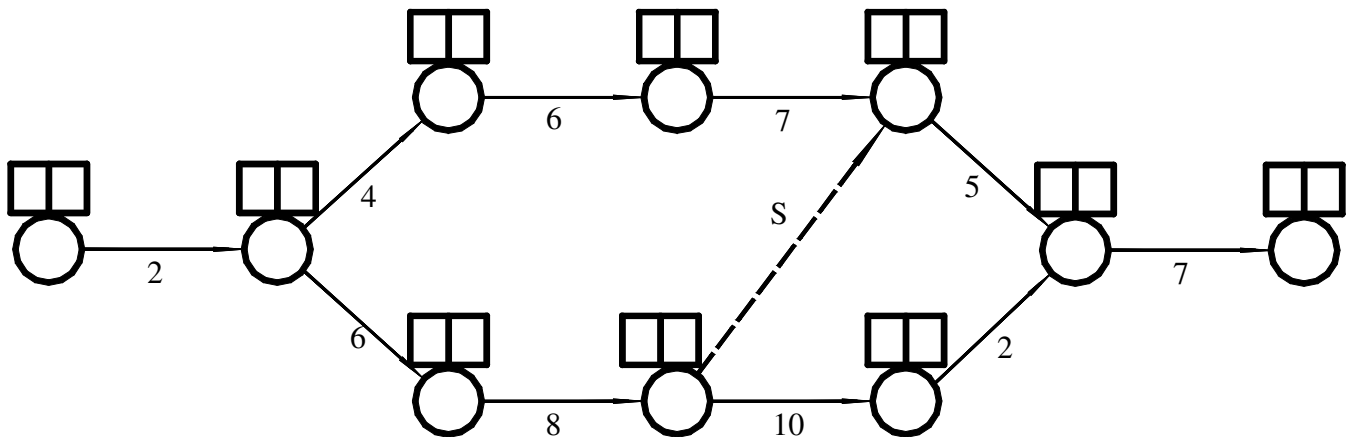


Fig. Q.3

QUESTION 4

- a). List and briefly explain the major contract documents. [8 marks]
- b). Under what circumstances can a contractor legitimately request for an extension of the building period? [6 marks]
- c). According to ZGCC (Zimbabwe General Conditions of Contracts), the specification and the bill of quantities are important contract documents. Explain why? [6 marks]

QUESTION 5

- a). Give the principal loads and forces to be taken into considerations when designing Reinforced Concrete formwork. Discuss the impact of each of them. [10 marks]
- b). Explain the basic concept of pre-stressed concrete. Distinguish between pre-tensioning and post-tensioning and their respective areas of application. [10 marks]

END OF EXAMINATION PAPER