THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

HIGHER DIPLOMA IN COMPUTER STUDIES (HDIP CS 10A)

ECT 3217: SOFTWARE ENGINEERING

END OF SEMESTER EXAMINATIONS

SERIES: DECEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
-   *Answer Booklet*
This paper consist of **FIVE** questions in **TWO** sections **A** & **B**
Answer question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question one   (30 marks)

a) Explain the following terms
    i.   Software engineering
    ii. System development methodology   (4 marks)

b) State the **three** main historical problems that have characterized the software crisis

(3 marks)

c) State the **five** software requirements analysis areas of effort.

(5 marks)

d) Describe the following system development methodologies stating one strength and weakness of each.
    i.   Prototyping
    ii.   Incremental
    iii. Spiral
    iv.   RAD   (12 marks)

e) Explain the **three** components of software engineering   (6 marks)

SECTION B (ANSWER ANY TWO QUESTIONS)

Question Two   [20marks]

a) Define the term system model.   (2 marks)

b) Using a diagram, illustrate the systems engineering process.   (8 marks)

c) Explain why the system engineering process follows a 'waterfall' model.   (2 marks)

d) The diagram below demonstrates the interdisciplinary involvement in the 'XYZ' systems engineering process.
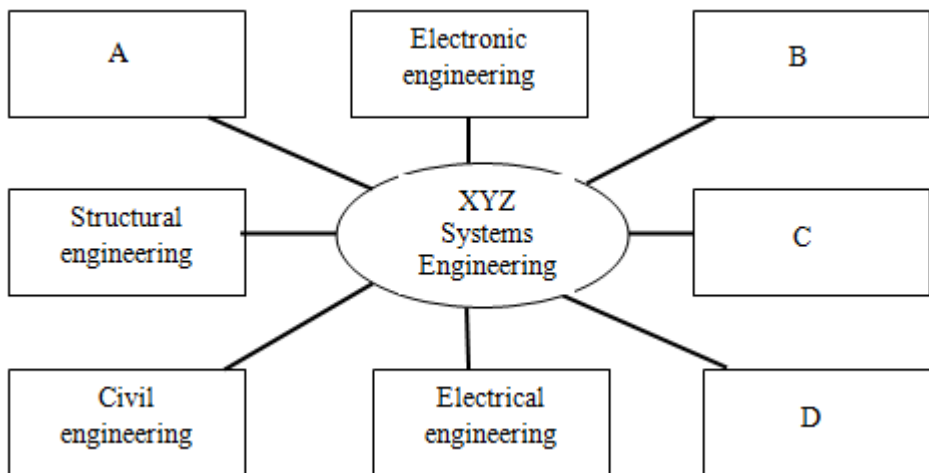
Identify the disciplines A, B, C & D, and state the major drawback arising from different disciplines working together.

(8 marks)

Question Three   [20marks]

a) Explain the **two** steps of Software Design

(4 marks)

b) Explain the **four** activities of Software Design and their features   (16 marks)

Question Four   [20marks]

a) State the **three** types (levels) of testing. Which one primarily would use use-cases to drive the
test cases?   (4 marks)

b) Differentiate between functional and non-functional requirements. Give an example of each.

(6 marks)

c) List 4 user interface design principles.

(4 marks)

d) Explain the purpose of a rapid prototype and the key issues related to reuse of a rapid prototype?

(6 marks)

Question Five   [20marks]

a) Explain the 4 issues of professional responsibility that software engineers should respect.

(8 marks)

b) Explain the 2 productivity measures used in software cost estimation.   (4marks)

c) Briefly Describe the COCOMO model of software cost estimation.   (4marks)

d) Explain 2 factors that affect the confidence in verification and validation of software.

(4 marks)