THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

JANUARY – APRIL 2019 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

DIT 015: INTRODUCTION TO SOFTWARE ENGINEERING

Date: APRIL 2019	Duration: 2 Hours
INSTRUCTIONS: Answer Question ONE and any other TWO Questions	

Q1 a) Define the following terms.
  i) Software Engineering   **(2 marks)**
  ii) Software Process   **(2 marks)**
  iii) Software Process Model   **(2 marks)**

   b) Draw a well labelled diagram that illustrates the waterfall model of software development and give a brief description of each of the phases in the model.   **(10 marks)**

   c)   Identify and explain three qualities you will desire to see in a software system.   **(6 marks)**

   d) Portability is one of the basic attributes that every software engineer wishes to have in their software. Explain any four techniques that will enable the designer to construct portable software.   **(8 marks)**

Q2. a) What do we mean by the following terms as used in software engineering?
  i) Alpha testing   **(2 marks)**
  ii) Beta testing   **(2 marks)**
  iii) Maintenance   **(2 marks)**

   b) i)   What do we mean by outsourcing?   **(2 marks)**

       ii)   Explain two advantages of outsourcing IT services.   **(4 marks)**

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c) i) Expand and give the meaning of CASE? **(2 marks)**

   ii) Explain three benefits that accrue from the use of CASE tools. **(6 marks)**

Q3. a) Discuss the role of the following items in program development.
   i) Application Generator. **(2 marks)**
   ii) Text editor. **(2 marks)**
   iii) Debugger. **(2 marks)**

   b) With the help of the bath tub curve, explain the stages in the life of software.
   (6 marks)

   c) Explain the following approaches used to change from one system to another with the help of diagrams.
   i) Straight Changeover. **(2 marks)**
   ii) Pilot Changeover. **(3 marks)**
   iii) Parallel Changeover. **(3 marks)**

Q4. a) i) What do we mean by prototyping? **(1 marks)**

   ii) With the help of a flow chart, explain the four-step prototyping model of software development. **(7 marks)**

   ii) Explain three advantages of prototyping. **(3 marks)**

   iii) Explain three disadvantages of prototyping. **(3 marks)**

   b) Provide the meaning of each of the following items. How will each factor affect maintenance effort?
   i) Programming language **(3 marks)**
   ii) System documentation **(3 marks)**

Q5. a) During system analysis a *feasibility study* is undertaken to determine whether the N solution proposed is achievable, given the organization's resources and constraints. Identify and explain the four areas of feasibility must be addressed here. **(8 marks)**

   b) Explain the following terms as applied in software engineering. What is their relevance in software design?
   i) Module cohesion **(3 marks)**
   ii) Module coupling **(3 marks)**

   c) Software requires maintenance during its life. Briefly explain the following types of maintenance.

i)   Corrective maintenance.   (2 marks)
ii) Perfective maintenance.   **(2 marks)**
iii) Adaptive maintenance.   **(2 marks)**

END