CHUKA   **UNIVERSITY**

SUPPLEMENTARY / SPECIAL EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE & BACHELOR OF SCIENCE IN APPLIED COMPUTER SCIENECE

COMP 306 / ACSC 333: SOFTWARE ENGINEERING I

STREAMS: Y3S1

TIME: 2 HOURS

DAY/DATE: WEDNESDAY   18/11/2020   **8.30 A.M - 10.30 A.M.**

INSTRUCTIONS:
- Answer Question One And Any Other Two

Instructions

- Answer question one and any other two questions from section B.
- Do not write on this question paper.

SECTION A

Question One (Compulsory) [30 marks]

(a) Explain the two motivations of carrying out program testing.   [3 marks]

(b) Discuss the importance of feasibility study in requirements gathering and analysis.
                                                                                        [3 marks]

(c) Explain the difference between functional and non-functional software requirements.
                                                                                        [3 marks]

(d) Discuss why software project planning is an iterative process and why the plan must be reviewed continually during the project development. [3 marks]

(e) A small company that develops specialized software for various customers has recently won a contract that would double its customer base. Discuss two reasons why it may a good idea to make its product open source. [6 marks]

(f) Discuss three essential software product attributes for an airline reservation system. [6 marks]

(g) Suppose you have been assigned the task of software project manager, discuss three ways you would motivate your development team. [6 marks]

SECTION B (ANSWER TWO QUESTIONS FROM THIS SECTION)

Question Two [20 marks]

(a) In the assessment of a university environment, generate two user functional requirements and two system functional requirements for a student management system for Chuka University. [4 marks]

(b) The first phase in software development is requirements definition. In this phase there are several activities involved. For either a small project or large project, explain the importance of this phase and the activities involved. [8 marks]

(c) Describe what software prototyping is and its benefits as a software development process. [8 marks]

Question Three [20 marks]

(a) Google have spent several years developing self-driving cars which rely on a range of sensors and stored data and are now claimed to have covered hundreds of thousands of miles with a good safety record. A Google executive has now asked to meet the Transport Secretary, who has in turn asked your company for advice. Discuss six safety risks that the government should demand from vendors and service providers if autonomous vehicles are to be allowedon Kenyan roads? [12 marks]

(b) Discuss four major differences between white box and black box software testing techniques. [8 marks]

Question Four [20 marks]

(a) Discuss the contribution and the relative value of the following aspects of the modern software development environment.

    (i)   Dividing a project into short development episodes.   [4 marks]

    (ii)   Automated regression testing tools.   [4 marks]

    (iii)   Project progress visualization tools such as GANTT charts.   [4 marks]

(b) Software development is considered a teamwork activity. As such, software developers are organized into software development groups to facilitate teamwork. Explain four factors that would determine the effectiveness of group communications.   [8 marks]

……………………………………………………………………………………………………..

Question Five [20 marks]

(a) Software pricing is usually a difficult task when bidding for a software project where there are many interested software companies. In an advisory role, explain four factors that you would consider so that you are successful in your company.

[4 marks]

(b) Explain the purpose of each of the following testing strategies

   (i)   Release testing   [2 marks]

   (ii)   Regression testing   [2 marks]

   (iii)   Component testing   [2 marks]

   (iv)   Integration testing   [2 marks]

(c) Explain four problems of natural language in documenting software requirements.

[8 marks]

……………………………………………………………………………………………