

kasneb

**CICT PART III SECTION 5**  
**SOFTWARE ENGINEERING**

**WEDNESDAY: 29 November 2017.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question.**

**QUESTION ONE**

- (a) (i) Explain the concept of “modularisation” in software engineering. (2 marks)
- (ii) Highlight four benefits of modularisation. (4 marks)
- (b) Describe three general models that could be used in licensing open source software. (6 marks)
- (c) An experienced team of software developers who are using the current software development techniques, have been approached to develop a system that is similar in design and coding to the one that they have recently commissioned.

The system needs to be deployed in the shortest time possible so as to avert competition. The team has resolved to adopt the component-based development (CBD) model in their new assignment.

**Required:**

Examine four stages in the CBD model that the team should undertake in order to produce a working system. (8 marks)

**(Total: 20 marks)**

**QUESTION TWO**

- (a) (i) Explain the meaning of the term “formal technical review (FTR)” in the context of software quality. (2 marks)
- (ii) Summarise four objectives of FTR. (4 marks)
- (b) The management of Kinda Company Ltd. intend to develop a new software application that would involve users interacting with a database on a remote server via web browsers. You have been contracted as the chief software engineer for the project.

**Required:**

- (i) Analyse six stages that you would follow when undertaking the requirements analysis for the above project. (6 marks)
- (ii) Discuss four issues relating to user interface that you would consider when converting the software application into a web-based application. (8 marks)

**(Total: 20 marks)**

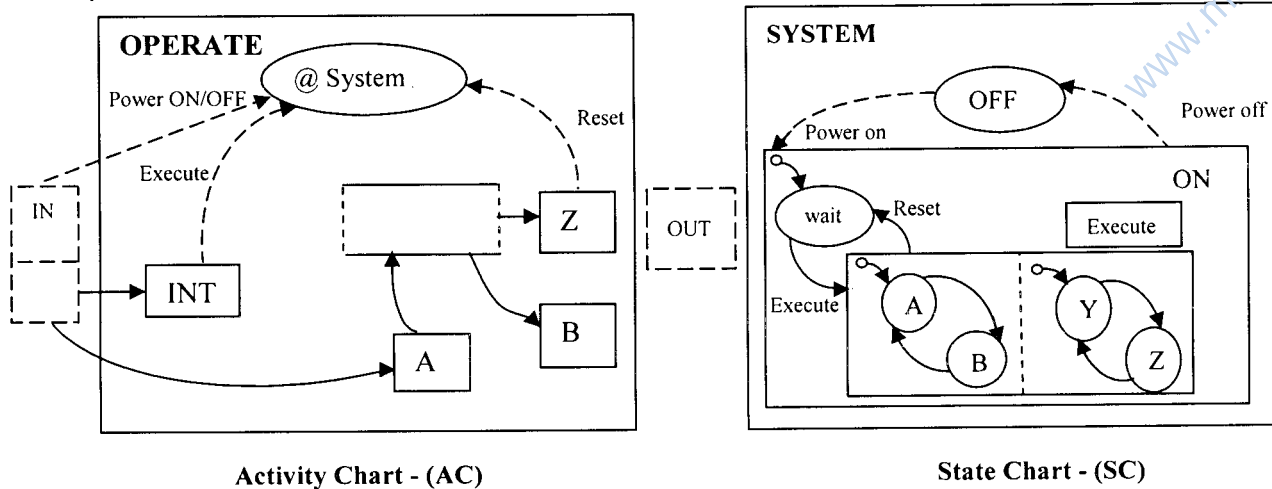
**QUESTION THREE**

- (a) “It is important to thoroughly analyse a software system at its initial stages of development”.

Citing three reasons, support the above assertion.

(6 marks)

- (b) The diagram below represents an activity chart and its corresponding state chart.



**Required:**

- (i) Explain how the two diagrams communicate to control a system. (4 marks)
- (ii) Describe the use of “data dictionary” in the communication process. (2 marks)
- (iii) The two charts are used to design a process of generating and printing documents.

With reference to states A, B, Y and Z, analyse how the above operation is achieved from the moment the user activates the power-on signal. (8 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

- (a) “Before fixing a software bug, it is standard procedure in software engineering to create a test case for it”.

Citing five reasons, argue the case for the above procedure. (5 marks)

- (b) Discuss five challenges faced by a user who buys a software system over the counter with the objective of customising it for his organisation. (5 marks)
- (c) Describe two types of system audit programs. (4 marks)
- (d) Suggest three measures that could be applied during the software lifecycle to mitigate problems associated with software maintenance. (6 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

- (a) (i) Explain the meaning of the term “software ecosystem”. (2 marks)
- (ii) Using illustrations, compare and contrast a natural ecosystem with a software ecosystem. (6 marks)
- (b) Distinguish between the following types of system documentation:
  - (i) Software overview and system administration. (2 marks)
  - (ii) A beginners guide and a reference guide. (2 marks)

- (c) A high degree of coupling among modules could make the maintenance of a software system very difficult.

Defend the above statement.

(8 marks)

**(Total: 20 marks)**

.....