

KASNEB

CICT PART III SECTION 5

SOFTWARE ENGINEERING

WEDNESDAY: 25 May 2016.

Time Allowed: 3 hours.

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

QUESTION ONE

- (a) Explain four reasons why many software systems continue to fall below user expectations, despite the established practice of software requirements engineering. (4 marks)
- (b) Analyse how measures of module coupling, cohesion and size could help a software engineer monitor the build quality of software. (6 marks)
- (c) Distinguish between software process metrics and software product metrics. (4 marks)
- (d) Giving an example in each case, describe three factors that contribute to difficulties during software maintenance. (6 marks)
- (Total: 20 marks)**

QUESTION TWO

- (a) Accurate software development cost estimation is very important. Underestimates may convince management to develop new systems that could later overrun their budgets and fail to achieve their expected payoff. Examine six possible causes of inaccurate estimates of software development costs. (6 marks)
- (b) A company has embarked on a project of developing an aircraft navigation and control system that will be installed in the newly designed dreamliner aircrafts. The company has appointed you as the team leader of the project. Discuss four major considerations that your team must observe in developing the system. (4 marks)
- (c) A commercial bank with branches all over the country installed its first automated system in the 1980s. The bank intends to migrate the core automated business system that will enable it to offer efficient and effective service to its clients. You have been contracted to oversee this migration and the management has invited you to explain to them the best way of undertaking the task. Explain the strategies that you would adopt in order to achieve the planned migration. (4 marks)
- (d) Citing three areas to be considered, explain why most organisations find it difficult to replace a legacy system. (6 marks)
- (Total: 20 marks)**

QUESTION THREE

- (a) Distinguish between “incremental model” and “linear sequential model” in the context of software development. (4 marks)
- (b) “Process quality may not necessarily lead to software product quality. Argue the case for the above statement. (4 marks)
- (c) Examine three approaches to software fault tolerance. (6 marks)
- (d) Describe the term “Pricing to win” as a technique of estimating the cost of software development. (3 marks)
- (e) Explain three techniques of maintaining the integrity of information systems audit logs. (3 marks)
- (Total: 20 marks)**

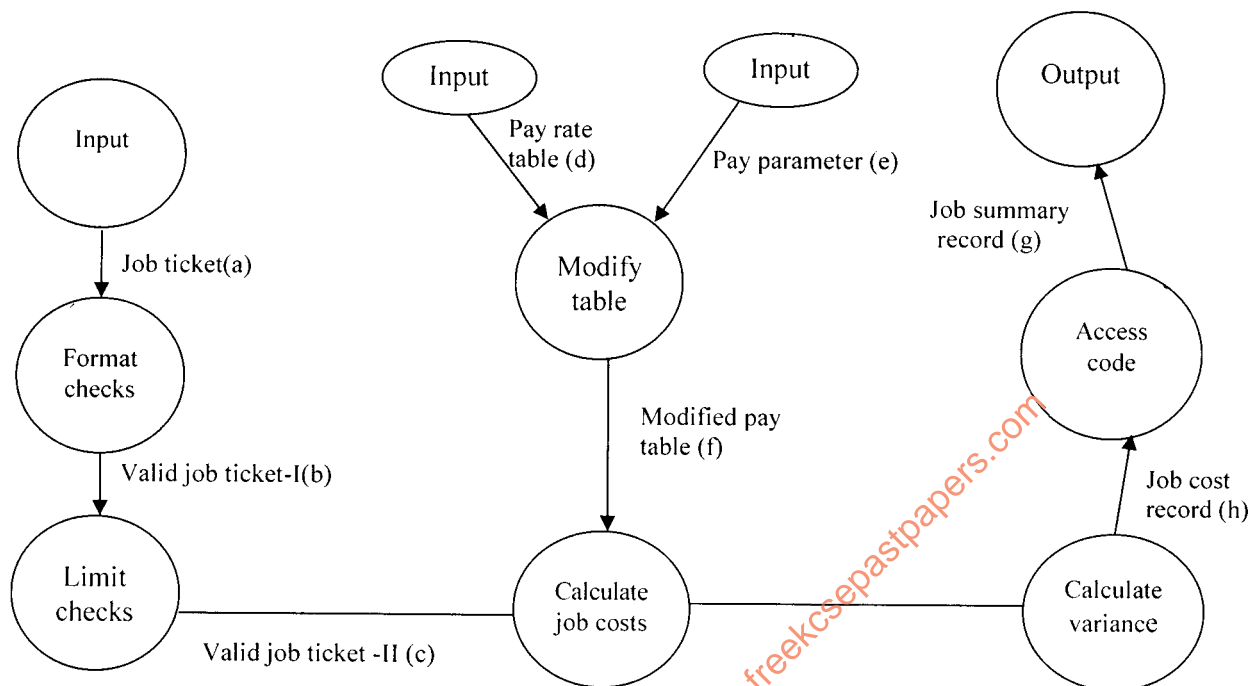
QUESTION FOUR

- (a) ABC Software Developer Ltd. has recruited you to lead its team of developers in delivering a quick solution to address a business demand. The company intends to concentrate on developing business e-commerce and personal systems.

Required:

- (i) Justify the process model that is most appropriate for ABC Software Developer Ltd. (2 marks)
- (ii) Highlight two advantages and two disadvantages of the model in (a)(i) above. (4 marks)

- (b) Enumerate the components of each of the following system documentations:
- (i) Process documentation. (2 marks)
 - (ii) Product documentation. (2 marks)
- (c) Consider the following data flow diagram (DFD):



Required:
Design the structure chart. (4 marks)

- (d) You have been contracted to design software for a large multinational company.

Required:
Examine the importance of the following aspects of the design:

- (i) Extensibility. (2 marks)
 - (ii) Modularity. (2 marks)
 - (iii) Robustness. (2 marks)
- (Total: 20 marks)**

QUESTION FIVE

- (a) Explain three types of changes that are likely to be encountered during the software support phase of software engineering cycle. (6 marks)
- (b) Citing an advantage and a disadvantage of each, describe two most common methods that could be used in estimating the effort required in developing software. (8 marks)
- (c) XYZ afa centre, a health care provider located in Kericho town is in the process of implementing a health care management system.

As a system engineer, you have been contracted to oversee the development of the system.

Required:
Write a sample user requirement and system requirements for the above system.

(6 marks)
(Total: 20 marks)

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