

KABARAK



UNIVERSITY

EXAMINATIONS

2008/2009 ACADEMIC YEAR

**FOR THE DEGREE OF BACHELOR OF EDUCATION
SCIENCE**

COURSE CODE: COMP421

**COURSE TITLE: Software Quality Assurance and
Management**

STREAM: SESSION VII

DAY: THURSDAY

TIME: 9.00 – 11.00 A.M.

DATE: 27/11/2008

INSTRUCTIONS:

Answer question **ONE** and any other **TWO** questions

PLEASE TURN OVER

Question One (30mks)

A). You have been appointed as a software quality assurance in a software industry. You are in charge of software quality. In your first meeting with your group you are to explain quality concepts. How will you explain the following quality concepts?

- i. Validation control [2mks]
- ii. Quality [2mks]
- iii. Quality assurance [2mks]
- iv. Cost of quality [2mks]
- v. Quality control [2mks]

b) The following is the definition of software quality. Fill the gap with appropriate words [3mks]

Software quality has been defined as conformance to ...i..... stated functional and.....ii....requirements, explicitly documented developmentiii....., and characteristic that are expected of all....iv... developed software.

c) The figure below shows McCall’s software quality factors. Study it and complete the table. [5mks]

Product	Quality factors
Product revision	Maintainability
	i.....
	ii.....
Product Transition	Portability
	iii.....
	Interoperability
Product Operations	iv.....
	v.....
	Efficiency
	Integrity
	Usability

d) The following represent a minimum set of guidelines for formal technical reviews. Which ones are not? [2mks]

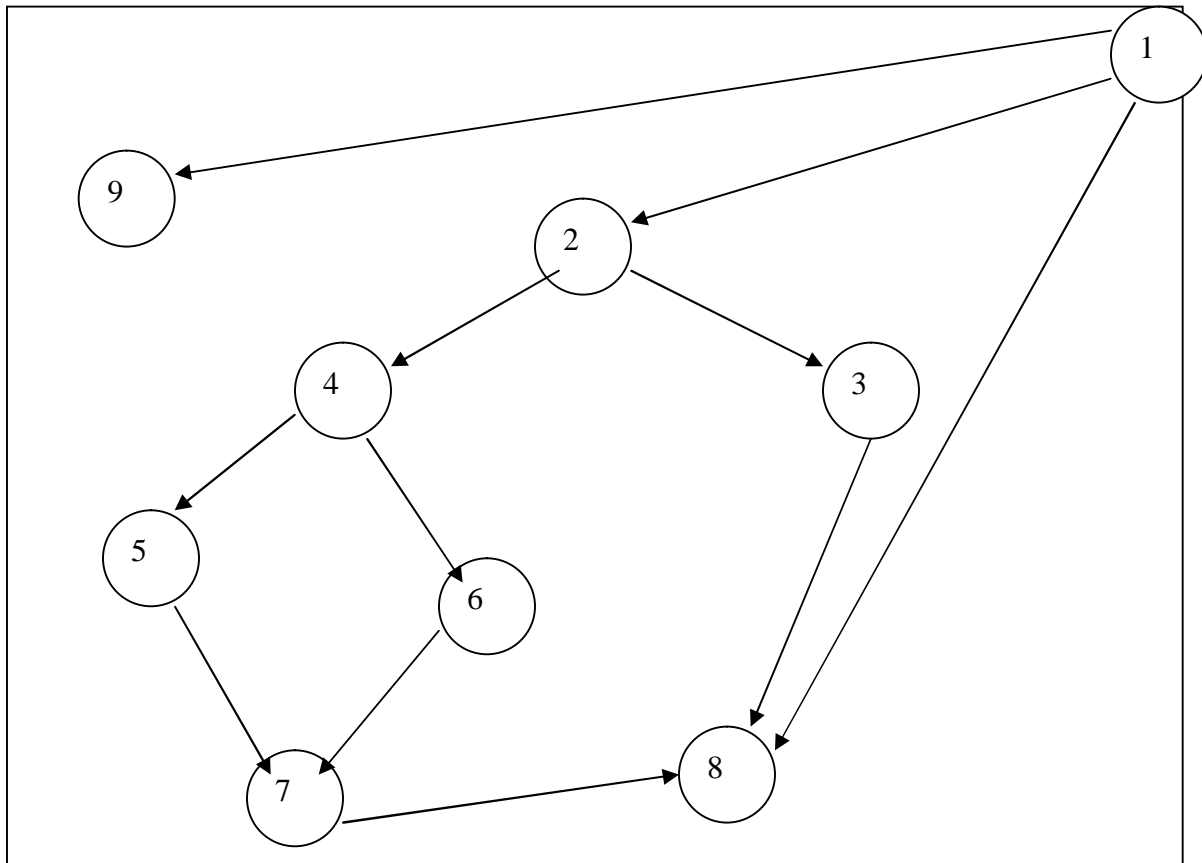
- i. Review the product, not the producer
- ii. Set agenda and maintain it
- iii. Unlimited debate and rebuttal
- iv. Don’t review early reviews

e) Software quality assurance is comprised of variety of tasks associated with seven major activities. Complete the activities shown below

- i. Application of technical methods
- ii. Conduct of formal technical review
- iii.[1mk]

- iv. Enforcement of standards
- v.[1mk]
- vi.[1mk]
- vii. Record keeping

f) Use the flow graph below to answer questions that follow:



- i. Define cyclomatic complexity (1mks)
- ii. Identify the independent path from the flow graph above (3mks)
- iii. Using the flow graph above construct a connection matrix (3mks)

Question Two (20mks)

a) Your ICT manager on attending a conference on software quality, one of the speaker said “When risks are analyzed, it is important to quantify the level of uncertainty and the degree of loss associated with each risk” The ICT manager wants to know what can be considered to accomplish this (10mks)

b) Here factors affect the consequences that are likely if risk does not occur. Its nature, its scope and its timing. What are the steps to determine the overall consequence of a risk (3mks)

c) Briefly describe the following

- i. Risk avoidance (3mks)
- ii. Risk monitoring (2mks)
- iii. Risk management (2mks)

Question Three (20mks)

- a) The Kenya National Quality Institute has recommended a set of SQA activities that address quality assurance planning, oversight, record keeping analysis and reporting. Your organization has formed an independent SQA group to facilitate this. You are required to formulate the roles of the SQA group (10mks)
- b) Describe the SQA plan, clearly identifying the components in each section (10mks)

Question Four (20mks)

- a) As a member of the technical review team, you are aware that guidelines for the conduct of the formal technical review must be established in advance. You are required to come up with the guidelines for the formal technical review. State and explain these guidelines (10mks)
- b) What steps are required to perform statistical SQA (4mks)
- c) How will you measure software reliability and availability (4mks)
- d) Why is Mean-time-between-failure (MTBL) a more useful metric than defects/KLOC (2mks)

Question Five (20mks)

The ISO 9001 is the quality assurance standard that applies to software engineering. The standard contains requirements that must be present for effective quality assurance system. Identify and explain these requirements (20mks)