UNIVERSITI TUNKU ABDUL RAHMAN

ACADEMIC YEAR 2019/2020

SEPTEMBER EXAMINATION

UCCD3064 SOFTWARE TESTING

SATURDAY, 14 SEPTEMBER 2019 TIME : 2.00 PM – 4.00 PM (2 HOURS)

BACHELOR OF COMPUTER SCIENCE (HONS)
BACHELOR OF INFORMATION TECHNOLOGY (HONS)
COMMUNICATIONS AND NETWORKING

Instruction to Candidates:

This question paper consists of THREE (3) questions in Section A and TWO (2) questions in Section B.

Answer **ALL** questions in **Section A** and **ONLY ONE (1)** questions in **Section B**.
Each question carries 25 marks.

Should a candidate answer more than ONE (1) questions in section B, marks will only be awarded for the FIRST questions in that section in the order the candidate submits the answers.

Candidates are not allowed to use calculator.

Answer questions only in the answer booklet provided.

UCCD3064 SOFTWARE TESTING

SECTION A

Q1. (a) With reference to the following testing environments, evaluate whether such tests are effective and recommend improvements if necessary:

(i) A tester decided to perform component tests on all the components that were developed by a new developer. After component tests, the tester continued to perform integration tests, system test level and acceptance tests. (4 marks)

(ii) After the software specifications and software code were ready, a tester had performed walkthrough reviews on all the software specifications. He then decided to perform dynamic tests using error guessing technique. (4 marks)

(b) Justify why both validation and verification are important in conducting tests. (4 marks)

(c) "The objective of testing is to prove any remaining defects that will not cause any failures".

Do you agree with the above statement? (Justify your answer). (3 marks)

(d) Describe the **TWO (2)** disadvantages of achieving high independence of testing. Recommend **ONE (1)** solution that can solve the disadvantages. (6 marks)

(e) What is defect cascading? How defect cascading can be prevented? (4 marks)
[Total : 25 marks]

Q2. (a) What are **TWO (2)** test basis that can be used to determine the units for component testing? (4 marks)

(b) Why software which has undergone thorough testing and bugs fixing still can be not usable in accordance to the principle of absence of error fallacy? (3 marks)

(c) What are the conflicting roles between a software developer and a software tester? (6 marks)

Q2. (Continued)

(d) Implement and explain the steps involved in applying the following acceptance test in the library system. The acceptance tests should test main features of borrow book, return book and reserve book.

(i) Operation acceptance test. (4 marks)

(ii) User acceptance test. (4 marks)

(e) Recommend **TWO (2)** methods that a tester can perform to ensure success in testing during the software development lifecycle. (4 marks)

[Total : 25 marks]

Q3. (a) Company 4U2C recently changed its database platform from Oralc to Micros. Module A, Module B and Module C access the database directly. Sub Module 1A and Sub Module 2A needs the output of data from Module A. Sub Module 1B is used by Module B to display messages (no data needed).

What tests shall be conducted with reference to the above scenario? (Implement the steps that are needed for the recommended tests.) (7 marks)

(b) After several cycles of tests, a tester discovered that there were too many tax calculation failures in three of the modules developed by a specific developer Mr. Lim. What test analysis shall be performed to prevent such failures from re-occurring? (Explain in details) (4 marks)

(c) Compare and contrast walkthrough review and technical review from the perspective of objectives and procedures. (8 marks)

Q3. (Continued)

(d) With reference to the flow diagram below (Figure 3.1).

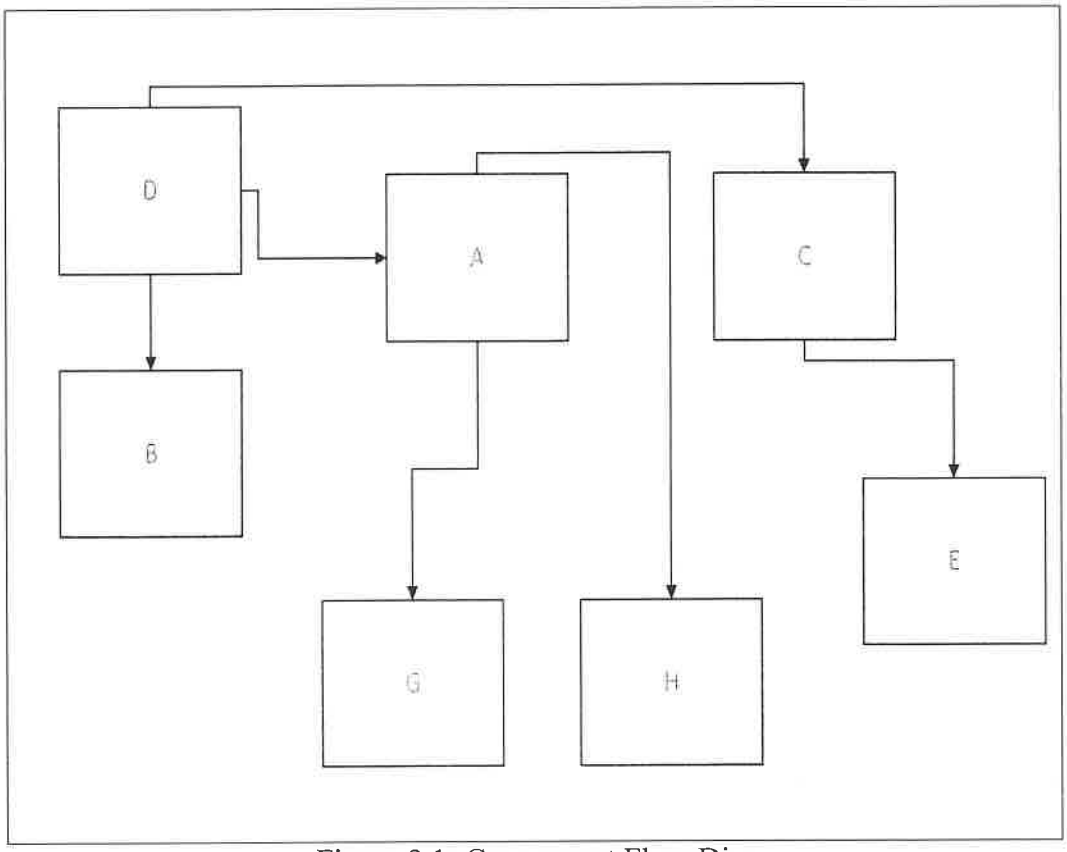

Figure 3.1: Component Flow Diagram

Show how Top-Down integration testing can be done. You are required to use stubs or drivers in the testing. (6 marks)

[Total : 25 marks]

SECTION B

Q4. (a) Propose and explain **TWO (2)** solutions that are able to help a reviewer in preparing for inspection review during the individual review phase. (4 marks)

(b) How static testing is able to ensure good maintainability of codes? (2 marks)

(c) With reference to the table 4.1 below, design a test using the equivalence partitioning technique . (4 marks)

Buying	Number of shares	Brokerage fees rate
	First 100,000	0.7 %
	Next 100,000	0.6 %
	Anything more than 200,000	0.5 %

Table 4.1: Brokerage Fees Rate

(d) Design decision table test technique for the following scenario. You are required to show all the test cases for the test being proposed.

Employee bonus is calculated based on length of employment and the score obtained in the key performance index (KPI). Table 4.2 contains value of bonus entitled based on both length of employment and KPI score. (9 marks)

Length of Employment	KPI Score	Bonus (%)
0 to 2 years	1 to 2	0
	3 to 4	5
	5	10
3 to 4 years	1 to 2	1
	3 to 4	7
	5	12
5 years and above	1 to 2	4
	3 to 4	10
	5	15

Table 4.2: Bonus Calculation

(e) What are the statuses that can be assigned to incidents in the test incident report in accordance to ISO/IEC/IEEE 29119 standard? (6 marks)

[Total : 25 marks]

Q5. (a) How 100% decision coverage can guarantee 100% statement coverage? (4 marks)

(b) What test is suitable when there is lack of time and requirements are incomplete or inapplicable? (Explain the steps involved) (6 marks)

(c) With reference to the control flow graph below (Figure 5.1).

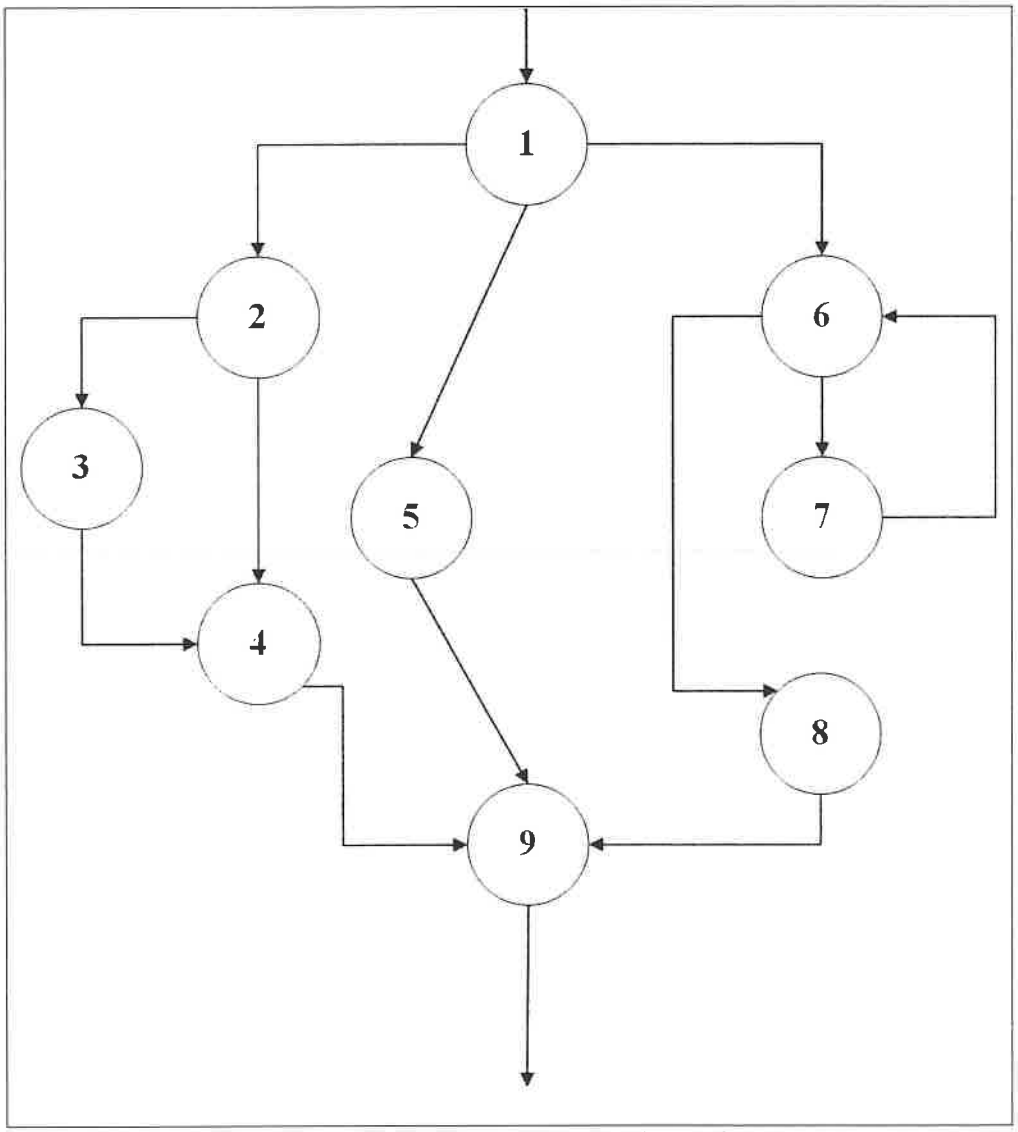

Figure 5.1: Component Flow Diagram

(i) Show the test cases for decision coverage. (4 marks)

(ii) Show the test cases for path coverage. (5 marks)

Q5. (Continued)

(d) What are the tasks that a tester should perform during Test Implementation phase in the testing lifecycle? (5 marks)

(e) What is horizontal traceability? (1 mark)

[Total : 25 marks]
