GALWAY-MAYO INSTITUTE OF TECHNOLOGY

SEMESTER 2 EXAMINATIONS 2018/2019

MODULE: COMP08034 - Software Testing

PROGRAMME(S):

GA_KSOFG_B07	BACHELOR OF SCIENCE IN COMPUTING IN SOFTWARE DEVELOPMENT
GA_KSOAG_H08	BACHELOR OF SCIENCE (HONOURS) IN COMPUTING IN SOFTWARE DEVELOPMENT
GA_KCDMG_H08	BACHELOR OF SCIENCE (HONOURS) IN COMPUTING AND DIGITAL MEDIA

YEAR OF STUDY: 3,4

EXAMINER(S):

NAOMI HURLEY	(Internal)
MARTIN HYNES	(Internal)
Mr. Tom Davis	(External)
Dr. Des Chambers	(External)

TIME ALLOWED: 2 Hours

INSTRUCTIONS: **Answer 3 questions. All questions carry equal marks.**

PLEASE DO NOT TURN OVER THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO.
The use of programmable or text storing calculators is expressly forbidden.
Please note that where a candidate answers more than the required number of questions, the examiner will mark all questions attempted and then select the highest scoring ones.

There are no additional requirements for this paper.

QUESTION 1 ***[TOTAL MARKS: 33]***

Q 1(a) **[6 Marks]**
Explain the main causes of software defects.

Q 1(b) **[8 Marks]**
Describe the process followed when developing a test strategy.

Q 1(c) **[12 Marks]**
Four Principles of Software Testing are:

- Absence of errors fallacy
- Testing is context dependant
- Testing shows presence of defects
- Defect Clustering

Provide a description of **THREE** of these Software Testing principles.

Q 1(d) **[7 Marks]**
Describe the various levels of independent testing and explain the advantages of increased independent testing.

[End of Question1]

QUESTION 2 ***[TOTAL MARKS: 33]***

Q 2(a) **[6 Marks]**

Differentiate between the following terms in relation to software testing.

- Verification
- Validation

Q 2(b) **[9 Marks]**

Explain the following types of testing:

- Unit Testing
- Maintenance Testing
- System Testing

Q 2(c) **[9 Marks]**

Describe **THREE** of the following Non Functional tests

- Security Testing
- Usability Testing
- Stress Testing
- Load Testing

Q 2(d) **[9 Marks]**

Explain **THREE** of the following terms in relation to software testing:

- Black Box Testing
- White Box Testing
- Alpha Testing
- Beta Testing

[End of Question2]

QUESTION 3 ***[TOTAL MARKS: 33]***

Q 3(a) **[5 Marks]**

Differentiate between static and dynamic testing.

Additionally, explain the advantages of static testing.

Q 3(b) **[9 Marks]**

Define the following terms in relation to the review process carried out during software projects:

- Walkthrough
- Technical Review
- Inspection

Q 3(c) **[9 Marks]**

Describe the problems that are encountered by software testers during the software development process

Q 3(d) **[6 Marks]**

Explain the following terms in relation to manual testing:

- Un-scripted Testing
- Scripted Vague Testing
- Scripted Detail Testing

Q 3(e) **[4 Marks]**

Explain which types of tests should be automated and which types of tests should not be automated

[End of Question3]

QUESTION 4 ***[TOTAL MARKS: 33]***

Q 4(a) **[6 Marks]**

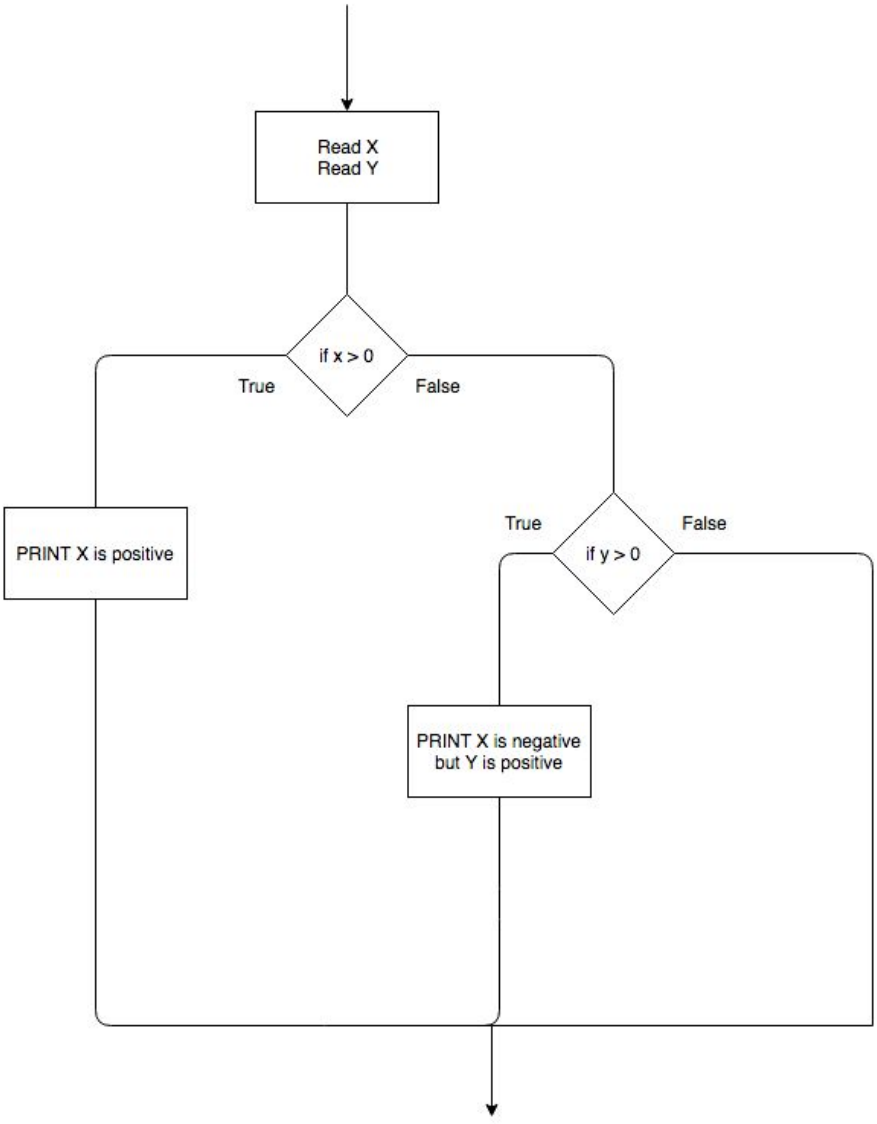
Explain how Test Coverage is used as a metric of the amount of testing completed.

Additionally, explain the following metrics:

- Statement Coverage
- Decision Coverage

Q 4(b) **[5 Marks]**

Consider the following flow diagram and write out Test Sets to achieve 100% decision coverage.



Q 4(c) **[12 Marks]**

Scenario: XYZ University Restaurant

A. If you are a student you receive a discount of 23% on the cost of your meal.

B. If you are paying for meals above €40 you receive a discount of 10%

C. If you are eating between 3pm and 5pm you receive an additional 15% discount. **Note: Students can not get this discount offer.**

D. Discount amounts are added if applicable

Produce a decision table showing the different discounts for the various types of restaurant customer profiles.

Q 4(d) **[10 Marks]**

Derive test cases from the decision table produced in part C of question 4.

[End of Question4]

QUESTION 5 ***[TOTAL MARKS: 33]***

Q 5(a) **[5 Marks]**

Explain the following terms:

- Test Basis
- Horizontal Traceability

Q 5(b) **[9 Marks]**

Explain the following terms:

- Equivalent Partition
- Boundary Value Analysis
- Exploratory Testing

Q 5(c) **[9 Marks]**

Discuss how you may distinguish an expert exploratory tester from an amateur under ALL of the following areas.

- Critical Thinking
- Diverse Ideas
- Status Reporting

In your discussion, provide insight into how an exploratory tester may improve in each area.

Q 5(d) **[10 Marks]**

A car fleet company provides online functionality to allow companies to hire cars for their staff by entering the number of cars and the number of days that they require for their booking.

<u>The number of cars should be:</u>

- A positive integer between 1 and 100.
- If book more than 20 cars you get 5% discount, if you book more that 50 cars then you get 15%, and if you book more than 75 cars you will receive 10 cars free.

<u>The number of days should be:</u>

- A positive integer between 1 and 31.
- The rate per day should be described as follows for the various number of days:
  - 1-7 (inclusive) - €15
  - 8-14(inclusive) - €13
  - 15-31(inclusive) - €11

Based on this data, fill in the Following Table for this system.

Parameter	**Partition**
Number of Cars	
Valid Values	
Boundary Values	
Number of Days	
Valid Values	
Boundary Values	

[End of Question5]

[END OF EXAM]