Code: PHCS102CCT

MAULANA AZAD NATIONAL URDU UNIVERSITY

Programme: PhD (CS)

Course Work Examination December 2017

PHCS102CCT**- Software Engineering**

Time: 3 hours **Max. Marks: 70**

Instructions:

This Question Paper consists of three parts: Part- A, Part-B and Part-C. Attempt all Parts.

Part-A contains 10 compulsory questions of very short answer type questions. Answers to be given in one word/sentence. Answer all questions. Each question carries 01 marks.

(10 x 1 = 10 Marks)

Part-B contains eight questions, of which students are supposed to answer any five questions. Answer each question in 200 words. Each question carries 06 marks.

(5 x 6 = 30 Marks)

Part-C contains five questions, of which students are supposed to answer any three questions. Answer each question in 500 words. Each question carries 10 marks.

(3 x 10 = 30 Marks)

[PART-A]

Q1.

i. Write the steps of Prototype Model.
ii. Why do we need metrics in software Engineering?
iii. Define software reliability.
iv. List any three software quality metrics.
v. Differentiate between Black Box and White Box Testing.
vi. What is debugging?
vii. Write any three tools for automated software testing.
viii. What are the characteristics to be considered for the selection of the life cycle model?
ix. List the advantages of using waterfall model instead of adhoc build and fix model.
x. What is CASE Tool?

[PART-B]

2. Discuss the differences between verification and validation, and explain why validation is a practically difficult process.
3. Explain requirements elicitation techniques. Which one is more important over other and why?
4. Describe the difference between product and process metrics. Define any two product and process metrics as an example for each category.
5. What is software requirement specification (SRS)? Write any three advantages of SRS standards.

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6. Explain software development life cycle phases. What is the purpose of integration testing in testing phase?
7. What is Regression testing? Differentiate between functional and non-functional testing with suitable examples. .
8. Consider a simple program to classify a triangle. Its inputs is a triple of positive integers (say x, y, z) and the data type for input parameters ensures that these will be integers greater than 0 and less than or equal to 100. The program output may be one of the following words: [Scalene; Isosceles; Equilateral; Not a triangle]. Design the boundary value test cases for the given scenario.
9. Differentiate between white box, grey box and black box testing with examples. What is the purpose of mutation testing?

[PART-C]

10. Using FP metrics compute the FP value for a project with the following information domain characteristics:
    Number of user inputs =32
    Number of user outputs =60
    Number of user inquiries =24
    Number of files =8
    Number of external interfaces =2
11. Explain why it is not necessary for a program to be completely free of defects before it is delivered to its customers. To what extent can testing be used to validate that the program is fit for its purpose?
12. Department of CS&IT is under process of automation of student result management system of UG and PG programs. Define the problem statement and prepare the SRS in order to develop the system.
13. A program is expected to have 500 faults. It is also assumed that one fault may lead to one failure only. The initial failure intensity was 2 failures/CPU hr. The program was to be released with a failure intensity objective of 5 failures/100 CPU hr. Calculate the number of failures experienced before release.
14. Write a short note on any four of the following:
    a. ISO 9000:2000 Software Quality Standard
    b. Acceptance Testing
    c. Stress Testing
    d. Load Testing
    e. Quality Metrics