

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019

Course Code: CS308

Course Name: SOFTWARE ENGINEERING AND PROJECT MANAGEMENT

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

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| 1 | Briefly explain the role of management in software development. | (3) |
| 2 | List the advantages of using waterfall model instead of adhoc build and fix model. | (3) |
| 3 | Explain quality function deployment technique of requirement elicitation. Why a value factor is always associated with every requirement? | (3) |
| 4 | List out the characteristics of a good SRS document. | (3) |

PART B

Answer any two full questions, each carries 9 marks.

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| 5 | a) Explain with suitable examples, the types of software development for which the spiral model is suitable. Is the number of loops of the spiral fixed for different development process? If not, explain how the number of loops in the spiral is determined. | (4) |
| | b) Suppose you were to plan to undertake the development of a product with a large number of technical as well as customer related risks, which life cycle model would you adopt? Justify your answer. | (5) |
| 6 | a) What are the major phases in the waterfall model of software development? Which phase consumes the maximum effort for developing a typical software product? | (5) |
| | b) What are the crucial steps of requirement engineering? Explain with the help of a diagram. | (4) |
| 7 | a) Explain Capability Maturity Model(CMM). Why is it suggested that CMM is the better choice than ISO-9001? | (3) |
| | b) A university has decided to engage a software company for the automation of student result management system of its Mtech Programme. Develop the following documents which may provide holistic view of the system. | (6) |
| | i. Problem Statement iii. Use case diagram | |
| | ii. Context diagram iv. ER diagram | |

PART C

Answer all questions, each carries 3 marks.

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| 8 | Assume that the size of an organic type software product has been estimated to be 32000 lines of code. Assume that the average salary of software engineers is Rs.15,000 per month. Determine the effort required to develop the software product and the nominal development time. | (3) |
| 9 | Explain the design guidelines that can be used to produce "good quality" classes or reusable classes. | (3) |

- 10 Distinguish between: (3)
 i. Structural testing and Functional testing
 ii. Cohesion and Coupling
 iii. Alpha testing and Beta testing
- 11 Define cyclomatic complexity. Explain different properties of cyclomatic complexity. (3)

PART D

Answer any two full questions, each carries 9 marks.

- 12 a) What is modularity? List out the important properties of a modular system. (3)
 b) What do you understand by the term system testing? What are the different kinds of system testing that are usually performed on large software products? (3)
 c) Explain different code review techniques (3)
- 13 a) Consider the program given below, construct the flow graph and calculate the cyclomatic complexity. (3)
 $i = 0;$
 $n = 4;$ // N-Number of nodes present in the graph
 while ($i < n - 1$) do
 $j = i + 1;$
 while ($j < n$) do
 if $A[i] < A[j]$ then
 swap($A[i], A[j]$);
 end do;
 $i = i + 1;$
 end do
- b) Consider a program to classify a triangle. Its input is a triangle 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). Explain decision table for triangle problem and identify the test cases using the decision table. (6)
- 14 a) Consider a project to develop a full screen editor. The major components identified are 1. Screen Edit 2. Command Language Interpreter 3. File input and output 4. Cursor movement 5. Screen movement. The sizes of these are estimated to be 4K, 2K, 1K, 2K, and 3K delivered source code lines. Use COCOMO model to determine overall cost and schedule estimates (Assume that i) required software reliability is high ie 1.15, ii) Product complexity is high ie 1.15, iii) Analyst capability is high ie 0.86, iv) Programming language experience is low ie 1.07, all other cost drivers are assumed to be nominal. (5)

- b) Consider a project with the following functional units: (4)
- Number of user inputs =50
Number of user outputs=40
Number of user enquiries=35
Number of user files=6
Number of external interfaces =4
Assume all complexity adjustment factors and weighting factors are average. Compute the function point for the project.
Functional units with weighting factors
(External input:4, External output:5, External inquiries :4, Internal logic file:10, External interface file:7)

PART E

Answer any four full questions, each carries 10 marks.

- 15 a) What is software maintenance? Describe various categories of maintenance. Which category consumes maximum effort and why? (6)
- b) Explain the steps of software maintenance with the help of a diagram. (4)
- 16 a) What is meant by software configuration management? Explain different activities involved in configuration management. (5)
- b) What do you understand by the terms CASE tool and CASE environment. With a neat schematic architecture explain CASE environment. (5)
- 17 a) Explain different characteristics which are desired for a good user interface. (6)
- b) Explain different types of user interface. (4)
- 18 a) What is risk? Explain different types of software risk. (4)
- b) What are risk management activities? Is it possible to prioritize risk? (6)
- 19 a) Explain the Taute maintenance model. What are the various phases of these model. (6)
- b) Annual change traffic for a software system is 15% per year. The development effort is 600 PMs. Compute an estimate for annual maintenance effort (AME). If life time of the project is 10 years, what is the total effort of the project? (4)
- 20 a) Explain the following CASE tools: (10)
- (i) SCM tools
(ii) Documentation tools
(iii) Integration & Testing tools
(iv) Static Analysis tools
(v) Reengineering tools
