Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SIXTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: CS308

Course Name: SOFTWARE ENGINEERING AND PROJECT MANAGEMENT (CS)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks. Marks

1		What is a software process? Why it is important?	(3)
2		Compare waterfall model and incremental model for software development	(3)
3		How does software prototyping help to increase the overall quality of the software?	(3)
4		How ISO 9000 helps in software process improvement?	(3)

PART B

Answer any two full questions, each carries 9 marks.

5	a)	Describe software engineering as a layered technology.	(4)
	b)	Describe Boehm's spiral model for software development.	(5)
6	a)	Explain the different levels in Capability Maturity Model.	(5)
	b)	Discuss the specification and design aspects of software engineering.	(4)
7	a)	Why requirements elicitation is considered as a critical task in requirements engineering? Explain any **two** methods for requirements elicitation.	(5)
	b)	Describe the elements of analysis model.	(4)

PART C

Answer all questions, each carries 3 marks.

8		What is the importance of software project planning?	(3)
9		Compare top-down and bottom-up design strategies.	(3)
10		What is software testing? Write any four fundamental testing principles.	(3)
11		What is the significance of adopting programming practices and coding standards?	(3)

PART D

Answer any two full questions, each carries 9 marks.

12	a)	What is the need of a modular system? Describe the effects of cohesion and coupling in modular design.	(5)

b) An air traffic control project of size 500 KLOC is to be developed. Software project team has very little experience on similar projects and the project schedule is also tight. Calculate the effort, development time, average staff size and productivity of the project. (4)

13 a) Describe basis path testing. Illustrate with an example. (5)

b) Explain code walk-through and code inspection. (4)

14 a) Describe the different levels of COCOMO. (5)

b) Discuss any **two** types of system test for software-based systems. (4)

PART E

Answer any four full questions, each carries 10 marks.

15 a) What is a task set? Write the various steps in selecting appropriate task set for a project. (6)

b) Explain Putnam-Norden-Rayleigh (PNR) curve with a neat graph showing effort versus development time. (4)

16 a) What is software maintenance? Explain various categories of software maintenance. (6)

b) Differentiate between product and process. (4)

17 a) What is risk identification? How risks are monitored and managed by project managers? (6)

b) What are the various types of risks in software projects? (4)

18 a) Describe software configuration management process. (6)

b) Discuss the rules for user interface design. (4)

19 a) Explain the basic building blocks of CASE tools. (6)

b) Write a note on integrated CASE environment. (4)

20 a) What are the signs that a software project is in jeopardy? What are the steps to be taken by a project manager to tackle this situation? (6)

b) How various stakeholders are organized to perform effective software engineering? (4)

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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 carries3 marks.

			Marks
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 carries9 marks.

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. i. Problem Statement iii. Use case diagram ii. Context diagram iv. ER diagram	(6)

PART C

Answer all questions, each carries3 marks.

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 carries9 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 .It's 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). (6)
Explain decision table for triangle problem and identify the test cases using the decision table.

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 carries10 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

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SIXTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: CS308

Course Name: SOFTWARE ENGINEERING AND PROJECT MANAGEMENT

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries3 marks. Marks

1		Explain software engineering as a layered technology	(3)
2		Write characteristics of Waterfall model for software development	(3)
3		How prototyping helps in software development	(3)
4		Write the significance of Requirement analysis in software engineering	(3)

PART B

Answer any two full questions, each carries9 marks.

5	a)	Explain Spiral Model for software development with a neat diagram.	(3)
	b)	Describe any three methods of Requirement elicitation process	(3)
	c)	Describe the different levels of Capability Maturity Model	(3)
6	a)	Write the elements of requirements engineering process	(2)
	b)	Discuss the prototyping model. What is the effect of designing a prototype on the overall cost of the project?	(4)
	c)	What is the scope of software engineering	(3)
7	a)	Discuss the maintenance aspects of software engineering.	(3)
	b)	Explain the importance of requirements. How many types of requirements are possible ?	(3)
	c)	Differentiate between Waterfall model and incremental model for software development?	(3)

PART C

Answer all questions, each carries3 marks.

8		Describe any two software size estimation techniques.	(3)
9		Explain all the levels of COCOMO model.	(3)
10		Differentiate between code walk through and codeinspection	(3)
11		Draw the Rayleigh manpower loading curve and state PNR model for staffing	(3)

PART D

Answer any two full questions, each carries9 marks.

12 a) Explain two types of Black box testing strategies. (3)

b) Differentiate between top down and bottom up design strategies. (3)

c) A simple stand – alone software utility is to be developed in 'C' programming by a team of software experts for a computer running Linux and the overall size of this software is estimated to be 20,000 lines of code. Considering (a, b) = (2.4, 1.05) as multiplicative and exponential factor for the basic COCOMO effort estimation equation and (c, d) = (2.5, 0.38) as multiplicative and exponential factor for the basic COCOMO development time estimation equation, approximately how long does the software project take to complete ? (3)

13 a) Define any four types of System testing (4)

b) Differentiate between stamp coupling and content coupling. (2)

c) Explain basis path testing with example (3)

14 a) Define Cohesion. Explain different types of cohesion (5)

b) Explain stepwise refinement (2)

c) How Black box testing differ from White box testing (2)

PART E

Answer any four full questions, each carries10 marks.

15 a) Write the need for software maintenance. Explain different categories of maintenance (5)

b) Discuss the building blocks of CASE. (5)

16 a) Discuss Risk management activities in detail. (5)

b) Write any four rules for user interface design. (5)

17 a) Describe the need for software configuration management. (5)

b) Discuss 4 p's of software management concepts. (5)

18 a) Describe different categories of risk. (5)

b) Explain different project scheduling techniques (5)

19 a) Write the different activities of software project management. (5)

b) Explain architecture of CASE environment. (5)

20 a) Discuss how to define a task set for the software project. (5)

b) Explain software configuration management activities. (5)

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth semester B.Tech degree examinations (S), September 2020

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

1		Define the term "software Engineering". Explain the major differences between software engineering and other traditional engineering disciplines.	(3)
2		Why do we feel that characteristics of requirements play a very significant role in the selection of a life cycle model?	(3)
3		Name the umbrella activities in software process.	(3)
4		Write a short note on ISO 9000 quality standards.	(3)

PART B

Answer any two full questions, each carries 9 marks.

5	a)	Illustrate the layered architecture of software engineering with a neat sketch.	(3)
	b)	If you have to develop a word processing software product, which process model will you choose? Justify your answer and examine.	(3)
	c)	List out the major shortcomings that we might face, if we use the classical waterfall model for developing software?	(3)
6	a)	Define "requirements elicitation"? Explain any *two* elicitation techniques in detail.	(6)
	b)	Compare ISO and SEI-CMM models.	(3)
7	a)	Explain Boehm's spiral model of software process with a neat diagram.	(6)
	b)	Distinguish between functional and non-functional requirements with example.	(3)

PART C

Answer all questions, each carries3 marks.

8		Suppose you are developing a software product in the organic mode. You have estimated the size of the product to be about 100,000 lines of code. Determine the effort required to develop the software product and the nominal development time.	(3)

9 List the important shortcomings of LOC for use as a software size metric for carrying out project estimations. (3)

10 Outline equivalence class partitioning? Explain with an example how equivalence class partitioning helps in testing (3)

11 What is meant by a code walkthrough? What are some of the important types of errors checked during code walkthrough? (3)

PART D

Answer any two full questions, each carries9 marks.

12 a) Explain the different types of coupling that might exist between two software modules. What problems are likely to arise if two modules have high coupling? (6)

b) When does software project planning activity start and end in a software life cycle? List the important activities software project managers perform during project planning. (3)

13 a) How can you compute the cyclomatic complexity of a program? How is cyclomatic complexity useful in program testing? (6)

b) One way to measure the design quality of a structure chart is to explore its coupling and cohesion. Differentiate between the two. (3)

14 a) Consider the following Function Point components and their complexity. If the total degree of influence is 52, find the estimated function points. (3)

Function type	Estimated count	Complexity
External Interface Files	2	7
Internal Logical Files	4	10
External Inquiries	22	4
External Outputs	16	5
External Inputs	24	4

b) What is black box testing? Explain the different types of black box testing strategies. For a software that computes the square root of an input integer that can assume values in the range of 0 and 1000. Determine the equivalence class test suite. (6)

PART E

Answer any four full questions, each carries 10 marks.

15 a) Explain in detail about the risk management in a software development life cycle. (5)

	b)	What is a task set? Write the various steps involved in selecting appropriate task set for a project.	(5)
16	a)	Explain the software maintenance steps with the help of a diagram.	(5)
	b)	Describe the golden rules for User Interface Design.	(5)
17	a)	Explain the Boehm's maintenance model with the help of a diagram.	(5)
	b)	Draw the architecture of a CASE environment and explain how the different tools are integrated.	(5)
18	a)	What is software maintenance? Describe in brief various categories of maintenance.	(5)
	b)	Explain change control in detail along with software configuration items and baseline.	(5)
19	a)	What are the various problems during software maintenance? Describe some solutions to these problems.	(5)
	b)	Write a short note on taxonomy of CASE tools.	(5)
20	a)	Explain four P's with respect to Software Project Management.	(5)
	b)	What is meant by Software Configuration Management(SCM)? Discuss the process of SCM in detail.	(5)

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