Reg. No.															

Question Paper Code	13527

B.E. / B.Tech. - DEGREE EXAMINATIONS, APR / MAY 2025

Third Semester

Information Technology

20ITPC302 - SOFTWARE ENGINEERING

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	The curve which depicts failure rate as a function of time for hardware in software development is (a) elliptic (b) bathtub (c) dependability (d) failure	*1*	*K1*	*CO1*
2.	Which of the following model suggests a systematic, sequential approach to software development that begins with customer specification requirements and progresses through planning, modeling, construction and deployment? (a) incremental (b) spiral (c) waterfall (d) evolutionary process	*1*	*K1*	*CO1*
3.	The requirements engineering involves which of the following three key activities (a) elicitation and analysis, specification, validation (b) elicitation and analysis, validation, verification (c) elicitation, specification, verification (d) analysis, specification, validation	*1*	*K2*	*CO2*
4.	The following is an observational technique that can be used to understand operational processes and help derive requirements for software to support the processes (a) Interviewing (b) Analyzing (c) validating (d) Ethnography	*1*	*K1*	*CO2*
5.	The technique which simplifies the design of a component without changing its function or behavior is (a) information hiding (b) modularity (c) refinement (d) refactoring	*1*	*K1*	*CO3*
6.	The most common design issues arise during the user interface evolving are system response time and user help facilities system response time and error information handling error information handling and command labeling command labeling (a) i) and iii) only (b) i) and iv) only (c) ii) and iv) only (d) i) only	*1*	*K2*	*CO3*
7.	Which of the following test-case design method that exercises the logical conditions contained in a program module? (a) unit testing (b) loop testing (c) data flow testing (d) condition testing	*1*	*K1*	*CO4*
8.	Stress tests are designed to (a) verify that protection mechanisms built into a system (b) confront programs with abnormal situations (c) exercises the software in each environment in which it is to operate (d) verify whether the recovery is properly performed or not	*1*	*K1*	*CO4*
9.	COCOMO stands for (a) COnstructive COst MOdel (b) COoperative COst MOdel (c) COnsumed COst MOdel (d) COmposition COst MOdel	*1*	*K1*	*CO5*

10. The risk projection steps are — 1 K2 CO6

i) Establish a scale that reflects the perceived likelihood of a risk
ii) Delineate the consequences of the risk
iii) Estimate the impact of the risk on the project and the product
iv) Assess the overall accuracy of the risk projection so that there will be no misunderstandings

(a) i) and ii) only (b) i) and iii) only (c) i), ii) and iii) only (d) i), ii), iii) and iv)

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	State the various umbrella activities that have to be carried out in software engineering process framework.	2	K1	CO1
12.	Describe the different specialized process models used in software engineering.	2	K2	CO1
13.	What are the components of the standard structure for the software requirements document?	2	K1	CO2
14.	Write a note on data dictionary.	2	K2	CO2
15.	Illustrate an Architectural Context Diagram (ACD) for a safe home product.	2	K2	CO3
16.	Distinguish between cohesion and coupling.	2	K2	CO3
17.	Discuss the various characteristics that software must have to achieve the goal of finding the most errors with a minimum of effort.	2	K2	CO4
18.	Explain the three debugging strategies proposed by Mye.	2	K2	CO4
19.	Highlight the activities involved in the project planning process.	2	K2	CO5
20.	Define Gantt Chart.	2	K1	CO5
21.	Compare and contrast risk components and risk drivers.	2	K2	CO6
22.	What are the different types of risk?	2	K1	CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Discuss in detail how the spiral model is used in SDLC.	11	K2	CO1
		OR			
	b)	Illustrate the Extreme Programming (XP) process and their tasks that are associated with each framework activity for agile software development.	11	K2	CO1
24.	a)	Consider the following Library Management System: A College library system manages and stores books information electronically according to student's needs. The system helps both students and library manager to keep a constant track of all the books available in the library. It allows both the admin and the student to search for the desired book. It becomes necessary for colleges to keep a continuous check on the books issued and returned and even calculate fine. Identify the Functional and Non-functional requirements for the above scenario and explain.	11	K2	CO2
		OR			
	b) i)	What is Requirement Elicitation? Briefly Describe the various activities performed in requirement elicitation phase.	6	K2	CO2
	ii)	Discuss the different types of checks that should be carried out during the requirements validation process.	5	K2	CO2
25.	a)	Illustrate the different categorization of architectural styles with neat sketch.	11	K2	CO3
		OR			
	b) (i)	Describe the golden rules of interface design.	6	K2	CO3

(ii) Explain the basic design principles applicable to component-level design when object-oriented software engineering is applied. *5* *K2* *CO3*

26. a) (i) Consider the pseudo code for simple subtraction below: *6* *K3* *CO4*

```
(1) Program 'Simple Subtraction'
(2) Input (x,y)
(3) Output(x)
(4) Output(y)
(5) If x>y then DO
(6) x-y=z
(7) Else y-z=x
(8) EndIf
(9) Output(z)
(10) Output "End Program"
```

Perform basis path testing and generate test cases.

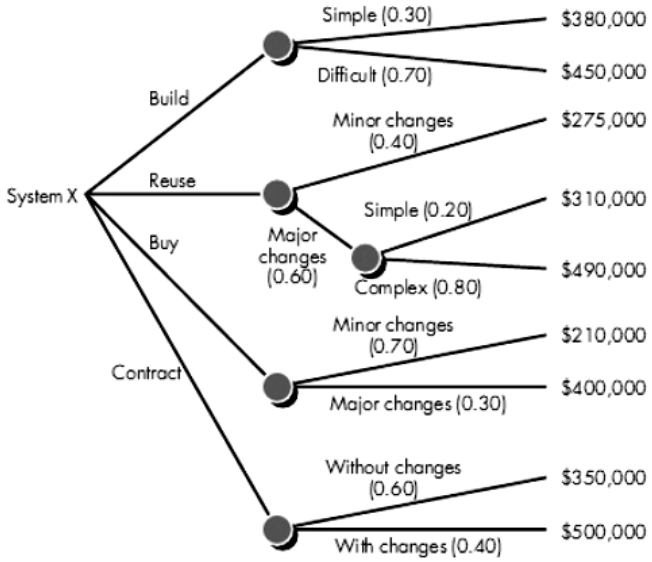
(ii) What is refactoring? When is it needed? Explain with example. *5* *K3* *CO4*

OR

b) Compare and contrast black box testing and white box testing. *11* *K3* *CO4*

27. a) (i) How are Lines of Code (LOC) and Function Points (FP) help in calculating the estimation for software projects? *6* *K2* *CO5*

(ii) The following figure depicts a decision tree for a software-based system X in a Make/Buy decision. Calculate the Expected cost of all paths and find the lowest expected cost path. *5* *K2* *CO5*



OR

b) How is Earned Value Analysis (EVA) assessing progress as the software team progresses through the work tasks allocated to the project schedule? *11* *K2* *CO5*

28. a) Identify the major risks that might affect a project and examine the strategies for minimizing each of those risks. *11* *K3* *CO6*

OR

b) You are a project manager of an AI based software company. Create a Risk Information Sheet and analyze the RMMM plan for Plagiarism Analyzer. *11* *K3* *CO6*