Subject Code: KCA302

PAPER ID-310416

Roll No: | | | | | | | | | | | | | |

MCA

(SEM III) THEORY EXAMINATION 2024-25

SOFTWARE ENGINEERING

TIME: 3 HRS **M.MARKS: 100**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question	CO	Level
a.	Describe are the components of a Software.	1	1
b.	"Software is developed or engineered; it is not manufactured in classical sense". Explain	1	2
c.	Differentiate between verification and validation with an example?	2	2
d.	Identify at least two functional requirements and two non-functional requirements of a Library Management System.	2	1
e.	Summarize the points to compare bottom-up design with top-down design	3	2
f.	Illustrate the concept of Object-Oriented Design.	3	2
g.	Define Unit testing with example.	4	1
h.	What are the two main activities of regression testing?	4	2
i.	Explain the role of CASE tools in Software Reengineering	5	2
j.	Write down the elements of a configuration management system.	5	2

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 20**

a.	What are the essential characteristics of software engineering? How is it different from other engineering disciplines such as house building and bridge design etc.? Explain in detail the various phases in a software development project?	1	2
b.	Draw a DFD for result preparation automation system of B.Tech. Courses of any university. Clearly describe the working of that system, also mention all assumptions made by you.	2	3
c.	Explain the concept of coupling and cohesion with suitable example.	3	2
d.	Consider a program which computes the square root of an input integer between 1 and 500. Determine the equivalence class test cases. Determine the test cases using boundary value analysis also.	4	3
e.	What do you mean by Change Control? Explain the process of change control with the help of diagram	5	2

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Discuss the Prototype model of the SDLC with advantages and disadvantages.	1	2
b.	Clarify the significance of spiral models in software engineering. Also, write the difference from traditional SDLC model.	1	3

4. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Write a detailed note on SEI CMM What are its different levels? How a company can move forward to higher levels of CMM. Use proper diagrams and examples?	2	2

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b.	Discuss the role of feasibility study in development of project. Explain the types of feasibility study in detail.	2	2

5. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Demonstrate the control flow graph for the following function named isEven. From the control flow graph, it determines its Cyclomatic Complexity.
	bool isEven(int num) {
	if (num % 2 == 0) {
	return true;
	} else {
	return false;
	}
	}
		3	3

b.	Infer the Halstead's length and volume measure for the following function:
	int sum(int a, int b) {
	int result;
	result = a + b;
	return result;
	}
		3	3

6. Attempt any *one* part of the following: **10 x 1 = 10**

a.	What is a formal technical review? What are the objectives of formal technical review? Give a comparative study of code inspection, reviews and walk-through.	4	2
b.	Why is testing important in the software development life cycle? Explain black box and white box testing in detail?	4	2

7. Attempt any *one* part of the following: **10 x 1 = 10**

a.	With neat sketch, briefly discuss the process of software re-engineering. How to measure cost, effort, duration and size using COCOMO estimation technique? Explain it in detail.	5	2
b.	How would you define Risk Management? Explain how to select the most appropriate methods for risk assessment and control.	5	2