KUMARAGURU
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B.TECH DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Fifth Semester

INFORMATION TECHNOLOGY

U18ITI5304: Software Engineering

COURSE OUTCOMES

CO1: Apply software engineering principles and techniques.

CO2: Translate end-user requirements into software requirements.

CO3: Develop, maintain, and evaluate large-scale software systems.

CO4: Implement efficient, reliable, robust, and cost-effective software solutions.

CO5: Identify software project planning and management activities.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions: -
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1. What are the umbrella activities of a software process?	CO1	[K2]
2. For the scenario described below, which life cycle model would you choose? Give the reason why you would choose this model. You are interacting with the MIS department of a very large oil company with multiple departments. They have a complex regency system. Migrating the data from this legacy system is not an easy task and would take a considerable amount of time. The oil company is very particular about processes, acceptance criteria, and legal contracts.	CO1	[K3]
3. List the methods to perform the requirement elicitation.	CO2	[K2]
4. State the phases involved in carrying out a feasibility study.	CO2	[K3]
5. List the basic design principles of class-based components.	CO3	[K2]
6. A system must be loosely coupled and highly cohesive. Justify	CO3	[K3]
7. Distinguish between alpha testing and beta testing.	CO4	[K2]
8. What is flow graph notation and how is it important in white box testing?	CO4	[K2]
9. List out the principles of project scheduling.	CO5	[K2]
10. Identify the type of maintenance for each of the following: a) Correcting the software faults. b) Adapting to the change in the environment	CO5	[K3]

Answer any FIVE Questions: -
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	List all life cycle models and explain the spiral model with a neat diagram and example.	8	CO1	[K2]
	b)	Discuss the process of Extreme Programming model with proper example.	8	CO1	[K2]
12.	a)	Consider the process of ordering a pizza over the phone. Draw the use case diagram and also sketch the activity diagram representing each step of the process, from the moment you pick up the phone to the point where you start eating the pizza. Include activities that others need to perform. Add exception handling to the activity diagram you developed. Consider at least two exceptions (e.g., delivery person wrote down the wrong address, or a delivery person brings the wrong pizza)	8	CO2	[K3]
	b)	Give the steps involved in initiating the requirements engineering process with examples.	8	CO2	[K3]
13.	a)	Construct a context flow diagram of level-0 DFD and Level-1 DFD for a Hotel reservation system and explain.	8	CO2	[K3]
	b)	Illustrate in detail about any four architectural styles with neat diagrams and examples.	8	CO3	[K2]
14.	a)	Generalize the concept of user interface design and list the characteristics of a good user interface design for a library management system.	8	CO3	[K3]
	b)	Consider the following Function point components and their complexity. Predict the estimated function points. Compute the function point for the project. The average productivity for the project is 6.5 FP/pm, labor rate $8000 per month. Compute the total estimated project cost and estimated effort.	8	CO4	[K3]

Function type Estimated count   complexity

Function type	Estimated count	complexity
ELF	2	7
ILF	4	10
EQ	22	4

EO	16	5
EI	24	4

15. a) Consider the following program segment.   8   CO4   [K3]

/*num is the number of searches in a presorted integer array arr*/

int bin_search(int num)

{ int min , max; min=0; max=100;

while(min!=max) {

if(arr[(min+max)/2]>num)

max=(min+max)/2;

else if(arr[(min+max)/2]

min=(min+max)/2;

else return((min+max)/2);

}

return(-1);

}

(i)Draw the control flow graph for this program segment.

(ii)Define cyclomatic complexity.

(iii)Determine the cyclomatic complexity of this program. Show the intermediate steps in computation.

b) Explain the boundary value analysis technique by specifying rules and their usage with the help of an example.   8   CO4   [K2]

16. a) Discuss the concept of RMMM with a proper example.   8   CO5   [K2]

    b) Summarize the activities involved in software maintenance.   8   CO5   [K2]

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