

**FACULTY OF INFORMATICS**

**M.C.A. (2 Years Course) III- Semester (CBCS) (Backlog) Examination, October/November 2023**

**Subject: Software Engineering**

**Time: 3 Hours**

**Max. Marks: 70**

**Note: I. Answer one question from each unit. All questions carry equal marks.  
II. Missing data, if any, may be suitably assumed.**

**Unit – I**

1. a) Define software engineering. Explain the changing nature of software.  
b) Explain cost, schedule and quality of software.  
**(OR)**
2. a) Differentiate between process and project.  
b) Explain prototyping model of software development model.

**Unit-II**

3. a) Explain the components of SRS.  
b) Mention the values of good SRS.  
**(OR)**
4. a) Explain component and connector view.  
b) Explain the role of software architecture.

**Unit-III**

5. a) Discuss the concept of Risk assessment and Risk control.  
b) Explain quality planning.  
**(OR)**
6. a) Explain main object oriented concepts.  
b) Describe structured Design Methodology and function oriented design.

**Unit-IV**

7. a) Explain about unit testing.  
b) Explain code inspection.  
**(OR)**
8. a) Explain different levels of testing.  
b) Write about black box testing?

**Unit-V**

9. a) Explain the concept of software maintenance process.  
b) Write short note on software reengineering.  
**(OR)**
10. a) Explain about SPI process.  
b) Write short note on PCMM.

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**Unit – I**

1. a) List some problems that will come up if the methods you currently use for developing small software are used for developing large software systems.  
**(OR)**  
b) What is the relationship between a process model, process specification, and a process for a project?
2. a) What types of effect will the project monitoring activity of the project management process have on the development process? Explain with an example.  
**(OR)**  
b) Write about the following
  - i) Industrial strength software
  - ii) Quality and productivity

**Unit – II**

3. a) Develop a worksheet for calculating the function point for a given problem specification.  
b) Write in detail about ATAM Analysis method.  
**(OR)**
4. a) Explain the Pipe and Filter with an example.  
b) Construct an example of an inconsistent (incomplete) SRS.

**Unit – III**

5. a) Write in detail about COCOMO model  
b) What is project monitoring and Tracking?  
**(OR)**
6. a) Describe the module – level concepts.  
b) What is Design Heuristics – Explain.

**Unit – IV**

7. a) What is Halsted's size measure? Compare this size with the size measured in LOC?  
b) Suppose a software has three inputs, each having a defined valid range. How many test cases will you need to test all the boundary Values.  
**(OR)**

8. a) Write about the following
- Data Flow – Based Testing
  - Mutation Testing
- b) Consider the following program to determine the product of two integers  $x$  and  $y$
- ```
If ( $x = 0$ ) or ( $y = 0$ ) then
   $P := 0$ 
else begin
   $P := x$ ;
   $i := 1$ ;
While ( $i \neq y$ ) do begin
   $P := P * x$ ;
   $i := i + 1$ ;
end;
end;
```

Write formal specifications for a program to compute the product of two numbers. Then using the axiomatic method, prove that this program is correct.

#### Unit – V

9. Why is it that software organizations often struggle when they run back on an effort to improve local software process.
- (OR)
10. Write about the Reverse Engineering in detail.

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