



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
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Paper Code : EE-604A

SOFTWARE ENGINEERING

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own
words as far as practicable.*

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any ten of the following : $10 \times 1 = 10$
 - i) An SRS document normally contains
 - a) functional requirements of the system
 - b) module structure
 - c) configuration management plan
 - d) all of these.
 - ii) What is the spiral model suitable for ?
 - a) Well-acquainted project that needs to be controlled
 - b) Very large problems
 - c) Projects whose user requirements are not well understood
 - d) Challenging software prone to several kinds of risks.

- iii) Project planning does not include
- a) Risk identification
 - b) Design
 - c) Cost estimation
 - d) Configuration.
- iv) Big-bang integration testing is useful for projects with
- a) small number of modules
 - b) large number of modules
 - c) average number of modules
 - d) none of these.
- v) The workflow behaviour that a system represents can be represented by
- a) sequence diagram
 - b) collaboration diagram
 - c) class diagram
 - d) activity diagram.
- vi) A stub is used in
- a) bottom-up testing
 - b) top-down testing
 - c) both of these
 - d) none of these.

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- vii) The cyclomatic complexity $V(G)$ can be computed as
- a) $V(G) = E - N + 2$ where N is the number of nodes and E is the number of edges
 - b) $V(G) = \text{Total number of bounded areas} + 1$
 - c) $V(G) = \text{Total number of decision points} + 1$
 - d) All of these.
- viii) Data processing programs are considered as
- a) Organic software
 - b) Semidetached software
 - c) Embedded software
 - d) none of these.
- ix) The project schedule can be graphically depicted by
- a) PERT chart
 - b) Project Network Diagram
 - c) Work Breakdown Structure chart
 - d) Gantt chart.
- x) The new version of software refers to
- a) fixing of a minor bug
 - b) minor enhancement to the functionality, usability etc.
 - c) fixing of a minor bug or minor enhancements to the functionality, usability etc.
 - d) significant change in functionality, technology, or the hardware of the software.

xi) COCOMO belongs to

- a) Empirical estimation technique
- b) Heuristic estimation technique
- c) Analytical technique
- d) None of these.

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

- 2. What are the differences between fault, failure and error ?
- 3. What do you mean by software quality ? What are SQA activities ?
- 4. "Software does not wear out." Explain the statement comparing with hardware. What is the difference between verification and validation ? $2 + 3$
- 5. What is UML ? Enumerate different diagrams of UML. $2 + 3$
- 6. Explain why Spiral model is also called the 'meta' model.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

- 7. a) What is data dictionary ? Explain with an example, why it is used.
- b) What is the significance of documentation in software design ?
- c) Draw and explain the context diagram and level-1 DFD of a typical ATM transaction system. $5 + 3 + 7$
- 8. A small mail order catalogue system allows people to shop from home. When a customer receives the catalogue and wants to buy something, they can telephone, fax or email their order to the company. The company gets the order and sends the goods with a delivery note, they send payment and receive a receipt for their payment. In this domain, perform the following actions :
 - i) Identify actors
 - ii) Develop the use cases
 - iii) Draw the class diagram
 - iv) Draw sequence diagram
 - v) Draw activity diagram
 - vi) Draw the total system diagram with packages.

$2 + 2 + 2 + 3 + 3 + 3$

9. a) Do a comparative study among the following CoCoMo models :
- i) Basic
 - ii) Intermediate
 - iii) Complete
 - iv) CoCoMo2
- b) What are the drawbacks of classical waterfall model ? How are they rectified in other variants of the classical waterfall model ? $8 + (4 + 3)$

10. a) The following table indicates the different activities to complete a software project and their estimated time :

Activity	Name of Activity	Predecessor Activity	Estimated Time
1-2	A	None	3
1-3	B	None	5
1-4	C	None	4
2-5	D	A	2
3-5	E	B	3
4-6	F	C	9
5-7	G	D, E	8
3-6	H	B	7
6-7	I	H, F	9

Draw the activity network and find out the critical path.

- b) What is cohesion and coupling ? Discuss different types of cohesion and coupling. $(7 + 2) + 6$

11. Write short notes on any *three* of the following : 3×5

- a) Prototype model
- b) Work breakdown structure
- c) Decision Tree and Decision Table
- d) Class Diagram
- e) Software Maintenance.