



2025

(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper : SWE:502 (Old Course)

(Software Engineering)

Full Marks : 70

Pass Marks : 45%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 45)

*The figures in the margin indicate full marks
for the questions*

1. (a) Define the term Software Engineering.
Explain the objective of software engineering. 5
- (b) State and explain any four objectives of
software engineering paradigm. 4

Or

- (c) Write short notes on : 5
 - (i) Evolutionary model
 - (ii) Spiral model

(d) Define the term software life cycles model. Explain the phases involved in SDLC.

4

2. (a) Compare Walston-Felix model with SEL model on software development expected to involve $10p - y$ of effort.

(i) Calculate the no. of LOC (Lines of Code)

(ii) Duration

(iii) Productivity

5

(b) Explain the differences between LOC and function point.

4

Or

(c) A program contains :

- Distinct operator (n_1) = 10
- Distinct operands (n_2) = 20
- Total operator (N_1) = 50
- Total operands (N_2) = 100

Calculate all the Halstead measures, i.e., Vocabulary (n), Length (N), Volume (V), Difficulty (D) and Effort (E).

7

(d) What do you understand by the term risk management in Software Engineering?

2

3. (a) Explain Data Flow Diagram (DFD) with neat sketch for a library management system. 5
- (b) Differentiate between behavioural and non-behavioural requirements with example. 4

Or

- (c) Define coupling in software design. Arrange the different types of coupling from highest to lowest and explain briefly. 5
- (d) Define Software Requirement Specification (SRS). What are its key characteristics? 4
4. (a) Justify the statement :
"Software reliability is one of the key attributes of quality software." 5
- (b) Differentiate between informal review and formal review with examples. 4

Or

- (c) What do you mean by software reliability? Define mistake, fault and failure in the context of software quality. 5
- (d) Write a short note on ISD quality standards in Software development. 4

5. (a) What is software maintenance? Why does software require continuous maintenance even if it is working correctly? 5
- (b) Compare and analyze white box vs. black box testing in terms of objective and limitations. 4
- Or*
- (c) Analyze the need for different types of maintenance within examples. 5
- (d) How does Reverse Engineering help in re-engineering legacy system? Give a logical explanation. 4

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(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper : SWE:502 (Old Course)

(Software Engineering)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

- 1. Put a Tick (✓) mark against the correct answer in the brackets provided : 1×10=10**

(a) Which process model is most suitable for small project with clear requirements?

- (i) Waterfall ()**
- (ii) RAD ()**
- (iii) Spiral ()**
- (iv) Agile ()**

(b) Which life cycle model is most expansive but reduces risks?

(i) Spiral ()

(ii) Waterfall ()

(iii) RAD ()

(iv) Incremental ()

(c) Software project effort is measured in

(i) KLOC ()

(ii) person-month ()

(iii) function points ()

(iv) All of the above ()

(d) Putnam's model is also called

(i) Norden-Rayleigh curve model ()

(ii) spiral model ()

(iii) risk management model ()

(iv) function point model ()

(e) A good software design should have

- (i) high cohesion and low coupling ()
- (ii) low cohesion and high coupling ()
- (iii) low cohesion and low coupling ()
- (iv) high cohesion and high coupling ()

(f) Data Dictionary stores

- (i) data about data ()
- (ii) user interface rules ()
- (iii) source code ()
- (iv) test cases ()

(g) Verification checks whether the product

- (i) meets user expectation ()
- (ii) is build correctly ()
- (iii) is defect free ()
- (iv) is error free ()

(h) Which testing ensures that new changes do not break existing functionality?

(i) Unit testing ()

(ii) Regression testing ()

(iii) System testing ()

(iv) Integration testing ()

(i) Corrective maintenance is concerned with

(i) fixing errors ()

(ii) adapting to environment ()

(iii) improving performance ()

(iv) adding new features ()

(j) Re-engineering is done to

(i) improve maintainability ()

(ii) reduce cost ()

(iii) replace outdated systems ()

(iv) All of the above ()

2. State whether the following are *True (T)* or *False (F)* by putting a Tick (✓) mark : 1×5=5

(a) Prototype model is mainly used for Project with well defined requirement.

(T / F)

(b) Function point count measures software sized based on user functionality.

(T / F)

(c) Cohesion measures how strongly modules are related to one another.

(T / F)

(d) A Formal Technical Review (FTR) is used to detect errors in requirement, design or code.

(T / F)

(e) Black Box testing focuses on the internal logic of the code.

(T / F)

3. Answer the following questions in short : $2 \times 5 = 10$

(a) What are the merits and demerits of increment model?

(b) Define risk management in software projects.

(c) Define Data Dictionary. Explain different types of Data Dictionary.

(d) What is the difference between quality control and quality assurance?

(e) Why is documentation important in software maintenance?
