

BACHELOR OF INFORMATION TECHNOLOGY ENGG. EXAMINATION, 20232nd year, 2nd semester**Software Engineering**

Time: 3 Hours

Full Marks: 100

Read the questions carefully and answer accordingly.

CO1: Answer any 2 questionsFull marks: **20**

- 1 A. i) Why are Software Engineering and programming not same?
 ii) Identify the umbrella activities in software engineering process.
 iii) Can all software projects be managed with the help of Prototyping model?
 iv) Name two applications that would be more difficult to prototype. (2+4+2+2)
- B. i) With a schematic diagram explain the waterfall model of software development.
 ii) Compare the relative advantages of using the Waterfall model and Spiral model of software development? (8+2)
- C. i) Distinguish clearly between verification & validation.
 ii) Write the distinct steps in requirements engineering process?
 iii) Mention any two non-functional requirements on software to be developed. (4+4+2)

CO2: Answer any 1 questionFull marks: **15**

- 2 A. i) What is Intermediate COCOMO model?
 ii) What are the shortcomings of Line of Code for using as a Software Size Metric? How can Function Point Metric overcome those problems?
 iii) If an organic project that is expected to be 128000 line of code, calculates Effort and the development time for basic COCOMO. (3+3+3+6)
- B. i) What are the essentials activities for Software Project Planning?
 ii) Suppose you are the project manager of a software project that consists of the following Tasks as given in the table. You have planned to complete the effort within the following time, but actually they took more time than estimation. How can you plan for the task 8, 9, and 10, so that you can meet the deadline? With an activity diagram show it. Find out the critical path also.
 iii) Design a Gantt chart for the above Activity Network. (3+5+2+5)

Task	Planned effort in weeks	Actual effort in weeks	Immediate Predecessor
T1	12	13	--
T2	15	15	1
T3	13	13.5	2
T4	8	9	2
T5	9.5	10	3
T6	5	5.5	3, 4
T7	14	14	4
T8	16	16	5, 6
T9	6	6	6, 7
T10	8	8	8

CO3: Answer any 3 questions**Full marks: 30**

- 3 A. i) Explain about Design concepts for Modular Design.
 ii) What are the various types of Coupling are there? Explain with examples.
 iii) "A good software design implies high cohesion and low coupling" - Explain. (3+5+2)
- B. Design a DFD of level- 0 and 1 for the following system.
 A mobile service providing system provides services for regular phone calls and internet facilities. A customer has to login to the system. In the first login attempt, the customer has to register himself/herself. A logged in customer can pay money to the mobile service providing system for the service the customer enjoys on a monthly basis. The customer may optionally get a print of the money receipt after payment. (10)
- C. Draw the class diagram for problem given below.
 A professor has a name, address, phone number, email address, and salary. A student also has a name, ID, address, phone number, email address. A student, however, has an average mark of his or her seminars. A seminar has a name and a seminar ID. A student can enrolled in many seminars. Many students enroll in the same seminar. When a student is enrolled in a seminar, the marks for this enrollment are recorded. From a student, one can obtain a list of seminars he or she is enrolled in. Professors teach seminars. Each seminar has exactly one teacher. (10)
- D. Draw a use case diagram for the problem given in question 3B. (10)

CO4: Answer any 3 questions**Full marks: 30**

- 4 A. i) Describe all the characteristics of a good User Interface Design.
 ii) What is the difference between a coding standard and a coding guideline?
 iii) Write a short note on error seeding. (4+3+3)
- B. i) What do you understand by the term integration testing? What are the different types of integration testing?
 ii) What is the difference between black-box testing and white-box testing? (2+5+3)
- C. i) What do you understand by the term system testing? What are the different types of system testing?
 ii) What is backtracking? (2+6+2)
- D. Design test cases for White Box Testing for the following program:-
 An array contains n number of integers. Find the minimum number from that array. (8+2)

CO5: Answer any 1 question**Full marks: 5**

- 5 A. Write short notes on Software Quality.
 B. What is PCMM level 5? Why it is necessary?