(Please write your Enrollment Number) Enrollment No. 01704096[illegible]

**End-Term Examination**
**(CBCS)(SUBJECTIVE TYPE)(OffLine)**
**Course Name: Software Engineering, Semester: II**
**(May, 2024)**

| Subject Code: MCA 106 | Subject: Software Engineering |
|---|---|
| Time :3 Hours | Maximum Marks :60 |

**Note:Q. 1 is compulsory. Attempt one question each from the Units I, II, III & IV.**

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|---|---|---|---|
| **Q1** | | **(4*5 =20)** | |
| | a) What are the characteristics of a good design? Describe different types of coupling and cohesion. | | |
| | b) Discuss the Data Dictionary and Decision Table with appropriate notations and suitable examples. | | |
| | c) Distinguish between verification and validation. | | |
| | d) What is Adaptive and Corrective Maintenance? | | |
| | e) What are the possible reasons for software failure? | | |
| | **UNIT-I** | | |
| **Q2** | a) Why are models important in software engineering work? Do we always need them? Discuss.<br>b) Discuss in which situation Agile Model will be preferred over other SDLC Models. | **(5,5)** | |
| **Q3** | Assume that you are a project manager of two projects with the following characteristics:<br><br>Project 1. A complex real-time system whose requirements can be relatively easily identified and are stable.<br><br>Project 2. A web-site for a local library. Requirements are vague and are likely to change in the future.<br><br>Consider also the following software development approaches/models: waterfall, incremental, prototyping, spiral and component based development. Which of the above models would you choose for each of your projects? Your choices should be properly justified. | **(10)** | |
| | **UNIT-II** | | |
| **Q4** | (a) Describe how software requirements are documented? State the importance of documentation.<br>(b) Draw an ER Diagram for a University Academic System. Make all necessary assumption and write them clearly. | **(10)** | |
| **Q5** | (a) "Non-functional requirements are also essential for customer satisfaction"-Justify this statement with suitable justification.<br>(b) Create a Data Flow Diagram for Food Ordering System in a Restaurant. | **(10)** | |
| | **UNIT-III** | | |
| **Q6** | A software has to be developed for automating the manual library of a University. The system should be stand alone in nature. It should be designed to provide functionalities as explained: Issue of Books, Return of Books, Query Processing and Report Generation. Generate following diagram for this (make necessary assumptions): | **(10)** | |

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|---|---|---|---|
| | i) Use – Case Diagram<br>ii) Class Diagram | | |
| Q7 | (a) What is black box testing? Is it necessary to perform this? Explain various test activities.<br>(b) Differentiate the terms: Error, Bug, Defect, Fault, Failure | (5,5) | |
| | **UNIT-IV** | | |
| Q8 | Consider a project with the following domain characteristics: Number of Inputs = 30, Number of Outputs = 62, Number of user Inquiries = 24, Number of files = 8 and Number of external interfaces = 2. Assume that all the complexity adjustment values are average. Also, assume outputs, queries, files function point attributes are of low complexity and all other function points attributes are of medium complexity. The complexity adjustment value for factor 1 is set to 3 because the SRS requires that the software product has only a good degree of data communication; factor 2 is set to 2 because the SRS emphasizes for heavy use of configuration; factor 5 is set to 3 because the module has medium level of complex processing; factors 10 and 11 are set to 4 and 2 respectively because the module is always on-line but needs only few updates ; factor 3, 4 6,7,8,9,12,13,14 are set to 4, 3,2, 3,4,3,4,3,2 respectively based on their estimated level of complexity or demand.<br><br>i) What is the Adjusted Function Points (AFP) for the above project?<br>ii) Calculate the estimated schedule time in person-months assuming that the total lines of code in the application is approx. 15K. | (10) | |
| Q9 | Write short notes on:<br><br>i) Function Point<br>ii) COCOMO | (10) | |