

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:2160701****Date:01/06/2022****Subject Name:Software Engineering****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

**MARKS**

- Q.1**
- |     |                                                                                                                   |           |
|-----|-------------------------------------------------------------------------------------------------------------------|-----------|
| (a) | Define Software and elaborate the statement ‘Software plays a dual role’                                          | <b>03</b> |
| (b) | How do we define Software Engineering? Discuss software engineering layers.                                       | <b>04</b> |
| (c) | What is the importance of process model in development of software system? Compare Prototype Model and RAD Model. | <b>07</b> |

- Q.2**
- |     |                                                                                                                                                                                                                                                                                                                                                       |           |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| (a) | Explain Software as a Service (SaaS).                                                                                                                                                                                                                                                                                                                 | <b>03</b> |
| (b) | What do you mean by Agile process? List the different Agile process model and Explain any one with suitable example.                                                                                                                                                                                                                                  | <b>04</b> |
| (c) | What are the limitations of size-oriented metrics?<br>Explain the process of FP based metrics used for software cost estimation and Compute the function points for the following information domain characteristics (All are average in nature) : Inputs =20, Outputs= 15, Inquiries = 7, Logical files = 21, Interfaces =3 and $\Sigma F_i = 41$ .. | <b>07</b> |

**OR**

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|-----|-----------------------------------------------------------------------------------------------------------------------------------|-----------|
| (c) | Explain Four P’s of effective software project management. What questions need to be answered in order to develop a project plan? | <b>07</b> |
|-----|-----------------------------------------------------------------------------------------------------------------------------------|-----------|
- Q.3**
- |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| (a) | Why functional independence is essential for good software design? What are the effects of cohesion and coupling on software modules?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>03</b> |
| (b) | Draw the class diagram representing following functionalities of Library Management system.<br>“A Library lends books and magazines to member, who is registered in the system. Also it handles the purchase of new titles for the Library. Popular titles are bought into multiples copies. Old books and magazines are removed when they are out or date or in poor condition. A member can reserve a book or magazine that is not currently available in the library, so that when it is returned or purchased by the library, that person is notified. The library can easily create, replace and delete information about the tiles, members, loans and reservation in the system.” | <b>04</b> |
| (c) | What is the importance of User Interface? Explain User Interface design rules.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>07</b> |

**OR**

- Q.3**
- |     |                                                                                                                                                                                |           |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| (a) | Comment on the validity of the statement” <i>if we subdivide software indefinitely, the effort required to develop it will become negligibly small!</i> ” Justify your answer. | <b>03</b> |
| (b) | What is architectural design? Enlist different style and patterns of architecture.                                                                                             | <b>04</b> |

- (c) Draw the context diagram and level-1 DFD illustrating following functionalities of supermarket software. **07**  
 A supermarket needs to develop software to encourage regular customers. For this, the customer needs to supply his name, address, telephone number and driving license number. A customer is assigned a unique customer number (CN) by the computer. When a customer makes a purchase, the value of the purchase is credited against his CN. At the end of each year, surprise gifts to 10 customers who have made the highest purchase is given. In addition, a 22 carat gold coin is given to every customer who has made a purchase over Rs.10,000/-. The entries are reset on the last day of the year.
- Q.4 (a) Differentiate Black Box and White Box Testing **03****  
**(b) Why Boundary Value analysis (BVA) testing is important? List set of guidelines for BVA. **04****  
**(c) Explain different SEI CMM process maturity levels and its associated key process areas. **07****
- OR**
- Q.4 (a) What is code review? How it is carried out? **03****  
**(b) What is the importance of SQA? What are the SQA activities? **04****  
**(c) Draw the flowchart for finding maximum out of given three numbers. **07****  
 Apply the basic path testing method on it and derive the test cases.
- Q.5 (a) What are the attributes of Web-based Applications? **03****  
**(b) What are the benefits of using CASE tools and draw its integrated architecture. **04****  
**(c) Explain in Software Configuration Management (SCM ) process in detail. **07****
- OR**
- Q.5 (a) Write a short note on Reverse Engineering **03****  
**(b) Explain the types of software maintenance. **04****  
**(c) Explain the Component-Based Software Engineering (CBSE) process in detail. **07****

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