

**QP Code : 6308**

Time: 3 Hrs

Max Marks: 80

N.B.: (1) Question No. 1 is compulsory.  
(2) Attempt any three questions out of remaining five.

1. A distance learning institute decides to use e-learning software to ease its regular functioning of the program. Through this e-learning tool students can register to various courses, appear for online exams, download study material, upload assignments online, view lecture videos etc. The faculty can upload study materials, conduct exams, teach one or many courses. The institute can check student and faculty information, collect fees, pay salary, display results and so on. Create an SRS for the institute that includes the following 20
  - 1. Product perspective
  - 2. Scope and objective
  - 3. Functional requirements (atleast 3)
  - 4. Non-functional requirements
2. Attempt any four (04).
  - (a) Define Software Engineering. Explain in brief the software process framework. 5
  - (b)  Discuss on Modularity and Functional Independence fundamentals of design concepts. 5
  - (c)  Explain cyclomatic complexity. How is it computed? 5
  - (d)  Discuss the different categories of risk that help to define impact values in a risk table. 5
  - (e) Briefly explain Unit and Integration Testing in the OO Context. 5
3. (a) Explain in brief the different types of coupling and cohesion. Give one practical example of high cohesion and low coupling 10  
(b)  What is FTR in SQA? What are its objectives? Explain the steps in FTR. 10
4. (a)  What is Agility in context of software engineering? Explain Extreme Programming (XP) with suitable diagram. 10  
(b)  Explain different techniques in White Box Testing. 10
5. (a) Explain the various steps in Risk Management with suitable diagram. Identify the risks associated with delayed projects. 10  
(b) Explain different architectural styles with suitable brief example for each. 10
6. (a) Explain the change control and version control activities in SCM. 10  
(b)  Explain TDD with its advantages. 10



N.B. : (1) Question No. 1 is compulsory  
 (2) Attempt any three questions out of remaining five.

- Q 1.** (a) Develop the SRS for an Online Shopping Portal. [20]  
 A customer visits the online shopping portal. He may buy item or just visit the page and logout. The customer can select a segment, then a category and brand to get different products in the desired brand.  
 The customer can select product for purchasing. The process can be repeated for more items. Once the customer finishes the selecting product/s, the cart can be viewed. If the customer wants to edit the final cart it can be done. For completing the process of purchase and payment the customer has to login the portal. If the customer is visiting for first time, he should do the registration process first, else he can directly login to continue. Final cart is submitted for payment and the delivery address is confirmed by the customer. Confirmation is given to the customer through shipment Id and products list.  
 SRS for this should include:  
 a. Product perspective  
 b. Scope and objective  
 c. Functional Requirements  
 d. Non-Functional Requirements
- Q 2.** (a) What is user interface design process? Explain with one example. [10]  
 (b) Explain Software Configuration item identification. [10]
- Q 3.** (a) What are the objectives of testing? Explain black box testing and integration testing. [10]  
 (b) What is Coupling and Cohesion? Explain different forms of it. [10]
- Q 4.** (a) What do you mean by requirements? Explain Functional and Non-Functional requirements in detail. [10]  
 (b) What are the different types of maintenance and also explain steps for creating maintenance log? [10]
- Q 5.** (a) Discuss Incremental model and prototype model for software development with merits and demerits. [10]  
 (b) Explain size oriented software engineering metrics.  
 Find function points for an E-commerce application with the following data,  
 No. of User inputs 50  
 No. of User outputs 30  
 No. of User inquiries 35  
 No. of User files 06  
 No. of external interfaces 04  
 Assume suitable complexity adjustment factors and weighting factors.
- Q 6.** Write short notes on (any two) [10]  
 (a) Version control and change control. [10]  
 (b) COCOMO Model. [10]  
 (c) Agile Methodology. [10]  
 (d) Risk Management. [10]

Q.P. Code :22530

[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

- N.B: 1. Question No. 1 is compulsory.  
2. Attempt any three questions out of remaining five.

**Q.1** Answer all questions

20

- a) What are the potential problems of prototyping model?
- b) What are the different steps recommended to determine the overall consequences of risks?
- c) Explain cohesion and coupling. What are the benefits of high cohesion and low coupling?
- d) With examples, differentiate between validation and verification.

**Q.2** a) Tell the methods to gather the requirements for an online ticket selling system for an event. Mention any four different requirements elicitation methods. 10  
b) With a neat diagram explain the spiral model of software development 10

**Q.3** a) Describe and discuss the characteristics of the agile requirements process. 10  
b) Prepare a risk identification checklist and RMMM plan for creating an UID with biometrics (Unique identification number) for a highly populated country. 10

**Q.4** a) Explain the different metrics used for software quality and reliability. 10  
b) Explain basis path testing and cyclomatic complexity with suitable examples. 10

**Q.5** a) What is Software Configuration Management? Explain the various steps involved in change control. 10  
b) Explain the different OO testing methods. 10

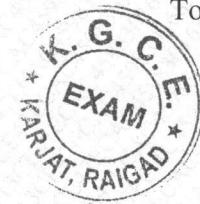
**Q.6** Write short notes on (any two) 20  
a) SCRUM  
b) Service Oriented Software Engineering  
c) Schedule and Cost Slippage  
d) Security Engineering

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(3 Hours)

Total Marks:80

N.B : (1) Question No. 1 is compulsory  
(2) Attempt any three questions out of remaining five.



- |    |  |    |
|----|--|----|
| 1. | (a) When should one use Prototype model? Discuss the advantages and disadvantages of the prototype model.              | 8  |
|    | (b) Discuss Abstraction, Information Hiding and Functional Independence.   | 6  |
|    | (c) Explain the features of repository required to support SCM.  | 6  |
| 2. | (a) Explain with suitable diagram Scrum Agile model.   | 10 |
|    | (b) Why Integration testing is needed to test a software? Explain the different incremental integration strategies.    | 10 |
| 3. | (a) List different metrics used for software measurement. Explain function point based estimation technique in detail. | 10 |
|    | (b) What do you understand by software maintenance? Also explain the different types of maintenance.                   | 10 |
| 4. | (a) Explain in detail the Software Configuration Management process with suitable diagram.                             | 10 |
|    | (b) What is white box testing? Explain the basis path testing method in detail.  | 10 |
| 5. | (a) What are the different categories of Risks? Explain the steps in developing RMMM plan.                             | 10 |
|    | (b) What is FTR in SQA? What are its objectives? Explain the steps in FTR.   | 10 |
| 6. | Write short notes on <b>any two (any 2)</b>  | 20 |
|    | (a) Black Box Testing  |    |
|    | (b) COCOMO II estimation models  |    |
|    | (c) Test Driven Development  |    |
|    | (d) Service Oriented Software Engineering  |    |

(3 Hours)

[ Total Marks :80

- N.B. : (1) Question No. 1 is compulsory.  
 (2) Attempt any three questions out of remaining five.

1. (a) Write suitable applications of different software models. 10  
 (b) Compare Verification and Validation Testing. 10  
 (c) Explain COCOMO Model.  
 (d) Explain the different types of software Maintenance.
  
2. (a) What is Agile methodology? Explain it with the principles used and give example of any One such software model. 10  
 (b) Explain Change Control and Version Control in SCM. 10
  
3. (a) Explain size oriented software engineering metrics. 10  
 Find function points for an e-commerce application with following data,

|                               |    |
|-------------------------------|----|
| Number of user Inputs         | 50 |
| Number of user Outputs        | 40 |
| Number of user Inquiries      | 35 |
| Number of user Files          | 65 |
| Number of External Interfaces | 34 |

Assume suitable complexity adjustment factors and weighting factors.

- (b) What Is Coupling and Cohesion? Explain different forms of it. 10
  
4. (a) What are the features of a good user Interface? Design and interface for Online Air Ticket Reservation System. 10  
 (b) Explain different metrics used for maintaining Software Quality. 10
  
5. (a) What is SRS document? Build an SRS document for Online Student Feedback System. 10  
 (b) What are Software Risks? Write a note on RMMM for delayed projects. 10

6. (a) Compare Black box and White Box Testing. Find cyclomatic complexity 10  
of following code

```
IF A = 10 THEN
IF B > C THEN
    A=B
ELSE A= C
END IF
END IF
PRINT A
PRINT B
PRINT C
```

- (b) Explain software Reverse Engineering In detail.

10

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Time: 3 Hrs

Max Marks: 80

- N.B.: (1) Question No. 1 is compulsory.  
(2) Attempt any three questions out of remaining five.  
(3) Figures to the right indicate full marks.  
(4) Assume suitable data wherever required.

1. Develop the SRS for the following scenario :-

A school has one or more departments. Department offers one or more subjects. A particular subject will be offered by only one department. Department has instructors and instructors can work for one or more departments. Students can enrol in up to 5 subjects in a school. Instructor can teach up to 3 subjects. The same subject can be taught by the different instructors. Students can be enrolled in more than one school.

SRS for the school should include the following:

- a. Product perspective
- b. Scope and objective
- c. Functional requirements
- d. Non-Functional requirements

2. (a) Explain and compare FTR and walkthrough. [10]  
(b) Explain the process of CMM. [10]
3. (a) Explain coupling & cohesion. Explain different types of coupling & cohesion. [10]  
(b) What are Agile process and its advantages? Explain any one Agile process. [10]
4. (a) Explain the change control and version control activities in SCM. [10]  
(b) Differentiate between black box testing and white box testing. Explain in detail about any one testing tool. [10]
5. (a) What are the different types of maintenance and also explain steps for creating a maintenance log? [10]  
(b) What is user interface design process? Explain with one example. [10]
6. Write short notes on (any two)  
(a) Risk management. [10]  
(b) Reverse Engineering. [10]  
(c) Service-Oriented Software Engineering. [10]  
(d) Object oriented testing methods. [10]

Q.P. Code :11612

[Time: 3 Hours]

[ Marks:80]

Please check whether you have got the right question paper.

- N.B:
1. **Question No.1 is compulsory.**
  2. **Attempt any three question out of remaining five.**

|     |   |    |
|-----|---|----|
| Q.1 | Develop a Software Requirement Specification (SRS) for developing a software for hospital management system. Create an SRS that contains the following:   | 20 |
|     | <ol style="list-style-type: none"> <li>1. Objective and Scope</li> <li>2. Product perspective</li> <li>3. Functional requirements (at least 3)</li> <li>4. Non-functional requirements</li> </ol> |    |
| Q.2 | a) List the various metrics used for software measurement. Explain Function Point estimation technique in detail.<br>b) Explain the various fundamental software design concepts.                 | 10 |
| Q.3 | a) Explain the change control and version control activities in SCM.<br>b) What are the different categories of risks? Explain the process of Risk Projection.                                    | 10 |
| Q.4 | a) What is Agility in context of software engineering? With suitable diagram explain Extreme Programming (XP).<br>b) Explain basis path testing in detail.  | 10 |
| Q.5 | a) Explain Test Driven Development (TDD) with an example.<br>b) What is FTR in SQA? What are its objectives? Explain the steps in FTR.  | 10 |
| Q.6 | Write short notes on <b>any two</b> :-<br>(a) System testing<br>(b) Coupling and Cohesion<br>(c) Service Oriented Software Engineering<br>(d) Software Maintenance                                | 20 |



Q.P. Code :11614

[Time: 3 Hours]

[ Marks:80]

Please check whether you have got the right question paper.

- N.B: 1. Question No.1 is compulsory.  
2. Attempt any three questions out of remaining five.

Q.1 Develop the SRS for Hospital Management System.

20

Hospital Management System is a process of implementing all the activities of the hospital in a computerized automated way to fasten the performance.

This system is to maintain the patient details, lab reports and to calculate the bill of the patient. You can also manually edit any patient details and issue bill receipt to patient within few seconds.

SRS for the hospital Management system should include the following:

- a) Product perspective
- b) Scope and objective
- c) Functional requirements
- d) Non-functional requirements

Q.2 a) Explain cohesion and Coupling. Explain different types with detailed example.

10

b) Explain in detail Service-Oriented Software Engineering.

10

Q.3 a) Explain what is cyclomatic complexity and different methods to calculate it. Find the cyclomatic complexity of following code

10

```

int x, y, power;
float z;
input (x, y );
if (y<0)
    power = - y;
else
power = y;
z = 1;
while (power != 0 ){
z = z * x;
power = power - 1;
}
if (y<0)
    z = 1/z;
output (z);
end

```

b) Explain Risk and its types? Explain the steps involved in setting up or generating RMMM plan.

10

Q.4. a) Consider a software project using Semi-detached mode with 30,000 lines of code. Obtain effort estimation, Duration estimation and person estimation.

10

b) Explain steps in version and change control.

10

(P.T.O)

- Q.5. a) Explain software reverse engineering in detail. 10  
b) What is FTR? Explain the Review guidelines considered during FTR. 10
- Q.6. Write short notes on **any two**:- 20
- (a) Software Configuration Management
  - (b) Test Driven Development
  - (c) Agile Process Models
  - (d) User interface design
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T.E.(Computer Engineering)(SEM-VI)(Choice Base) / DEC -2019 /03 . 12 .2019  
Time: 3 Hours Marks: 80



Note:- 1. Q1 is compulsory.

2. Solve any 3 question from remaining questions.

Q1 Attempt any 4

- a) Define software engineering. Explain umbrella activities of software engineering. (5)
- b) List out Requirement models. Explain any one of them. (5)
- c) What is cost estimation? Explain LOC method. (5)
- d) Illustrate design Principles. (5)
- e) Explain Walkthrough. (5)
- f) Differentiate between White Box and Black Box Testing. (5)

Q 2 a) Discuss different categories of risk that help to define impact values in a risk table. (10)  
b) Explain software reverse engineering in detail. (10)

Q3 a) Explain cyclomatic complexity. How is it computed? (10)  
b) What are the different testing types? Explain glass path testing in detail. (10)

Q4 a) Elaborate COCOMO method of cost estimation. (10)  
b) What is FTR? Explain review guidelines considered during FTR. (10)

Q5a) What is maintenance? Explain the steps for creating the maintenance log . (10)  
b) What are Agile methodologies? Explain any one of them. (10)

Q6 a)  Explain Coupling and Cohesion? Explain the types of cohesion with example. (10)  
b) Illustrate SCM Process. (10)

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67605

**Time: 3 Hours**

**Marks: 80**

**Note:- 1. Q1 is compulsory.**

**2. Solve any 3 question from remaining questions.**

**Q1 Attempt any 4**

- a) Differentiate in between waterfall and spiral model. (5)
- b) List out Requirement Elicitation Techniques. Explain any two methods. (5)
- c) What is process and project metrics? Explain 3 P's of software Engineering. (5)
- d) Illustrate design issues. (5)
- e) Explain FTR. (5)
- f) What is testing? What is the role of testing in software engineering. (5)

**Q 2 a) Develop the SRS for University Management System. (10)**  
**b) Explain the process of CMM. (10)**

**Q3 a) Explain Coupling and Cohesion? Explain the types of couplings with example. (10)**  
 **b) What are the testing strategies? (10)**

**Q4 a) Differentiate between FP based & LOC based cost estimation techniques. (10)**  
 **b) What is user interface design? Explain it with example. (10)**

**Q5a) What is maintenance? Explain the different types of maintenance. (10)**  
**b) What is the use of use case diagram? Draw use case diagram for hospital management system. (10)**

**Q6 a) Differentiate between White Box and Black Box Testing. (10)**  
 **b) Illustrate Change Control & version control. (10)**

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