This question paper contains **5** printed pages]

Roll No.

S. No. of Question Paper   : **1114**

Unique Paper Code   : **2342013503**

Name of the Paper   : **Software Engineering (NEP)**

Name of the Course   : **B.Sc. (H) Computer Science**

Semester   : **V**

Duration : 3 Hours   Maximum Marks : 90

(Write your Roll No. on the top immediately on receipt of this question paper.)

Section A is compulsory.

Attempt any *four* questions from Section B.

Parts of a question should be attempted together.

Section A

1. (a) Describe the following characteristics of Software Requirement Specification (SRS) document :   3

   (i) Consistent

   (ii) Verifiable

   (iii) Unambiguous.

   (b) Discuss the advantages of the Incremental process model.   3

   (c) What is the difference between conceptual and technical design ?   3

(d) What do you mean by design strategy ? Discuss the various types of design strategies in brief.   3

(e) Illustrate the requirement process with the help of a suitable diagram.   3

(f) Consider a software project with the following information domain values :

  Number of external inputs (I) = 30

  Number of external outputs (O) = 60

  Number of external inquiries (E) = 23

  Number of files (F) = 08

  Number of external interfaces (N) = 02

  All these values are of average complexity with 4, 5, 4, 10 and 7 respectively. Assume the complexity adjustment value is 1.25. Compute Function Points for the system.   3

(g) Discuss how the following activities help in achieving high quality for the software : 3

  (i)   Software Engineering Methods

  (ii) Project Management Techniques.

(h) Describe the various levels of software testing in brief.   3

(i) What is coupling ? List different types of coupling.   3

(j) What are umbrella activities ? Describe any two umbrella activities.   3

Section B

2. (a) Discuss the various process flows with the help of suitable diagrams.   7.5

   (b) A Rental Agency needs to develop software for the following requirements :   7.5

   (i) The owner wishing to put his property for rent needs to supply his residence address, telephone number, and the driving license number.

   (ii) Each owner who registers for this is assigned a unique number (UN) by the computer.

   (iii) After registration, all the above details are stored in the Owner database.

   (iv) A similar registration process is undertaken by the potential tenants wishing to rent the property. A tenant can present his UN to the estate agent when he decides to rent the property.

   (v) The rental agency matches the potential tenant's requirements with the available properties and sends them the details of selected properties.

   (vi) When a contract between an owner and tenant is completed, the tenant confirms that the contracts have been exchanged and an invoice is sent to the owner and tenant.

   Create a Context diagram and level-1 DFD for the Rental Agency.

3. (a) What is coupling ? Discuss any *five* types of coupling.   7.5

   (b) What is the purpose of using a structure chart ? Prepare a structure chart for the following problem :   7.5

   A system requires a user to login by entering User ID and Password. The system searches for the User ID and the Password for a match. The system allows the user to input the correct password. If the user enters the correct password, the message "Login Authorised" is output. If the password is incorrect, a warning message "Access Denied" is output.

4. (a) Draw a Timeline chart for developing an online course registration system for a University. Give *three* ways of tracking a project schedule. 7.5

   (b) Differentiate between the following : 7.5
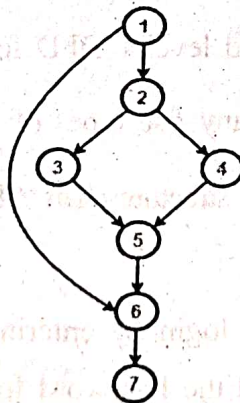
   (i) Stub and driver

   (ii) Verification and validation

   (iii) Error and defect

   (iv) White-box and black-box testing.

5. (a) Draw the risk table with at least three entries and discuss its components in brief. Make the necessary assumptions. 7.5

   (b) Find the cyclomatic complexity of the graph given below using three different methods and find all independent paths. 7.5

6. (a) How can Risk Mitigation, Monitoring, and Management (RMMM) be applied to "staff turnover" risk ? Discuss in brief. 7.5

(b) Consider a simple program to classify a triangle. Its inputs is a triple of positive integers (say x, y, z) and the date type for input parameters ensures that these will be integers greater than 0 and less than or equal to 100. **7.5**

The program output may be one of the following words :

[Scalene; Isosceles; Equilateral; Not a Triangle]

Design the Boundary Value test cases.

7. (a) Discuss any *seven* elements of Software Quality Assurance (SQA). **7.5**

(b) Briefly explain the following : **7.5**

(i) Scrum

(ii) Use cases.