C10-R4: SOFTWARE SYSTEMS

«QP_SRLNO»

NOTE:

> 1. Answer question 1 and any FOUR from questions 2 to 7.
> 2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours **Total Marks: 100**

1.

a) What is software development life cycle? Explain all its phases briefly.

b) What are the objectives of software design? How do we transform an informal design to a detailed design?

c) Software Requirement Specification Document (SRS) is the output of requirement analysis. What does this document contain and list the characteristics of a good SRS?

d) Describe system testing in detail.

e) Explain what do you mean by software re- engineering? When should software be re-engineered?

f) Name and describe the four classes of norm as they occur in agent-based systems.

g) What is the advantage of using prototype software development model instead of waterfall model?

(7x4)

2.

a) Differentiate between object oriented and function oriented design

b) Explain different phase of spiral model. Spiral model is a realistic approach to the development of large-scale systems & software. Justify & explain the model?

(8+10)

3.

a) A store is in the business of selling paints and hardware items. A number of reputed companies supply items to the store. New suppliers can also register with the store after providing necessary details. The customer can place the order with the shop telephonically or personally. In case items are not available customers are informed. The detail of every new customer is stored in the company's database for future reference. Regular customers are offered discounts. Additionally details of daily transactions are also maintained. The suppliers from time to time also come up with attractive schemes for the dealers. In case, scheme is attractive for a particular item, the store places order with the company. Details of past schemes are also maintained by the store. The details of each item i.e. item code, quantity available etc. is also maintained. Draw a level 1 DFD for the above requirement.

b) Explain following requirement elicitation methods: Interviews and Facilitated Application Specification Technique (FAST).

(10+8)

4.

a) Explain the concept of bottom-up, top-down and hybrid design.

b) Design black box test suits for a function that checks whether a character or string up to ten characters in a palindrome?

c) In requirements engineering, what is the difference between functional requirements and non-functional requirements? Give one functional requirement, and one non-functional requirement.

(8+6+4)

5.

a) Draw ER diagram for below mention Banking System requirement and clearly indicate the entities, relationships, cardinality and key constraints.

The general things needed in a Banking System are: Person Opens an Account and Person using ATM for Transaction.

The person opens an Account in a Bank and gets a account number and ATM card. The person can make transactions in ATM centres. The details of the Transaction has to be maintained between three entities. i.e. User, Account, ATM.

b) Differentiate between failures and faults.

(14+4)

6.

a) Draw Class diagram for Hospital management system which helps in registering information about patients and handles patient's query. A unique ID is generated for each patient after registration. This helps in implementing customer relationship management and also maintains medical history of patient. This system also monitors the doctor appointments, when the ID is generated the patient receives the appointment time and number from the receptionist and accordingly visit the doctor. This system also deals with testing appointments as and when ID is generated, the patient receives the appointment time and number and accordingly undergoes the test. It also deals with bed allotments to various patients by checking their ID. It also undergoes various operations by diagnosing the patients. The system identifies whether the person is a doctor or staff and handles various activities such as draw salary and give salary, also it adds doctor/staff information into database. This system is responsible for handling various other activities like deleting, editing doctor/staff information into the database. As per doctor diagnoses the patient, gives treatment and gives suggestions to patients and prescribe laboratory tests and medicines. This system also takes care of medical equipment, doctor visit, vitals recording, patient case sheet, diet ordering, blood requisition, transfer information and discharge information, maintenance of wards, inter and intrawards transfers. Also it generates patient's discharge summary which includes patients health at the time of discharge, medical history, various diagnosis and drug prescriptions, history of patients illness and course in hospital. Patient can pay bill through credit card, cash or cheque whose information is maintained by this system.

b) What are the four essential elements of software architecture?

(13+5)

7.

a) What is data dictionary? What are the objectives of data dictionaries? Explain types of data items in it.

b) Explain the concept of software reusability with example? Explain main steps of reuse model.

(9+9)