Model paper -SAD-2021

Q1

(i) Describe the waterfall model. (03 Marks)

(ii) State two strengths and two weaknesses of the waterfall model. (04 Marks)

(iii) After delivering the information system, what type of **errors and issues** can be found by the users? (05 Marks)

(iv) Propose the most appropriate system development life cycle model for each situation given below and justify your answers.

a. Some troubles are arising in the Army Hospital Management system frequently. So, they need to replace it and implement a new system within a short time period because they adapt to work with the current system. (04 Marks)

b. Customer needs to implement a school management system in their school. Now they are using a manual system. (04 Marks)

Q2

(i) Explain the difference between functional requirements and non-functional requirements (02 Marks)

(ii) Imagine you have to develop a childcare information system. It is the caring of a child or children, usually age from three years to six years. Every single activity of a child is going to record and analyze through this system. List three functional requirements and three non-functional requirements of the above system. (06 Marks)

(iii) Why do you need to do the Economic Feasibility? (04 Marks)

(iv) KSNTG Pvt Ltd expects to undertake a project for their business. They received project (project R, project T) proposals from two different companies. Assume the following cash flows for two projects.

Year	Project R	Project T
0	Rs. -100 000	Rs.-100 000
1	Rs.50 000	Rs.10 000
2	Rs.40 000	Rs.30 000
3	Rs.30 000	Rs.40 000
4	Rs.10 000	Rs.60 000

a. Which is the best project to accept according to the payback method? Justify your answer. (08 Marks)

Q3

(i) What is a model? (02 marks)

(ii) State two (02) roles of use case diagrams in modeling systems. (04 marks)

(iii) What is the use of '**include'** relationship in use case diagrams (02 marks)

(iv) Draw a use case diagram for the following scenario in a hotel (12 marks)

The following text describes the proposed Hotel Reservation System.

A customer can view the hotel information and reserve a room online or visit the place and reserve rooms. Rooms can be Single rooms, double rooms, or family rooms.

If they are online customers, the system will check the room availability and notify the customer availability of rooms. If not, the receptionist does the task.

When the customer makes the payment, the room is allocated for them. Online customers should pay via credit cards and others are allowed to pay by credit cards or cash payment.

When the customer checks in the system is updated. The customer can check out from the hotel at any time or extend after informing the receptionist. It will be accepted if rooms are available.

Q4

i.) Draw three (03) elements in Data Flow Diagram. (03 Marks)

ii.) Read the following case study and answer the questions.

Dugles brothers are electronic equipment sellers. They are maintaining a website for their business purpose.

When customers place orders through the company's Web site, the system checks to see if the items are in stock, issues a status message to the customer, and generates a shipping order to the warehouse, which fills the order. When the order is shipped, the customer is billed. The system also produces various reports.

a. Identify the entity of the system. (03 Marks)

b. Draw the Context Diagram of the system. (05 Marks)

c. Identify four (04) subprocesses of the system. (02 Marks)

d. Identify two (02) data stores of the system. (02 Marks)

e. Draw the top-level DFD of the system. (05 Marks)

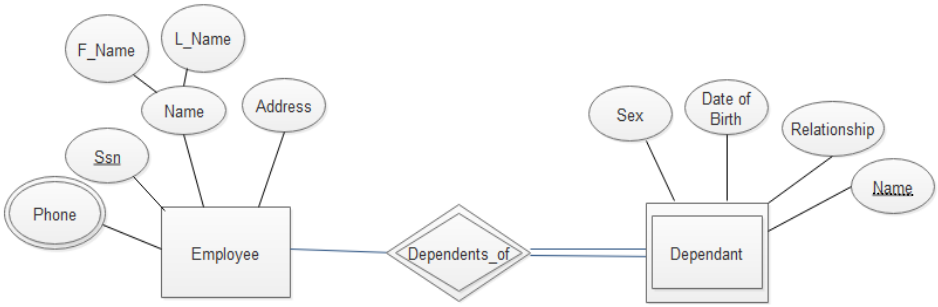
Q5

i. Define the following attribute types with the relevant Entity Relationship (ER) diagram fragment.

   a. Composite attribute
   b. Derived attribute
   c. Descriptive attribute

(06 marks)

ii. Convert the following Entity Relationship Diagram (ERD) fragment to corresponding relations. (04 marks)



iii. The university research symposium committee has decided to use a database to handle the research papers of the annual research symposium.

The data requirements are summarized as follows.

- The authors of the papers are uniquely identified by an email ID. First name, last name, research field, and institute are also recorded.
- A paper may have multiple authors. Each paper is assigned a paper ID by the system and is described by a title, keywords of the paper, and the year of the research.
- Each reviewer is uniquely identified by a reviewer's ID. Each reviewer's first name, last name, phone number, affiliation, and topics of interest are also recorded.
- Each paper is reviewed by two reviewers. A reviewer mark each paper assigned to him. These marks are stored as a review status along with the paper ID and the reviewer's ID. Finally, each reviewer provides an overall recommendation regarding each paper.

a. Identify all the **entities, and attributes** and then draw the ER (Entity Relationship) diagram for the proposed system. (10 marks)

Q6

(i) State three limitations of software testing. (03 Marks)

(ii) What are CASE tools? Mention its two functions. (04 Marks)

(iii) Draw a class diagram for the scenario given in question number three(03) part four (06 marks)

(iv) Briefly explain the bespoke package with two advantages and two disadvantages. (07 Marks)