

**Course Title:** Software Engineering.

**Content:** Examination.

### Instructions

1. Answer question **ONE (Compulsory)** and any other **TWO** questions.
2. Write all your answers in the answer booklet provided.
3. Time allowed: **Two hours**.

### Question #1 [30 Marks]

#### Consider following system development case:

JamboJet is in the process of acquiring an airline reservation System is a computerized system used to store and retrieve information and conduct transactions related to air travel. This application aims to have two parts. First is user part and the administrator part. User part is used as a front end and administrator is the back end. Administrator is used by airline authority. It will allow the customers to access database and allow new customers to sign up for online access.

Airline passenger should be able to search for flights that are available between the two travel cities, namely the "Departure city" and "Arrival city" for a particular departure and arrival dates. The system displays all the flight's details such as flight no, name, price and duration of journey etc. After search the system display list of available flights and allows customer to choose a particular flight. Then the system checks for the availability of seats on the flight. If the seats are available then the system allows the passenger to book a seat. Otherwise it asks the user to choose another flight.

To book a flight the system asks the customer to enter his details such as name, address, city, state, and credit card number and contact number. Then it checks the validity of card and book the flight and update the airline database and user database. The system also allows the customer to cancel his/her reservation, if any problem occurs. The system should then allow the administrator to generate reports of flight schedules, booking and cancelations.

#### Task:

a) Formulate a requirements engineering documents composed of clearly outlined:

- User requirements
- System requirements
- Nonfunctional requirements categorized as product, organizational and external.

**[15 Marks]**

b) Draw a use case diagram for the entire system.

**[7 Marks]**

c) Discuss how the scrum approach for agile project management could be used during the development of the system. Use diagram with clear explanations.

**[8 Marks]**

## **SECTION TWO**

### **Question #2 [20 Marks]**

- a) Discuss why the hybrid methodology is best suited for the development for the system. **[6 Marks]**
- b) If you were contracted to develop the system, with the aid of diagrams supported by explanations, outline any two hybrid process models that you will opt to use. **[14 Marks]**

### **Question #3 [20 Marks]**

- a) What is software prototyping? **[2 Marks]**
- b) State and explain the two prototyping approaches in software process? **[8 Marks]**
- c) Discuss the view that software prototyping with incremental delivery can be useful during the requirements analysis process. **[10 Marks]**

### **Question #4 [20 Marks]**

- a) State and explain any three reasons why system modeling is important in software engineering. **[6 Marks]**
- b) Define Reverse Engineering. State and explain three main objectives of reverse engineering? **[7 Marks]**
- c) What is software reengineering? State and explain any three conditions that will lead to the need for software reengineering required. **[7 Marks]**

### **Question #5 [20 Marks]**

- a) State and briefly explain the three fundamental software configuration management activities. **[6 Marks]**
- b) Discuss any three issues to be considered for developing tactics for WebApp Configuration Management? **[6 Marks]**
- c) Discuss the view that Open Source Software has decreased the productivity of developers and the quality of the systems produced. **[8 Marks]**