MCA (Revised)
Term-End Examination
June, 2018

02705

MCS-032 : OBJECT ORIENTED ANALYSIS AND DESIGN

Time : 3 hours *Maximum Marks : 100*

Note : *Question no. 1 is* **compulsory.** *Attempt any* **three** *questions from the rest.*

1. (a) Identify the class, objects, instance, generalization, association and inheritance. 5

   (i) Furniture — Table

   (ii) Father — Daughter

   (iii) Faculty

   (iv) Computer — Mouse

   (v) Person — Student

   (b) Draw a state diagram for borrowing a book from a library. For issuing a book, a valid library card is required. At a time not more than two books can be issued. The reserved books cannot be issued. 5

(c) A hospital wants a computerized system to manage patients' appointments, maintain their medical records, keep payment records and generate reports. Both doctors and patients are reminded one day in advance through SMS/e-mail about the appointment. The appointment can be fixed by on-line/off-line mode. When the patient makes a call for an appointment, the receptionist will check the schedule as per the earlier date. Perform the following tasks :

(i) Draw a use-case diagram. 4

(ii) Draw a class diagram. 6

(iii) Draw an object diagram. 6

(iv) Draw the sequence diagram. 4

(d) What is Abstraction ? Explain with the help of an example. 4

(e) In object oriented design, what steps must be taken by the designer to design association ? Explain association with the help of a UML diagram. 6

2. (a) How are generalization, specialization and inheritance closely related ? Explain. 7

(b) How is a functional model related to object and dynamic model ? 8

(c) What are the major features of UML ? 5

3. (a) What is a State Diagram ? How are composite states represented in a state diagram ? Give an example with suitable diagram. 7

(b) Draw a sequence diagram for withdrawal of an amount from an ATM. In the ATM, the user inserts the card, enters his/her PIN and performs the desired task. 5

(c) What is the use of inheritance ? How is inheritance readjusted by rearranging classes and operations ? 8

4. (a) Explain the concept of delegation. How is it useful for implementing inheritance ? 6

(b) Draw an activity diagram for a Sales Order Management System. The sales order management system includes sending an order by the customer, confirmation of the order through the receipt of the order, checking for condition whether the order is normal or special, confirmation of the order processing and finally dispatch of the order and raising the bill. 6

(c) Write two main aspects of implementing association. Explain bidirectional and unidirectional association with an example for each. 8

5. (a) Draw a generalization hierarchy of Employee class. *6*

(b) Mention the purpose of object diagrams and deployment diagrams. Also draw and explain the appropriate deployment diagram for an Online Admission System. The purpose of the online admission system is to automate the online student admission process. It also maintains students' personal details, academic records, payment details and generates reports. *8*

(c) What is Persistency ? Explain with an example, how persistent data are identified. *6*

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