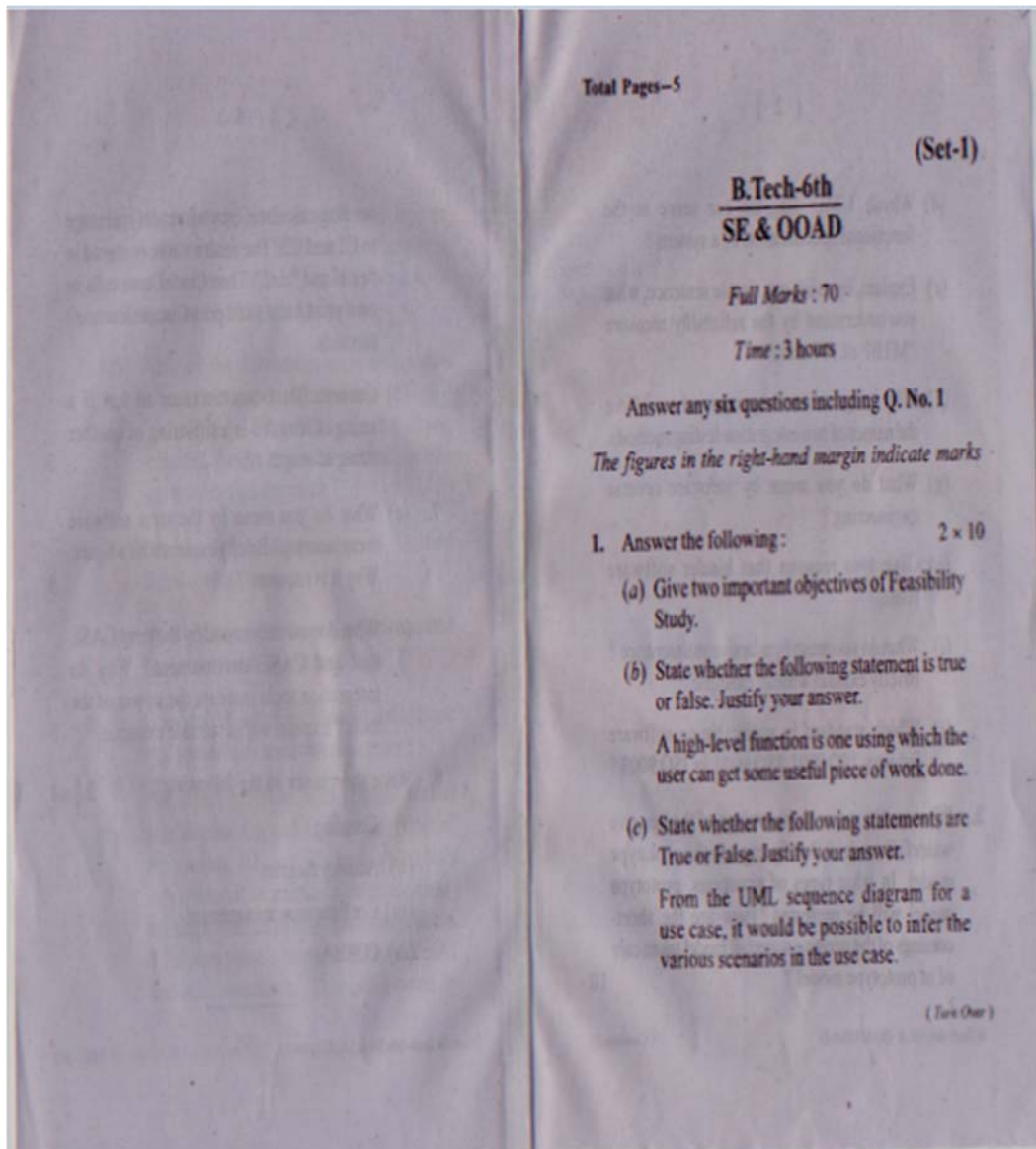


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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
& INFORMATION TECHNOLOGY
SESSION 2014-2015 (EVEN SEMESTER)



- (d) Which UML diagram can serve as the functional specification of a system?
- (e) Explain, by using one simple sentence, what you understand by the reliability measure "MTBF of 100 units".
- (f) Why integration testing is carried out? Give the names of two integration testing methods.
- (g) What do you mean by software reverse engineering?
- (h) Give two reasons that hinder software reuse.
- (i) What do you mean by adaptive maintenance? Briefly explain with an example.
- (j) Which standard is applicable to software industry, ISO 9001, ISO 9002, or ISO 9003?
2. What are the major shortcomings of the iterative waterfall model? Briefly explain the prototype model. In what types of situations, prototype model will be preferred? How are the shortcomings of the iterative waterfall model taken care of in prototype model? 10

3. Algebraically specify an ADT that stores a set of elements and supports the following operations. Assume that the ADT element has already been specified and you can use it: 10
- new** : creates a null set.
- add** : takes a set and an element and returns the set with the additional elements stored.
- size** : takes a set as argument and returns the number of elements in the set.
- remove** : takes a set and an element as its argument and returns the set with the element removed.
- contains** : takes a set and an element as its argument and returns the boolean value true if the element belongs to the set and returns the boolean value false if the element does not belong to the set.
- equals** : takes 2 sets as arguments and returns true if they contain identical elements and returns false otherwise.

4. (a) What do you understand by the layered software design? What are the advantages of the layered design? Explain your answer by using suitable examples. 5
- (b) What are the differences between function-oriented design and object-oriented design? Give the main advantages of using object-oriented design approach over a function-oriented design approach? 5
5. (a) Discuss the various phases of Unified Development Process. 5
- (b) Briefly discuss the steps of object-oriented analysis and design methodology. 5
6. (a) Consider the following scenario and indicate this scenario by a sequence diagram: 5

An object of class "CircleDemo" creates two objects C1 and C2 of class "Circle" by passing R1 and R2 in the Circle's constructor. It then sends a calculateArea() message to each of the constructed circle. The return value is stored in the variables A1 and A2 respectively. This is followed by

- sending calculateCircumference() message to C1 and C2. The return value is stored in "cir1" and "cir2". Then CircleDemo calls its own printArea() and printCircumference() methods.
- (b) Generate Black-box test cases to test if a string of length 5 is a substring of another string of length 10. 5
7. (a) What do you mean by the term software reengineering? Briefly explain with a figure. Why it is required? 5
- (b) What do you understand by the term CASE tool and CASE environment? Why do integration tools increase the power of the tools? Explain with a suitable example. 5
8. Write short notes on the following: $2\frac{1}{2} \times 4$
- Coupling
 - Activity diagram
 - Configuration management
 - CORBA.