Roll No. .....

B.Sc. (Hons.) SEMESTER V EXAMINATION 2016-17

COMPUTER SCIENCE

BCS - 504A : System Analysis and Design

Time : Three hours **Max. Marks : 70**

(WRITE YOUR ROLL NO. AT THE TOP IMMEDIATELY ON THE RECEIPT OF THIS QUESTION PAPER)

NOTE : ANSWER ANY FIVE QUESTIONS AND THE FIGURES IN THE RIGHT HAND MARGIN INDICATE MARKS.

1. a) Write the IEEE definitions of the following term in connection with software : 6
   i) Error ii) Fault
   iii) Failure
   b) Design an ER diagram for Library Management System. Specify all constraints that should hold on the database. Make sure that it has atleast three entity types, two relationship types, a weak entity type, a super class/subclass relationship and n-ary (n>2) relationship type. 8

2. a) Describe software crisis and the goals of software engineering. 7
   b) Write four important attributes of software products and differentiate them with hardware products. 7

3. a) Compare prototyping and iterative software development process models by listing their strengths and weakness. 7
   b) Describe at least five important characteristics of an SRS. 7

4. a) What is the role of problem analysis in software development? Explain the use of Data Flow Diagrams in problem analysis by an example. 7
   b) What are use cases? Where are these use cases used during software development process? Explain through an example. 7

5. a) What do you understand by a module? What are the modularization criteria used for function-oriented design to produce modular designs? 7
   b) Explain all four major steps of structured design methodology using <u>one</u> example. 7

6. a) Write the purpose of the following diagrams of UML used in object-oriented design : 7
   i) Class diagram ii) Interaction diagram
   iii) Activity diagram
   b) What do you understand by test cases and test criteria? Write the differences between black-box and white-box testing.

7. Write short notes on the following :
   i) Test oracle
   ii) Software maintenance
   iii) Data dictionary
   iv) Open-closed principle

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