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**University Examinations 2015/2016**

**THIRD YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER TECHNOLOGY AND BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**CIT 3327: ADVANCED PROGRAMMING**

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**DATE: NOVEMBER, 2015 TIME: HOURS**

**INSTRUCTIONS:** *Answer question* ***one COMPULSORY*** *and any other* ***two*** *questions.*

**QUESTION ONE – (30 MARKS)**

1. Compare component based software development process with traditional software development life cycle. (8 Marks)
2. Discuss any two software design pattern and give commercial application where each has been used. (6 Marks)
3. Write a code snippet using **C#** to list number of times char **A** is repeated in the string “ “**ADVANCED PROGRAMMING IS FUN FOR SERIOUS PROGRAMMER**”

(4 Marks)

1. Discuss any two merit of multi-tier software architecture. (4 Marks)
2. Briefly explain giving example how abstraction and generic programming support development and implementation of abstract data types (ADT). (8 Marks)

**QUESTION TWO (20 MARKS)**

**Use the following narrative to answer some part of following questions**

The Department of Computing and Mathematical Sciences of Silversmiths College has a set of courses provided for the undergraduate level. For each course a well-defined set of admission criteria is specified; for instance, for the "Computer Science" course, 3 A are required, minimum B for each, an A in Mathematics being compulsory.. Each course has a name and duration; certain courses can allow industrial placements. Each course consists of a set of modules, some compulsory and some optional. A certain module is described by its name, a short syllabus, type (lectured, seminar-like, project) and year of study for which it was intended. Each student enrolled with the department, is registered for one particular course. The student must attend the compulsory modules. For every year of study, from the set of optional modules, the student must attend a certain number which is specified in the course's description. Each module is taught by a single lecturer. However, there might be modules, from the optional ones, that are not taught at all (for instance, because no students have actually registered for them). There also can exist lecturers who do not teach at all, being only involved in research. Contact information (address, telephone, …) plus personal details (date of birth, male/female, …) is needed for both lecturers and students

1. Briefly illustrate software architectural design using three tier approach for above college. List any three elements in each tier. (10 Marks)
2. Discuss ADO.net data access model. Explain components required to link student data entry form to college data base. Illustrate how objects are instantiated from relevant classes. (10 Marks)

**QUESTION THREE (20 MARKS)**

1. Discuss any three factors to consider while designing Graphical user interface entry forms in high data volume application. (6 Marks)
2. Explain how data access methods are controlled using various access modifiers.

(6 Marks)

1. Draw a ER diagram based on narrative in question 2. (8 Marks)

**QUESTION FOUR (20 MARKS)**

1. Discuss any three drawbacks of component based software development. (6 Marks)
2. Briefly explain main structure for exception handling in C#. Illustrate your answer by catching array overflow error. (4 Marks)
3. Explain role of LINQ and Illustrate powerful features of LINQ in C# by processing frequent repeated word in the string “**Discuss ADO.net data access model. Explain components required to link student data entry form to college data base. Illustrate how objects are instantiated from relevant data classes”.** (10 Marks)

**QUESTION FIVE (20 MARKS)**

1. Discuss any three circumstances under which programmer would prefer form based user interface instead of web based one. (6 Marks)
2. Explain how code reuse is controlled in C# as compared to C++. (4 Marks)
3. A database in drive D named patient.mdf is contained in a directory named local apps. Use the ADO component to declare, Initiate and populate dataset objects. A table drug is used and all the fields are selected. (10 Marks)