NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING

Manufacturing Information & Database Systems – TIE 6110

SUPPLEMENTARY EXAMINATIONS OCTOBER 2009

Instructions to candidates

Time Allowed 3 Hours

Answer any four questions. The paper contains five questions.

QUESTION 1

a. Your organization is facing a challenge because of the traditional based approach to information organization that is currently in use. As a systems administrator outline and explain five reasons why the company should adopt a database approach to file organization. [15]
b. A database environment consists of end users of the database. State and explain giving examples five such users of the database [10]

QUESTION 2

a. Describe the working process with a database system [9]
b. Explain the concept of data independence in relation to database concepts [6]
c. Define the following terms
   I. Normalization [2]
   II. Domain Integrity [2]
   III. Primary key [2]
   IV. Referential integrity [2]
   V. Null values [2]

QUESTION 3

PupijlsDetails(Grade#,ClassCode, TeacherName, GradeDescription, NoOfpupils,PupilName)

Answer the following questions using the above scenario.

a. Normalize the above schema up to the third normal form [15]
b. In relation to database concepts, explain the acronym ACID [4]
c. Write an SQL statement to:
   I. Display the minimum age of the pupils in each class. [2]
   II. Give the average age of the pupils in each class [2]
   III. Display all pupils whose surname start with a “D” [2]

QUESTION 4

a. With the aid of the diagram, describe the three level architecture of a database system and the main functionality of each levelin this architecture. [15]

b. In relation to database concepts, contrast Object based data model with record based data models giving at least two examples in each [10]

QUESTION 5

a) Outline the features of a table in 1NF and 2NF [5]
b) Write an SQL statement to do the following
   I. Create a table called 1202Students [2]
   II. Display the average age of the students [3]
   III. Display the total number of students in class [3]
   IV. Display students by the departments [4]
   V. Delete the table called 1202Students [2]
   VI. What attribute could be used to identify each student in the 1202 Students table [1]
c) Using an example explain the concept of ODBC in relation to database concepts [5]

END OF EXAM