

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCES
COMPUTER SCIENCE DEPARTMENT
MAY EXAMINATIONS 2011

SUBJECT: DATABASE CONCEPTS
CODE: SCS1202

INSTRUCTION TO CANDIDATES

Answer any four questions. The paper contains five questions.

Time: 3 hours

QUESTION ONE

- a) One of the components of the database environment are database users.
State and explain, giving examples any four types of such end users. [12]
- b) Given the following Table 1 in zero normal form with records for students at a university, Show the normalized table in first normal form. [13]

Table 1: University students records

SudentName	Programme	Lecturers	HomeAddress	DateOfBirth
Sino, Princess Dube	BSc (HONS) Computer Science	Miss S. Ncube	3 Linden Lane Belleveiw, Bulawayo	10 August 1991
Vusi, Tanaka Chiro	MSc Operations Research	Mr. J. Tarumbwa	5 Jorosa Court , Avenues Harare	2 June 1975
Chilly, James Jones	BSc (HONS) Library Information Science	MRS. Z. Moyo	23 Livingstone rd, Surbabs, Gweru	12 December 1990
Tendai, Dorcias Motsi	MSc Applied Physics	Mr. T Jones	12 Gladstone dr, Morningside, Bulawayo	5 January 1967

QUESTION TWO

Use this scenario to answer the following questions; A primary school has seven grades and in each grade there are three classes A, B and C. Each class has 30 pupils. A single teacher is responsible for each class. Each pupil does four subjects that is Mathematics, English Language, Content and Ndebele.

- Draw an Entity –Relationship diagram to demonstrate the above scenario, clearly showing the keys used for indexing. [20]
- Explain how an entity relationship model is related to a relational data model. [5]

QUESTION THREE

Answer the following questions using the contents of Tables 2, 3,4 and 5.

Table2 FACULTIES

NAME
Faculty of Applied Sciences
Faculty of Built Environment
Faculty of Commerce
Faculty of Medicine
Faculty of Industrial Technology

Table 3: DEPARTMENTS

DEPARTMENT	FACULTIES
COMPUTER SCIENCE	Faculty of Applied Sciences
APPLIED MATHEMATICS	Faculty of Applied Sciences
APPLIED PHYSICS	Faculty of Applied Sciences
ELECTRONICS ENGINEERING	Faculty of Industrial Technology
BANKING AND FINANCE	Faculty of Commerce

Table 4 COURSES

COURSE CODE	COURSE	LECTURER ID
SCS 1101	INTRODUCTION TO COMPUTERS	1000
SMA1101	CALCULUS	1200
SCS4103	SOFTWARE PROLECT MANAGEMENT	1102
SPH 1109	RADIOGRAPHY	1209
SMA 1102	LINEAR ALGEBRA	1302

Table 5: LECTURERS

LECTURERID	LECTURER NAME	DEPARTMENT
1000	J.F. Motsi	COMPUTER SCIENCE
1200	M.M Mlilo	APPLIED MATHEMATICS
1102	B.J Best	COMPUTER SCIENCE
1209	L.T Sibanda	APPLIED PHYSICS
1302	P>T Clair	APPLIED MATHEMATICS
1310	H.Manda	Applied Physics

- Show the result set for 'LECTURERS LEFT OUTER JOIN COURSES'. [5]
- Show the result set for 'DEPARTMENTS DIVIDED BY FACULTIES'. [5]
- Show the result set of 'LECTURERS INTERSECTION COURSES'. [5]
- Show the results for 'LECTURERS MINUS COURSES'. [5]
- Show the result for 'LECTURERS UNION COURSES'. [5]

QUESTION FOUR

Write an SQL statement to do the following:

- a. To calculate the average number of students in a class. [5]
- b. To display the minimum Age of students in a class. [5]
- c. To display the list of students with surname consisting of the vowel "u". [5]
- d. To display a student's Surname as Last Name [5]
- e. To calculate the sum of marks for a student in the class [5]

QUESTION FIVE

- a. You have just gathered data about students from a Private college. You have been asked to develop a relational database table using Microsoft Access 2007 Database Management system. Specify the data types and appropriate field sizes for the following fields (StudentNumber, Firstname, Gender, Age, DateOfBirth). [10]
- b. In an Microsoft Access database management system, What are the following used for:
 - i. Report
 - ii. Query
 - iii. Macro
 - iv. Module
 - v. Table [10]
- c. Explain the concept of Data Definition Language in relation to Database Management Systems(DBMS). [5]

END OF QUESTION PAPER

