



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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University Examinations 2014/2015

FOURTH YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN BUSINESS INFORMATION TECHNOLOGY

AND

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
SCIENCE IN INFORMATION TECHNOLOGY, BACHELOR OF SCIENCE IN BUSINESS
INFORMATION TECHNOLOGY

AND

SECOND YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN COMPUTER SCIENCE

ICS 2206: DATABASE SYSTEMS

DATE: DECEMBER 2014

TIME: 2 HOURS

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

QUESTION ONE

a) Refer to the customer table below to answer the questions that follow;

Customer

CustID (PK)	Last name	First name	Phone	City	Regions	Over due status	Preferred	Income	Numorders	Balance	Birthdate
10	Smith	Bob	123- 4567	Orlando	North	Paid	Y	10000	5	100	1/1/1978

12	Ramirez	Jose	422-1234	Apex	South	Paid	Y	50000	16	600	2/8/1970
13	Washington	Terrell	951-1234	Sujour	East	(null)	Y	20000	25	700	3/5/1985
15	Jones	Bill	963-7894	Axecrossing	West	Unpaid	Y	16900	2	500	12/1/1990
17	Morales	Sandy	951-1234	Orlando	North	Paid	N	85000	90	400	8/3/1986
21	Principe	Michelle	963-4561	Apex	South	Paid	N	94000	85	300	7/2/1974
23	Mavis	John	147-4561	sujour	East	unpaid	Y	25000	26	600	3/5/1989

As a data analyst, you have been requested to write the SQL statements to display:

- i) The table as it appears above (2 marks)
 - ii) The name of the city and the names of the customers in that city (2 marks)
 - iii) The name of the customers whose overdue status is paid and they are preferred (2 marks)
 - iv) The custID, phone and city for all customers whose balance is less than 500 or whose income is less than or equal to 60000 (2 marks)
 - v) The names of the regions (to appear without repetition) and displayed in descending order (2 marks)
 - vi) The customer names and phone number for all customers whose overdue status is unpaid (2 marks)
 - vii) The customer names, city and region in a descending order of income (2 marks)
 - viii) The name of the customer with highest balance (2 marks)
- b) Define the following terms as used in database systems
- (i) Entity integrity (2 marks)
 - (ii) Data redundancy (2 marks)
 - (iii) Serializability (2 marks)
 - (iv) Database (2 marks)
- c) Explain why database design is important (6 marks)

QUESTION TWO

- a) Discuss any four different types of database systems (8 marks)
- b) “Concurrent transactions can present various problems”. Describe some of these problems and explain how they can be resolved (12 marks)

QUESTION THREE

- a) Explain the five functional components of a database system (10 marks)
- b) (i) Define the term deadlock and explain when it can occur (4 marks)
- (ii) Describe any three techniques to control deadlock (6 marks)

QUESTION FOUR

- a) Distinguish between simple and composite attributes and single valued and multi valued attribute (4 marks)
- b) Describe five disadvantages of using database systems (10 marks)
- c) Evaluate three causes of a transaction failure (6 marks)

QUESTION FIVE

- a) Explain five characteristics of a relational model (10 marks)
- b) Explain any five of the rules in the “Date’s 12 rules of distribution” (10 marks)