



# **GRE TSA UNIVERSITY - THIKA**

**UNIVERSITY EXAMINATIONS  
MAY - AUGUST 2018 SEMESTER**

**BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

**COURSE CODE: BSCS 107**

**COURSE TITLE: INTRODUCTION TO DATABASE SYSTEMS**

**DATE: 8 AUGUST 2018**

**TIME: 3.00 PM – 6.00 PM**

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**INSTRUCTIONS TO CANDIDATES**

1. SECTION A IS **COMPULSORY**.
2. SECTION B: ANSWER ANY OTHER **THREE** QUESTIONS.
3. **DO NOT** WRITE ANYTHING ON THIS QUESTION PAPER AS IT WILL BE AN EXAM IRREGULARITY.
4. ALL ROUGH WORK SHOULD BE AT THE BACK OF YOUR ANSWER BOOKLET AND CROSSED OUT.

**CAUTION:** *All exam rooms are under CCTV surveillance during the examination period.*



## **SECTION A: COMPULSORY**

### **Question One**

- a) Define the following terms
- i. Database architecture [2 marks]
  - ii. Database model [2 marks]
  - iii. Database object [2 marks]
- b) Explain any five features of a database management system [5 marks]
- c) Differentiate between meta data and data dictionary [4 marks]
- d) Outline any five functions of a data dictionary [5 marks]
- e) State and explain any five features of object oriented database models [10 marks]
- f) A company has a number of employees. The attributes of employee include employee\_id (identifier), name and birth date. The company has also several projects. Attributes of PROJECT include project\_ID(identifier), project\_name, and start\_date. Each employee may be assigned to one or more projects or may not be assigned to a project. A project must have at least one employee assigned and may have any number of employees assigned. An employee's billing rate may vary by project, and the company wishes to record the applicable billing rate (billing\_rate) for each employee when assigned to a particular project. Represent the above information using an ER diagram. [10 marks]

## **SECTION B: ANSWER ANY THREE QUESTIONS**

### **Question Two**

- a) Outline any four duties of a database designer [4 marks]
- b) State and explain any three differences between a 3 tier and a 2 tier database architecture [6 marks]
- c) The Gill Art Gallery wishes to maintain data on their customers, artists and paintings. They may have several paintings by each artist in the gallery at one time. Paintings may be bought and sold several times. In other words, the gallery may sell a painting, then buy it back at a later date and sell it to another customer.

Study the customer form below and normalize it to 2NF

[10 marks]

Gallery Customer History Form			
<u>Customer Name</u>			
Jackson, Elizabeth 123 – 4 <sup>th</sup> Avenue Fonthill, ON L3J 4S4		Phone (206) 284-6783	
<u>Purchases Made</u>			
Artist	Title	Purchase Date	Sales Price
03 - Carol Channing	Laugh with Teeth	09/17/2000	7000.00
15 - Dennis Frings	South toward Emerald Sea	05/11/2000	1800.00
03 - Carol Channing	At the Movies	02/14/2002	5550.00
15 - Dennis Frings	South toward Emerald Sea	07/15/2003	2200.00

**Question Three**

- a) State and explain the phases of database design [10 marks]
- b) Outline any five benefits of using structured query language in database design [5 marks]
- c) Outline the functions of any five types of attributes in an entity [5 marks]

**Question Four**

- a) Write SQL statements to perform the following tasks
  - i. Create a database named Grets University [3 marks]
  - ii. Create a table named new students and populate it with the data shown below [8 marks]

<u>Reg Number</u>	<u>Student Name</u>	<u>Date of registration</u>
001	Joseph	2/5/2018
045	Ramsey	4/5/2018
098	Hope	6/2/2018
109	Lily	8/2/2018

- iii. Sort the records in the table in descending order [4 marks]
- iv. The student Lily has the wrong date of registration. Update lily’s date of registration to 9/2/2018. [5 marks]

**Question Five**

- a) State and explain the functions of any five database keys [5 marks]
- b) Explain any five emerging trends in database systems [10 marks]
- c) Discuss any five activities involved in database administration [5 marks]