Mansoura University		Department: Computers Engineering And Systems Total Marks: 20 Marks	Faculty of Engineering BME Program MTE Program

Course Title: Database Systems	(MID Term exam)	Course Code: CSE 265
Date: Nov. 2018	Allowed time: 1 hrs	No. of Pages: (1)

Remarks: (Answer the following questions… assume any missing data)

Question No. (1) (12 Marks 1.5 Point Each)

Q1-A) List Advantages of DBMSs in the case of using Flat file system DBS model?

(Q1-B) Specify why Records in a DB file may be variable length? (How to unify)

(Q1-C)What is used to define the structure of the relation, deleting relations and relating schemas?

(Q1-D) Give some example of the DB applications in our daily life

(Q1-E) State the different types of System Tables, write a short about each one?

(Q1-F) Write a short note about Database systems components (for each write a short note)

(Q1-G) State the most important two issues must be considered while designing DBMS for network environment

(Q1-H) State the relationship between (Parent table and Primary key – Key and Index – RDB and ROODB- Host language and SQL – Attribute and Degree – Domain and Integrity)

Question No. (2) (13 Marks)

(Q2- A) (4 Points) Given two relations $R1$ and $R2$, where $R1$ contains N1 tuples, $R2$ contains N2 tuples, and N2 > N1 > 0, give the minimum and maximum possible sizes (in tuples) for the resulting relation produced by each of the following relational algebra expressions. In each case, state any assumptions about the schemas for $R1$ and $R2$ needed to make the expression meaningful:

(1) $R1 \cup R2$, (2) $R1 \cap R2$, (3) $R1 - R2$, (4) $R1 \times R2$, (5) $\sigma a=5(R1)$, (6) $\pi a(R1)$, and (7) $R1/R2$

(Q2- B) (5 Points) Use the following relational schema for writing the SQL statements which help in the next requirments: Car (vehicle_id, make, license_plateNo, max_numb_passengers, max_speed, price) - Truck(vehicle_id, make, license_plateNo, numb_axles, tonnage, price)- Employee(first_name, last_name, SSN, birthdate, address, jobtype)- Drives(SSN, vehicle_id) - PartType(typeid, description)- Part(part_num, typeid, vehicle_id) Write an RA Statement that :

1. List vehicle_id and tonnage for trucks that have in them "windshield wipers model 345" (partType description) installed.

2. Find the most expensive vehicle in the system.

3. List employees (first and last names) of those who have driven both trucks and cars.

4. Identify employees who have not driven any vehicles.

(Q2- C) (4 Points) Suppose you are given the following requirements for a simple database for the Egyptian football league (EFL): Construct an ER diagram for such database.the EFL has many teams,

- **each team has a name, a city, a coach, a captain, and a set of players,**
- **each player belongs to only one team,**
- **each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records,**
- **a team captain is also a player,**
- **a game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 16th, 2002) and a score (such as 6 to 1).**

Best wishes

Prof. Dr Hesham Arafat