

TAKE HOME EXAMINATION

Student NRIC : _____

Student ID : _____

Programme	:	DIPLOMA IN COMPUTER SCIENCE(MQA/PA13808) DIPLOMA IN E-BUSINESS TECHNOLOGY(MQA/PA13807)
Intake	:	JANUARY 2021
Course	:	DATABASE MANAGEMENT SYSTEM
Course Code	:	DCS2233/DEB2113
Duration	:	(3 hours)

INSTRUCTIONS TO CANDIDATES:

1. Please read the instructions given in the question paper **CAREFULLY**.
2. Answer **ALL FOUR (4)** questions.
3. Answers to the questions are to be written into own A4 sized papers.
4. Please write your NRIC number or student ID number on every page of your answer script. **Do NOT** write your name.
5. Please write page number on every page of your answer script.
6. Please **KEEP** the hardcopy of your answer script.
7. 1 mark will be deducted for every minute delay in submission after the 20 minutes lapse with maximum of 10 minutes delay is allowed.
8. Any submission will **NOT** be accepted after the submission time. 0 marks will be awarded.

WARNING:

The Examination Board of Peninsula College Georgetown regards cheating as a most serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in the accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from Peninsula College Georgetown.

(This booklet contains 4 printed pages including this page)

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ALLOWED TO DO SO

Answer **ALL FOUR (4)** questions on the separate sheet provided.

[100 marks]

1. a) List **FOUR (4)** responsibilities of a Database Administrator (DBA). (4 marks)

b) Describe **THREE (3)** advantages of using a Database Management System. (6 marks)

c) American National Standards Institute (ANSI) Standards Planning, and Requirements Committee (SPARC) framework has been introduced to support data independency and data view. Explain the scheme available in this architecture. Provide a diagram to support your answer. (10 marks)

d) List **FIVE (5)** data model in Database management System. (5 marks)

2. a) The table below shows a list of errands that Ms.Sharon needs to run. Convert the table into 1NF and 2NF tables. Be sure to define a primary key. (15 marks)

Location	Items
Grocery store	milk, eggs, bananas
Office supply store	paper, pencils, divining rod
Post Office	stamps
Computer store	flash drive, 8" floppy disks

b) Convert the Employee table below into 3NF. (10 marks)

Employee	Project	Department
Alice Most	Work Assignment	Network Lab
Bill Michaels	Network Routing	Network Lab
Deanna Fole	Survey Design	Human Factors
Josh Farfar	Work Assignment	Network Lab
Julie Wish	Survey Design	Human Factors
Mandy Ponem	Network Routing	Network Lab
Mike Mix	New Services Analysis	Human Factors

3. a) Write SQL statements to create the **THREE (3)** tables shown in Figure 3.1. Identify the primary key and foreign key constraints on the fields given. (6 marks)

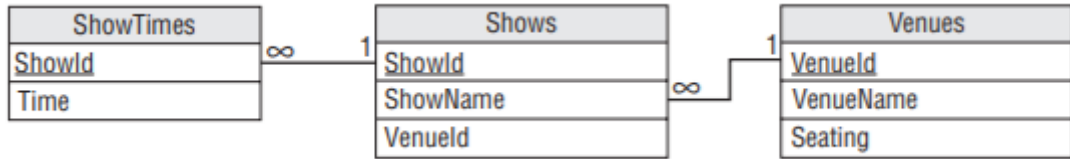


Figure 3.1 Entity Relationship Diagram for Shows Database

- b) Given the relations, write the SQL queries for sub questions below.

Student(snum: integer, sname: string, major: string, level: string, age: integer)
 Class(name: string, meets_at: time, room: string, fid: integer)
 Enrolled(snum: integer, cname: string)
 Faculty(fid: integer, fname: string, deptid: integer)

- i. Find the names of faculty members who teach in every room in which some class is taught. (3 marks)
- ii. Print the Level and the average age of students for that Level, for each Level (1 mark)
- iii. Find the names of students who are not enrolled in any class. (2 marks)
- iv. Print the Level and the average age of students for that Level, for all Levels except JR. (1 mark)
- v. Find the names of all Juniors (Level = JR) who are enrolled in a class taught by I. (3 marks)

- c) Write SQL statements to insert the first **THREE (3)** records into the each table below. (9 marks)

ShowTimes		Shows			Venues		
11:15	1	1	Sherm's Shark Show	101	101	Sherman's Lagoon	375
3:00	1	2	Meet the Rays	101	102	Peet Amphitheater	300
1:15	2	3	Deb's Daring Dolphins	102	103	Ngorongoro Wash	413
6:00	2	4	The Walter Walrus Comedy Hour	102			
11:00	3	5	Flamingo Follies	103			
12:00	3	6	Wonderful Waterfowl	103			
6:30	3						
2:00	4						
5:27	4						
2:00	5						
3:00	6						

4. a) Draw Entity Relationship Diagram for the situation below. (15 marks)
- All students must be enrolled in at least one course or one project
 - An instructor must teach at least one course or supervise at least one project.
 - A student cannot be working on more than one project.
 - An instructor can teach any number of courses and supervise any number of projects.
 - A project or course must have an instructor.
 - A course must have at least 5 students.
 - A project must have between 1 and 5 students.
 - Student and Instructor should be subclasses of a PERSON class that contains common elements such as name, address, and phone number.
 - Student data must include past courses and projects, and grades for them.
- b) Construct an Entity Relationship Diagram using Chen Model for a car insurance company. Identify the necessary entity and attributes for the company. Primary key is needed. (10 marks)

- END OF QUESTIONS -