NATIONAL SCHOOL OF BUSINESS MANAGEMENT

BSc in Management Information Systems (Special) (NSBM)– 20.3

BSc (Hons) in Software Engineering (NSBM)– 20.3

BSc (Hons) in Computer Science (NSBM)– 20.3

BSc (Hons) Software Engineering (PU) – 20.3

BSc (Hons) Computer Networks (PU) – 20.3

BSc (Hons) Computer Security (PU) – 20.3

Bachelor of Information Technology (VU)- 20.3

Year 01 Semester 01 Examination

19 May 2021

CS105.3 Database Management Systems

Instructions to Candidates

1) Answer all questions.
2) Time allocated for the examination is three (03) hours and 30 minutes (Including downloading and uploading time)
3) Weightage of Examination: 60% out of final grade
4) Download the paper, provide answers to the selected questions in a word document.
5) Please upload the document with answers (Answer Script) to the submission link before the submission link expires
6) Answer script should be uploaded in PDF Format
7) Under any circumstances E-mail submissions would not be taken into consideration for marking. Incomplete attempt would be counted as a MISSED ATTEMPT.
8) The Naming convention of the answer script –Index No.pdf

9) You must adhere to the online examination guidelines when submitting the answer script to N-Learn.

10) Your answers will be subjected to Turnitin similarity check, hence, direct copying and pasting from internet sources, friend's answers etc. will be penalized.

ANSWER ALL QUESTIONS

1. The following questions are based on database fundamentals. (20 Marks)

I. Assume that you are requested to give advice on buying a DBMS for a small manufacturing organization where only five executive members are handling the DB operations. Indicate which of the following DBMS features company should pay for, in each case also indicate why the organization should (or should not) pay for that features in the system they buy,

a. Security facility
b. Concurrency control
c. Crash control (10 marks)

II. Compare and contrast the 'Flat', 'Hierarchical' and 'Network' Data Models. Draw illustrations where necessary. (10 marks)

2. The following questions are based on ER Diagrams and Relational Schema Diagrams. (40 Marks)

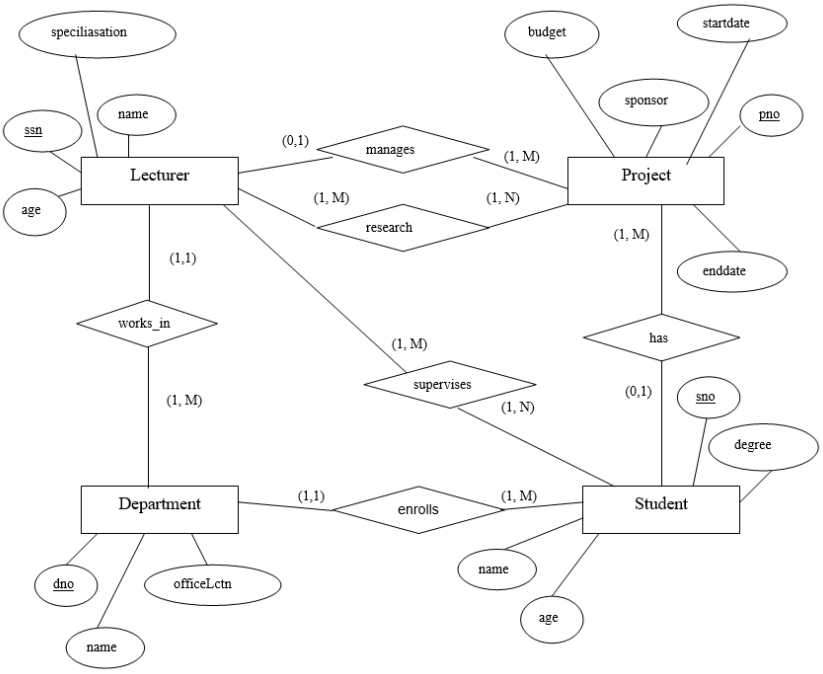
I. Draw an ER diagram for the below given scenario. State any assumptions you make. (20 marks)

The CeyChin Hospital database stores details about Doctors, Patients, Appointments, Payments, Diagnosis, and Admitted Patient records like in a typical hospital. The data stored in this centralized database helps in recording the details of entities and answering queries useful in such an environment.

You need to consider the following basic requirements:

- Each doctor has a doctor ID. All the personal details of the doctor are recorded. A doctor may see many patients.
- A patient is identified by a patient ID, and other personal details. A patient may make an appointment with many doctors.
- Appointments to see a doctor are recorded by the secretary, which includes the appointment number, patient ID, patient name, doctor, location, time/date, and a contact number.
- Payments are recorded for all completed appointments and include the mode of payments as cash or credit-card.
- The doctors may record a Diagnosis after seeing the patients. The diagnosis record includes the diagnosis ID, patient details, id of the last appointment, and diagnosis determined by the doctor.
- Admitted Patients are assigned to a ward and a room number. Each admitted patient is also assigned a Nurse who looks after the patient.
- There are many nurses working in the hospital, but a nurse is assigned to look after only 1 patient. Nurses work only on the ward they are allocated.
- There are 4 wards in the hospital, indicated by ward number, name and floor. Each ward is managed by a Head Nurse working in hospital.

II. Consider the following ER diagram given. Derive the relational schema diagram accordingly. (20 marks)



3. **The following question is based on Normalization.** **(15 Marks)**

An agency called Instant Cover supplies part-time/temporary staff to hotels within Scotland. The table shows sample data, which lists the time spent by agency staff working at various hotels. The National Insurance Number (NIN) is unique for every member of staff.

NIN	contractNo	hours	eName	hNo	hLoc
1135	C1024	16	Smith J	H25	East Kilbride
1057	C1024	24	Hocine D	H25	East Kilbride
1068	C1025	28	White T	H4	Glasgow
1135	C1025	15	Smith J	H4	Glasgow

I. The table is susceptible to anomalies. Provide examples of insertion, deletion, and update anomalies. (5 marks)

II. Identify the functional dependencies represented by the attributes shown in the table. State any assumptions you make about the data and the attributes shown in this table. (5 marks)

III. Describe and illustrate the process of normalizing the table to 3NF. Identify primary and foreign keys in your relations. (5 marks)

4. **The following question is based on SQL.** **(25 Marks)**

Consider the following table structure and write SQL statements for the given scenarios.

CAR Table

Registration#	**Make**	**Model**	**YearOfManufacture**
ABU 2522	Hyundai	Elantra	1999
ABA 1978	Honda	City	1998
WKC 6256	Perodua	Kancil	1997

DRIVEN_BY Table

Registration#	**CustCode**	**MilesDriven**	**DateHired**
ABU 2522	E100	2300	02/05/2000
ABA 1978	C100	1200	02/06/2000
WKC 6256	K201	100	02/07/2000

CUSTOMER Table

CustCode	**CustName**	**Location**	**Age**
E100	Salim	Perak	28
C100	Harsha	Perak	40
K201	Chin	Kuala Lumpur	35

I. Implement and populate the above tables, which form part of a CarRental database. (6 marks)

II. List the names of customers whose Location is '*Perak*' and are aged over 30. (2 marks)

III. list the number of cars whose make is '*Perodua*' and were manufactured in 1997. (2 marks)

IV. Insert your details into the '*Customer*' table. Take the '*CustCode*' as your index no. (2 marks)

V. List all customers who are living in '*Perak*' in descending order of their name. (2 marks)

VI. Add a *'country'* column to the '*Customer'* table. (1 marks)

VII. View the properties of the '*Customer'* table. (1 marks)

VIII. Now drop the *'Country'* column you had just added to the '*Customer'* table. (1 marks)

IX. List down all the customers who live in a city other than '*Kuala Lumpur'* and '*Perak*.' (2 marks)

X. Write the SQL statement which would produce the following result table. (3 marks)

Make	**NoOfCars**
Honda	1
Hyundai	1
Perodua	1

XI. Write a SQL statement to delete the 'Customer' table. If you try to execute the above query what will happen. Justify your answer. (3 marks)

END OF THE PAPER