



UNIVERSITI PENDIDIKAN SULTAN IDRIS

FINAL EXAMINATION  
SEMESTER 2 SESSION 2015/2016

CODE : MKD1013

COURSE : DATABASE DESIGN

DATE : 29 FEB 2016

DURATION : 2 HOURS 15 MINUTES

INSTRUCTIONS

1. This question paper contains **THREE (3)** sections : **Section A, B and C.**
2. Answer **ALL** questions in **Section A, B and C** in the answer booklet provided.
3. Please read every instruction properly before answering any question.
4. All questions should be answered in English language.
5. Question paper will be collected immediately after the examination.

This question paper consists of 7 printed pages including front page

PROGRAMME : \_\_\_\_\_

YEAR : \_\_\_\_\_ CLASS GROUP : \_\_\_\_\_

REGISTRATION NO : \_\_\_\_\_ 

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IDENTITY CARD NO : 

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LECTURER : DR. SITI AISYAH BINTI SALIM

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**SECTION A: (25 marks)**Perpustakaan Tuanku Bainun  
Kampus Sultan Abdul Jalil Shah

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**Instruction:** Answer all questions in the answer booklet provided.

1. a. List the **five (5)** major components of DBMS?

**[3 marks]**

- b. Provide the difference between derived attributes and composite attributes by giving example of each type of the attribute.

**[2 marks]**

- c. Define entity (s) and attribute (s) for this statement:

Alibaba Co. would like to keep their product information in a database. Each of the products has a description, a price and a vendor. Vendors have addresses, phone numbers, and names.

**[4 marks]**

2. Create an entity relationship (ER) diagram for each of the following descriptions:

- a. An English subject can be taught by more than one teacher and a teacher can teach more than one subject.

**[3 marks]**

- b. Each client may generate one or more invoice(s) and each invoice is generated by one client.

**[3 marks]**

- c. A gym instructor can monitor up to 10 trainees for one session.

**[3 marks]****[See next page]**

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3. LexisNexis is an IT company that provides high quality technical services to its clients. As a big IT company, it has several parking lots, which are provided for their employees. Each parking lot has a unique name, location, capacity and number of floors. Each parking lot has parking spaces, which are uniquely identified through a space number. Each of the employees can request for the parking space. Each of the employees will have a unique number, name, telephone extension number and vehicle license number. As a database software designer, you are required to create a complete ER model for the organization. As a database software designer, you are required to create a complete ER model for the company.

**[7 marks]**



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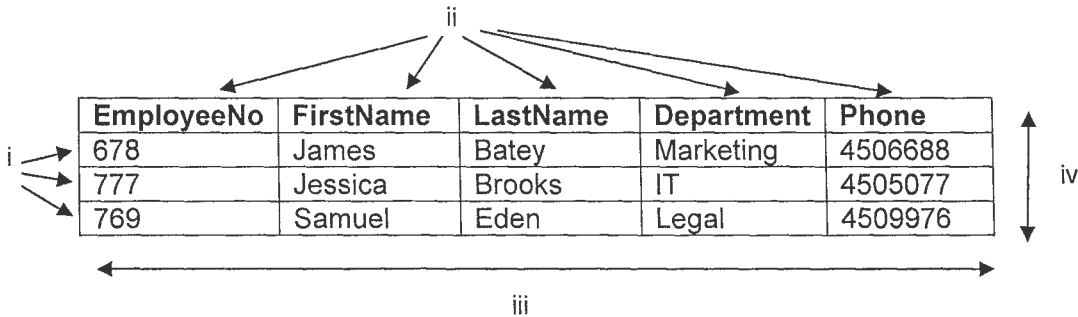
**SECTION B: (25 marks)**

**Instruction:** Answer all questions in the answer booklet provided.

1. a. State the difference between primary keys and foreign keys.

**[3 marks]**

b. Table below is an Employee relation. Based on the table, indicate what is i, ii, iii, and iv.



**[4 marks]**

c. Define all primary keys and foreign keys for each table provided in the relational schema below. Assuming one customer can rent only one vehicle at a time.

- CUSTOMER (CustNo, Name, Tel, Add, PassportNo)
- VEHICLE (PlateNo, VehicleID, Status, TotalFuel)
- VEHICLE\_RENTAL (CustNo, PlateNo, DateRent, DateReturn, Charge)
- VEHICLE\_TYPE (VehicleID, VehcCategory, VehcType, CC)

**[3 marks]**

**[See next page]**

- d. Figure 1 below shows an ER Diagram for the production tracking. Production tracking is important in many manufacturing companies such as the pharmaceuticals industry and electronics industry. The diagram indicates a relationship between production lots (or batches), individual production units, and raw materials. Complete the ER diagram below. Be certain to indicate the relationship name, multiplicities and primary keys and foreign keys.

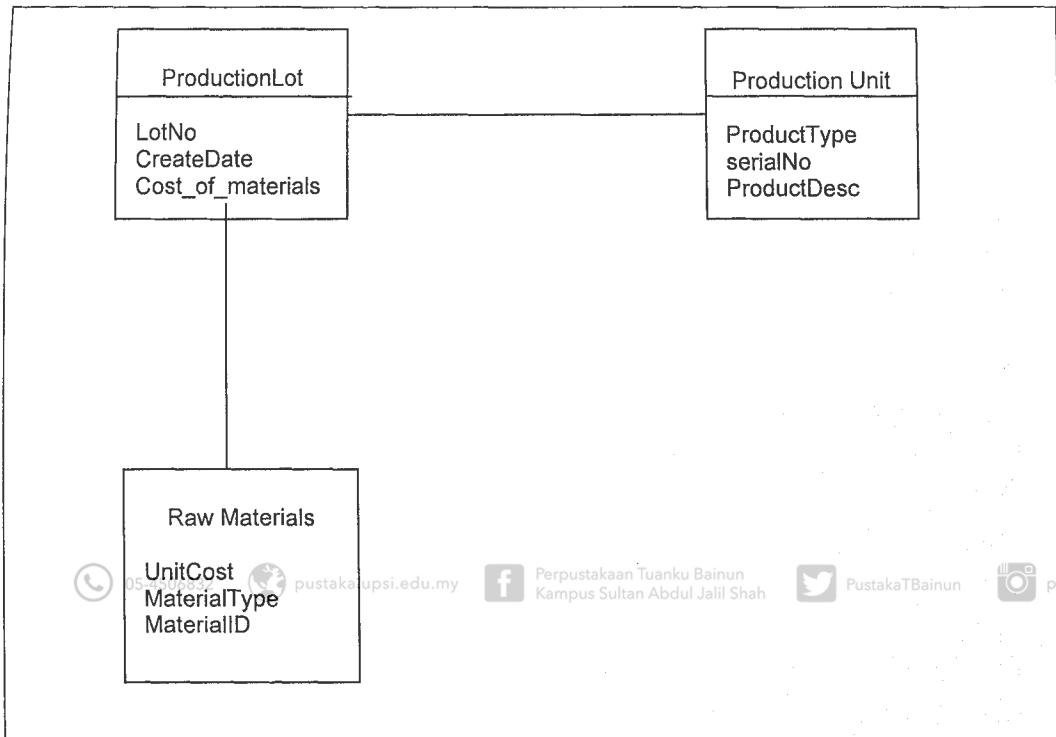


Figure 1 ER Diagram

[15 marks]

[See next page]

**SECTION C: (25 marks)****Instruction:** Answer all questions in the answer booklet provided.

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1. a. Please explain the meaning of SQL statement below?

```
SELECT s.studentName, c.courseName, c.courseGrade
FROM student s, courseEnrolled c
WHERE s.studentID=c.studentID
AND c.courseGrade = 'B';
```

**[2 marks]**

- b. Suppose we would like to know the average age of a sales person in salesPerson table. The output is shown below:

avg(age)
35

- i. Write the SQL statement.

**[2 marks]**

- ii. We would like to have a meaningful name to the column. The name is AverageAge. Write the SQL statement.

**[2 marks]**

2. The following tables form part of a database. Write the SQL statement for each of questions below.



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Airline Company (CompanyID, CompName, city)  
 Flight (FlightNo, CompanyID, Flighttype, price)  
 Booking (CompanyID, passengerNo, departDate, returnDate, seatNo)  
 Passenger (passengerNo, passengerName, passengerAddress)

- a. List full details of all airline companies

**[2 marks]**

- b. List the names and addresses of all passengers from Singapore, alphabetically, ordered by name

**[4 marks]****[See next page]**

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c. List the bookings for which no returnDate has been specified.



**[3 marks]**

d. What is the average price of a flight ticket?

**[4 marks]**

e. Insert row into table Booking with the following data:

CompanyID = 8845  
passengerNo = 20233  
departDate = 3/5/2016  
returnDate = 14/5/2016

**[3 marks]**

f. Update the price of all tickets by 5%.

**[3 marks]**

**END OF QUESTIONS**

