University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination Spring -2019
Program: B. Sc. Engineering (2nd Year/ 2nd Semester)
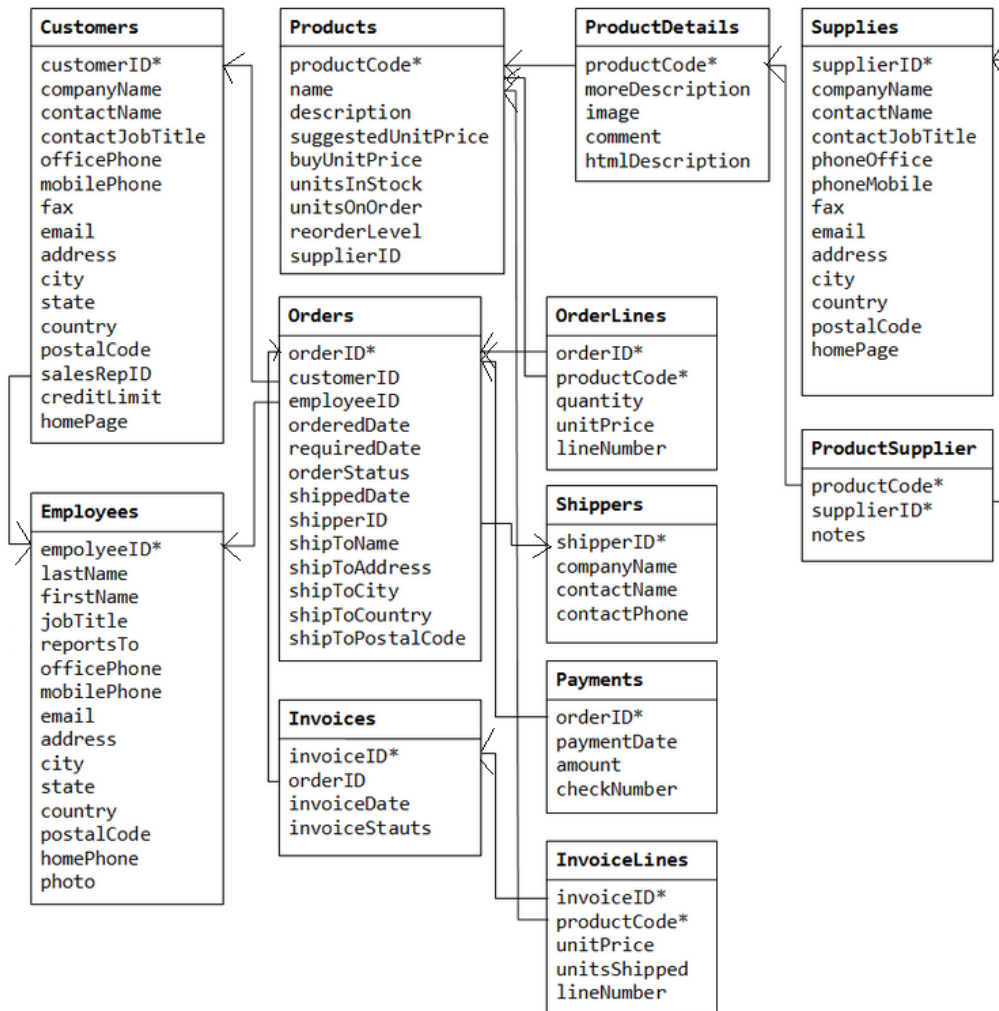Course Title: Database Systems Course No. CSE 211 Credit: 3.00

Time: 1.00 Hours.   Full Mark: 60

There are **Four** Questions. Answer any **Three**. All questions are of equal value/Figures in the right margin indicates full marks.

1. a) What is Integrity Constraint? Explain Super key, Candidate key, Primary and Foreign key with an example.   2+8

    b) Suppose you have already created the tables in below. Now you want to drop all the tables. Write DDL in a correct sequence.   10

Customers
customerID*
companyName
contactName
contactJobTitle
officePhone
mobilePhone
fax
email
address
city
state
country
postalCode
salesRepID
creditLimit
homePage

Products
productCode*
name
description
suggestedUnitPrice
buyUnitPrice
unitsInStock
unitsOnOrder
reorderLevel
supplierID

ProductDetails
productCode*
moreDescription
image
comment
htmlDescription

Supplies
supplierID*
companyName
contactName
contactJobTitle
phoneOffice
phoneMobile
fax
email
address
city
country
postalCode
homePage

Orders
orderID*
customerID
employeeID
orderedDate
requiredDate
orderStatus
shippedDate
shipperID
shipToName
shipToAddress
shipToCity
shipToCountry
shipToPostalCode

OrderLines
orderID*
productCode*
quantity
unitPrice
lineNumber

ProductSupplier
productCode*
supplierID*
notes

Employees
empolyeeID*
lastName
firstName
jobTitle
reportsTo
officePhone
mobilePhone
email
address
city
state
country
postalCode
homePhone
photo

Shippers
shipperID*
companyName
contactName
contactPhone

Payments
orderID*
paymentDate
amount
checkNumber

Invoices
invoiceID*
orderID
invoiceDate
invoiceStauts

InvoiceLines
invoiceID*
productCode*
unitPrice
unitsShipped
lineNumber

2. Write DDL to create tables (*Orders, Invoices, OrderLines, Shippers, Payments, PrductDetails and ProductSupplier*) (see question 1.b) with proper integrity constraints.   20

3. Perform the following **Relational Algebra Operations** on relation "R" and "S":   20

   i. $\sigma_{B>5 \wedge A=C}(R)$ ii. $\pi_{C,D}(R)$ iii. $(R \cup S)$ iv. $\sigma_{B=E}(R \times S)$ v. $(R \bowtie S)$

R

A	B	C	D
α	β	α	γ
1	17	1	4
2	5	γ	16
7	8	7	14

S

B	C	D	E
β	α	16	9
α	1	4	17
γ	2	γ	5
8	7	14	10

4. a) Consider the following schema: 10

       employee (***person id, street, city***)
       works (***person id, person name, company name, salary***)
       company (***company name, city***)

   i) Write down the DDL for adding a new column "country" in *employee* and *company* table.
   ii)   Write down a SQL to insert information of 2 persons into *works* table.
   iii)   Write down a SQL to drop the salary attribute from *works* table.
   iv)   Write down a SQL to select all tuples from *company* table where city attribute starts with 'Sa'.
   v)   Write down a SQL to Show all 'person_id' of Dhaka city.

b) What is NULL in database?   3

c) In below scenario is there any problem **'section'** table in UAP's perspective. Explain with dummy data.   7