

# SIT103 – DATABASE - SAMPLE EXAM

VALUE: 60% of final marks

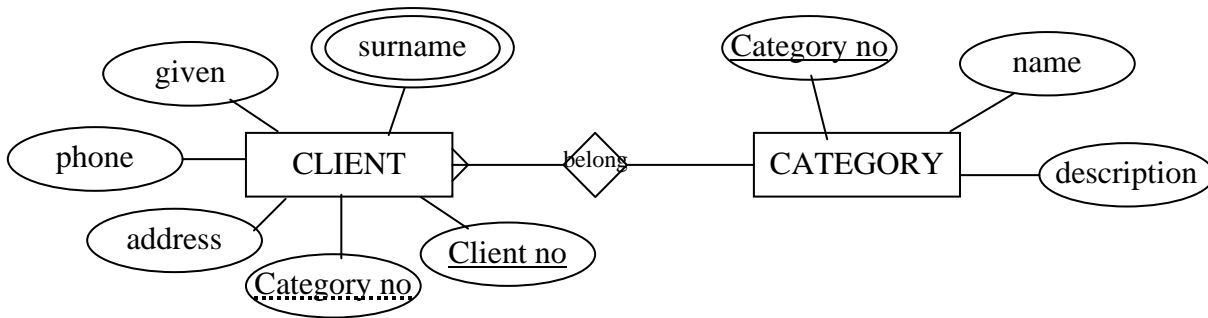
## SECTION A - 40 Marks



There are 40 multiple choice questions, each worth 1 mark. Answer **ALL** questions HERE.

1. You should create **indexes** on which of the following....(select ALL that apply)
  - A** fields with few different values
  - B** fields with NULL values
  - C** Search fields
  - D** Foreign key fields
  - E** small tables
  - F** ordering fields
  
2. Which component of an SQL statement controls the sorting of **records**?  
(select the ONE BEST answer)
  - A** GROUP BY
  - B** WHERE
  - C** ORDER BY
  - D** SORT BY
  - E** HAVING
  
3. When mapping a **one to one** relationship from ERD to a relational model, the foreign key goes on....  
(select the one BEST answer)
  - A** the one side
  - B** the many side
  - C** either side
  - D** both sides
  - E** create new table with combined foreign keys

4. DEADLOCKS, when do they occur? (select the ONE BEST answer)
- A one transaction, updating data
  - B two transactions, extracting the same data
  - C two transactions, involving different data for update
  - D two transactions, involving same data for update
5. A **transitive dependency** (related to normalisation) occurs when a field depends on... (select the ONE BEST answer)
- A the whole key
  - B a non-primary key field
  - C part of the whole key
  - D a foreign key
6. A **correlated nested** query can be described as a query (select the one BEST answer)
- A located outside another query that refers to fields in the inner query
  - B located within another query that refers to no fields in the outer query
  - C located within another query that refers to fields in the outer query
  - D located outside another query that refers to fields in the outer query only
7. What **anomalies** does normalisation try to eliminate (select the ONE BEST answer)
- A insert, update and delete
  - B add, modify, and remove
  - C insert and update
  - D None of the above
8. On execution of a **CREATE VIEW** query what happens? (select the ONE BEST answer)
- A A special phantom table is created.
  - B The view query is stored in the data dictionary and becomes active.
  - C An index file is created.
  - D A new table as specified by the view query is created.
9. Select any of the following statements which describes an **update anomaly** (select one or more answers)
- A multiple copies of the same value mean we do not know which is correct
  - B Can update a value when we want
  - C need to insert a new value in more than one place
  - D Change of value must be done multiple times to each copy of a value
  - E duplication wastes resources
10. In relation to distributed databases, what is **vertical partitioning** of a table? (select the ONE BEST answer)
- A same columns different rows
  - B different columns different rows
  - C different rows different columns
  - D same columns same rows
  - E different columns same rows
  - F None of the above

11. The following ER Diagram has a **problem**. What is it? (select the one BEST answer)



- A The Category no attribute should be removed from the CLIENT entity.
- B The client no should be placed in the CATEGORY entity with a dotted underline.
- C The Category no attribute should not have a dotted underline in the CLIENT entity..
- D The attributes (eg. given, surname, ...etc) should be in rectangles not oval shapes
- E The “belong” relationship should not have a diamond shape , it should be a star 

12. How will a transaction log be used to recover from a **hard disk crash**?  
(select the ONE BEST answer)

- A recover from OFFSITE BACKUP and then ROLLBACK
- B recover from FULL BACKUP and then ROLLBACK
- C recover from FULL BACKUP and then ROLLFORWARD
- D recover from PARTIAL BACKUP and then ROLLFOWARD

13. File server based databases (such as Access) have **disadvantages** (select ALL that apply)

- A Cheaper cost per user
- B No network required
- C More powerful PCs needed
- D Can handle thousands of users
- E High network traffic

14. An **unbounded join** between a table1 with 8 records and table2 with 2 records produces a result set of \_\_\_ records (select the one BEST answer)

- A 2
- B 6
- C 8
- D 16
- E 32

15. Which of the following are aspects of an **operational database** (as opposed to a decision support system/datawarehouse)? (select THREE BEST answers)

- A snapshot of operational data
- B benefits “knowledge” worker – management
- C short term, day to day operations
- D helps transaction based processing
- E helps decision making process
- F benefits clerical work

## SECTION B - 45 Marks

There are 9 SQL questions. You must answer **ALL** questions.

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Books R Us (a book/magazine mail order company) has implemented the following tables:  
(primary keys are underlined, foreign keys are shown in dotted underline)

Show output of the following queries, based on the data shown in next page

a) SELECT Name, Address

```
FROM customer
WHERE address LIKE '%Street%';
```

c) SELECT name, orderDate, courier\_No

```
FROM customer, custorder
WHERE customer.customer_no = custorder.customer_no(+)
AND (DeliveryCompleted = 'Y' OR DeliveryCompleted is NULL);
```

e) SELECT name

```
FROM staff
WHERE 0 = (
    (SELECT count(*)
     FROM custorder
     WHERE custorder.packedBy_no = staff.staff_no)
    +
    (SELECT count(*)
     FROM custorder
     WHERE custorder.takenBy_no = staff.staff_no)
)
ORDER BY name;
```

g) SELECT name

```
FROM staff
INTERSECT
SELECT name
FROM customer
ORDER BY name
```

**CUSTOMER**

Customer_No	Name	Address	Suburb	Postcode
1	Fred Bloggs	83 Smith Street	Fitzroy	3003
3	Wilma Flint	8 Rock Avenue	Bedrock	3922
4	Kylie Mino	102 Loco Street	Brighton	3010
6	Eric Vike	32 Rugged Road	Lambohov	58333

**CUSTORDER**

Order_No	Cust- omer_No	Publicat ion_No	Order- Date	Packed By_No	Courier _No	TakenBy _No	Delivery Date	Delivery- Completed
32100	1	6161	9-feb-03	S101	87	S104	19-feb-03	Y
32103	4	6166	11-feb-03	S103	5	S104	1-mar-03	Y
32104	3	6164	11-feb-03	S103	23	S101		N
32105	1	6164	11-feb-03	S103	41	S101	1-feb-04	N

**STAFF**

Staff_No	Name	Joined	Resigned	Supervisor_No
S101	Charlie Brown	10-jun-02		
S102	Kylie Mino	23-oct-02		S101
S103	Barney Rubble	1-feb-03	23-sep-03	S101
S106	Superman	21-nov-03		

## SECTION C - 35 Marks

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### Question C1

(5 + 5 = 10 Marks)

1. What is wrong with the following set of tables, designed for a driving school ?
2. How would you redesign them ? Show the table definitions you would recommend.

#### **INSTRUCTOR**

Instructor Name  
Address  
Phone  
Age  
Car\_Registration

#### **STUDENT**

Student Name  
Student\_Address  
Student\_phone  
Next\_lesson\_date  
Next\_lesson\_time  
Next\_lesson\_length  
Car\_type (**A**-uto, **M**-anual)  
Fees paid to date