



**T173**

**08:30 – 11:30 AM**

**Names.**

**Index number**

**TVET NATIONAL EXAMINATIONS, RTQF LEVEL 5, 2020-2021**

## QUESTIONS and ANSWERS BOOKLET

OPTION/ TRADE : SOFTWARE DEVELOPMENT

**SUBJECT : DATABASE DESIGN AND DEVELOPMENT**

ACADEMIC YEAR: 2020-2021

Read carefully the instructions on page (i) & (ii)

**FOR EXAMINER'S USE ONLY**

[illegible]



# **TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021**

## **INSTRUCTIONS TO CANDIDATES: PART I (Answer Booklet)**

1. A candidate should fill in the actual names and the index number on the cover of this questions and answer booklet on the provided place (Black Box).
2. It is illegal for a candidate to write any of his/her names, index number or a school name inside the answer booklet.
3. A candidate should check if all pages of the answer booklet are complete. No candidate should remove or tear any pages or part of it from the answer booklet.
4. A candidate should answer in the language in which the examination is set. (See page **(ii)**)
5. A candidate should sign on the sitting plan when submitting the answer booklet. He/she has also to check if the answer booklet is well sealed.
6. No extra paper is allowed in the examinations room. If a candidate is caught with it his/her results will be nullified.
7. No candidate is allowed to write answers not related to the subject being sat for, otherwise it will be considered as a cheating case.
8. Write your answers on the 12 lined pages (From page 1 of 12 to page 12 of 12).
9. Use the last non-lined pages as draft.
10. Results for any candidate who is caught in examination malpractices are nullified. The cheating can be recognized during examinations administration, marking exercise or even thereafter.

# **TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021**

**OPTION/TRADE: SOFTWARE DEVELOPMENT**

**SUBJECT: Database Design and Development**

**DURATION: 3 hours**

## **INSTRUCTIONS TO CANDIDATES: PART II(Question paper)**

The paper is composed of two (2) Sections as follows:

**Section I: Attempt all the Twelve (12) questions (60 marks)**

**Section II: Attempt any Four (4) questions out of Six (6) (40 marks)**

### **Allowed materials:**

- Ruler or square
- Calculator

### **Note:**

***Every candidate is required to carefully comply with the provided assessment instructions.***

**Section I : Attempt all the Twelve (12) questions****(60 marks)**

1. Define the following terms: **(5 marks)**  
a. Field    b. Key    c. SQL
2. The following are the examples of DBMS: True or False? **(5 marks)**  
a) MySQL  
b) Sybase  
c) Firefox  
d) Microsoft Access  
e) Primary key
3. a) What does data redundancy mean?  
b) How can you minimize data redundancy into a database? **(5 marks)**
4. Match appropriately the SQL operators with their corresponding descriptions (indicate the letter corresponding to the right answer only). **(5 marks)**

SQL operators	Description
<b>1.SQL Arithmetic Operator</b>	A. they can perform arithmetical operations on numeric operands involved.
<b>2.SQL Comparison Operator</b>	B. they perform bit manipulations between two integer expressions of the integer data type category.
<b>3.SQL Assignment operator</b>	C. they are those that are true or false. They return a true or false value to combine one or more true or false values.
<b>4.SQL Bitwise Operator</b>	D. It is a mathematical symbol which is used to compare two values. The result can be TRUE, FALSE, or UNKNOWN.
<b>5.SQL Logical Operator</b>	E. It assigns a value to a variable or of a column or field of a table.

5. Answer the following statements by TRUE or FALSE: **(5marks)**  
a. SQL is not case insensitive  
b. The SELECT command, with its various clauses, allows users to query the data contained in the tables.  
c. The condition in a WHERE clause can refer to only one value  
d. SQL permits attribute names to be repeated in the same relation.  
e. The CREATE command allows us to change the definition of a table.

6. List and explain the different types of JOIN clauses supported in SQL.

(5 marks)

7. Explain the terms 'Record', 'Field' and 'Table' in terms of database. (5 marks)

8. Differentiate primary key from foreign key. (5 marks)

9. Consider the table BOOKS below: (5 marks)

Book ID	Book name	Edition	Author	Published date	Number
B001	Web design	Ed2	H.olivier	1997	30
B002	Database	Ed1	P. Albert	2001	20
B003	VB	Ed3	M.Claude	1985	14
B004	Web design	Ed1	J.Mata	1998	26

By using the table above, write the SQL commands do the following:

- List all Books records whose number is equal to 20 and 30
- What are the books that were published before 2001?
- Write SQL query to display number of unique Book name in the table
- Inserting a new record into the table BOOKS
- Change column Edition of table BOOKS to Ed2

10. Differentiate from data from information. (5 marks)

11. What are the various types of relationships in Database? Define them.

(5 marks)

12. This is a STUDENT relation.

(5 marks)

Student	Name	Age	Gnder	Combination	Level
01ICT	Robert	16	Male	ICT	5
01EL	Mary	17	Female	EL	4
02ICT	Peter	18	Male	ICT	6

- How many tuples are there? Define a tuple.
- What is the degree of this relation? Define a degree.
- What is the cardinality of this relation? Define cardinality.

**Section II: Attempt any Four (4) questions out of Six (6) (40 marks)**

13. Consider the following table called staff (10 marks)

StaffNo	Fname	Lname	Position	Sex	DOB	Salary	BranchNo
SL21	John	White	Manager	M	1-Oct-1945	30000	B005
SG37	Ann	Beech	Assistant	F	10-Nov-1960	12000	B003
SG14	David	Ford	Supervisor	M	24-Mar-1958	18000	B003
SA9	Mary	Howe	Assistant	F	19-Feb-1970	9000	B007
SG9	Susan	Brand	Manager	F	3-Jun-1940	24000.00	B003
SL41	Julie	Lee	Cashier	F	13-Jun-1965	9000	B005

Write SQL statement for:

- Listing all managers, Supervisor and Cashier
  - Write a query to get all staffs whose salary is between 15000 and 25000 and give the output
  - Write a query to get all staffs whose Salary is below 15000 and give the output
  - Write query to display all staff whose first names are ended by letter "n"
14. a. Define entity relationship diagram (ERD). (10 marks)
- b. List, name and draw Common Entity Relationship Diagram Symbols

15. Consider the table BOOKS below: (10 marks)

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B003	VB	Ed3	M.Claude	1985	14
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By using the table above, write the SQL commands to do the following:

- List the all Books records whose number is equal to 20 and 30
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- Inserting a new record into the table BOOKS
- Change the edition of database to Ed2

16. Consider the following Sample Table: Worker

(10 marks)

WORKER_ID	FIRST_NAME	LAST_NAME	SALARY	JOINING_DATE	DEPARTMENT
001	Monika	Arora	100000	2014-02-20 09:00:00	HR
002	Niharika	Verma	80000	2014-06-11 09:00:00	Admin
003	Vishal	Singhal	300000	2014-02-20 09:00:00	HR
004	Amitabh	Singh	500000	2014-02-20 09:00:00	Admin
005	Vivek	Bhati	500000	2014-06-11 09:00:00	Admin
006	Vipul	Diwan	200000	2014-06-11 09:00:00	Account
007	Satish	Kumar	75000	2014-01-20 09:00:00	Account
008	Geetika	Chauhan	90000	2014-04-11 09:00:00	Admin

- Write an SQL query to fetch "FIRST\_NAME" from Worker table using the alias name as <WORKER\_NAME>.
- Write an SQL query to fetch "FIRST\_NAME" from Worker table in upper case.
- Write an SQL query to fetch unique values of DEPARTMENT from Worker table.
- Write an SQL query to print the first three characters of FIRST\_NAME from Worker table.
- Write an SQL query to print all Worker details from the Worker table order by FIRST\_NAME Ascending.

17. Define SQL constraints. List and explain types of SQL constraints (10 marks)

18. List five (5) types of database user and explain each of them. (10 marks)





