NESA NATIONAL EXAMINATION AND SCHOOL INSPECTION AUTHORITY

SOD –Database Design and Development

T172

Thursday, 03/08/2023

08:30 – 11:30 AM

Names:.....

Index number :.....

TVET NATIONAL EXAMINATIONS, LEVEL 5, 2022-2023

QUESTIONS and ANSWERS BOOKLET

OPTION/ TRADE : SOFTWARE DEVELOPMENT

SUBJECT/EXAM: DATABASE DESIGN AND DEVELOPMENT

DURATION: 3 Hours

Read carefully the instructions on page 1 & 2.

FOR EXAMINER'S USE ONLY

QUESTIONS	1	2	3	4	5	6	7	8	9	10	Total
Marks											

QUESTIONS	11	12	13	14	15	16	17	18	19	20	Total
Marks											

QUESTIONS	21	22	23	24	25	26	27	28	29	30	Total
Marks											

TVET NATIONAL EXAMINATIONS, LEVEL 5, 2022-2023

INSTRUCTIONS TO CANDIDATES (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.

2. It is illegal for a candidate to write any of names, Index number or school name inside the answer booklet.

3. No candidate should remove or tear any pages or part of it in the answer booklet.

4. A candidate should answer in the language in which the examination is set.

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 16 lined pages (From page 7 to page 22).

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.

N.B: 1) After results publication, there is no remarking and no candidate is given his/her answer booklet for review. This answer booklet is a property of NESA.

2) Claims are only received online within 30 days after results publication. A link will be provided after results publication.

TVET NATIONAL EXAMINATIONS, LEVEL 5, 2022-2023

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INSTRUCTIONS TO CANDIDATES (QUESTION PAPER)

This Exam paper is composed of Three Sections (A, B, and C). Follow the instructions given below, and answer the indicated questions for a total of 100 marks

Section **A**: Fourteen (**14**) questions, all **Compulsory**	**55 marks**
Section **B**: Among the five (**5**) questions, attempt any three (3)	**30 marks**
Section **C**: Among the two (**2**) questions, attempt any one (1)	**15 marks**

Allowed materials:

- Blue or black pen
- Mathematical set

Note:

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

SECTION A: Attempt all questions **(55 marks)**

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01. List three (3) examples of three-tier architecture. **(3marks)**

02. Name and explain two (2) database integrity rules. **(4marks)**

03. What are any three (3) major steps that organizations should take to keep nonpublic information private? **(3marks)**

04. Define DBMS and give any three (3) examples of DBMS. **(3marks)**

05. Why do we need to create backup of our database? **(4marks)**

06. Explain any four (4) data types in database. **(4marks)**

07. Answer by **True(T)** or **False(F)** to the following statements: **(4marks)**

a) Constraints let you define the way the database engine automatically enforces the integrity of a database.
b) Constraints can be column level constraints or table level constraints.
c) Primary keys allow for NULL as one of the unique values.
d) The purpose of foreign key constraints in SQL Servers is to enforce referential integrity.

08. Explain two (2) main uses of SQL server file stream. **(4marks)**

09. Consider the following two tables (CUSTOMER, ORDERS) **(4marks)**

Table CUSTOMER

CID	CNAME	CAGE	CADDRESS	CSALARY
1	Ritha	32	KIGALI	2000.00
2	Kevin	25	KAMONYI	1500.00
3	Kelly	23	MUHANGA	2000.00
4	Chantal	25	RUHANGO	6500.00
5	Hadji	27	NYANZA	4500.00
6	Kettine	22	HUYE	4500.00
7	Marc	24	NYAMAGABE	10000.00

Table ORDERS

OID	ODATE	CID	AMOUNT
01	2009-08-10	3	3000.00
02	2009-02-19	3	1500.00
03	2009-11-11	2	1560.00
04	2008-05-20	2	2060.00

Use SQL commands to join the above two tables by using UNION to produce the following output:

Output:

CNAME	AMOUNT
Hadji	null
Chantal	null
Kelly	1500.00
Kelly	3000.00
Kettine	null
Kevin	1560.00
Kevin	2060.00
Marc	null
Ritha	null

10. What are three (3) Levels of database abstraction? **(3marks)**

11. Identify the steps to upgrade SQL Server to different editions. **(5marks)**

12. Create the following person table using SQL. **(4marks)**

PERSON_ID	FIRST_NAME	LAST_NAME	ADDRESS	CITY

13. You are a database administrator of a company X with a database called school. Create an SQL statement that will be used to Back up the company's database to disk D in Backups folder using Differential backup method. **(5marks)**

14. Analyze the following table called staff and answer related questions **(5marks)**

STAFFNO	FNAME	LNAME	POSITION	SEX	DOB	SALARY	BRANCHNO
SL21	John	White	Manager	M	01-Oct-45	30000	B005
SG37	Ann	Beech	Assistant	F	10-Nov-60	12000	B003
SG14	David	Ford	Supervisor	M	24-Mar-58	18000	B003
SA9	Mary	Howe	Assistant	F	19-Feb-70	9000	B007
SG9	Susan	Brand	Manager	F	03-Jun-40	24000	B003
SL41	Julie	Lee	Cashier	F	13-Jun-65	9000	B005

Write SQL statement for the following sub-questions:

a) List all managers, Supervisor and Cashier
b) Find the number of staff in each branch and their total salaries. Write also its output
c) Write a query to get all staffs whose salary is between 15000 and 25000 and give the output
d) Write a query to get all staffs whose Salary is below 15000 and give the output
e) Write query to display all staff whose first names are ended by letter "n"

Section B: Attempt any three (3) questions **(30 marks)**

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15. Distinguish global variables from local variables in SQL Server by giving clear examples. **(10marks)**

16. Compare three (3) main types of relationships and give a clear example for each relationship type. **(10marks)**

17. With clear examples, explain clearly UNION and UNION ALL operators. **(10marks)**

18. Are drop and Delete commands the same in SQL? Defend your answer and give an example for each command. **(10marks)**

19. Analyze the tables below and provide the used statements to produce the given output: **(10marks)**

Geeks1

ID	LASTNAME
1	Gupta
2	Desai
3	Kumari

Geeks2

GIP	PID	Asset
1	P1	Laptop
2	P2	Desktop
3	P3	Laptop
4	P4	None

Geeks3

ID	FIRST NAM
1	Nisha
2	Manoj
3	Pooja

Output:

GID	PID	Asset	FirstName	LastName
1	P1	Laptop	Nisha	Gupta
2	P2	Desktop	Manoj	Desai
3	P3	Laptop	Pooja	Kumari
4	P4	None	NULL	NULL

Section C: Attempt only one (1) question **(15 marks)**

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20. Given the following LMD: **(15marks)**
Customer (CID (PK), CLAST_NAME, CFIRST_NAME, CAGE, CADDRESS, CSALARY)
Use SQL commands to produce/create the following table with similar data

CID	CLAST_NAME	CFIRST_NAME	CAGE	CADDRESS	CSALARY
8	KAZE	OLGA	32	KIGALI	2000.00
9	ISHIMWE	NAOME	25	KAMONYI	1500.00
10	ISHIMWE	SAMUEL	23	MUHANGA	2000.00
11	GATETE	YOUSSOUF	25	RUHANGO	6500.00
12	NISHIMWE	ALICE	27	NYANZA	4500.00
13	TUYIZERE	JOSIANE	22	HUYE	4500.00
14	UWIRAGIYE	MONIQUE	24	NYAMAGABE	10000.00

21. a) Discuss the roles of a database administrator. **(8marks)**

b) Compare authorization from authentication. **(7marks)**

END OF ASSESSMENT

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