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**KABARAK UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**MAIN CAMPUS**

**SECOND SEMESTER 2020, 2021 ACADEMIC YEAR**

**EXAMINATION FOR THE BACHELOR OF SCIENCE COMPUTER SCIENCE/BACHELOR OF SCIENCE IN TELECOMMUNICATIONS**

**COMP 324 COMP 220 DATABASE MANAGEMENT SYSTEM II**

**STREAM: [Y3S2/Y2S2] TIME: 11:30-1:30 PM**

**EXAMINATION SESSION MAY-AUGUST DATE: 24/08/2021**

**INSTRUCTIONS TO CANDIDATES**

1. **Answer Question 1 and any other two questions in the answer booklet provided.**
2. **Do not write on your question papers. All rough work should be done in your answer booklet.**
3. **Clearly indicate which question you are answering.**
4. **Write neatly and legibly.**
5. **Follow all the instructions in the answer booklet**

**SECTION A: (Compulsory) TOTAL MARKS FOR THIS SECTION IS 30.**

1. Describe the following concepts:
   1. Table space (**2 Marks**)
   2. Transaction (**2 Marks**)
2. Describe file organization. (**2 Marks**)
   1. Explain one reason why file organization in databases is important.(**2 Marks**)
3. Explain clearly two reasons why databases are stored on external storage media.

(**4 Mark**s)

1. Discuss the primary, secondary and tertiary categories of data storage media in relation to:-
   1. Speed (**2 Marks**)
   2. Capacity (**2 Marks**)
   3. Cost (**2 Marks**)
2. Explain any two functions of database applications. (**4 marks**)
3. Mention two SQL statements used to delineate a transaction. Explain briefly their purpose. (**4 Marks**)
4. Write a PL/SQL block that will use the for loop control structure to print no.s 1 – 10 in descending order. (include comments in your code) (**4 Marks**)

**SECTION B. TOTAL MARKS FOR THIS SECTION IS 40.**

**ANSWER ANY TWO QUESTIONS FROM THIS SECTION. EACH QUESTION IN THIS SECTION CARRIES 20 MARKS.**

1. Explain two main characteristics of a data warehouse. (**4 Marks**)
2. With the aid of a diagram, describe how the fact tables and dimension tables of a star schema differs. (**4 Marks**)
3. Write a pl/sql block to display employee id, first\_name, last\_name, hiredate and salary of an employee whose Employee Id is 107. Use the %type attribute. (**4 Marks**)
4. Write a pl/sql block that will allow a user to input two numbers and perform the multiplication operation. The program should then check if the product exceeds 500 or not, and give an appropriate message for whichever case. (*Include comments*).(**4 Marks**)
5. Given the following relation below:

**Book** (*BookNo*, *Title*, *Author*)

* 1. Write a PL/SQL block to display all the details of a book whose book number is 500. Use %type attribute (**4 Marks**)

1. Describe the computer security goals. (**6 Marks**)
2. Concurrency control aims for the objective of serialisability: -
   1. What is a schedule? (**2 Marks**)
   2. Differentiate between a serial schedule and a non-serial schedule. (**3 Marks**)
3. The DBA is responsible for the overall security and administrations of the database system- discuss two DBA’s responsibilities in managing the database environment. (**4 Marks**)
4. Using a relevant control structure, write a PL/SQL block that will print out the message “*Welcome to Kabarak University 16th Graduation Ceremony*” five times. (**5 Marks**)
5. If a DBMS already supports discretionary and mandatory access controls, is there a need for encryption? Why? (**3 Marks**)
6. Use a suitable example diagram to describe a deadlock, with respect to concurrency control in databases transaction processing. (**3 marks**)
7. Given the following relations schema:

**Region** (RegionId, RegionName)

**Country** (CountryId, CountryName, RegionId)

* 1. Write a PL/SQL block that will accept any country name as input from the user, display its equivalent region id and region name. (**5 Marks**)
  2. Write a PL/SQL program that will accept region id as input from the user, and display its equivalent region name. (**4 Marks**)

1. Write a PL/SQL block that will prompt the user for student’s marks and then determine its equivalent grade according to the following criteria. (*include comments in your program*) (**5 Marks**)

70 and above A

60 – 69 B

50 – 59 C

40 – 49 D

39 and below F

1. Differentiate between the following in PL/SQL: Named blocks and anonymous blocks.

(**4 marks**)

1. Mention two benefits of using PL/SQL. (**2 Marks**)
2. Differentiate between database integrity and database security. (**4 Marks**)
3. Explain two of the dbms mechanisms for database security. (**4 Marks**)
4. Given the following relation schema:

Jobs (*JobId*: number, *JobName*: varchar2(20), *JobDesc*: varchar2(40)).

1. Write SQL statement used to create the above relation. (**2 Marks**)
2. Write a PL/SQL block used to insert a new record into the relation. Use the %type attribute. (*include comments*) (**4 Marks**)