

GWANDA STATE UNIVERSITY

DEPARTMENT OF GEOMATICS AND SURVEYING DATABASE AND DATABASE DESIGN

ESG 3107

Examination Paper

November 2023

This examination paper consists of 3 pages

Time Allowed: 3 hours

Total Marks: 100

Examiner's Name: Mr. J.B Manyati

INSTRUCTIONS

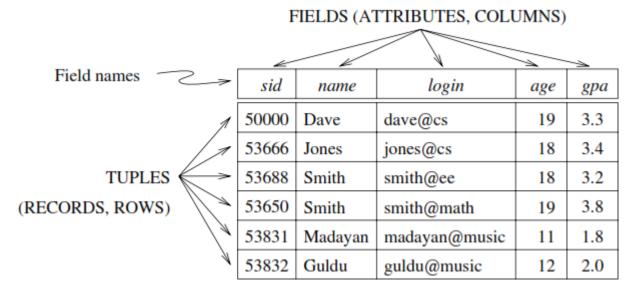
Answer ALL questions

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QUESTION 1	25
Define the following terms:	
a) Name and Briefly outline any 5 disadvantages of the Traditional File-base	d systems
in comparison to database design systems.	[10]
b) With the aid of examples where applicable, explain the following key terms	s as
applied to database design;	
i. Concurrency	[2]
ii. data element	[2]
iii. data inconsistency	[2]
iv. data isolation	[2]
v. data integrity	[2]
c) What are the fundamental properties of a Database?	[5]
QUESTION 2	25
QUESTION 2	2
 a) Differentiate (in tabular form and citing examples on each model) between level Conceptual Data Models and Record-based Logical Data Models 	•
b) Scrooge McNugget wants to store information (names, addresses, des embarrassing moments, etc.) about the many ducks on his payroll. Not see the volume of data compels him to buy a database system. To save wants to buy one with the fewest possible features, and he plans to run it alone application on his PC clone. Of course, Scrooge does not plan to sl with anyone. Indicate which of the following DBMS features Scrooge sho in each case also indicate why Scrooge should (or should not) pay for the system he buys.	surprisingly, money, he as a stand- nare his list uld pay for;
1. A security facility.	[3]
2. Concurrency control.	[4]
3. Crash recovery.	[4]
c) What are the roles of data administration and database administration?	[6]
QUESTION 3	25
a) What is normalisation?	[5]
b) Discuss on the ANSI/SPARC architecture of relational databases	[15]
QUESTION 4	25
a) By citing any two of the major activities involved in database design, expa	_
the processes involved in those activities	[10]

b) Consider the instance of the Students relation shown in the table and answer questions that follow.



- a) Give an example of an attribute (or set of attributes) that you can deduce is not a candidate key, based on this instance being legal. [2]
- b) Is there any example of an attribute (or set of attributes) that you can deduce is a candidate key, based on this instance being legal? [3]
- c) Explain the difference between external, internal, and conceptual schemas. [10]

END OF EXAMINATION