



NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
FACULTY OF SCIENCES
COMPUTER SCIENCE DEPARTMENT
2021 EXAMINATIONS

DAM 461: STATISTICAL DATABASE SYSTEM

Credit: 3 units

TIME ALLOWED: 2½ Hours

INSTRUCTION: Answer Question 1 and any other FOUR (4) Questions

QUESTION ONE

1a (i). Define database with relevant example? **(2 marks)**

1a (ii). Describe any three (3) characteristics/features of the database approach? **(3 marks)**

1b (i). What is an Entity Relationship Diagram? **(2 marks)**

1b (ii). With the information below, construct a clean and concise ER diagram for the National Hockey League (NHL) database using the Chen notation as in your textbook. List your assumptions and clearly indicate the cardinality mappings as well as any role indicators in your ER diagram. **(7 marks)**

Suppose you are given the following requirements for a simple database for the National Hockey League (NHL). The NHL has many teams, each team has a name, a city, a coach, a captain, and a set of players, each player belongs to only one team, each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records, a team captain is also a player, a game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 11th, 1999) and a score (such as 4 to 2).

1c (i). Differentiate between entity and entity type. **(2 marks)**

1c (ii). Mention the four (4) components of a DB environment. **(2 marks)**

QUESTION TWO

2a (i). What is a database Model? **(2 marks)**

2a (ii). List four examples of a database model and describe any two? **(4 marks)**

2b. Define data architecture and briefly describe the three-schema architecture. **(6 marks)**

QUESTION THREE

3a. List and explain the three categories of data models? **(6 marks)**

3b. Briefly describe the following: **(6 marks)**

- Data independence
- Logical data independence
- physical data independence

QUESTION FOUR

4a (i). Using diagram only, show the phases involved in the design of a database. **(3 marks)**

4a (ii). State two characteristics each for the clients and the servers. **(4 marks)**

4b (i). What do you understand by The SPEA Smart Airport Statistical Data Management System (SMART STAT)? **(2 marks)**

4b (ii). State three benefits of the Airport Statistical Data Management System? **(3 marks)**

QUESTION FIVE

5a. Describe the 2-tier and 3-tier client server architectures. **(6 marks)**

5b. Define the following in relation to statistical database. **(6 marks)**

QUESTION SIX

6a (i). Explain the concept of perturbation in statistical database. **(4 marks)**

6a (ii) Mention three features and functionalities of the STAT. **(3 marks)**

6b (i). What is data mining? **(2 marks)**

6b (ii) Describe how the Decision Tree works. **(3 marks)**