



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**PLOT 91 CADASTRAL ZONE, NNAMDI AZIKWE EXPRESSWAY, JABI, ABUJA**  
**FACULTY OF SCIENCES**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**2020\_1 EXAMINATION**

**COURSE CODE: CIT427**

**COURSE CREDIT: 3**

**COURSE TITLE: DATABASE SYSTEMS AND MANAGEMENT**

**ALLOWED: 2<sup>1</sup>/<sub>2</sub> HOURS**

**INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER (4) QUESTIONS**

- 1a. i.) Define and with suitable examples explain the components of E-R model 5½ marks  
ii.) Name and draw symbols of the major symbols used in E-R diagrams, and state what each symbol represent 4marks
- b. i.) Using appropriate the symbols and attributes, draw the E-R diagram of the following entity sets: Customer and Account 4marks  
ii. Outline the features and operation of the Object-Oriented Model 4marks
- c. Briefly State the features of the following models: Relational, Network, and Hierarchical. 4½ marks
- 2a. Explain the following concepts: Instance and Schema 3marks  
b. Explain the classes of Data Independence 4marks  
c. outline the various Categories of Database Users stating the function of each 5marks
- 3a. Explain the role of various components of DBMS Data Structure 4marks  
b. Differentiate between the following terms: Entity, Entity-types, Entity-Representations 3marks  
C. Define Mapping Cardinalities and explain the possible cardinality types in a binary relationship given two entity sets A and B 5marks
- 4a. What are decisions or choices to be made in designing a good database scheme? 4marks  
b. Briefly explain the following relational algebra operations: Select, Project, Cartesian product and Union 8marks
- 5a. What are the roles of the following SQL parts: Data definition language, Data Manipulation language and Data Control language? 3marks  
b.) Explain the following DML operations/command: Delete, Insert and Update 3marks  
c. i) Explain the purpose of the following Integrity constraints: Domain/Key Normal Form and Referential Integrity 3marks  
ii) Given two relations R1 and R2, explain what happens when referential Integrity constraint rule is violated 3marks
- 6a. Distinguish between the following storage terminologies: Dynamic Random Access Memory, Static Memory and Memory Storage Density and File Organisation 8marks  
b. What are the key considerations in specifying a system of file organisation? 4marks