

**BANKURA UNIVERSITY**  
**B. Sc. (HONOURS) FOURTH SEMESTER EXAMINATIONS, 2022**

**Subject: Computer Science**

**Course ID: 41513**

**Course Title: Database Management Systems**

**Course Code: SH/CSC/403/C-10**

**Full Marks: 25**

**Time: 1 Hr 15 min**

**The figures in the margin indicate full marks**

**Attempt the question(s) unit-wise as instructed**

**UNIT-I**

- 1. Answer any five of the following questions:** **(1 × 5 = 5)**
- a. Distinguish between database management system and database system
  - b. Why representational data model is used?
  - c. What is the data dictionary?
  - d. What is the cardinality ratio of the relationship type connecting Voter Card and PAN Card entities?
  - e. What do you mean by integrity constraint?
  - f. Distinguish between relational algebra and relational calculus.
  - g. Why do you use COMMIT command?
  - h. State a distinguishing feature of B<sup>+</sup>-tree over B – tree.

**UNIT-II**

- 2. Answer any two of the following questions:** **(2 × 5 = 10)**
- a. Describe 3-tier architecture of DBMS in brief.
  - b. Discuss 3NF in brief with a suitable example.
  - c. Write a short note on ACID properties of transaction.
  - d. Give an overview of file organization.

**UNIT-III**

- 3. Answer any one of the following questions:** **(1 × 10 = 10)**
- a. Discuss insertion and deletion operation for a B-tree with a suitable example involving at least four records
  - b. Consider the following three structures of tables:  
EPIC\_INFO (VoterID, FirstName, SurName, Pincode, AadhaarNo, PANNo)  
PAN\_INFO (PANNo, Year, GrossIncome, TaxPaid)  
AADHAAR\_INFO (AadhaarNo, AccountNo, AccountType)  
Write SQL queries for listing:
    - i. PAN No for which highest tax has been paid for the financial year 2021-22
    - ii. All accounts hold by a person with a particular Voter ID
    - iii. All PAN numbers and linked Aadhaar numbers