

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⁺-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