MCA (Revised) / BCA (Revised)
Term-End Examination
June, 2015

11423

MCS-023 : INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS

Time : 3 hours *Maximum Marks : 100*

(Weightage 75%)

Note : *Question number **1** is **compulsory**. Answer any **three** questions from the rest.*

1. (a) Give the limitations of file based system. How can they be overcome using DBMS ? 7

   (b) Discuss the 3-level architecture of DBMS. Explain how it leads to data independence. 8

   (c) A bookshop has a huge collection of books to sell them online and therefore requires a database to track its sales. For each book they store the Title, Author(s) name, Publisher, Volume, ISBN No., Price, Stock (no. of copies), Year of publication, etc. To help the customers to search the book, they require that each book is assigned to one or more categories such as Engineering,

Sciences, Fiction, Literature, Applications, etc. If at all, any discounts that are there for certain books, need to be notified on the site (best-buy offer). To buy a book, a customer needs to register on the site. Also it maintains the profile of the user and also their earlier purchases. The bookshop also sends "Newsletter" to all the registered users to update them about the publications.

Identify the entities, relationships, constraints and cardinality and construct an ER diagram for the above mentioned specifications. *10*

(d) Discuss briefly about Sparse and Dense Indexes with the help of an example. *10*

(e) What is a view ? What are the major advantages of views ? Explain with the help of an example. *5*

2. (a) Discuss the use of B-Tree as a structure for creating index, with the help of an example in support. *10*

(b) Explain the Log-based recovery scheme with the help of an example. *6*

(c) Explain 2-phase locking protocol. *4*

3. (a) Consider the following relation EMP. Create queries for it : *10*

empno	ename	job	sal	depno
116	NAND	Manager	29,750	40
118	KAPOOR	Analyst	30,000	10
119	HARISH	President	50,000	20
112	ANAND	Analyst	30,000	20
115	BOBBY	Clerk	15,000	20

(i) Get details of employee having minimum salary (sal).

(ii) Display employee whose job title (job) is same as that of employee 116 and sal > sal of employee 118.

(iii) Find average sal.

(iv) Find the ename, depno, sal of employee drawing maximum sal.

(b) Explain the data models, used to structure the data in the database systems. *10*

4. (a) Explain the need of Distributed DBMS over Centralized DBMS. Also give the structure of Distributed DBMS. *10*

(b) List and explain the 4 basic properties of a Transaction with the help of appropriate examples. *10*

5. Write short notes on the following : *4×5=20*

(a) Locks

(b) Deadlock and its prevention

(c) Database Errors

(d) Data fragmentation in Distributed databases