

- (iii) Each professor teaches at least *one* course and same professors may teach multiple courses.
- (iv) Each professor teaches at least *one* course and some professors must teach all the courses. **12**

Section B

5. What is the purposes of Normalization ? Explain 2NF, 3NF and BCNF with suitable examples. **20**
6. (a) Consider the following tables : **10**
 WORKS (Pname, Cname, Salary)
 LIVES (Pname, Streat, City)
 LOCATED_IN(Cname, City)
 MANAGER(Pname, Mgrname)
 Where Pname = Person name,
 Cname = Company name, and Mgrname
 = Manager name.

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Roll No.

E-162

B.C.A. EXAMINATION, Dec. 2017

(Fifth Semester)

(Old Scheme) (Re-appear Only)

(BCA)

BCA-303

DATA BASE MANAGEMENT SYSTEMS

Time : 3 Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *four* questions from Section A, B and C by selecting at least *one* question from each Section. Q. No. **1** is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) Define the following terms : **2×8**
- (i) DDL
 - (ii) DML
 - (iii) Generalization
 - (iv) Specialization
 - (v) Foreign key
 - (vi) Weak entity
 - (vii) Multi-valued Attribute
 - (viii) Derived Attribute.
- (b) What do you mean by data integrity ?
Illustrate. **2**
- (c) Distinguish between Candidate key and
Primary key. **2**

Section A

2. (a) What do you understand by database
management systems ? Also write the
advantages of the database systems over
the conventional file processing systems. **15**
- (b) Differentiate between logical data
independence and physical data
independence. **5**

3. List and explain the different categories of
Data Models in detail. **20**
4. (a) List and explain the naming conventions
used for E-R schema diagrams. **8**
- (b) A university database contains
information about Professors (Identified
by a social security number) and courses
(Identified by a course ID). Each of the
following situation concerns the
relationship set between the teacher and
the student. Draw an ER diagram for
each situation (Assuming that no further
constraints hold).
- (i) Professors can teach the same
course over several semesters and
each offering must be recorded.
 - (ii) Each Professor teacher exactly one
course.

Section C

7. (a) What do mean by a transaction ? Explain its properties. **10**
(b) Explain, how 2-phase locking protocols are useful in handling concurrency ? **10**
8. Write short notes on the following : **20**
(a) Timestamp-based protocols
(b) Shadow paging.

Write the SQL queries for the following :

- (i) List the name of the people who work for the company 'Wipro' along the cities they live in.
(ii) Find the name of the persons who live and work in the same city.
(iii) Find the names of the persons who don't work for 'Infosys'.
(iv) Find the name of the companies that are located in every city where the company 'Infosys' is located.
- (b) Explain, how the 'GROUP BY' clause works. What is the difference between the 'WHERE' and 'HAVING' clauses ? **6**
- (c) Consider the following relational schemas :
EMPLOYEE (EMPLOYEE_NAME, STREET, CITY)
WORKS (EMPLOYEE_NAME, COMPANYNAME, SALARY)
Specify the table definitions in SQL for the above schemas. **4**