

**CERTIFICATE IN MOBILE  
APPLICATION DEVELOPMENT  
(CMAD)**

**Term-End Examination  
June, 2023**

**BCS-092 : INTRODUCTION TO DATABASES**

Time : 3 Hours

Maximum Marks : 75

*Note : There are five questions in this paper.*

*Question No. 1 is compulsory. Attempt any  
three questions from the rest.*

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1. (a) What is data integrity and why is it important ? 4
  - (b) Differentiate between Logical and Physical data independence. 4
  - (c) ABC Hospital has number of departments, rooms, doctors and nurses with other staff working in hospital. Patients having different types of ailments and checkups done from the concerned doctors. The

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system maintains records of regular patients, concerned doctors to whom patient contacted for ailment, bill details if admitted and discharge summary.

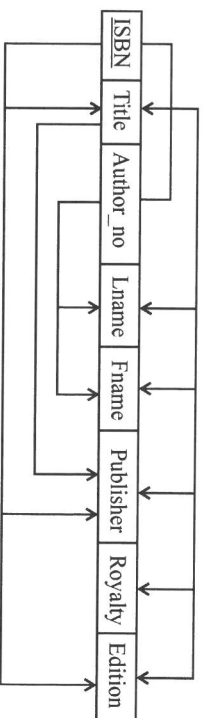
- (i) List all the possible entities and corresponding attributes. 2
  - (ii) Identify cardinality among entities. 2
  - (iii) Make E-R diagram for the system. 3
  - (iv) Mention/Mark primary key and foreign keys for the system. 3
  - (d) Explain briefly different phases of database development life cycle. 4
  - (e) Consider the following relations : 8
 

HOTEL	( <u>hotelno</u> , hotelname, city)
ROOM	(roomno, <u>hotelno</u> , type, price)
BOOKING	( <u>hotelno</u> , <u>guestno</u> , datefrom, dateto, roomno)
GUEST	( <u>guestno</u> , guest_name, guest address).
- Write the following queries using SQL :
- (i) List names and addresses of all guests living in 'DELHI', in alphabetical order.
  - (ii) How many different guests have made bookings for 'JUNE' ?

- (iii) List the bookings for which no "date to" has been specified.
- (iv) List the number of rooms in each hotel.
2. (a) Explain various components of a database system. 5
- (b) Define SQL and explain the various categories of commands available in SQL with *one* example of each. 5
- (c) Define the terms Entity, Foreign key, Attributes, Key attribute and Super key. 5
3. (a) Explain the 3-level architecture of database system with the help of a diagram. 5
- (b) Explain the data models with appropriate example of each. 5
- (c) Write SQL commands to create the following table : 5
- CUSTOMER (C\_num, Cname, city, C\_rating.
- Important constraints for the table are :
- (i) C\_num should be more than one and primary key.
- (ii) City can be only 'DELHI', or 'PATNA' or 'BHOPAL'.
- Choose appropriate data types for all the attributes.

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4. (a) Why should normalization be performed on a table ? Explain using an example. 5
- (b) Explain the LIKE and BETWEEN ..... AND operators with an example for each. 4
- (c) Consider the following dependency diagram : 6



- (i) List the functional dependencies.
- (ii) Normalise the above table till 2nd NF.
5. Explain the following with the help of examples/diagram : 5×3=15
- (a) Data Abstraction
- (b) ALTER command
- (c) Weak entity and discriminator
- (d) "Select" and "Project" operations
- (e) Views and insertion through views

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