Question 1. What is database? Give example.
Answer: A collection of related information organised as tables is known as database, e.g. INGRES, MySQL etc.

Question 2. Write the purpose of DBMS. CBSE 2007
Answer: DBMS is used to store logically related information at a centralised location. It facilitates data sharing among all the applications requiring it.

Question 3. Write the relationship between a database and a table.
Answer: A database contains multiple tables whereas, a table cannot exist outside a database.

Question 4. Give any one use of database
Answer: A database is used to store logically related information in table.

Question 5. What is field in database? Give an example.
Answer: A field is an area, reserved for a specific piece of data. It is also known as attribute, e.g. Customer_Name.

Question 6. Define the term DBMS.
Answer: The full form of DBMS is Database Management System. It is a computer based record keeping system.

Question 7. State the primary goal of a DBMS.
Answer: To provide a convenient and efficient environment in which we can store and retrieve information.

Question 8. Write any two uses of database management system. CBSE 2007
Answer:

1. DBMS is used to store data at a centralised location.
2. It is used to minimise data redundancy and data inconsistency.

Question 9. Give any two disadvantages of the database.
Answer:

1. High complexity
2. Database failure

Question 10. Write any two advantages of using database.
Answer:

1. Can ensure data security.
2. Reduces the data redundancy.

What is a primary key in database? Give an example. CBSE 2010
Answer: A field which uniquely identifies each record in a table is known as primary key. e.g. empld is the primary key of the Employee table.

Question 14. Name two possible primary keys for an Employee table.
Answer: Possible primary keys for an Employee table are empcode, empphonenumber.

Question 15. Write the significance of a foreign key.
Answer: A foreign key is used to Establish relationship between any two tables of RDBMS.

Question 16. What is the default extension of OO.o not zero BASE database?
Answer: The default extension of OO.o BASE database is .odb.

Question 1. What are the main purposes of a database system?
Answer:

- Storage of information.
- Retrieval of information quickly.

- Sorting, selecting data that satisfies certain criteria (filtering).
- Produce the report in some standardised and readable format.

Question 2. How are fields, record and a table related to each other? Explain with the help of an example. CBSE 2007
Answer: Fields are one type of information. A record contains logically related fields. A table Emp name contains logically related records.

EmpNo	Name	Salary
1.	Shridhar	20000
2.	Raghav	40000

Here EmpNo, Name and Salary are three different fields. 1, Shridhar, 20000 represents one complete record.

Question 3. What is the difference between 'Rows' and 'Columns' in a table? CBSE 2002
Answer: In a table, rows are called records and columns are termed as fields. A row stores complete information of a record whereas column stores only similar data values for all records.

Question 4. Distinguish between data and information. CBSE 2007
Answer: Distinguish between data and information are as follows:

Data	Information
It is a raw facts.	It is a process form of data.
It considers facts symbols, images for reference or analysis.	It considers knowledge derived from study, experience or instruction.
e.g. 23 is a data.	e.g. age = 23 is information.

Question 5. Define query in the context of database.
Answer: A query is an inquiry into the database using the SELECT statement.These statements give you filtered data according to your conditions and specifications indicating the fields, records and summaries which a user wants to fetch from a database.

Question 6. Define forms and what is the need of using them?
Answer: In a database, a form is a window or a screen that contains numerous fields or spaces to enter data. Forms can be used to view and edit your data. It is an interface in user specified layout.
e.g. a user can create a data entry form that looks exactly like a paper form. People generally prefer to enter data into a well-designed form, rather than a table.

Question 7. What do you understand by report?
Answer: When you want to print those records which are fetched from your database, design a report. It is an effective way to present data in a printed format. It allows you to represent data retrieved from one or more tables, so that it can be analysed.

Question 8. What do you mean by DBMS?
Answer: It is a collection of programs that enables users to create, maintain database and control all the access to the database. It is a computer based record keeping system. DBMS is a software package that manages database, e.g. MySQL, INGRES, MS-ACCESS etc.
DBMS is actually a tool that is used to perform any kind of operation on data in database.

Question 9. Define RDBMS.
Answer: RDBMS is a type of DataBase Management System that stores data in the form of relations (tables).

Relational databases are powerful, so they require few assumptions about how data is related or how, it will be extracted from the database.

Question 10. A table named School (containing data of students of the whole school) is created, where each record consists of several fields including AdmissionNo (Admission Number), RollNo (Roll Number), Name. Which field out of these three should be set as the primary key and why? CBSE 2007
Answer: AdmissionNo should be set as primary key because admission numbers are unique for each and every students of the school, which is not possible in the case with RollNo and Name.

Question 11. What is the utility of primary key in database? Write distinct features of primary keys. CBSE 2013
Answer: Primary key is used to uniquely identify the record in a database. It can be a column or a set of columns in the table. Main features of primary key are as follows:

1. It must contain a unique value for each record of table.
2. It does not contain null values.

Long Answer Type Questions [5 Marks each]

Question 1. Discuss the components of a database.
Answer: A database consists of several components. Each component plays an important role in the database system environment.
The major components of database are as follows:

- **Data**
  It is raw numbers, characters or facts represented by value. Most of the organisations generate, store and process large amount of data. The data acts as a bridge between the hardware and the software. Data may be of different types such as User data, Metadata and Application Metadata.
- **Software**
  It is a set of programs that lies between the stored data and the users of database. It is used to control and manage the overall computerised database. It uses different types of software such as MySQL, Oracle etc.
- **Hardware**
  It is the physical aspect of computer, telecommunication and database, which consists of the secondary storage devices such as magnetic disks, optical discs etc., on which data is stored.
- **Users**
  It is the person, who needs information from the database to carry out its primary business responsibilities.

The various types of users which can access the database system are as follows:

- **Database Administrator (DBA)**
  A person, who is responsible for managing or establishing policies for the maintenance and handling the overall database management system is called DBA.
- **Application Programmers**
  The people, who write application programs in programming languages to interact and manipulate the database are called application programmers.
- **End-user**
  A person, who interacts with the database system to perform different operations on the database like inserting, deleting etc., through menus or forms.

Question 2. Define database management system. Write two advantages of using database management system for school. CBSE 2007,05, 04
Answer: DataBase Management System (DBMS) is a collection of programs that enable users to create, maintain database and control all the access to the database. The primary goal of the DBMS is to provide an environment that is both convenient and efficient for user to retrieve and store information.

The advantages of using DBMS for school are as follows:

1. In school, DBMS is used to store the data about students, teachers and any other related thing at a centralised location.
2. It provides security to the personal information of the school, stored in it.

Question 3. Distinguish between a record and a field in a table, with an example. CBSE 2007,05
Answer: Distinguish between a record and a field in a table are as follows:

Record	**Field**
It is a collection of data items, which represent a complete unit of information about a thing or a person.	It is an area within the record reserved for a specific piece of data.
A record refers to a row in the table.	A field refers to a column in the table.
Record is also known as tuple.	Field is also known as attribute.
e.g. if Employee is a table, then entire information of an employee is called a record.	e.g. if Empolyee is a table, then empld, empName, department, salary are the fields.

Question 4. Write the steps to design a database.
Answer: Steps to Design a Database
There are various steps to design a database which are as follows:

- **Step 1 Determine the purpose of your database** The first step of designing a database is to determine the purpose and mechanism to design and use it.
- **Step 2 Determine the tables** Tables are one of the most important elements of a database, consist of rows and columns. To create a well-defined database, you have to keep some conditions which are as follows:
    - A table should not contain duplicate information.
    - Each table should contain information about one subject.
      e.g. One table is used to contain the personal information of the students and the other is used to contain the marks scored by the student.
- **Step 3 Determine the fields** After creating a table, you need to decide the type and number of fields required for the tables in your database. Each field in a table contains individual facts about the table's subject.
  e.g. A customer table may include company name, address, city, state and phone number fields.
- **Step 4 Identify the primary key in a table** From the fields of table, you need to identify a primary key which uniquely identifies each individual record of the table. The primary key helps you to reduce data duplication in the table.
- **Step 5 Determine the relationship between tables** In this step, you need to determine relationship between two or more tables in your database. You can set-up a relationship between tables on the basis of common field between them. Establishing a relationship allows you to fetch any information from both the tables.
- **Step 6 Refine the design** After you have designed the tables, fields and relationships, its time to study the design and detect any faults that might remain.
- **Step 7 Enter data and create other database objects** When you are satisfied that the database structure meets the goals you needed, add all your existing data to the tables.

Application Oriented Questions

Question 1. Consider the following table

Employee

EmpNo	EmpName	Designation
1	Sahil	A
2	Anup	B
3	Mansi	A
4	Pooja	B

1. **Which of the above field can be selected as a primary key?**
2. **EmpName field also has unique values for all the records. Can it be made primary key? Give answer with reason.**

Answer:

1. EmpNo can be selected as a primary key.
2. EmpName is having unique values, but there is no guarantee that if more employees are included then there would not be multiple people with similar names.
   So, in future its values may be duplicate. Thus, it cannot be made as a primary key.

Question 2. Sanchita is working for a nationalised bank and is in the process of creating a table to store the details of customers of the bank.
Find out, which of the following fields of table Bank can be selected as primary key, candidate key and alternate key? CBSE 2011
Account No, Customer Name, Date of Birth, PAN Number, Opening Balance
Answer:
Primary key AccountNo
Candidate key AccountNo and PAN Number
Alternate key PAN Number

Question 3. Consider the following database Student

Student

Roll No.	First Name	Last Name	Class	Marks Obtained (%)	Scholarship Awarded (₹)
1205	Mohan	Garg	12th	99.9	50000
1009	Dushyant	Singh	10th	98.7	45000
1101	Swati	Rana	11th	95.4	30000
945	Ravindra	Saini	9th	97.5	35000
1015	Ritika	Thakur	10th	98.6	40000

1. The marks obtained by the student with RollNo. 1101 is?
2. What is the name of the student, who has got the highest marks and what is the amount of scholarship awarded to him/her?
3. How many records are there in the table?
4. How many fields are there in the table?