Time: 2½ Hrs.   ①   **Max. Marks: 75**

Note: 1) All questions are compulsory.
           2) Figures to the right indicate marks.

Q.1	**A)**	**State whether the following statements are True or False : (Attempt any Eight).**	**(8)**
	1.	The OSI model consists of seven layers.	**T**
	2.	Email is considered as the "Killer app" on Internet.	**T**
	3.	.in is a top level domain.	**F**
	4.	Processed data is called information.	**T**
	5.	Analytical databases store information from both operational and external databases.	**T**
	6.	Database cannot be encrypted with a password.	**F**
	7.	A database can contain only one form.	**F**
	8.	If two tables are joined, we can use the data from both tables in a query.	**T**
	9.	Graphics can be included in a report.	**F**
	10.	A Pivot table can be used to analyze a large amount of data.	**T**

Q.1   **B)**   **Select the appropriate option from the following :**   **(7)**
                  (Attempt any Seven).

1. Which protocols are used for receiving email?
    a) SMTP and POP3   b) SMTP and MIME
    c) MIME and IMAP   **d) POP3 and IMAP**

2. Software such as Firefox, Internet Explorer and Safari are referred to as…
    a) Word processors   b) System software
    c) Internet tools   **d) Browsers**

3. The full form of the acronym SMTP is …….
    a) Simple Mail Transfer Protocol
    b) Solve Many Transport Protocol
    c) Simple Manager Total Protocol
    d) Simple Message Transport Protocol

4. The database and DBMS software together is called as….. System.
    a)Program   **b) Database**   c)Table   d) Model

5. To add or delete columns in a table, which of these Tabs is used?
    a) Create   b) External Data
    c) Datasheet   d) Database Tools

6. The properties of a form can be modified through ……….
    a) Design View   b) Datasheet View
    c) Pivot Table view   d) Any of these

7. Access 2007 database can contain which objects:
    a) Tables   b) Forms
    c) Queries   **d) All of these**

8. What are the different views in which a table can be displayed?
    a) Design View   b) Pivot Table and Pivot Chart View
    c) Datasheet View   **d) All of the above**

9. Which data type is most suitable for storing the primary key?
    a) Hyperlink   b) Text
    c) OLE Object   **d) AutoNumber**

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10. Which of these is not a feature of HTML?

a) Displaying images   b) Displaying video

c) Linking documents   **d) Performing calculations**

Q.2 A) Attempt any One sub-question from a, b

a. Explain all layers of TCP/IP Protocol.   **(8)**

Layers of TCP/IP Model

Application layer
Transport Layer
Internet Layer
Data Link Layer
Physical Layer

The TCP/IP suite does not define any specific protocols at the data link and physical layers.

Function of Each Layer:

The Application layer: This layer is equivalent to the combined OSI Session, Presentation, andApplication layers. All the functions handled by these 3 layers in the OSI model are handled by the Application layer. A data unit created at the application layer is called a message. This layer offers support for user applications.

This layer contains the higher level protocols :

a. **FTP** – File Transfer Protocol – basic file transfer between hosts (computers)

b. **SMTP** – Simple Mail Transfer Protocol (for email)

c. **HTTP** – Hyper Text Transfer Protocol (for web browsing)

Transport Layer

a. This layer is responsible for reliable delivery of data and ordering of data.

b. This layer is represented by two protocols – TCP (Transmission Control Protocol) and UDP (User Datagram Protocol).

c. UDP is simpler but is used when reliability and security are less important than size and speed – such as speech and video where a loss of few data is not significant, but speed is important.

Network Layer or Internetwork Layer

Internetwork Protocol (IP) is an unreliable and connectionless datagram protocol. It offers a best–effort delivery service. There is no error checking. IP does its best to get a transmission through to its destination but with no guarantees. Noise can cause bit errors during transmission, and datagrams maybe discarded due to timeout errors. This layer takes care of the routing of data across multiple networks.

IP transports data in packets called datagram's :

- Each datagram is transported separately.
- Datagrams can be of variable lengths (upto 64 KB).
- Datagrams may travel along different routes and may arrive out of sequence at the destination.
- IP does not keep track of the routes that each datagram will take.
- IP does not have the facility to reorder datagrams once they arrive at the destination.
- A datagram contains a header and data.
- The header contains a number of fields including source and destination address.

Physical Layer
This layer provides the interface between the computer and transmission medium of the network (wire/fibre optic cable). This layer is concerned with issues such as data rates and signal levels.

Encapsulation of Data : TCP/IP protocol suite encapsulates data units at various layers of themodel
a. At the Application layer, the data unit created is called a **message**.
b. The Transport layer adds a header to form either a **segment** with TCP or a **user datagram** with UDP.
c. Each segment created by TCP includes:

      i. A sequencing number for re-ordering after receipt.
      ii. An acknowledgement ID number
      iii. Source address and destination address
      iv. Checksum – for error detection
      v. Data
        vi. And other fields

d. The Network (or Internet) layer adds another header to form a **datagram**. A datagram is a self-contained message unit which contains sufficient information to allow it to be routed from the source to the destination. The protocol used at the data link layer encapsulates the datagram into a **frame** and this is transmitted across the transmission medium.

b. Write short note on 1) FTP   2) MIME   **(8)**
1) FILE TRANSFER PROTOCOL (FTP):
FTP was one of the first services offered on the internet. FTP is used to transfer files between two computers on a network. FTP is based on Internet Protocol. Special software has to be installed on the server to enable a computer to work as a FTP server. Similarly, software must be installed on the client machine that will permit connection to the FTP server. The user can download or upload files to the server.

User may connect to a FTP server in two ways
- Normal FTP - If he has an account, he must give his username and password.
- Anonymous FTP - in this case, the user need not have an account on the FTP server. Instead he can login with username as 'anonymous' and password as his email address.

2) MULTIPURPOSE INTERNET MAIL EXTENSION (MIME):
Normally, email can carry only text data in the body part. MIME is a supplementary protocol for sending non-text email attachments with an email.
MIME allows your email client or the web browser to send and receive attachments such as audio/video files, spreadsheet, images, and word-processor files like Microsoft Word documents.

- A MIME message has MIME headers that are added to the original email header. These headers are :

- MIME version – defines the version of MIME used. Currently, ver 1.1 is used

- Content-type – This header defines the type of data used in the body of the message. MIME allows text, image, audio, video, application, or a part of a large message.

- Content Transfer encoding – It defines the method used to encode the message into 1s and 0s.

- o Content-Id – uniquely identifies the whole message in a multiple message environment.

- o Content-Description – This header defines whether the body is image, audio or video.

Q.2   B)   Attempt any One sub-question from c, d

c.   Explain Internet with different types of Internet connections.   **(7)**

The **Internet** is a worldwide collection of computer networks, co-operating with one another toexchange data using a common software standard. It can also be defined as "the global communications systems of diverse, INTERconnected computer NETworks for the exchange of information". The Internet is also called as the **Information Superhighway**.

Different types of Internet connections:
- ✓   Cable Internet
- ✓   DSL(Digital Subscriber Line)
- ✓   Wi-Fi Connection
- ✓   Dialup Internet Access
- ✓   ISDN Connection
- ✓   Leased Lines (T-1 Line)
- ✓   Fibre-to-the-Home (FTTH)

- • d.   What are the advantages of E-mail?   **(7)**
Advantages of Electronic mail (E-mail) :
- o   It is almost instantaneous.
- o   Even if the recipient is not connected to the Internet, the message is delivered into his mailbox from where he can retrieve it the next time he logs on to the Internet.
- o   E-mail is very cheap compared to other forms of messaging such as SMS.
- o   Since the message is in an electronic form, there is a saving in cost of printing, paper, and storage.
- o   E-mail messages can be encrypted so that they are not tampered with.
- o   It is possible to send an e-mail message to many people at the same time.
- o   It is possible to send attachments with an e-mail message; these attachments may be a picture, a movie, a chart, or any other type of document generated electronically.

Q.3   A)   Attempt any One sub-question from a, b

a.   What do you mean by RDBMS? What are the limitations of DBMS?   **(8)**
RDBMS (Relational Database Management Systems)
1. The Relational Database model was proposed by Mr. E.F. Codd of IBM in 1970. However, the first commercial system appeared only in 1981-82.
2. In this model, unlike the Hierarchical and Network models, there are no physical links.
3. All Data is kept in tables which contain rows and columns.
4. The data in two tables are linked through the columns and not through physical links. Hence there is no reason to traverse pointers as in Non-relational Model.
5. Relational databases have become a predominant choice for the storage of information in new databases used for financial records, manufacturing and logistical information, personnel data and much more.
6. The Relational model is most widely implemented model in modern business systems and it is the foundation for SQL.

The limitations of DBMS:
- •   Uses extra computer time and resources.
- •   It is expensive to install new systems.

- Requires well qualified and expert personnel to operate the system.
- If it is not designed for concurrent access to many users it will be of little use.
- Authority of ownership rights over the data have to be fixed, so as to determine who is eligible for using the data.

b. Explain the following terms used in databases: **(8)**
    1) Relation   2) Entities   3) Attribute   4) Instance

1) Relation (File or table)
This is nothing but the relation/file i.e. Table which contains rows and columns of related data.

2) Attribute or Tuple (Columns)
They are the qualities of an entity that are stored as information. Hence the Name, Age, City, Salary etc in the table are all examples of attributes. Other examples are marks of students or the Employee number, salaries of employees etc.

3) Entities (rows)
They are the items about which some relevant information is stored in the database. Hence, the row containing all the information about a person say Santosh in the table is called an Entity. Hence, information about a student in a college or an employee in an organization or an item on the inventory are all examples of entities.

4) Instance (environment)
This is used to describe the entire database environment, which includes the RDBMS software, procedures and table structures. For example, an organization having an employee's database can have different instances such as production: which stores live data, pre-production: which stores tests of new functionality before release to production and development: which data developers use to create new functionality.

Q.3   B)   Attempt any One sub-question from c, d

c. Explain the term relationship and join with reference to relational databases.   **(7)**
    Relationship
    In the context of databases, a relationship is a connection between the data stored in one relational database table and another. With the large amount of data that is required in today's environment, it becomes necessary to split it into more than one table. However, a connection or a relationship has to be maintained between the relational database tables, so that data can be meaningfully obtained from them. The fundamental difference between relational databases and other databases is the ability to define a relationship between them.

    Consider a sample Inventory database given below, which consists of the tables of Stock and Supplier. As the supp_id column is the same in both tables, we can define a relation between these two tables and use it to obtain information from them using join.

    Join
    A Join is a connection between two tables where the data from them is merged together based on a field(column) that is common to these tables, creating a new virtual table. To create a Join it is necessary that the tables have a relationship as defined above.

    In the example of the tables given above, we can Join the columns stock_id, sup_id, Stock_name, Supp_name and Phone no from the Stock and Supplier table based on the common field supp_id to obtain the following.

d. Explain the terms DDL, DCL and DML with reference to DBMS.   **(7)**
    Data Definition Language (DDL):
    This language is used by the designers and programmers of the database to indicate the content and the structure of the database i.e. its schema. It is used to indicate the

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physical structure of the database i.e. field names, their types etc. and also the record relationships while creating the database. It is also used to remove the database.

Data Control Language (DCL):
This is used for controlling the data and access to the database. It is used to address security issues and restrict the access to the database.

Data Manipulation Language (DML):
This language is used primarily for data manipulation and processing. It involves retrieving the data, arranging the data, deleting the data and displaying the data etc. A user queries the database and receives the required reports.

Q.4 A) Attempt any One sub-question from a, b

a.   Explain the different data types used in database. (8)
Data types:

Data Type	Description	Example
Text (default)	Text or combinations of text and numbers, as well as numbers that don'trequire calculations, such as phone numbers. Maximum 255 characters allowed	To store names, addresses, telephone numbers.
Number	Numeric data used in mathematicalcalculations.	To store marks, salary, value, discount, etc
Date/Time	Date and time values for the years 100through 9999. An automatic calendar for data picking appears next to a date field.	To store date of birth, joining date, etc

Currency
AutoNumber
Yes/No
Hyperlink
OLE Object
Lookup Wizard

b.   What are the steps to import the data from excel file. (8)

Steps to import the data from excel file:
To import or link data, Access creates a new table for the information.

1. Open the **database** in which you want to import or link data.
2. Click the **External Data** tab.
3. Click the **Import Excel Spreadsheet** button.
4. Click **Browse**, locate and select the Excel spreadsheet file you want to import or link data and then click Open.
5. Click the import, append or link option you want.
6. Click Ok.
7. Follow the **Import Wizard** instructions, some of the requested information includes:
    - A worksheet or named range
    - First row column heading
    - A new or existing table
    - Field information

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- Primary key
- Table name

8. When you're done, click **Finish**.
9. To **save** import steps, select the Save import steps check box, enter a name and description and then click Save Import.
10. Otherwise click **Close**.

Q.4   B)   Attempt any One sub-question from c, d

c.   What is the Input Mask wizard used for?   (7)

Input Mask wizard

An input mask allows you to control what values a database user can enter into a field. Input masks consist of literal characters, such as spaces, dots, parentheses, and placeholders. A placeholder is a text character, such as the underline symbol (_), that indicates where the user should insert values.

An input mask for a phone number field might appear as follows:
(_ _) _ _ _ - _ _ _ _. The parenthesis and dash characters act as literal characters, and the underscore character acts as a placeholder for the phone number values.

Access provides several predefined input masks, but you can create your own customized masks also. The Input Mask Wizard is available only for text and date fields. If you want to create an input mask for numeric fields, you must enter the formatting symbols yourself.

d.   Explain the steps to hide and unhide a column.   (7)

Hide a column:

Hiding a column does not mean that the underlying data is lost. The hidden column can be again displayed.

1. In **Datasheet** view, select the column or columns you want to hide.
2. Click **Home** tab.
3. Click the **More** button, and then click Hide Columns. The shortcut to this sis right-click the column you want to hid, and then click **Hide Columns**.

Unhide a Column/Display hidden column:

1. In **Datasheet** view, Click **Home** tab.
2. Click the **More** button, and then click **Unhide Columns**.
3. Select the **names** of the columns that you want to show/display.
4. Click **Close**.

Q.5   A)   Attempt any One sub-question from a, b

a.   Explain how a query can be created in Design View?   (8)

A **query** is a simple question put to a database in order to get some information from the database.

The simplest way to create a query is through the Design View. Let us create a query that searches for all Printers in the Assets table. We will display the following information in the result: Item, Description, acquired Date.

Steps to create query in Design View:

- Click the **Create** tab.
- Click the **Query Design** button.
- Select the table or query you want to use (Select the Assets table).
- Click **Add**.
- Repeat steps 3 and 4 for additional tables or queries (if any), and then click Close.
- Double-click each field you want to include in the query from the field list.
- In the Design grid, enter any desired search criteria in the Criteria box

- Click the list arrow in the Sort box, and then specify a sort order.
- Click the **Save** button, type a name for the query, and then click **OK**.
- In order to identify a query easily, start the query name with qry. Example:qryPrinters is our query to display information about all printers in the Assets table.
- To **run** the query. select the **Design** tab, and click on Run button in **Results** tab.

b.   What is a form? Write the steps to add a calculated control to a form.   **(8)**

Form

Forms are used to enter, edit and view data in the tables. A form is created after the tables have been created, and relationships between them have been set.

To add a text box control to the form that displays the following fields from the Marks tableRollNo, Economics marks, Commerce marks, Maths marks, and a calculated field to display the total marks of these three subjects.

Steps to add a calculated control to a form:

- Right-click the form or report in the Navigation Pane, and then click **Design View**.
- On the **Design** tab, in the **Controls** group, click the tool for the type of control you want to create. We will use the Text Box control
- Position the pointer where you want the control to be placed on the form or report, and then click on the form or report to insert the control.
- If a control wizard starts, click **Cancel** to close it.
- Select the control, and then type this expression in the text box : =Economics+Commerce+Maths. Access will automatically convert this to =[Economics]+ [Commerce]+[Maths] to indicate that these are fields in the underlying table.
- Switch to Form view or Report view and verify that the calculated control works as you expect.

Q.5   B)   Attempt any One sub-question from c, d

c.   Write the steps to create mailing labels.   **(7)**

Mailing labels

Access provides a Label Wizard to help you create mailing labels quickly. A mailing label contains information such as Name, address, and other information like telephone number.

Steps to create mailing labels:

- In the Navigation pane, click the Tables on the Objects bar, and then click the table you want to use.
- Click the **Create** tab.
- Click the **Labels** button.
- Select the type of mailing label you're using. Click **Next** to continue.
- Specify the font style and color for the label text. Click **Next** to continue.
- Double-click the field names in the Available Fields list to place them on your mailing labels. Type any text that you want to accompany the field values. Click Next to continue.
- If necessary. select a field to sort your labels by. Click **Next** to continue.
- Enter a name for your mailing labels report. and then choose whether to preview the printout or modify the label design.
- Click **Finish**.

(9) d. Write the steps to create a report using the Report Wizard. (7)

Report- summary of information. Its final display can be used for printing in proper format.

Creating report using report wizard:
- Click the **Create** button.
- Click the **Report Wizard** button.
- Click the list arrow for choosing a table on which to base the form, and then click the name of the table you want.
- Select the fields you want to include, in the report. Click **Next** to continue.
- If necessary, specify any groupings of the records, choosing any or all of the selected fields (maximum 10 fields). Click Next to continue.
- Specify the order of records within each group, sorting by up to four fields at a time, and then specify ascending or descending order. Click **Next** to continue.
- Determine the layout and orientation of your report. Click **Next** to continue.
- Specify the style of the report, which affects its formatting and final appearance. Click **Next** to continue.
- In the final wizard dialog box, name your report, and then indicate whether you want to preview the report or display it in Design view. Click **Finish**.

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