Q&A

WORK BOOK CUM QUESTION BANK WITH ANSWERS

INFORMATION TECHNOLOGY

CLASS - XII

Work Book
cum
Question Bank with Answers

INFORMATION TECHNOLOGY

CLASS-XII

Compiled by :

Prof. Arabinda Nanda, M.C.A., M.Tech., Ph.D.
Ex-Vice Principal UG Professional Program
&
Assoc. Professor, Department of Computer Science
NIIS Institute of Information Science & Management
Madanpur, Bhubaneswar

**SCHEDULED CASTES & SCHEDULED TRIBES
RESEARCH & TRAINING INSTITUTE (SCSTRTI)
ST & SC DEVELOPMENT DEPARTMENT**
BHUBANESWAR

2020

FOREWORD

An innovative education program has been initiated by ST & SC Development Department, Govt. of Odisha for the students appearing in +2 Science and Commerce examination pursuing studies in the ST & SC Development Department Schools (EMRS & HSS) to ensure quality education at +2 level.

In this regard it is to mention that an Academic Performance Monitoring Cell (APMC)has been set up in SCSTRTI to monitor the Training and Capacity Building of Teachers of SSD Higher Secondary Schools and Ekalabya Model Residential Schools (EMRS) to enhance quality education for better performance of the students appearing +2 Science and Commerce examination.This effort by APMC will certainly help the students to equip themselves for appropriate answering the question in the examination in an efficient manner.

In order to materialize the effort, thebest ofsubject experts of the state have been roped into formulate self-contained and self-explanatory "Work book cumQuestions Bankwith Answers" as per the syllabi of CHSE,Odisha.They have tried to make the material as far as activity based and solution based as possible.This novel effort is first of its kind at +2 level in Odisha.

I would like to extend my thanks to Prof.(Dr.) A.B. Ota, Advisor-Cum-Director and Special Secretary, SCSTRTI and the team of Subject experts for their sincere effort for bringingout the study materials in quick time.

Hope, these study materials will be extremely useful for the students appearing the +2 examination in Science and Commerce of our SSD Schools.

Ranjana Chopra
Principal Secretary
ST & SC Development Department
Govt. of Odisha

PREFACE

The ST and SC Development Department, Government of Odisha, has initiated an innovative effort by setting up an Academic Performance Monitoring Cell (APMC) in Scheduled Castes and Scheduled Tribes Research and Training Institute (SCSTRTI) to monitor the Training and Capacity Building of teachers of SSD Higher Secondary Schools and Ekalavya Model Residential Schools (EMRS) and to ensure quality education of students studying at +2 level under the administrative control of the ST & SC Development Department. This innovative programme is intended to ensure quality education in the Higher Secondary Level of the schools of the ST & SC Development Department.

Since the introduction of +2 Science and +2 Commerce stream by the Council of Higher Secondary Education, Odisha, there was a great demand to cater to the needs of the students appearing the +2 Examination. But no organisation or institute has taken the initiative to fulfil the needs of the students appearing the +2 examination. Realizing the necessities and requirements of students to perform better and secure better marks in the examination and proper pattern of answering the question in a scientific way, the APMC under the banner of SCSTRTI has taken the initiative for the first time in Odisha to prepare Questions Banks in Physics, Chemistry, Botany, Zoology, Mathematics, IT, English & Odia of the Science Stream and all the disciplines of the Commerce stream in line with the Syllabus of the Council of Higher Secondary Education (CHSE).

These questions banks are first of this kind in Odisha, as per syllabi of CHSE and are self contained and self explanatory. The subject expert, who are the best in their respective subjects in the state have been roped in for the exercise. They have given their precious time to make the question banks as activity based and solution based as possible.

I take this opportunity to thank all the subject experts of different subjects for rendering help and assistance to prepare the question banks within a record time. I hope, this material will be extremely useful for the students preparing for the +2 examination in different subjects of Science & Commerce streams.

Prof. (Dr.) A.B. Ota
Advisor cum Director & Special Secretary
SCSTRTI, Govt. of Odisha

INFORMATION TECHNOLOGY
2nd Year Paper - II

UNIT-1:   Networking & Open Standards : [25 Periods]   [30 Marks]

i)   Computer Networking: [08 Periods]   [10 Marks]

Networking - a brief overview, Network devices (Hub, Switch, Bridge, Router, Repeater, Gateway) & their functions, Type of Network (LAN, MAN, WAN, PAN) Network Topologies (Star, Ring, Bus, Tree), Communication, Media, Wired Technologies [Coaxial, Ethernet cable, optical fiber] Wireless Technologies [Bluetooth, Infrared, Microwave, Radio Link, Satellite link]

ii)   Internet & its Application: [12 Periods]   [10 Marks]

Internet - an Overview, Internet Backbone, Internet Access (Dial-up, direct, Broadband connection), Role of ISP, Internet Protocols (TCP/IP, HTTP, FTP, TELNET, WAIS, GOPHER), Internet Addressing (IP Address, Domain names), MAC (Media Access Control), URL, E-mail, Address, Internet Application [www, websites & web pages, E- mail, SMS, voice mail, chatting, IRC, Video conferencing, web browsers, search Engine] wireless/mobile communication [GSM, CDMA, WLL, 3G, 4G]

iii)   Network security on internet : [05 Periods]   [10 Marks]

Threats & prevention from virus, Use of cookies, Firewall, use of digital signature, cyber crimes [Hacking, on-line fraud, pornography, snooping, spooling, cyber stalking, software piracy] Cyber Laws.

UNIT - 2 : Programming : [Reviews of 1st yr] : [40 periods]   [16 Marks]

i)   Programming fundamentals: [28 periods]   [10 Marks]

Basic concept of Access specifier for class member [data member & methods], Basic concept of inheritance, commonly used libraries .... staring class & methods [tasting (), concat (), length (), to lower case (), to upper case (), trim (), substring ()] & math class & methods [pow (), round ()], Accessing MY SQL database using ODBC, JDBC to connect with database.

ii)   HTML based web page covering basic tag: [12 periods]   [6 marks]

HTML, DHTML, TITLE, BODY, H1........ H6, Paragraph (P) Line break (BR),Section separator (HR), font, table, list (UL, OL), FORM, Creating & Accessing static & dynamic pages using HTML, DHTML & introduction to XML.

UNIT - 3 : Relational Database Management System: [30 Periods]   [14 Marks]

i)   Database fundamentals: [20 periods]   [8 Marks]

Concept of Database Transaction, committing and revoking a transaction using COMMIT & ROLLBACK, Grouping Records, GROUP BY, Group function [MAX (), MIN (), AVG(), SUM(), COUNT()] Using COUNT (*), DISTINCT clause with COUNT, group function & NULL value, displaying data from multiple tables [Cartesian product, union, concept of foreign key, equi-join].

ii)   Introduction to MYSQL: [10 periods]   [6 Marks]

Working with NULL value, ORDER BY CLAUSE [sorting in ascending / descending order, sorting by column alias name, sorting or multiple column], manipulating data of a table / relation [update command to change exiting data of a table, delete command for removing rows from a table], restructuring a table [ALTER TABLE for adding new columns and deleting columns], string function [ASCII(), CHAR(), CONCAT(), INSTR(), LCASE(), UCASE (), LENGTH (), LTRIM(), MID (), RIGHT (), RTRIM (), TRIM (), SUBSTR ()], Mathematical functions [POWER (), ROUND(), TRUNCATE()], Date & time functions [CURDATE(), DATE(), MONTH(), DAYOFMONTH(), DAYOFWEEK(), DAYOFYEAR(), NOW(), SYSDATE()].

UNIT - 4:   IT Applications: [10 periods]   [10 Marks]

i)   E-business

Definition, E-commerce & its type with benefits, E-business websites & their salient features & Social impacts, E business challengers.

ii)   Front-end Interface:

Introduction, Content & Features, identifying validation & display (Text Box, Radio Button, Check Box, list etc.)

iii)   Front-end & Database connectivity:

Introduction, requirement & benefits

iv)   Back - end database:

Introduction & its purpose, exploring the requirement of table & its essential attributes.

v)   Development of database: Demonstrator & development of appropriate front - end interface & back - end interface database for e - governance applications.

***

Question Paper Design (For Theory)
+2 2nd Year Science/Arts/Commerce

A.   Very short question: (1 marks each)

i)   Computer network (2 question x 1 marks)   ....   2 marks

ii)   Internet & its application (2 question x 1 marks)   ....   2 marks

iii)   Network security (2 question x 1 marks)   ....   2 marks

iv)   Database (2 question x 1 marks)   ....   2 marks

v)   Introduction to MYSQL (2 question x 1 marks)   ....   2 marks

vi)   IT Application (2 question x 1 marks)   ....   2 marks

B.   Short question: (2 Marks each)

i)   Computer network (2 question x 2 marks)   ....   4 marks

ii)   Internet & its application (1 question x 2 marks)   ....   2 marks

iii)   Network security (2 question x 2 marks)   ....   4 marks

iv)   HTML base web pages (1 question x 2 marks)   ....   2 marks

v)   Database (1 question x 2 marks)   ....   2 marks

vi)   IT Application (2 question x 2 marks)   ....   4 marks

C. Short question: (4 Marks each)

i)   Computer network (1 question x 4 marks)   ....   4 marks

ii)   Network security (1 question x 4 marks)   ....   4 marks

iii)   Programming Fundamental (1 question x 4 marks)   ....   4 marks

iv)   HTML base web pages (1 question x 4 marks)   ....   4 marks

v)   Database (1 question x 4 marks)   ....   4 marks

vi)   Introduction to MY SQL (1 question x 4 marks)   ....   4 marks

vii)   IT Application (1 question x 4 marks)   ....   4 marks

D.   Long question: (6 marks each)

i)   Internet & its application (1 question x 6 marks)   ....   6 marks

ii)   Programming Fundamentals (1 question x 6 marks)   ....   6 marks

CHSE QUESTION PAPERS WITH ANSWERS
2019 to 2017

2019 (A)
(Arts / Science / Commerce)

Time- 3 Hours | **Full Marks-70**

The figures in the right hand margin indicate marks.
Answer all questions from Group-A, Ten bits from Q. No. 3, Three bits from Q. No. 4 of Group-B
and three questions from Group-C.

GROUP-A

1. Choose the correct answer: [1x10=10]

a) The CURDATE () function returns the current date in the format _____.
   i) YY-MM-DD
   ii) DD-MM-YYYY
   iii) YYYY-MM-DD
   iv) None of these

b) Which of the following is a Group function?
   i) MAX()
   ii) COUNT()
   iii) COUNT(*)
   iv) All of these

c) Which of the following is a valid inheritance type?
   i) Single level   ii) Multilevel
   iii) Multiple   iv) All of these

d) In broadband transmission, signals are sent on _____ frequencies.
   i) Single   ii) Multiple
   iii) Microwave   iv) Radio

e) Which of the following is a valid network topology?
   i) WAN   ii) MAN
   iii) Ring   iv) PAN

f) Cartesian product between two tables A and B refers to _____.
   i) Set of all ordered pairs from A and B
   ii) Set of rows from A and B
   iii) Set of columns from A and B
   iv) Concatenation of two tables A and B

g) What is the minimum number of arguments required for the INSTR () function?
   i) 1   ii) 2
   iii) 3   iv) 4

h) In HTML, which of the following tags is used for line break?
   i) <lb>   ii) <bk>
   iii)
            iv) None of these

i) WLL stands for _____.
   i) Wireless Local Loop
   ii) Wireless local Link
   iii) Wire Less link
   iv) None of these

j) Fibre optic technology converts electrical signal to _____ for data transmission.
   i) Digital signal   ii) Magnetic signal
   iii) Light   iv) Heat

2. Expand the followings: [1x10=10]

a) 4G   b) XML

c) HTML   d) MAC

e) WAN   f) GSM

g) RDBMS   h) SQL

i) JDBC   j) HTTP

GROUP-B

3. Answer any *ten* of the following questions within 30 words each: [2x10=20]

a) How does the radio link work?

b) Write the significance of URL.

c) Write the use of substring ( ) function with an example.

d) Distinguish between static and dynamic pages in a website.

e) Distinguish between LCASE ( ) and UCASE ( ).

f) Mention some applications of e-governance.

g) Write the function of Repeater.

h) Write the merits and demerits of Bus network topology.

i) What is voice mail?

j) What is the need for Cyber laws?

k) Explain the use of MAX ( ) function with an example.

l) Write the use of ORDER BY CLAUSE.

4. Answer any *three* questions within 50 words each*:* [3x3=9]

a) Explain the use of SUM ( ) and COUNT ( ) functions with example.

b) What is an access specifier? Mention different types of access specifiers.

c) Distinguish between Bluetooth and Infrared technologies.

d) Distinguish between RIGHT ( ) and RTRIM ( ) functions with example.

e) Distinguish between Web browser and Search engine.

GROUP-C
Answer any *three* of the following questions. **[7x3=21]**

5. What is a database transaction? What is meant by committing and revoking a transaction ? How are they achieved using COMMIT and ROLLBACK statements?

6. Explain the use of five commonly used tags in an HTML document.

7. What is a network topology? Explain the working of different topologies highlighting their merits and demerits.

8. What is E-commerce? Elaborate on its benefits. What are the major challenges in implementing E-business?

9. What is the need for internet addressing? Discuss different internet addressing schemes.

***

ANSWERS 2019 (A)

GROUP-A

1. Choose the correct answer:

   a) iii) YYYY-MM-DD
   b) iv) All of these
   c) iv) All of these
   d) ii) Multiple
   e) iii) Ring
   f) i) Set of all ordered pairs from A and B
   g) ii) 2
   h) iii)
   i) i) Wireless Local Loop
   j) iii) Light

2. Expand the followings:

   a) 4G   - Fourth Generation Wireless
   b) XML   - Extensible Markup Language
   c) HTML   - Hypertext Markup Language
   d) MAC   - Media Access Control
   e) WAN   - Wide Area Network
   f) GSM   - Global System for Mobile communication
   g) RDBMS - Relational Database Management System
   h) SQL   - Structured *Query Language*
   i) JDBC   - Java Database Connectivity
   j) HTTP   - HiperText Transfer Protocol

GROUP-B

3. Answer the following questions within 30 words each:

   a) How does the radio link work?

   Ans. A *radio link* is a *wireless* connection between two nodes, or *radio* units, in a data network. As the connection is very directive it enables very high signal to noise ratio and thereby high data rates. *Radio links are* quick to deploy as they *do* not require any physical cable to be layed down in the ground.

   b) Write the significance of URL.

   Ans. • It is a standard for identifying a resource (site, name, application, etc.) across a computer network.

   • A fully qualified Internet URI must include a protocol, a server, a domain name and its position within the DNS structure.

   c) Write the use of substring ( ) function with an example.

   Ans. The substring () function extracts a substring from a string (starting at any position).

   Syntax: substring (*string*, *start*, *length*)

   Ex- Select substring ('hello', 2, 3);

   Output: llo

   d) Distinguish between static and dynamic pages in a website.

   Ans. **Static Pages**

   1. Static web pages have fixed content
   2. Static web pages have to be manually changed
   3. Static web pages use only a web server

   Dynamic Pages

   1. Dynamic web pages may have changing content
   2. Changes to a dynamic page can be loaded through an application where resources are stored in a database.
   3. Dynamic web pages use a web server, application server, and a database.

e) Distinguish between LCASE ( ) and UCASE ( ).

Ans. **LCASE ( )**

1. LCASE () converts the characters of a string to lower case characters.
2. **Syntax :** LCASE (string)
3. **Ex-** LCASE('HELLO') **Output:** hello

UCASE ( )

1. UCASE () coverts all the characters of a string to uppercase.
2. **Syntax:** UCASE (string)
3. **Ex-** UCASE('hello') **Output:** HELLO

f) Mention some applications of e-governance.

Ans. Some applications of e-governance are as follows :
- Government To Citizen (G2C)
- Consumer To Government (C2G)
- Government To Government (G2G)
- Government To Business (G2B)
- Government To NGO (G2N)

g) Write the function of Repeater.

Ans. A **repeater** operates at the physical layer. Its job is to regenerate the signal over the same network before the signal becomes too weak or corrupted.

h) Write the merits and demerits of Bus network topology.

Ans. **Merits and Demerits of Bus Topology:-**

Merits:

1. It is easy to set up, handle, and implement.
2. It is best suited for small networks.
3. It costs very less.

Demerits:

1. The cable length is limited. This limits the number of network nodes that can be connected.
2. It is suitable for networks with low traffic.
3. It is heavily dependent on the central bus. A fault in the bus leads to network failure.
4. It is not easy to isolate faults in the network nodes.

i) What is voice mail?

Ans. Voice mail is a method of storing voice messages electronically for later retrieval by intended recipients. Callers leave short messages that are stored on digital media.

j) What is the need for Cyber laws?

Ans.
- Cyber law provides *legal* protections to people using the internet.
- This includes both businesses and everyday citizens.
- Understanding cyber law is of the utmost importance to anyone who uses the internet.
- Cyber Law has also been referred to as the "law of the internet."

k) Explain the use of MAX ( ) function with an example.

- The MAX () function returns the largest value of the selected column.
- Syntax:

  SELECT MAX(*column_name*)
  FROM *table_name*
  WHERE *condition*;

- Example:

  SELECT MAX(Price) AS MaxPrice
  FROM Products;

l) Write the use of ORDER BY CLAUSE.

Ans. The SQL **ORDER BY** clause is used to sort the data in ascending or descending order, based on one or more columns.
Syntax :
Select Column-list from table-name
[Where Condition]
[Order BY Column 1, Column 2,Column N]
[ASC|DESC];

4. Answer the questions within 50 words each:

a) Explain the use of SUM ( ) and COUNT ( ) functions with example.

Ans. • The SUM () function returns the total sum of a numeric column.

Syntax:- SELECT SUM (*column_name*)
FROM *table_name*
WHERE *condition*;

Ex: - SELECT SUM (Quantity)
FROM Order Details;

• The COUNT() function returns the number of rows that matches a specified criteria.

Syntax:- SELECT COUNT (*column_name*)
FROM *table_name*
WHERE *condition*;

Ex. :- SELECT COUNT (PID)
FROM Products;

b) What is an access specifier? Mention different types of access specifiers.

Ans. **Access specifiers** are keywords in object-oriented languages that set the accessibility of classes, methods, and other members.

Types of access specifiers: In java we have 4 Access specifiers and they are as follows: 1. Public, 2. Private, 3. Protected 4. Default (no specifier).

Public access specifier : The public access specifier is accessible everywhere. It has the widest scope among all other modifiers.

Private access specifier : The private access specifier is accessible only within class.

Protected access specifier : The protected access specifier is accessible within package and outside the package but through inheritance only.

Default access specifier : If you don't use any specifier, it is treated as default. The default modifier is accessible only within package.

c) Distinguish between Bluetooth and Infrared technologies.

Ans. Bluetooth, uses a radio frequency, which allows transmission through walls and other objects. The standard range of a Class 3 Bluetooth device is about 30 ft., which makes it ideal for wireless cell phone headsets, and enabling handsfree cell phone use inside Bluetooth-enabled automobiles. Because Bluetooth technology is based on a standard 2.4 GHz frequency, different Bluetooth devices can typically communicate with each other, regardless of the manufacturer.

Infrared technology is what most TV remotes use. The distance an infrared signal can travel varies based on the strength of the remote, but is usually less than 50 feet for household electronics. In order for an infrared signal to be detected, there must be a direct line of sight between the transmitter (remote) and the receiver (TV). If there is a wall or large object between them, the signal will not pass through it.

d) Distinguish between RIGHT ( ) and RTRIM ( ) functions with example.

Ans. RIGHT ( ) function

1. The RIGHT() function extracts a number of characters from a string (starting from right).

2. Syntax:- RIGHT(string, number_of_chars)

3. Example: RIGHT('hello',3);

Output: llo

RTRIM ( ) function

1. The RTRIM() function removes trailing spaces from a string.

2. Syntax:- RTRIM(string)

3. Example:RTRIM ('hello   ');

Output: hello

e) Distinguish between Web browser and Search engine.

Ans. A browser is a software program installed on your computer locally. There are many browsers such as Internet Explorer, Firefox, Safari, and Opera, etc. A browser is used to access various websites and web pages.

A search engine is also a software program that searches for some particular document when specific keywords are entered. The search engine matches the exact keywords entered against the documents available on the Internet and returns a list of documents in which the keywords were found. Google and Yahoo are the most popular search engines.

GROUP-C
(Answer the followings)

5. A transaction is program module whose execution may change the content of database.

Committing a transaction means the permanently save any transaction into the database.

Revoking a transaction means the operation of restoring a database to a previous state by canceling a specific transaction.

COMMIT Statement:

The COMMIT command is the transactional command used to save changes invoked by a transaction to the database.

Syntax: commit;

Ex:- Following is an example which would delete those records from the table which have age = 25 and then COMMIT the changes in the database.

SQL> delete from customer where age=25;

SQL>commit;

ROLLBACK Statement:

The ROLLBACK command is the transactional command used to undo transactions that have not already been saved to the database. This command can only be used to undo transactions since the last COMMIT or ROLLBACK command was issued.

Syntax : rollback;

Ex:-Following is an example, which would delete those records from the table which have the age = 25 and then ROLLBACK the changes in the database.

SQL> Delete from customer where age=25;

SQL>rollback;

6. Use of five commonly used tags in an HTML document:

(i) HTML tag: It is the root of the html document which is used to specify that the document is html.

Syntax : <html> Statements... </html>

(ii) Head tag: Head tag is used to contain all the head element in the html file. It contains the title, style, meta, … etc tag

Syntax: <head> Statements……..</head>

(iii) Body tag: It is used to define the body of html document. It contains image, tables, lists, … etc.

Syntax: <body> Statements…….</body>

(iv) Title tag: It is used to define the title of html document.

Syntax: <title> Statements…….</title>

(v) Paragraph tag: It is used to define paragraph content in html document.

Syntax: <p> Statements... </p>

7. A network topology is the arrangement of a network, including its nodes and connecting lines.

Types of Network Topologies

(A) **Bus Topology :** Bus Topology is the simplest of network topologies. In this type of topology, all the nodes (computers as well as servers) are connected to the single cable (called bus), by the help of interface connectors.
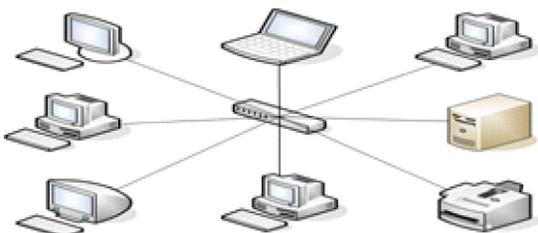

Merits:

(i) It is easy to set-up and extend bus network.

(ii) Bus topology costs very less.

(iii) Good for LAN.

Demerits:

(i) It is difficult to detect and troubleshoot fault at individual station.

(ii) Maintenance costs can get higher with time.

(iii) Efficiency of Bus network reduces, as the number of devices connected to it increases.

(iv) It is not suitable for networks with heavy traffic.

(B) **Star Topology:** In Star topology, all the components of network are connected to the central device called "hub" which may be a hub, a router or a switch. All the workstations are connected to central device with a point-to-point connection.
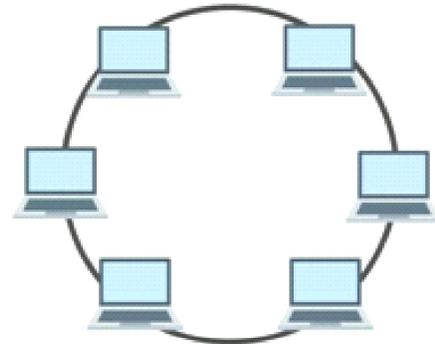

Merits:

(i) If one node or its connection breaks, it doesn't affect the other computers nor their connections

(ii) Devices can be added or removed without disturbing the network

(iii) They work well under heavy loading

(iv) It is possible to create very large network

Demerits:

(i) An expensive network layout to install.

(ii) The central hub is a single point of failure for the network

(C) **Ring Topology:** A ring topology is a topology for LAN in which every device has exactly two neighbor for communication purposes. All messages travel through a ring in the same direction.
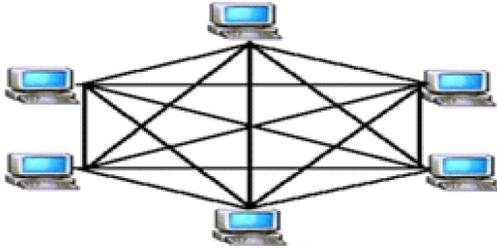

Merits:

(i) It is relatively less expensive than a star topology network.

(ii) In a Ring topology, every computer has an equal access to the network.

(iii) Performs better than a bus topology under heavy network load

Demerits:

(i) Failure of one computer in the ring can affect the whole network.

(ii) It is difficult to find faults in a ring network topology.

(iii) Adding or removing computers will also affect the whole network since every computer is connected with previous and next computer.

(D) **Mesh Topology:** In a Mesh topology, all the nodes are connected to other nodes with a dedicated connection.

Merits:

(i) Data can be transmitted from different devices simultaneously.

(ii) Even if one of the components fails there is always an alternative present. So data transfer doesn't get affected.

(iii) Expansion and modification in topology can be done without disrupting other nodes.

Demerits:

(i) There are high chances of redundancy in many of the network connections.

(ii) Overall cost of this network is way too high as compared to other network topologies.

(iii) Set-up and maintenance of this topology is very difficult.

(E) **Tree Topology:** A tree topology is a special type of structure in which many connected elements are arranged like the branches of a tree.
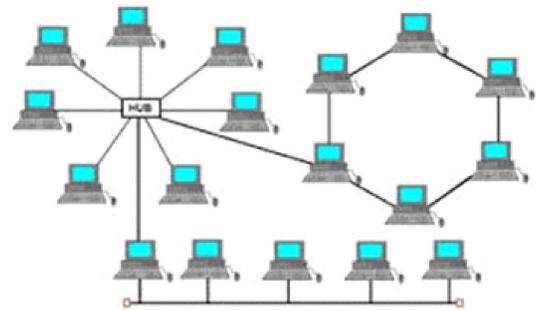
Merits:

(i) It is an extension of Star and bus Topologies

(ii) Expansion of Network is possible and easy.

(iii) We divide the whole network into segments (star networks), which can be easily managed and maintained.

(iv) Error detection and correction is easy.

(v) If one segment is damaged, other segments are not affected.

Demerits:

(i) As more and more nodes and segments are added, the maintenance becomes difficult.

(ii) Scalability of the network depends on the type of cable used

(F) **Hybrid Topology:** A hybrid topology is a type of network topology that uses two or more other network topologies, including bus topology, mesh topology, ring topology, star topology, and tree topology.

Merits:

(i) Very reliable and easy to detect the Faulty system.

(ii) Troubleshooting is easy.

(iii) It includes both wired and wireless network.

(iv) It is an expandable network.

Demerits:

(i) Its design is difficult to understand.

(ii) The cost of this network design is high, because of the requirement of a lot of cables, cooling systems, etc.

8. E-commerce, also known as electronic commerce or internet commerce, refers to the buying and selling of goods or services using the internet.

Benefits of E-Commerce:

● Immediacy - no going to the shops or waiting in queues

● price - goods bought online tend to be cheaper

- Choice - the range of goods available is vast and with sites like http://www.amazon.com that let you compare goods from many retailers it is easy to find what you want.

- 24-hour availability - the shop never closes

- Speed - you'll locate what you want much quicker

- Global markets - neither you nor the vendor are restricted to your/their locality

- Interactivity - get immediate feedback on prices, features etc

- Less paperwork - always a good thing!

Some of the major challenges faced by e-commerce in India are:

(i)   Infrastructural Problems

(ii)   Absence of Cyber Laws

(iii)   Privacy and Security Concern

(iv)   Payment and Tax Related Issues

(v)   Digital Illiteracy and Consumer awareness

(vi)   Virus Problem

(vii)   English Specific

9. Every entity in a network must have an IP address in order to be identified in a communication.

Addressing Schemes

There are two types of addressing schemes:

- Classful addressing scheme

- Classless addressing scheme

Classful addressing scheme

IPv4 addresses may be represented in any notation expressing a 32-bit integer value. They are most often written in the dot-decimal notation, which consists of four octets of the address expressed individually in decimal numbers and separated by periods.

8 bits	8 bits	8 bits	8 bits
Network	Network	Sub-Network	Host

Ex-

IPv4 address in dotted-decimal notation

Under classful addressing scheme, there are five classes. These classes are distinguished based on the prefix of the IP address.

First 8 Bits of an IP v4 Address	Address Class
0-127	Class A
128-191	Class B
192-223	Class C
224-239	Class D
240-255	Class E

Classless Addressing Scheme

To overcome the problems of classful addressing schemes, classless addressing scheme was developed. In this scheme, variable number of bits are alloted for the network and the host portion.

***

2018 (A)

Time- 3 Hours **Full Marks-70**

The figures in the right hand margin indicate marks.
Answer all questions from Group-A, Ten bits from Q. No. 3, Three bits from Q. No. 4 of Group-B and three questions from Group-C.

GROUP-A

1. Choose the correct answer from the followings: [1x10=10]

(a) The process of converting analog signals into digital signals to be processed by a receiving computer is referred as _____.

(i) Modulation (ii) Demodulation

(iii) Syncronizing (iv) None of these

(b) In database system _____ key is used to identify tuples uniquely in a relation.

(i) Primary key (ii) Secondary key

(iii) Internal key (iv) Foreign key

(c) IP address is of _____ bit.

(i) 8 (ii) 16

(iii) 32 (iv) 64

(d) The degree of a relation is the number of _____ it contains.

(i) Records (ii) Keys

(iii) Attributes (iv) Relations

(e) Converting plain text to cipher text is called as _____.

(i) Digital conversion (ii) Encryption

(iii) Decryption (iv) Cipher conversion

(f) An online community bulletin board is also called as:

(i) Telnet (ii) Newsgroup

(iii) Chat (iv) Newsnet

(g) _____ is a java IDE.

(i) JDBC (ii) ODBC

(iii) java lang (iv) Eclipse

(h) _____ enforces access policies such as what services are allowed to be accessed by the network users.

(i) Gateway (ii) Protocol

(iii) Firewall (iv) Router

(i) COUNT (*) return the number of _____ in a table.

(i) Rows (ii) Columns

(iv) Keys (iv) Primary keys

(j) _____ is not a package name in the Java language.

(i) lang (ii) util

(iii) sql (iv) pkg

2. Expand the followings: [1x10=10]

(a) SMTP

(b) IDE

(c) OLE

(d) MAC

(e) PSTN

(f) DML

(g) MTNL

(h) SQL

(i) B2C

(j) DTHML

GROUP-B

3. Explain any ten of the following within two/ three sentences each: [2x10=20]

   (a) DCL commands

   (b) Public-key encryption

   (c) Broadband

   (d) Instance variable

   (e) XML

   (f) Protocol

   (g) Electronic Data Exchange (EDE)

   (h) Public Variable

   (i) ORDER BY clause

   (j) Switch

   (k) Firewall

   (l) WWW

4. Answer any **three** of the following questions within six sentences each: **[3x3=9]**

   (a) What is Back-end database?

   (b) Is a NULL value same as zero or a blank space? If not then what is the difference?

   (c) List three features of Java.

   (d) How many encryption techniques are there and what are they?

   (e) How many major categories are there for E-Commerce? Write their benefits.

GROUP-C

Answer any *three* of the following. **[7x3=21]**

5. Write different features of E-Commerce.

6. Write the name of three network topologies. Describe them with their advantages and disadvantages.

7. What are Tags? Do all HTML tags have end tag? What are the commonly used tags that are used when designing a page?

8. What are various types of threats on Internet? How can they be avoided?

9. What is meant by Access Modifier? Describe the uses of different Access Modifiers of Java with examples.

10. What is the difference between SQL and MYSQL? What are the various DDL commands present in SQL? Give brief description of their purposes.

***

ANSWERS - 2018 (A)

GROUP-A

1. Choose the correct answer:
   a) (ii) Demodulation
   b) (i) Primary key
   c) (iii) 32
   d) (iii) Attributes
   e) (ii) Encryption
   f) (ii) Newsgroup
   g) (iv) Eclipse
   h) (iii) Firewall
   i) (i) Rows
   j) (iv) pkg

2. Expand the followings:
   (a) SMTP : Simple Mail Transfer Protocol
   (b) IDE : Integrated Development Environment
   (c) OLE : Object Linking and Embedding
   (d) MAC : Media Access Control
   (e) PSTN : Public Switched Telephone Network
   (f) DML : Data Manipulation Language
   (g) MTNL : Mahanagar Telephone Nigam Limited
   (h) SQL : Structured Query Language
   (i) B2C : Business-to-Consumer
   (j) DHTML : Dynamic HyperText Markup Language

GROUP-B

3. Explain the following within two/three sentences each:
   a) DCL commands
   - Data Control Language (DCL) is used to control privileges in Database.
   - DCL commands are:

   GRANT: Used to provide any user access privileges or other priviliges for the database.

   REVOKE: Used to take back permissions from any user.

   (b) Public-key encryption

   Public-key encryption is a cryptographic system that uses two keys: A public key known to everyone and a private key known only to the recipient.

   (c) Broadband

   In telecommunications, broadband is wide bandwidth data transmission which transports multiple signals and traffic types. The medium can be coaxial cable, optical fiber, radio or twisted pair.

   (d) Instance variable
   - There are those variables that are associated with object.
   - Instance variables are defined inside the class, but outside of any method, and are only initialized when the class is instantiated.
   - Their values are unique to each instance of a class.

   (e) XML

   Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.

   (f) Protocol

   A protocol is a set of rules and guidelines for communicating data. Rules are defined for each step and Process during communication between two or more computers. Networks have to follow these rules to successfully transmit data.

   (g) Electronic Data Exchange (EDE)

   The Electronic Data Exchange (EDE) is a secure, web-based file transmission system. Local governments must use EDE to submit a variety of data and reports.

(h)   Public Variable

Public variables are variables that are visible to all classes.

(i)   ORDER BY clause

The ORDER BY statement in SQL is used to sort the fetched data in either ascending or descending according to one or more columns. By default ORDER BY sorts the data in ascending order.

Syntax: SELECT * FROM table_name ORDER BY column_name ASC|DESC;

(j)   Switch

A switch, in the context of networking is a high-speed device that receives incoming data packets and redirects them to their destination on a local area network (LAN).

(k)   Firewall

In computing, a firewall is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules. A firewall typically establishes a barrier between a trusted internal network and untrusted external network, such as the Internet.

(l)   WWW

The World Wide Web (WWW), commonly known as the Web, is an information space where documents and other web resources are identified by URL, such as https://www.example.com/), which may be interlinked by hypertext, and are accessible over the Internet. The resources of the WWW may be accessed by users by a software application called a web browser.

4. (a)   What is Back-end database?

A back-end database is a database that is accessed by users indirectly through an external application rather than by application programming stored within the database itself or by low level manipulation of the data (e.g. through SQL commands). A back-end database stores data but does not include end-user application elements such as stored queries, forms, macros or reports. The back-end database concept was invented by Microsoft in 1989.

(b)   Is a NULL value same as zero or a blank space? If not then what is the difference?

● A NULL value is not same as zero or a blank space.

● A NULL value is a value which is 'unavailable, unassigned, unknown or not applicable'.

● Whereas, zero is a number and blank space is a character.

(c)   List three features of Java.

Three features of Java are:

i)   Simple: Java is very easy to learn, and its syntax is simple, clean and easy to understand

ii)   Object-Oriented: Java is an object-oriented programming language. Everything in Java is an object.

iii)   Secured: Java is best known for its security. With Java, we can develop virus-free systems.

(d)   There are two types of encryption algorithms:

i)   Symmetric-Key Algorithms: These algorithms use the same key for data encryption and   decryption.

ii)   Asymmetric key Algorithm:- These algorithms use the different keys for data encryption and decryption.

(e)   Electronic commerce can be classified into four main categories.

i) B2B   ii) B2C

iii) C2C   iv) C2B

Benefits of E-commerce

- E-commerce provides the sellers with a global reach.
- E- commerce will substantially lower the transaction cost.
- It provides quick delivery of goods with very little effort on part of the customer.
- 24x7 services.
- Electronic commerce also allows the customer and the business to be in touch directly, without any intermediaries.

GROUP-C
(Answer the followings)

5. Seven Unique Features of E-commerce are:

(i)   **Ubiquity -** E-commerce technology is available everywhere. A unique feature of e-commerce technology. Example is if the user is at outstation, he also can through www.acer.com get the information of the product.

(ii) **Global Reach -** The total number of users or customers an e-commerce business can obtain. Example is www.acer.com is whole world also can browse it. Because the website have supplied many language to let different language users understand it.

(iii) **Universal Standards -** Standards that are shared by all nations around the world. Example is when you see the price of product in the website, that price is very fairly and standards.

(iv) **Richness -** Video, audio and text messages are possible. Example is the richness is can make the websites become attract people to browse.

(v)   **Interactivity -** Technology that allows for two way communication between merchant and consumer. Example is in the website we can contract the merchants, that have many way can contract like: phone, e-mail, video call, and etc.

(vi) **Information Density -** The total amount and quality of information available to all market participants. Example is we can get the clearly information in the websites.

(vii) **Personalization/Customization -** It allows personalized messages to be delivered to individuals. Example of personalization is if have a new product, the website will send the email flyer to the customer. Example of customization is customer can customize something in the product like name, pattern, colors, and etc.

6. Name of three Network Topologies are:

(i)   Bus Topology

(ii) Star topology

(iii) Ring topology

Bus Topology: Bus Topology is the simplest of network topologies. In this type of topology, all the nodes (computers as well as servers) are connected to the single cable (called bus), by the help of interface connectors
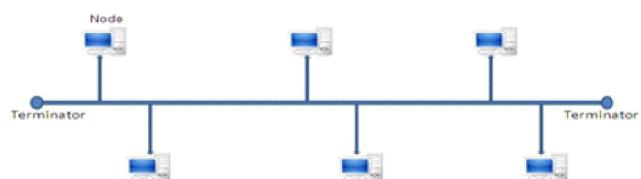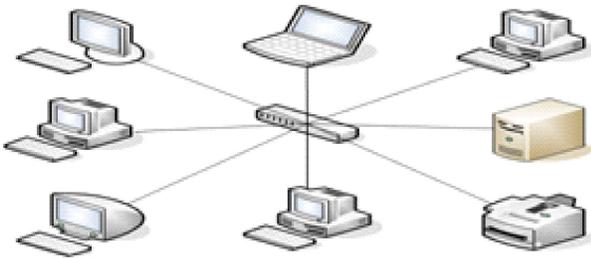
Advantages:
- It is easy to set-up and extend bus network.
- Bus topology costs very less.
- Good for LAN.

Disadvantages:
- It is difficult to detect and troubleshoot fault at individual station.
- Maintenance costs can get higher with time.
- Efficiency of Bus network reduces, as the number of devices connected to it increases.
- It is not suitable for networks with heavy traffic.

Star Topology : In Star topology, all the components of network are connected to the central device called "hub" which may be a hub, a router or a switch. All the workstations are connected to central device with a point-to-point connection.

Advantages:
- If one node or its connection breaks, it doesn't affect the other computers nor their connections
- Devices can be added or removed without disturbing the network
- They work well under heavy loading
- It is possible to create very large network

Disadvantages
- An expensive network layout to install.
- The central hub is a single point of failure for the network

Ring Topology : A ring topology is a topology for LAN in which every device has exactly two neighbors for communication purposes. All messages travel through a ring in the same direction.
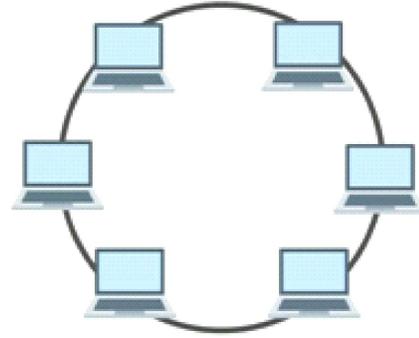
Advantages:
- It is relatively less expensive than a star topology network.
- In a Ring topology, every computer has an equal access to the network.
- Performs better than a bus topology under heavy network load

Disadvantages:
- Failure of one computer in the ring can affect the whole network.
- It is difficult to find faults in a ring network topology.
- Adding or removing computers will also affect the whole network since every computer is connected with previous and next computer.

7. Tags are the hidden keywords within a web page that define how your web browser must format and display the content.

No, all the elements in HTML do not require a end tag.

The lists here offer the basic HTML tags used most often in formatting Web pages, including links to other Web pages, inserting images on your page, and creating tables.

FORMATTING TEXT:

You need headings to organize your Web page, differing types of type to place emphasis, and lists to keep things interesting. These tags help you format them all:

- Headings: <h1>Top heading</h1>, <h2>Next-level heading</h2>, ... <h6>Lowest heading</h6>

- Bold: text

- Italic: <i> text </i>

- Paragraph: <p> A paragraph of text </p>

- Bulleted list: <ul> First list item Second list item

- Numbered list: <ol> Item #1 Item #2

INSERTING LINKS:

Web sites are meant to link to other sites and be linked to them. These HTML tags are the ones you need to connect in the ether:

- Links to external Web pages: The ...For Dummies Web page

- Links within a Web site, same directory: My resume

- Links within a page: Jump to the next line. Here is the next line.

GRAPHICS AND MULTIMEDIA:

You want graphics and multimedia on your Web page to add visual interest. These HTML tags show how to include visuals:

- Photos and still images: <img src="myphoto.jpg" ALT="My photo!">

- Moving images: <embed src="mymovie.mov">

DRAWING TABLES

Setting up tables means setting a border and making HTML tags for every row and cell:

- Start table with 1-pixel border: <table border="1?>

- Rows and cells: <tr><td>First Row, First Cell</td><td>First Row, Second Cell</td></tr> <tr><td>>Second Row, First Cell</td><td>Second Row, Second Cell</td></tr>

- Table end: </table>

8. Some of the most common threats on internet include:

- Malware
- Viruses
- Spyware
- Adware
- Trojan horses
- Worms
- Phishing
- Spear phishing
- Wi-Fi attacks
- Denial of service (DOS) attacks

There are 5 security measures to avoid the threats:

(i) Strengthen Access Control

Access control is an important part of security. Weak access control leaves your data and systems susceptible to unauthorized access.

Boost access control measures by using a strong password system. You should have a mix of uppercase and lower case letters, numbers, and special characters. Also, always reset all default passwords.

Finally, create a strong access control policy.

(ii) Keep All Software Updated

From anti-virus software to computer operating systems, ensure your software is updated. When a new version of software is released, the version usually includes fixes for security vulnerabilities.

Manual software updates can be time-consuming. Use automatic software updates for as many programs as possible.

(iii) Standardize Software

Keep your systems protecting by standardizing software. Ensure that users cannot install software onto the system without approval.

Not knowing what software is on your network is a huge security vulnerability. Make sure that all computers use the same:

- Operating system
- Browser
- Media player
- Plugins

(iv)   Use Network Protection Measures

Protecting your network is crucial. To keep your network and its traffic secured:
- Install a firewall
- Ensure proper access controls
- Use network segmentation
- Use a virtual private network (VPN)
- Conduct proper maintenance

(v)   Employee Training

Sometimes external threats are successful because of an insider threat. The weakest link in data protection can be your own employees.

Ensure your employees understand network security. Your employees should be able to identify threats. They should also know who to contact to avoid a security breach.

Provide security training throughout the year, and be sure to update it. There are new security risks every day.

9. Access modifiers are the keywords which are used with classes, variables, methods and constructors to control their level of access.

Java has four access modifiers:

- Default: When no access modifier is specified, it is treated as default modifier. Its scope is limited within the package.

- Public: The word itself indicates that it has scope everywhere, i.e.; it is visible everywhere even outside the package.

- Private: It has scope only within the class

- Protected: Its scope limits within the package and all sub classes.
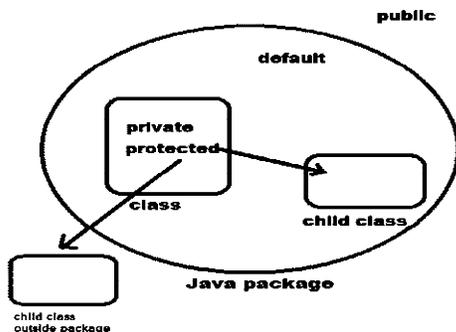
10. Difference between SQL and MYSQL

- SQL is a language which is used to operate your database

- MySQL was one of the first open-source database available in the market

- SQL is used in the accessing, updating, and manipulation of data in a database

- MySQL is an RDBMS that allows keeping the data that exists in a database organized

- SQL is a Structured Query Language

- MySQL is a RDBMS to store, retrieve, modify and administrate a database using MYSQL

- SQL is a query language while MYSQL is database software

DDL (Data Definition Language): DDL or Data Definition Language actually consists of the SQL commands that can be used to define the database schema. It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in database.

DDL Commands:

- Create - is used to create the database or its objects (like table, index, function, views, store procedure and triggers).

- Drop - is used to delete objects from the database.

- Alter -is used to alter the structure of the database.

- Truncate-is used to remove all records from a table, including all spaces allocated for the records are removed.

- Rename -is used to rename an object existing in the database.

***

2017 (A)

Time- 3 Hours   **Full Marks-70**

The figures in the right hand margin indicate marks.
Answer all questions from Group-A, Ten bits from Q. No. 3, Three bits from Q. No. 4 of Group-B and three questions from Group-C.

GROUP-A

1. Choose the correct answer from the followings:

(a) The process of extracting hidden relationship among data from a large database is called
   (i)   Data queries   (ii) Data analysis
   (iii) Data mining   (iv) Data warehouse

(b) Which of the following is a cyber crime?
   (i)   Cyber staking   (ii) Hacking
   (iii) Phishing   (iv) All of the above

(c) Concealing the functional details of a class is referred to as
   (i)   Abstraction   (ii) Encapsulation
   (iii) Inheritance   (iv) Data binding

(d) Which protocol is used in dial-up connection?
   (i)   PPP   (ii) SLIP
   (iii) FTP   (iv) Both (i) and (ii)

(e) Which network device is used to amplify signal in long-distance networking?
   (i)   Switch   (ii) Repeater
   (iii) Hub (iv)   Bridge

(f) Which of the following is a web browser?
   (i)   Internet explorer (ii) Google
   (iii) Windows   (iv) Gmail

(g) In database, a relation is represented by
   (i)   Tuple   (ii) Table
   (iii) Domain   (iv) none of the above

2. Expand the following.
   (a) GIS   (b) IRC
   (c) IPR   (d) OOP
   (e) ISDN   (f) FTP
   (g) ISP   (h) WAIS

GROUP-B

3. Answer the followings

   (a) What is access control attack? Give examples.

   (b) Distinguish between spam and cookies.

   (c) Write the objective of cyber law.

   (d) Write the advantages of broadband connection

   (e) Write the role of ISP.

   (f) Write the function of hub.

   (g) What is a newsgroup?

   (h) What is the necessity of data normalization?

   (i) Distinguish between Web browser and search engine

4. Answer the followings within 6 sentences.

   (a) What is firewall? Write its functions.

   (b) Differentiate between the users of switch gateway in internet

GROUP-C

5. What is the need for internet protocols? Explain the uses of TCP/IP, HTTP and FTP.

6. How do the following internet applications work?

   (a) Internet Telephony

   (b) Internet Relay Chart

***

ANSWERS - 2017(A)

GROUP-A

1. Choose the correct answer:

   (a)   (iii)   data mining

   (b)   (iv)   All of the above

   (c)   (i)   Abstraction

   (d)   (iv)   Both (i) and (ii)

   (e)   (ii)   Repeater

   (f)   (i)   Internet explorer

   (g)   (ii)   Table

2. Expand the followings:

   (a)   GIS   : Geographic Information System

   (b)   IRC   : Internet Relay Chat

   (c)   IPR   : Intellectual Property Right

   (d)   OOP   : Object Oriented Programming

   (e)   ISDN : Integrated Services Digital Network

   (f)   FTP   : File Transfer protocol

   (g)   ISP   : Internet Service Provider

   (h)   WAIS : Wide Area Information Servers

GROUP-B

3. Answer the followings

   (a)   What is access control attack? Give examples.

   Access control attacks typically bypass access control methods to steal data or user credentials.

   Ex:-Common Attacks Due To Broken Access Control

   ● Access control prevents the unauthorized access to the objects which include access to the information systems like communication links, networks, computers, services and sensitive data.

   ● On the other hand, broken access control continues to be the most common web application Vulnerability.

   (b)   Distinguish between spam and cookies.

   ● Cookies are files that your web browser uses to remember things like have you visited a page before and so on.

   ● Spam means unwanted emails.

   (c)   Write the objective of cyber law.

   Objective of cyber law:

   i)   Safeguard national critical information infrastructure (CII)

   ii) Respond to, resolve, and recover from cyber incidents and attacks through timely information sharing, collaboration, and action.

   iii) Establish a legal and regulatory framework to enable a safe and vibrant cyberspace.

   (d)   Write the advantages of broadband connection

   Advantages of Broadband connections

   i)   Connection speed is up to 100 times faster than dialup connection. You can download pictures files, software in seconds or minutes instead of hours. Online gaming is only possible using a broadband internet access.

   ii) It does not affect the phone line.

   iii) It is convenient because the internet connection is always on.

   iv) You don't need to dial an access number and risk getting a busy signal.

   v) Broadband internet offers unlimited access and you won't be charged based on the connection duration.

   vi) Broadband internet not only gives you high speed internet access, it can also provide cheap phone services via VoIP technology.

(e) Write the role of ISP.

Role of ISP (Internet Service provider):

- As a medium that provides services to connect to the internet.
- Connect customers to the nearest Internet gateway.
- Provides a modem for dial-up.
- Connecting an information service to a user of the World Wide Web (WWW).
- Allows a user to use the services of electronic mail (e-mail).
- Allows a user voice conversations via the internet.
- Gave place to the homepage.
- ISP does protection from the spread of the virus by applying antivirus systems for his customers.

i) Write the function of hub.

A network hub is a networking device that connects to one or more equipment. For example, a computer can connect to a server, printer and another computer through a network hub. It is useful in sharing of resources and broadcasting data it receives. It helps connects these devices together without having to connect to each other directly. There are three types of network hubs: Passive Hubs, Active Hubs and Intelligent Hubs.

ii) What is a newsgroup?

A newsgroup is a discussion about a particular subject consisting of notes written to a central Internet site and redistributed through Usenet, a worldwide network of news discussion groups.

iii) What is the necessity of data Normalization?

Normalization is a technique used in relational database to reduce data duplication as far as possible but not all.

iv) Distinguish between Web browser and Search engine

A browser is a software program installed on your computer locally. There are many browsers such as Internet Explorer, Firefox, Safari, and Opera, etc. A browser is used to access various websites and web pages.

A search engine is also a software program that searches for some particular document when specific keywords are entered. The search engine matches the exact keywords entered against the documents available on the Internet and returns a list of documents in which the keywords were found. Google and Yahoo are the most popular search engines.

4. Answer the followings within 6 sentences.

(a) What is firewall? Write its functions.

A firewall is a network security device that monitors incoming and outgoing network traffic and permits or blocks data packets based on a set of security rules.

A firewall in the networking world should examine the traffic that is entering into the network and pass the "Wall" based on some rules defined by the network and its resources. It acts as a security guard, who normally sits at the main gate, and checks your identity and access privileges and lets you in.

b) Differentiate between the users of switch & gateway in internet.

Gateways are devices acts as a junction between multiple networks.

Switches are computer networking devices that allow one or more computers to be connected to the other computers and networks.

GROUP-C
(Answer the followings)

5. What is the need for internet protocols? Explain the uses of TCP/IP, HTTP and FTP.

    The Internet Protocol (IP) is the protocol by which data is sent from one computer to another on the Internet.

    Transmission Control Protocol/Internet Protocol (TCP/IP) is a suite of communication protocols used to interconnect network devices on the internet. TCP/IP can also be used as a communications protocol in a private network (an intranet or an extranet).

    The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web. Hypertext is structured text that uses logical links (hyperlinks) between nodes containing text.

    File Transfer Protocol (FTP) is File transfer protocol used to transfer files between computers on a network. You can use FTP to exchange files between computer accounts, transfer files between an account and a desktop computer, or access online software archives.

6. How do the following internet applications work?

    (a) Internet Telephony

         Internet Telephony is a type of communications technology that allows voice calls and other telephony services like fax, SMS and other voice-messaging applications to be transmitted using the Internet as a connection medium. Software under this technology is cost-effective and convenient because it allows the user to communicate through fax, voice and video calls anywhere in the world as long as there is an Internet connection. In this way, users are able to bypass the charges that are common in traditional telephone services. However, the quality of this service is not as good as that of traditional circuit-switched networks used in traditional telephone services because it is very dependent on the quality and speed of the Internet connection. Internet telephony is also called IP telephony or broadband telephony.

    (b) Internet Relay Chart

         Internet Relay Chat (IRC) is an application layer protocol that facilitates communication in the form of text. The chat process works on a client/server networking model. IRC clients are computer programs that users can install on their system or web based applications running either locally in the browser or on 3rd party server. These clients communicate with chat servers to transfer messages to other clients. IRC is mainly designed for group communication in discussion forums, called channels, but also allows one-on-one communication via private messages as well as chat and data transfer, including file sharing.

***

VST-I

(Arts / Science / Commerce)

Time- 3 Hours   **Full Marks-70**

The figures in the right hand margin indicate marks.
Answer all questions.

GROUP-A

1. Choose the correct answer   [1x10=10]

A. The main job of MODEM is

   (i) Modulation and demodulation

   (ii) Multiplexing

   (iii) Encryption and decryption

   (iv) None of these

B. The router algorithm takes the decision to changes the route when

   (i) Router changes

   (ii) Topology changes

   (iii) User changes

   (iv) Transmission time does not change

C. The core protocol on which the internet runs is

   (i) FTP

   (ii) TCP/IP

   (iii) HTTP

   (iv) TPX/SPX

D. Which of the followings is a Web Browser

   (i) Google Chrome (ii)   Google

   (iii) Gmail   (iv)   Windows

E. Java is a/an _____ language.

   (i) Object Oriented language

   (ii) Structured Language

   (iii) Scripting Language

   (iv) None of these

F. A virus is _____.

   (i) Hardware   (ii)   Software

   (iii) (i) & (ii)   (iv)   None

G. Which SQL language the COMMIT command belongs.

   (i) DDL   (ii)   DML

   (iii) DCL   (iv)   TCL

H. What MySQL property is used to create a surrogate key in MySQL?

   (i) UNIQUE

   (ii) SEQUENCE

   (iii) AUTO_INCREMENT

   (iv) None of the above

I. The term attribute refers to a _____ of a table.

   (i) Record

   (ii) Column

   (iii) Tuple

   (iv) Key

J.   E-business is _____.

 (i)   The use of electronic communications to support the full range of business processes.

 (ii)   An organization using electronic media to sell direct to its customers.

 (iii) An organization using electronic media to purchase from to its suppliers.

 (iv)   Any electronically mediated communication between an organization and its stakeholders.

2.   Expand the following: [1x10=10]

 (a)   LAN

 (b)   IAN

 (c)   DSC

 (d)   RDBMS

 (e)   ASCII

 (f)   BDSU

 (g)   IEEE

 (h)   B2C

 (i)   ISP

 (j)   FTP

GROUP-B

3.   Answer the followings: (Any ten) [2x10=20]

 (a)   What is gateway?

 (b)   What is PAN?

 (c)   What is TELNET?

 (d)   What is CDMA?

 (e)   What is Virus?

 (f)   What is firewall?

 (g)   What is XML?

 (h)   What is RDBMS?

 (i)   What is E-business

 (j)   What is TCP?

 (k)   What is DML?

4.   Answer the followings: (Any three) [3x3=9]

 (a)   Discuss about bus topology?

 (b)   Discuss the use of cookies?

 (c)   Discuss about access specifier of class member?

 (d)   Explain with an example of HTML list?

 (e)   Explain about Cartesian product?

 (f)   Discuss about some string function in SQL?

 (g)   What is a front-end interface?

 (h)   Explain hyperlink with example.

 (i)   What is WiFi ?

GROUP-C

(Answer any Three)   [7x3=21]

5.   What is internet? Discuss about internet backbone & feature of internet?

6.   Discuss the role of ISP?

7.   Discuss about different types of List with example.

8.   What are the difference types of inheritance in java?

***

ANSWERS - VST-I

GROUP-A

1. Choose the correct answer:

   A.   (i)   Modulation and demodulation

   B.   (ii)   Topology changes

   C.   (ii)   TCP/IP

   D.   (i)   Google Chrome

   E.   (i)   Object Oriented Language

   F.   (ii)   Software

   G.   (iv)   TCL

   H.   (iii) AUTO_INCREMENT

   I.   (ii)   Column

   J.   (i)   The use of electronic communications to support the full range of business processes.

2. Expand the followings:

   (a) LAN   : Local Area Network

   (b) IAN   : Internet Area Network

   (c) DSC   : Digital Signature Certificate

   (d) RDBMS : Relational Database Management System

   (e) ASCII : American Standard Code for Information Interchange

   (f) BDSU   : Basic Digital Subscriber Unit

   (g) IEEE   : Institute of Electrical and Electronics Engineers

   (h) B2C   : Business-to-Customer

   (i) ISP   : Internet Service Provider

   (j) FTP   : File Transfer Protocol

GROUP-B

3. Answer the followings

   a)   A gateway is a network node that connects two networks using different protocols together. While a bridge is used to join two similar types of networks, a gateway is used to join two dissimilar networks.

   b)   A Permanent Account Number (PAN) is a ten-digit alphanumeric number, issued in the form of a laminated card, by the Indian Income Tax Department, to any "person" who applies for it or to whom the department allots the number without an application.

   c)   Telnet is a networking protocol and software program used to access remote computers and terminals over the Internet or a TCP/IP computer network.

   d)   Code Division Multiple Access (CDMA) is a channel access method used by various radio communication technologies. CDMA is an example of multiple access, where several transmitters can send information simultaneously over a single communication channel. CDMA is used as the access method in many mobile phone standards.

   e)   A virus is a type of malicious software (malware) comprised of small pieces of code attached to legitimate programs. When that program runs, the virus runs.

   f)   A firewall is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.

g) Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable

h) A Relational database management system (RDBMS) is a database management system (DBMS) that is based on the relational model as introduced by E. F. Codd.

i. E-business is any kind of business or commercial transaction that includes sharing information across the internet.

j. Transmission Control Protocol (TCP) is a standard that defines how to establish and maintain a network conversation via which application programs can exchange data. TCP works with the Internet Protocol (IP), which defines how computers send packets of data to each other.

k. A Data Manipulation Language (DML) is a computer programming language used for adding, deleting, and modifying data in a database. A DML is often a sublanguage of a broader database language such as SQL, with the DML comprising some of the operators in the language.

4. Answer the followings:

a) A bus topology is a topology for a Local Area Network (LAN) in which all the nodes are connected to a single cable. The cable to which the nodes connect is called a "backbone". If the backbone is broken, the entire segment fails.

b) Cookies are most commonly used to track website activity. When you visit some sites, the server gives you a cookie that acts as your identification card. Upon each return visit to that site, your browser passes that cookie back to the server. Servers can use cookies to provide personalized web pages.

c) Access specifiers are keywords in object-oriented languages that set the accessibility of classes, methods, and other members.

Types of access specifiers:

In java we have 4 Access specifiers and they are as follows:

* Public

* Private

* Protected

* Default (no specifier)

d) Unordered HTML List:

An unordered list starts with the <ul> tag. Each list item starts with the <li> tag.

Example:

   Coffee

   Tea

   Milk

Ordered HTML List:

An ordered list starts with the <ol> tag. Each list item starts with the <li> tag.

Example:

   Coffee

   Tea

   Milk

e) The SQL CROSS JOIN produces a result set which is the number of rows in the first table multiplied by the number of rows in the second table if no WHERE clause is used along with CROSS JOIN. This kind of result is called as Cartesian product.

Syntax: Select * from table1 CROSS JOIN table 2;

f) Some string functions in SQL are:

i) CONCAT (): This function is used to add two words or strings.

ii) LCASE (): This function is used to convert the given string into lower case.

iii) UCASE (): This function is used to make the string in upper case.

iv) LENGTH (): This function is used to find the length of a given string

v) LTRIM (): This function removes the leading space characters of a string passed as argument.

vi) REVERSE (): This function is used to reverse a string

vii) RTRIM (): This function removes the trailing space characters of a string passed as argument

g) Front-end and back-end are terms used to characterize program interfaces and services relative to the initial user of these interfaces and services.

Example:-The Telephony Application Program Interface (TAPI) is sometimes referred to as a front-end interface for telephone services.

h. HTML links are hyperlinks.

You can click on a link and jump to another document.

Syntax:

In HTML, links are defined with the <a> tag:

link text

Example: Visit google.com!

i. Wi-Fi is a wireless networking technology that allows devices such as computers (laptops and desktops), mobile devices (smart phones and wearables), and other equipment (printers and video cameras) to interface with the Internet. It allows these devices and many more to exchange information with one another, creating a network.

GROUP-C
(Answer the followings)

5. What is internet?

The Internet is a massive network of networks, a networking infrastructure. It connects millions of computers together globally, forming a network in which any computer can communicate with any other computer as long as they are both connected to the Internet.

Internet backbone:

An Internet backbone refers to one of the principal data routes between large, strategically interconnected networks and core routers on the Internet. An Internet backbone is a very high-speed data transmission line that provides networking facilities to relatively small but high-speed Internet service providers all around the world.

Internet backbones are the largest data connections on the Internet. They require high-speed bandwidth connections and high-performance servers/routers. Backbone networks are primarily owned by commercial, educational, government and military entities because they provide a consistent way for Internet service providers (ISPs) to keep and maintain online information in a secure manner.

Major Features of the Internet:
i) The World Wide Web
ii) E-mail
iii) News
iv) Telnet
v) File Transfer Protocol (FTP)
vi) Internet Relay Chat (IRC)

6. To be able to join the internet, we must have access by subscribing to the internet service provider.

ISP is a company that offers services to us to connect with the internet. To access

the Internet, we simply call the ISP via the ISP's modem and the computer will take care of the details necessary to connect to the Internet, including the cost of the connection.

The role of ISP in internet access among others:

● As a medium that provides services to connect to the internet.

● Connect customers to the nearest Internet gateway.

● Provides a modem for dial-up.

● Connecting an information service to a user of the World Wide Web (WWW).

● Allows a user to use the services of electronic mail (e-mail).

● Allows a user voice conversations via the internet.

● Gave place to the homepage.

● ISP does protection from the spread of the virus by applying antivirus systems for his customers.

7. HTML offers web authors three ways for specifying lists of information. All lists must contain one or more list elements. Lists may contain: ?

● ? An unordered list. This will list items using plain bullets.

● ? An ordered list. This will use different schemes of numbers to list your items.

● <dl> ? A definition list. This arranges your items in the same way as they are arranged in a dictionary.

HTML Unordered Li sts:

An unordered list is a collection of related items that have no special order or sequence. This list is created by using HTML <ul> tag. Each item in the list is marked with a bullet.

 Example:

　　　　 Coffee

　　　　 Tea

　　　　 Milk

　　　　

HTML Ordered Lists:

If you are required to put your items in a numbered list instead of bulleted, then HTML ordered list will be used. This list is created by using <ol> tag. The numbering starts at one and is incremented by one for each successive ordered list element tagged with

Example:

Coffee

Tea

 Milk

　　

HTML Definition Lists:

A definition list is a list of items, with a description of each item.

The definition list created using <dl> tag. The <dl> tag is used in conjunction with <dt> - defines the item in the list, and <dd> describes the item in the list:

<dl>

<dt>Bread </dt>

<dd>A baked food made of flour. </dd>

<dt>Coffee</dt>
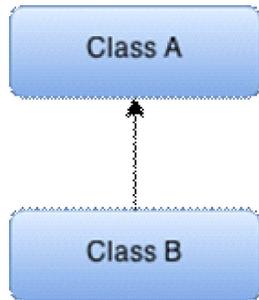
<dd>A drink made from roasted coffee beans.</dd>

</dl>

8. Types of inheritance in java:
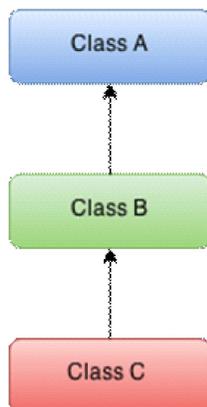
i) Single Inheritance:

Single inheritance is a simple and easy to understand. A class is created by extending an another class is called Single inheritance.

On the above diagram Class B is extended from Class A, then this type of deriving is called single inheritance. Here class A is a parent class of class B. In other words, Class B is a child of Class A.

ii) Multilevel Inheritance:

Multilevel Inheritance refers to when a class extends from another class which extends another class is called Multilevel inheritance.

On the above diagram represents the multilevel inheritance, here Class C extended from Class B and Class B extended from the Class A,
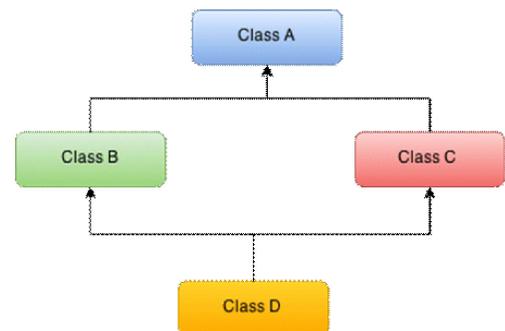
iii) Hierarchical Inheritance:

When multiple classes are inherited from a single class is called Hierarchical inheritance.
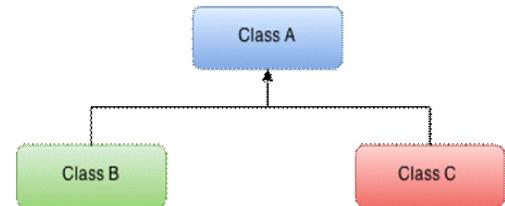
On the above diagram Class B and Class C are inherited from a single class A, this represents the Hierarchical inheritance.

iv) Hybrid Inheritance:

The Hybrid inheritance is the combination of both the Single and Multiple inheritances

The hybrid inheritance is achieved with the interfaces in Java.

Note: Java does not support multiple inheritance

[Multiple inheritance one of rarely used inheritance type in software development. Because it leads some unwanted complexity when further extending the classes. Because of this reason, some of the languages like Java, C# and Smalltalk don't support the multiple inheritances.]

GROUP - A

OBJECTIVE & VERY SHORT TYPE QUESTIONS

1. ***Multiple Choice Questions & Answers:***

UNIT - I
(Networking & Open Standard)

1. Computer Network is
   A. Collection of hardware components and computers
   B. Interconnected by communication channels
   C. Sharing of resources and information
   D. All of the Above

2. What is a Firewall in Computer Network?
   A. The physical boundary of Network
   B. An operating System of Computer Network
   C. A system designed to prevent unauthorized access
   D. A web browsing Software

3. How many layers does OSI Reference Model has?
   A. 4   B. 5
   C. 6   D. 7

4. DHCP is the abbreviation of
   A. Dynamic Host Control Protocol
   B. Dynamic Host Configuration Protocol
   C. Dynamic Hyper Control Protocol
   D. Dynamic Hyper Configuration Protocol

5. IPv4 Address is
   A. 8 bit   B. 16 bit
   C. 32 bit   D. 64 bit

6. IPv6 Address is
   A. 8 bit   B. 16 bit
   C. 32 bit   D. 128 bit

7. DNS is the abbreviation of
   A. Dynamic Name System
   B. Dynamic Network System
   C. Domain Name System
   D. Domain Network Service

8. What is the meaning of Bandwidth in Network?
   A. Transmission capacity of a communication channels
   B. Connected Computers in the Network
   C. Class of IP used in Network
   D. None of Above

9. ADSL is the abbreviation of
   A. Asymmetric Dual Subscriber Line
   B. Asymmetric Digital System Line
   C. Asymmetric Dual System Line
   D. Asymmetric Digital Subscriber Line

10. What is the use of Bridge in Network?
    A. to connect LANs
    B. to separate LANs
    C. to control Network Speed
    D. All of the above

11. Router operates in which layer of OSI Reference Model?
    A. Physical Layer
    B. Network Layer
    C. Transport Layer
    D. Application Layer

12. Each IP packet must contain
    A. Only Source address
    B. Only Destination address
    C. Source and Destination address
    D. Source or Destination address

13. Bridge works in which layer of the OSI model?
    A. Application layer
    B. Transport layer
    C. Network layer
    D. Data link layer

14. _____ provides a connection-oriented reliable service for sending messages
    A. TCP   B. IP
    C. UDP   D. All of the above

15. Which layers of the OSI model are host-to-host layers?
    A. Transport, Session, Presentation, Application
    B. Network, Transport, Session, Presentation
    C. Data link, Network, Transport, Session
    D. Physical, Data link, Network, Transport

16. Which of the following IP address class is Multicast?
    A. Class A
    B. Class B
    C. Class C
    D. Class D

17. Which of the following is correct regarding Class B Address of IP address?
    A. Network bit - 14, Host bit - 16
    B. Network bit - 16, Host bit - 14
    C. Network bit - 18, Host bit - 16
    D. Network bit - 12, Host bit - 14

18. The last address of IP address represents
    A. Unicast address
    B. Network address
    C. Broadcast address
    D. None of above

19. How many bits are there in the Ethernet address?
    A. 64 bits
    B. 48 bits
    C. 32 bits
    D. 16 bits

20. How many layers are in the TCP/IP model?
    A. 4 layers
    B. 5 layers
    C. 6 layers
    D. 7 layers

21. Which of the following layer of OSI model also called end-to-end layer?
    A. Presentation layer
    B. Network layer
    C. Session layer
    D. Transport layer

22. Why IP Protocol is considered as unreliable?
    A. A packet may be lost
    B. Packets may arrive out of order
    C. Duplicate packets may be generated
    D. All of the above

23. What is the minimum header size of an IP packet?
    A. 16 bytes
    B. 10 bytes
    C. 20 bytes
    D. 32 bytes

24. Which of following provides reliable communication?
    A. TCP
    B. IP
    C. UDP
    D. All of the above

25. What is the size of Network bits & Host bits of Class A of IP address?
    A. Network bits 7, Host bits 24
    B. Network bits 8, Host bits 24
    C. Network bits 7, Host bits 23
    D. Network bits 8, Host bits 23

26. What does Router do in a network?
    A. Forwards a packet to all outgoing links
    B. Forwards a packet to the next free outgoing link
    C. Determines on which outing link a packet is to be forwarded
    D. Forwards a packet to all outgoing links except the originated link

27. The Internet is an example of
    A. Cell switched network
    B. Circuit switched network
    C. Packet switched network
    D. All of above

28. What does protocol defines?
    A. Protocol defines what data is communicated.
    B. Protocol defines how data is communicated.
    C. Protocol defines when data is communicated.
    D. All of above

29. What are the uses of subnetting?
    A. It divides one large network into several smaller ones
    B. It divides network into network classes
    C. It speeds up the speed of network
    D. None of above

30. Repeater operates in which layer of the OSI model?
    A. Physical layer
    B. Data link layer
    C. Network layer
    D. Transport layer

31. What is the benefit of the Networking?
    A. File Sharing
    B. Easier access to Resources
    C. Easier Backups
    D. All of the Above

32. Which of the following is not the Networking Devices?
    A. Gateways
    B. Linux
    C. Routers
    D. Firewalls

33. What is the size of MAC Address?
    A. 16-bits
    B. 32-bits
    C. 48-bits
    D. 64-bits

34. Which of the following is Software?
    A. Routers
    B. Firewalls
    C. Gateway
    D. Modems

35. What is the use of Ping command?
    A. To test a device on the network is reachable
    B. To test a hard disk fault
    C. To test a bug in a Application
    D. To test a Pinter Quality

36. MAC Address is the example of
    A. Transport Layer
    B. Data Link Layer
    C. Application Layer
    D. Physical Layer

37. Routing tables of a router keeps track of
    A. MAC Address Assignments
    B. Port Assignments to network devices
    C. Distribute IP address to network devices
    D. Routes to use for forwarding data to its destination

38. Layer-2 Switch is also called
    A. Multiport Hub
    B. Multiport Switch
    C. Multiport Bridge
    D. Multiport NIC

39. Difference between T568A and T568B is
    A. Difference in wire color
    B. Difference in number of wires
    C. Just different length of wires
    D. Just different manufacturer standards

40. The meaning of Straight-through Cable is
    A. Four wire pairs connect to the same pin on each end
    B. The cable Which Directly connects Computer to Computer
    C. Four wire pairs not twisted with each other
    D. The cable which is not twisted

41. Which of the following is not the External Security Threats?
    A. Front-door Threats
    B. Back-door Threats
    C. Underground Threats
    D. Denial of Service (DoS)

42. What is the maximum header size of an IP packet?
    A. 32 bytes
    B. 64 bytes
    C. 30 bytes
    D. 60 bytes

43. What is the size of Host bits in Class B of IP address?
    A. 04
    B. 08
    C. 16
    D. 32

44. What is the usable size of Network bits in Class B of IP address?
    A. 04
    B. 08
    C. 14
    D. 16

45. What do you mean by broadcasting in Networking?
    A. It means addressing a packet to all machines
    B. It means addressing a packet to some machine
    C. It means addressing a packet to a particular machine
    D. It means addressing a packet to except a particular machine

46. Which of the following is/are Protocols of Application?
    A. FTP
    B. DNS
    C. Telnet
    D. All of above

47. Which of the following protocol is/are defined in Transport layer?
    A. FTP   B. TCP
    C. UDP   D. B & C

48. Physical or logical arrangement of network is _____
    A) Topology
    B) Routing
    C) Networking
    D) None of the mentioned

49. In which topology there is a central controller or hub?
    A) Star   B) Mesh
    C) Ring   D) Bus

50. This topology requires multipoint connection
    A) Star   B) Mesh
    C) Ring   D) Bus

51. Bus, ring and star topologies mostly used in the
    A) LAN   B) MAN
    C) WAN   D) Internetwork

52. Combination of two or more topologies are called
    A) Star   B) Bus
    C) Ring   D) Hybrid

53. Which of the following is not type of the network topology
    A) Mesh   B) Bus
    C) Ring   D) Stub

54. In a network with 24 computers, which topology would require the most extensive cabling?
    A) Bus   B) Mesh
    C) Star   D) tree

55. Data communication system spanning states, countries, or the whole world is _____
    A) LAN
    B) WAN
    C) MAN
    D) None of the mentioned

56. Data communication system within a building or campus is _____
    A) LAN
    B) WAN
    C) MAN
    D) None of the mentioned

57. Expand WAN?
    A) World Area Network
    B) Wide Area Network
    C) Web Area Network
    D) None of the mentioned

58. Internet is
    A) A local computer network
    B) A worldwide network of computers
    C) An interconnected network of computers
    D) A worldwide interconnected network of computers which use a common protocol to Communicate with one another

59. Internet requires
    A) An international agreement to connect computers
    B) A local area network
    C) A commonly agreed set of rules to communicate between computers
    D) A World Wide Web

60. Each computer connected to the internet must
    A) Be an IBM PC
    B) Have a unique IP address
    C) Be internet compatible
    D) Have a modem connection

61. A fiber-optic cable is made of _____
    A) Silver   B) Copper
    C) Glass or plastic D) Iron

62. A fiber-optic cable transmits signals in the form of _____.
    A) Light   B) Radio wave
    C) Micro wave   D) Magnetic wave

63. A ____ is a multiport repeater.
    A) Hub   B) Bridge
    C) Switch   D) Gateway

64. _____ is used for interconnecting two LANs working on the same protocol.
    A) Hub
    B) Bridge
    C) Switch
    D) Gateway

65. _____ is a device that routes data packets based on heir IP address.
    A) Router
    B) Bridge
    C) Switch
    D) Gateway

66. A ____ is a multiport bridge with a buffer.
    A) Hub
    B) Bridge
    C) Switch
    D) Gateway

67. Which of the following is unguided transmission media.
    A) Twisted-pair Cable
    B) Coaxial Cable
    C) Fiber-Optic cable
    D) Radio waves

68. Unguided media is also called_____
    A) Wire media
    B) Wireless media
    C) Both A & B
    D) None of these

69. _____ protocol is most important protocols in the Internet.
    A) TCP/ IP
    B) PPP
    C) UDP
    D) None of these

70. TCP is a _____ protocol.
    A) Connection-Oriented
    B) Connectionless
    C) Both A & B
    D) None of these

71. UDP is a _____ protocol
    A) Connection-Oriented
    B) Connectionless
    C) Both A & B
    D) None of these

72. Which is a file transfer protocol?
    A) FTP
    B) IP
    C) UDP
    D) HTTP

73. _____ refers to a web address which uniquely identifies a document over the internet.
    A) URL
    B) DNS
    C) UDP
    D) HTTP

74. A WWW contains Web Pages _____.
    A) Residing in many computers
    B) Created using HTML
    C) With links to other web pages
    D) Residing in many computers linked together using HTML

75. A search engine is a program to search
    A) Web pages
    B) information
    C) Web pages for information using specified search item
    D) Web pages for specified index terms

76. Which performs modulation and demodulation?
    A) Modem
    B) Satellite
    C) Multiplexor
    D) Cable

77. Transmission mode supports data communication in only one direction is
    A) Simplex
    B) Half duplex
    C) Full duplex
    D) None of these

78. Transmission mode supports data communication in both directions is
    A) Simplex
    B) Half duplex
    C) Full duplex
    D) None of these

79. Computer virus is a _____.
    A) Software
    B) Hardware
    C) Both A & B
    D) None of these

80. ____ are messages that web servers pass to your web browser when you visit Internet sites.
    A) Cookies
    B) Firewall
    C) URL
    D) DNS

81. When any crime is committed over the Internet it is referred to as a_____.
    A) Cyber Crime
    B) Crime
    C) Social Crime
    D) None of these

82. _____ is an electronic signature that can be used to authenticate the identity of the sender of a Message.
    A) Digital Signature
    B) Signature
    C) Authenticate Signature
    D) None of these

UNIT - II
(Programming)

1. HTML stands for ?
   A. Hyper Text Markup Language
   B. High Text Markup Language
   C. Hyper Tabular Markup Language
   D. None of these

2. HTML document itself begins with
   A. <html>   B. <body>
   C. <p>   D. <!DOCTYPE>

3. HTML describes webpage's structure by using
   A. Constructs   B. Domains
   C. Markup   D. Tools

4. Terminology that is not displayed by a browser is called
   A. HTML tags   B. Layout
   C. Page margins   D. Page Tables

5. All HTML documents must start with a declaration of
   A. <DOCTYPE html>
   B. <!DOCTYPE html>
   C. <html>
   D. <!html>

6. Which of the following tag is used to mark a beginning of paragraph ?
   A. <TD>   B.
   C. <P>   D. <TR>

7. From which tag descriptive list starts?
   A. <LL>   B. <DD>
   C. <DL>   D. <DS>

8. Correct HTML tag for the largest heading is
   A. <head>   B. <h6>
   C. <heading>   D. <h1>

9. The attribute of <form> tag
   A. Method   B. Action
   C. Both (a)&(b)   D. None of these

10. Who is making the Web Standards?
    A. Mozilla
    B. Microsoft
    C. Apple
    D. The World Wide Web Consortium

11. HTML is considered as _____ language.
    A. Programming Language
    B. OOPs language
    C. Higher Level language
    D. Markup language

12. <p> tag defines a
    A. Paragraph   B. Line
    C. Link   D. Table

13. The first page of webpage is called
    A. First Page   B. Main Page
    C. Home Page   D. Design Page

14. How many heading tags used in HTML?
    A. 3   B. 4
    C. 5   D. 6

15. Which of these tags are all <table> tags?
    A. <table><head><tfoot>
    B. <table><tr><td>
    C. <table><tr><tt>
    D. <thead><body><tr>

16. What is the correct HTML for creating a hyperlink?
    A. A
    B. <a>B
    C. example
    D. example

17. What is the correct HTML tag for inserting a line break?
    A.
          B. <break />
    C. <lb />   D. <nbsp>

18. The ____ access specifier is accessible only within class.
    A. Private   B. Public
    C. Protected   D. Default

19. The _____ access specifier is accessible everywhere.
    A. Private   B. Public
    C. Protected   D. Default

20. Which of the following inheritance not supported by java.
    A. Single level inheritance
    B. Multi level inheritance
    C. Multiple inheritance
    D. Hierarchical inheritance

21. JDBC Driver is a _____ component that enables java application to interact with the database.
    A. Software   B. Hardware
    C. Both A & B   D. None of these

UNIT - III
(Relational Database Management System)

1. Collections of operations that form a single logical unit of work are called _____
   a) Views   b) Networks
   c) Units   d) Transactions

2. The "all-or-none" property is commonly referred to as _____
   a) Isolation
   b) Durability
   c) Atomicity
   d) None of the mentioned

3. Which of the following is a property of transactions?
   a) Atomicity
   b) Durability
   c) Isolation
   d) All of the mentioned

4. Execution of translation in isolation preserves the _____ of a database
   a) Atomicity
   b) Consistency
   c) Durability
   d) All of the mentioned

5. Which of the following is not a property of a transaction?
   a) Atomicity   b) Simplicity
   c) Isolation   d) Durability

6. Which of the following systems is responsible for ensuring durability?
   a) Recovery system
   b) Atomic system
   c) Concurrency control system
   d) Compiler system

7. Which of the following systems is responsible for ensuring isolation?
   a) Recovery system
   b) Atomic system
   c) Concurrency control system
   d) Compiler system

8. A transaction that has not been completed successfully is called as _____
   a) Compensating transaction
   b) Aborted transaction
   c) Active transaction
   d) Partially committed transaction

9. Which of the following is not a transaction state?
   a) Active   b) Partially committed
   c) Failed   d) Compensated

10. A transaction for which all committed changes are permanent is called
    a) Atomic   b) Consistency
    c) Isolated   d) Durability

11. A transaction may not always complete its execution successfully. Such a transaction is termed
    a) Aborted   b) Terminated
    c) Closed   d) All of the above

12. Which of the following is not the property of transaction?
    a) Atomicity   b) Concurrency
    c) Isolation   d) Durability

13. A transaction complete its execution successfully is called
    a) Committed
    b) Rollback
    c) Partially Committed
    d) Aborted

14. COMMIT & ROLLBACK are _____ statements.
    a) DDL
    b) DML
    c) DCL
    d) TCL

15. GRAND and REVOKE are _____ statements.
    a) DDL
    b) DML
    c) DCL
    d) TCL

16. The SYSDATE () function returns the current date and time in the format _____.
    a) YY-MM-DD HH:MM:SS
    b) DD-MM-YYYY HH:MM:SS
    c) YYYY-MM-DD HH:MM:SS
    d) None of these

17. The Cardinality of a relation is the number of _____ it contains.
    a) Records
    b) Keys
    c) Attributes
    d) Relations

18. The Cardinality of primary key column of a relation is the number of _____ in the table.
    a) Records
    b) Keys
    c) Attributes
    d) Relations

19. The degree of a relation is the number of _____ it contains.
    a) Records
    b) Keys
    c) Attributes
    d) Relations

20. A _____ is the reference key between two tables.
    a) Primary key
    b) Candidate key
    c) Foreign key
    d) Super key

UNIT - IV
(IT Applications)

1. Which of the followings describes e-commerce
    A) Doing business electronically
    B) Sale of goods
    C) Doing business
    D) All of the above

2. Which of the following are not the types of e-commerce?
    A) B2B
    B) B2C
    C) C2C
    D) G2G

3. Which segment does flipkart, Amazon.com belongs.
    A) B2B
    B) B2C
    C) C2C
    D) C2B

4. EDI standard
    A. is not easily available
    B. defines several hundred transaction sets for various business forms
    C. is not popular
    D. defines only a transmission protocol

***

2. Expand the Followings :

UNIT - I	25. FDDI	48. DCL
1. LAN	26. SONET	49. TCL
2. MAN	27. NIC	50. DBMS
3. WAN	28. TDM	51. RDBMS
4. PAN	29. FDM	52. OODBMS
5. FTP	30. WDM	53. DDBMS
6. HTTP	31. ISDN	54. KDBMS
7. TCP	32. GIS	55. DBA
8. IP	33. IRC	56. OLAP
9. GSM	34. MODEM	57. DW
10. CDMA	35. VPN	58. DM
11. PPP	36 WAIS	59. DWDM
12. 3G	37. SPAM	60. BCNF
13. 4G	38. PGP	**UNIT - IV**
14. WLL	**UNIT - II**	61. B2B
15. MAC	39. HTML	62. B2C
16. E-Mail	40. DHTML	63. C2B
17. SMS	41. XML	64. C2C
18. URL	42. ODBC	65. G2C
19. ISP	43. JDBC	66. G2B
20. WWW	44. OLE	67. JPEG
21. SMTP	**UNIT - III**	68. MPEG
22. MTNL	45. SQL	69. GIF
23. BSNL	46. DDL	70. JVM
24. PSTN	47. DML	71. API

GROUP - A
ANSWERS

1. **Multiple Choice Questions & Answers:**

UNIT - I
(Networking & Open Standard)

1. D. All of the Above
2. C. A system designed to prevent unauthorized access
3. D. 7
4. B. Dynamic Host Configuration Protocol
5. C. 32 bit
6. D. 128 bit
7. C. Domain Name System
8. A. Transmission capacity of a communication channels
9. D. Asymmetric Digital Subscriber Line
10. A. to connect LANs
11. B. Network Layer
12. C. Source and Destination address
13. D. Data link layer
14. A. TCP
15. A. Transport, Session, Presentation, Application
16. D. Class D
17. A. Network bit-14, Host bit-16
18. C. Broadcast address
19. B. 48 bits
20. A. 4 layers
21. D. Transport layer
22. D. All of the above
23. C. 20 bytes
24. A. TCP
25. A. Network bits 7, Host bits 24
26. C. Determines on which outing link a packet is to be forwarded
27. C. Packet switched network
28. D. All of above
29. A. It divides one large network into several smaller ones
30. A. Physical layer
31. D. All of the Above
32. B. Linux
33. C. 48-bits
34. B. Firewalls
35. A. To test a device on the network is reachable
36. B. Data Link Layer
37. D. Routes to use for forwarding data to its destination
38. C. Multiport Bridge
39. D. Just different manufacturer standards
40. A. Four wire pairs connect to the same pin on each end
41. C. Underground Threats
42. D. 60 bytes
43. C. 16
44. C. 14
45. A. It means addressing a packet to all machines
46. D. All of above
47. D. B & C
48. A. Topology
49. A. Star
50. D. Bus
51. A. LAN
52. D. Hybrid
53. D. Stub
54. B. Mesh
55. B. WAN
56. A. LAN
57. B. Wide Area Network
58. D. A worldwide interconnected network of computers which use a common protocol to Communicate with one another
59. C. A commonly agreed set of rules to communicate between computers
60. B. Have a unique IP address

61. C. Glass or plastic
62. A. Light
63. A. Hub
64. B. Bridge
65. A. Router
66. C. Switch
67. D. Radio waves
68. B. Wireless media
69. A. TCP/ IP
70. A. Connection-Oriented
71. B. Connectionless
72. A. FTP
73. A URL
74. D. Residing in many computers linked together using HTML
75. C. Web pages for information using specified search item
76. A. Modem
77. A. Simplex
78. C. Full duplex
79. A. Software
80. A. Cookies
81. A. Cyber Crime
82. A. Digital Signature

UNIT - II
(Programming)

1. A. Hyper Text Markup Language
2. A. <html>
3. C. Markup
4. A. HTML tags
5. B. <!DOCTYPE html>
6. C. <P>
7. C. <DL>
8. D. <h1>
9. C. Both (a) & (b)
10. D. The World Wide Web Consortium
11. D. Markup language
12. A. Paragraph
13. C. Home Page
14. D. 6
15. B. <table><tr><td>

16. C. example
17. A.
18. A. Private
19. B. Public
20. C. Multiple inheritance
21. A. Software

UNIT - III
(Relational Database Management System)

1. d) Transactions
2. c) Atomicity
3. d) All of the mentioned
4. b) Consistency
5. b) Simplicity
6. a) Recovery system
7. c) Concurrency control system
8. b) Aborted transaction
9. d) Compensated
10. d) Durability
11. a) Aborted
12. b) Concurrency
13. a) Committed
14. d) TCL
15. c) DCL
16. c) YYYY-MM-DD HH:MM:SS
17. a) Records
18. a) Records
19. c) Attributes
20. c) Foreign key

UNIT - IV
(IT Applications)

1. A) Doing business electronically
2. D) G2G
3. B) B2C
4. B. defines several hundred transaction sets for various business forms

***

2. Expand the Followings:

UNIT-I

1. LAN : Local Area Network
2. MAN : Metropolitan Area Network
3. WAN : Wide Area Network
4. PAN : Personalised Area Network
5. FTP : File Transfer Protocol
6. HTTP : Hypertext Transfer Protocol
7. TCP : Transmission Control Protocol
8. IP : Internet Protocol
9. GSM : Global System for Mobile Communication
10. CDMA : Code-Division Multiple Access
11. PPP : Point to Point Protocol
12. 3G : Third Generation of Wireless Technologies
13. 4G : Fourth-Generation wireless
14. WLL : Wireless Local Loop
15. MAC : Media Access Control
16. E-Mail : Electronic Mail
17. SMS : Short Message Service
18. URL : Uniform Resource Locator
19. ISP : Internet Service Provider
20. WWW : World Wide Web
21. SMTP : Simple Mail Transfer Protocol
22. MTNL : Mahanagar Telephone Nigam Limited
23. BSNL : Bharat Sanchar Nigam Limited
24. PSTN : Public Switched Telephone Network
25. FDDI : Fiber Distributed Data Interface
26. SONET : Synchronous Optical Networking
27. NIC : National Informatics Centre
28. TDM : Time Division Multiplexing
29. FDM : Frequency Division Multiplexing
30. WDM : Wavelength Division Muliplexing
31. ISDN : Integrated Service Digital Network
32. GIS : Geographical Information System
33. IRC : Internet Relay Chat
34. MODEM : Modulator and Demodulator
35. VPN : Virtual Private Network
36. WAIS : Wide Area Information System
37. SPAM : Specialized Automated Mail
38. PGP : Pretty Good Privacy

UNIT-II

39. HTML : Hypertext Markup Language
40. DHTML : Dynamic Hypertext Markup Language
41. XML : Extended Markup Language
42. ODBC : Open Database Connectivity
43. JDBC : Java Database Connectivity
44. OLE : Object Linking and Embedding

UNIT-III

45. SQL : Structured Query Language
46. DDL : Data Definition Language
47. DML : Data Manipulation Language
48. DCL : Data Control Language
49. TCL : Transaction Control Language
50. DBMS : Database Management System
51. RDBMS : Relational Database Management system
52. OODBMS : Object Oriented Database Management System
53. DDBMS : Distributed Database Management System
54. KDBMS : Knowledge Database Management System
55. DBA : Database Administrator
56. OLAP : Online Analytical Processing
57. DW : Data Warehouse
58. DM : Data Mining
59. DWDM : Data Warehouse and Data Mining
60. BCNF : Boyce-Codd Normal form

UNIT-IV

61. B2B : Business-to-Business
62. B2C : Business-to-Consumer
63. C2B : Consumer-to-Business
64. C2C : Consumer -to-Consumer
65. G2C : Government -to-Customer
66. G2B : Gevernment-to-Business
67. JPEG : Joint Picture Expert Group
68. MPEG : Moving Picture Expert Group
69. GIF : Graphics Interchange Format
70. JVM : Java Virtual Machine
71. API : Application Programming Interface

GROUP - B

SHORT TYPE QUESTIONS

UNIT - I

1. What is a link?
2. Define a network.
3. Write two advantages of networks.
4. Write two disadvantages of networks.
5. What is communication channel? Name the basic types of communication channels available.
6. What is IP address?
7. What is domain name? How is it alternatively known?
8. What are the various types of networks?
9. What is the difference between MAN and WAN?
10. What is meant by Topology? Name some popular topologies.
11. What are the similarities and differences between bus and tree topologies?
12. What are the limitations of star topology?
13. What are the layers of the OSI reference model?
14. What is backbone network?
15. What is a LAN?
16. What is a node?
17. What are routers?
18. What is point to point link?
19. What is anonymous FTP?
20. What is subnet mask?
21. What is the maximum length allowed for a UTP cable?
22. What is data encapsulation?
23. Describe Network Topology
24. What is VPN?
25. Briefly describe NAT.
26. What is the job of the Network Layer under the OSI reference model?
27. How does a network topology affect your decision in setting up a network?
28. What is RIP?
29. What are different ways of Securing a Computer Network?
30. What is NIC?
31. What is WAN?
32. What is the importance of the OSI Physical Layer?
33. How many layers are there under TCP/IP?
34. What are proxy servers and how do they protect computer networks?
35. What is the function of the OSI Session Layer?
36. What does 10Base-T mean?
37. What is a private IP address?
38. What is NOS?
39. What is DoS?
40. What is OSI and what role does it play in computer networks?
41. What is the purpose of cables being shielded and having twisted pairs?
42. What is the advantage of address sharing?
43. What are MAC addresses?
44. What is the equivalent layer or layers of the TCP/IP Application layer in terms of OSI reference model?
45. How can you identify the IP class of a given IP address?
46. What are firewalls?
47. Describe star topology
48. What are gateways?
49. What are the disadvantage of a star topology?
50. What are the functions of a network administrator?
51. Describe at one disadvantage of a peer to peer network.
52. What is Hybrid Network?

53. What is the main job of the ARP?

54. What is TCP/IP?

55. How can you manage a network using a router?

56. What is the use of a default gateway?

57. One way of securing a network is through the use of passwords. What can be considered as good passwords?

58. What is the number of network IDs in a Class C network?

59. What common software problems can lead to network defects?

60. What is ICMP?

61. What is Ping?

62. What is peer to peer?

63. What is DNS?

64. What advantages does fiber optics have over other media?

65. What is the difference between a hub and a switch?

66. What are the maximum networks and hosts in a class A, B and C network?

67. You need to connect two computers for file sharing. Is it possible to do this without using a hub or router?

68. What is ipconfig?

69. What is the difference between a straight-through and crossover cable?

70. When you move the NIC cards from one PC to another PC, does the MAC address gets transferred as well?

71. In a network that contains two servers and twenty workstations, where is the best place to install an Anti-virus program?

72. Describe Ethernet.

73. What are some drawbacks of implementing a ring topology?

74. What is the difference between CSMA/CD and CSMA/CA?

75. What is SMTP?

76. What is multicast routing?

77. What is the importance of Encryption on a network?

78. How are IP addresses arranged and displayed?

79. Explain the importance of authentication.

80. What are the different technologies involved in establishing WAN links?

81. What is one advantage of mesh topology?

82. What is the role of IEEE in computer networking?

83. What protocols fall under the TCP/IP Internet Layer?

84. What is one basic requirement for establishing VLANs?

85. What is IPv6?

86. What is mesh topology?

87. What is the maximum segment length of a 100Base-FX network?

88. What is Uniform Resource Locator (URL)?

89. What is Web Server?

90. What is Web Browser?

91. What is MAC Address?

92. What are the types of transmission modes?

93. Define Simplex transmission mode.

94. Define Half Duplex transmission mode.

95. Define Full Duplex transmission mode.

96. What is guided media?

97. What is unguided media?

98. What is HTTP?

99. What is DNS?

100. What is ISP?

101. What is ISDN?

102. What is Telnet?

103. What is TCP?

104. What is UDP?

105. What is FTP?

106. What is WWW?

107. What is Virus?

108. What is Cookies?

109. What is malicious software?

110. What is Hacking?

111. What is Cyber Stalking?

112. What is Digital Signature?

113. What is Snooping ?

114. What is Cyber Crime?

115. What is Cyber law?

116. What are importance of Cyber law

UNIT - II

1. What is HTML?

2. What are Tags?

3. Do all HTML tags have an end tag?

4. How many types of heading does an HTML contain?

5. How to create a hyperlink in HTML?

6. Which HTML tag is used to display the data in the tabular form?

7. What are some common lists that are used when designing a page?

8. What is the difference between HTML elements and tags?

9. Does a hyperlink only apply to text?

10. What is a marquee?

11. How to make a picture of a background image of a web page?

12. What is an access specifier?

13. Mention different types of access specifiers.

UNIT - III

1. What is SQL?

2. When SQL appeared?

3. What are the usages of SQL?

4. Does SQL support programming?

5. What are the languages used in SQL?

6. What is a Data Definition Language (DDL)?

7. What is a Data Manipulation Language (DML)?

8. What is Data Control Language (DCL)?

9. What is a Database?

10. What do you mean by a Database Management System?

11. What is RDBMS?

12. What is primary key?

13. What is a foreign key?

14. What is referential integrity?

15. What is MySql?

16. What is null value in MySql?

17. Which keyword eliminates redundant data in from a query result?

18. How would you display system date as the result of a query?

19. What is NOT NULL constraint?

20. What is error in following statement? UPDATE EMPL;

21. Identify the error? DELETE ALL FROM TABLE EMP;

22. Differentiate WHERE and HAVING clause?

23. How SQL commands are classified?

24. Define a transaction.

25. What are the two ways in which multiple transactions can be executed?

26. What is a savepoint?

27. Why do understand by transaction COMMIT and ROLLBACK?

28. What are the properties of database transaction?

29. What TCL commands are supported by SQL?

30. Write the use of ORDER BY CLAUSE.

UNIT - IV

1. What is E-business

2. Mention some applications of e-governance.

3. How many major categories are there for E-Commerce?

4. Write the Benefits of E-commerce

GROUP - B
ANSWERS

UNIT - I

1. A link refers to the connectivity between two devices. It includes the type of cables and protocols used in order for one device to be able to communicate with the other.

2. A computer network is a system in which computers are connected to share information and resources.

3. Advantages:
   i. Data or information can be shared among the users.
   ii. Fast communication can be achieved.

4. Disadvantages of networks:
   i. Sophisticated Hardware and software technology is required.
   ii. Expensive to install network.

5. Communication channels mean the connecting cables that link various workstations.

   There are 3 basic types of cables:
   i. Twisted Pair cables
   ii. Coaxial cables
   iii. Fiber-optic cables

6. A unique number consisting of 4 parts separated by dots, e.g. 165.113.245.2.

   Every machine that is on the Internet has a unique IP number - if a machine does not have an IP number, it is not really on the Internet.

7. The unique name that identifies an Internet site. Domain Names always have 2 or more parts, separated by dots. The part on the left is the most specific, and the part on the right is the most general. E.g.: matisse.net

8. Network can be classified on the basis of their size, complexity and geographical spread. On the basis of geographical spread it can be classified as Local Area Network, Metropolitan Area Network and Wide Area Network.

9. A metropolitan area network (MAN) is a large computer network that usually spans a city or a large campus. WAN is a network that covers an area larger than a single building or campus such as across the cities or countries.

10. Network topology is defined as the interconnection of the various elements (links, nodes, etc.) of a computer network. In computer networking, topology refers to the layout of connected devices.
    - Bus topology
    - Star topology
    - Ring topology
    - Tree topology
    - Mesh topology

11. In bus topology each machine is connected to a single cable. Each computer or server is connected to the single bus cable through some kind of connector. Tree topology is a network with the shape of an inverted tree in which a single link between two nodes.

12. i) Central node dependency: In this topology central node is a controller of the network. If the central node fails, the entire network will be failed.
    ii) Difficult to expand: The addition of a new node to a network involves a connection all the way to the central node.

13. There are 7 OSI layers: Physical Layer, Data Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer and Application Layer.

14. A backbone network is a centralized infrastructure that is designed to distribute different routes and data to various networks. It also handles management of bandwidth and various channels.

15. LAN is short for Local Area Network. It refers to the connection between computers and other network devices that are located within a small physical location.

16. A node refers to a point or joint where a connection takes place. It can be computer or device that is part of a network. Two or more nodes are needed in order to form a network connection.

17. Routers can connect two or more network segments. These are intelligent network devices that store information in its routing table such as paths, hops and bottlenecks. With this info, they are able to determine the best path for data transfer. Routers operate at the OSI Network Layer.

18. It refers to a direct connection between two computers on a network. A point to point connection does not need any other network devices other than connecting a cable to the NIC cards of both computers.

19. Anonymous FTP is a way of granting user access to files in public servers. Users that are allowed access to data in these servers do not need to identify themselves, but instead log in as an anonymous guest.

20. A subnet mask is combined with an IP address in order to identify two parts: the extended network address and the host address. Like an IP address, a subnet mask is made up of 32 bits.

21. A single segment of UTP cable has an allowable length of 90 to 100 meters. This limitation can be overcome by using repeaters and switches.

22. Data encapsulation is the process of breaking down information into smaller manageable chunks before it is transmitted across the network. It is also in this process that the source and destination addresses are attached into the headers, along with parity checks.

23. Network Topology refers to the layout of a computer network. It shows how devices and cables are physically laid out, as well as how they connect to one another.

24. VPN means Virtual Private Network, a technology that allows a secure tunnel to be created across a network such as the Internet. For example, VPNs allow you to establish a secure dial-up connection to a remote server.

25. NAT is Network Address Translation. This is a protocol that provides a way for multiple computers on a common network to share single connection to the Internet.

26. The Network layer is responsible for data routing, packet switching and control of network congestion. Routers operate under this layer.

27. Network topology dictates what media you must use to interconnect devices. It also serves as basis on what materials, connector and terminations that is applicable for the setup.

28. RIP, short for Routing Information Protocol is used by routers to send data from one network to another. It efficiently manages routing data by broadcasting its routing table to all other routers within the network. It determines the network distance in units of hops.

29. There are several ways to do this. Install reliable and updated anti-virus program on all computers. Make sure firewalls are setup and configured properly. User authentication will also help a lot. All of these combined would make a highly secured network.

30. NIC is short for Network Interface Card. This is a peripheral card that is attached to a PC in order to connect to a network. Every NIC has its own MAC address that identifies the PC on the network.

31. WAN stands for Wide Area Network. It is an interconnection of computers and devices that are geographically dispersed. It connects networks that are located in different regions and countries.

32. The physical layer does the conversion from data bits to electrical signal, and vice versa. This is where network devices and cable types are considered and setup.

33. There are four layers: the Network Layer, Internet Layer, Transport Layer and Application Layer.

34. Proxy servers primarily prevent external users who identifying the IP addresses of an internal network. Without knowledge of the correct IP address, even the physical location of the network cannot be identified. Proxy servers can make a network virtually invisible to external users.

35. This layer provides the protocols and means for two devices on the network to communicate with each other by holding a session. This includes setting up the session, managing information exchange during the session, and tear-down process upon termination of the session.

36. The 10 refers to the data transfer rate, in this case is 10Mbps. The word Base refers to base band, as oppose to broad band. T means twisted pair, which is the cable used for that network.

37. Private IP addresses are assigned for use on intranets. These addresses are used for internal networks and are not routable on external public networks. These ensures that no conflicts are present among internal networks while at the same time the same range of private IP addresses are reusable for multiple intranets since they do not "see" each other.

38. Network Operating System (NOS), is specialized software whose main task is to provide network connectivity to a computer in order for it to be able to communicate with other computers and connected devices.

39. Denial-of-Service(DoS) attack, is an attempt to prevent users from being able to access the internet or any other network services. Such attacks may come in different forms and are done by a group of perpetuators. One common method of doing this is to overload the system server so it cannot anymore process legitimate traffic and will be forced to reset.

40. OSI (Open Systems Interconnect) serves as a reference model for data communication. It is made up of 7 layers, with each layer defining a particular aspect on how network devices connect and communicate with one another. One layer may deal with the physical media used, while another layer dictates how data is actually transmitted across the network.

41. The main purpose of this is to prevent crosstalk. Crosstalks are electromagnetic interferences or noise that can affect data being transmitted across cables.

42. By using address translation instead of routing, address sharing provides an inherent security benefit. That's because host PCs on the Internet can only see the public IP address of the external interface on the computer that provides address translation and not the private IP addresses on the internal network.

43. MAC, or Media Access Control, uniquely identifies a device on the network. It is also known as physical address or Ethernet address. A MAC address is made up of 6-byte parts.

44. The TCP/IP Application layer actually has three counterparts on the OSI model: the Session layer, Presentation Layer and Application Layer.

45. By looking at the first octet of any given IP address, you can identify whether it's Class A, B or C. If the first octet begins with a 0 bit, that address is Class A. If it begins with bits 10 then that address is a Class B address. If it begins with 110, then it's a Class C network.

46. Firewalls serve to protect an internal network from external attacks. These external threats can be hackers who want to steal data or computer viruses that can wipe out data in an instant. It also prevents other users from external networks from gaining access to the private network.

47. Star topology consists of a central hub that connects to nodes. This is one of the easiest to setup and maintain.

48. Gateways provide connectivity between two or more network segments. It is usually a computer that runs the gateway software and provides translation services. This translation is a key in allowing different systems to communicate on the network.

49. One major disadvantage of star topology is that once the central hub or switch get damaged, the entire network becomes unusable.

50. A network administrator has many responsibilities that can be summarize into 3 key functions: installation of a network, configuration of network settings, and maintenance/troubleshooting of networks.

51. When you are accessing the resources that are shared by one of the workstations on the network, that workstation takes a performance hit.

52. A hybrid network is a network setup that makes use of both client-server and peer-to-peer architecture.

53. The main task of ARP or Address Resolution Protocol is to map a known IP address to a MAC layer address.

54. TCP/IP is short for Transmission Control Protocol / Internet Protocol. This is a set of protocol layers that is designed to make data exchange possible on different types of computer networks, also known as heterogeneous network.

55. Routers have built in console that lets you configure different settings, like security and data logging. You can assign restrictions to computers, such as what resources it is allowed access, or what particular time of the day they can browse the internet. You can even put restrictions on what websites are not viewable across the entire network.

56. Default gateways provide means for the local networks to connect to the external network. The default gateway for connecting to the external network is usually the address of the external router port.

57. Good passwords are made up of not just letters, but by combining letters and numbers. A password that combines uppercase and lowercase letters is favorable than one that uses all upper case or all lower case letters. Passwords must be not words that can easily be guessed by hackers, such as dates, names, favorites, etc. Longer passwords are also better than short ones.

58. For a Class C network, the number of usable Network ID bits is 21. The number of possible network IDs is 2 raised to 21 or 2,097,152. The number of host IDs per network ID is 2 raised to 8 minus 2, or 254.

59. Software related problems can be any or a combination of the following:
    - client server problems
    - application conflicts
    - error in configuration
    - protocol mismatch
    - security issues
    - user policy and rights issues

60. ICMP is Internet Control Message Protocol. It provides messaging and communication for protocols within the TCP/IP stack. This is also the protocol that manages error messages that are used by network tools such as PING.

61. Ping is a utility program that allows you to check connectivity between network devices on the network. You can ping a device by using its IP address or device name, such as a computer name.

62. Peer to peer are networks that does not reply on a server. All PCs on this network act as individual workstations.

63. DNS is Domain Name System. The main function of this network service is to provide host names to TCP/IP address resolution.

64. One major advantage of fiber optics is that is it less susceptible to electrical interference. It also supports higher bandwidth, meaning more data can be transmitted and received. Signal degrading is also very minimal over long distances.

65. A hub acts as a multiport repeater. However, as more and more devices connect to it, it would not be able to efficiently manage the volume of traffic that passes through it. A switch provides a better alternative that can improve the performance especially when high traffic volume is expected across all ports.

66. For Class A, there are 126 possible networks and 16,777,214 hosts. For Class B, there are 16,384 possible networks and 65,534 hosts. For Class C, there are 2,097,152 possible networks and 254 hosts.

67. Yes, you can connect two computers together using only one cable. A crossover type cable can be use in this scenario. In this setup, the data transmit pin of one cable is connected to the data receive pin of the other cable, and vice versa.

68. Ipconfig is a utility program that is commonly used to identify the addresses information of a computer on a network. It can show the physical address as well as the IP address.

69. A straight-through cable is used to connect computers to a switch, hub or router. A crossover cable is used to connect two similar devices together, such as a PC to PC or Hub to hub.

70. Yes, that's because MAC addresses are hard-wired into the NIC circuitry, not the PC. This also means that a PC can have a different MAC address when the NIC card was replace by another one.

71. An anti-virus program must be installed on all servers and workstations to ensure protection. That's because individual users can access any workstation and introduce a computer virus when plugging in their removable hard drives or flash drives.

72. Ethernet is one of the popular networking technologies used these days. It was developed during the early 1970s and is based on specifications as stated in the IEEE. Ethernet is used in local area networks.

73. In case one workstation on the network suffers a malfunction, it can bring down the entire network. Another drawback is that when there are adjustments and reconfigurations needed to be performed on a particular part of the network, the entire network has to be temporarily brought down as well.

74. CSMA/CD, or Collision Detect, retransmits data frames whenever a collision occurred. CSMA/CA, or Collision Avoidance, will first broadcast intent to send prior to data transmission.

75. SMTP is short for Simple Mail Transfer Protocol. This protocol deals with all Internal mail, and provides the necessary mail delivery services on the TCP/IP protocol stack.

76. Multicast routing is a targeted form of broadcasting that sends message to a selected group of user, instead of sending it to all users on a subnet.

77. Encryption is the process of translating information into a code that is unreadable by the user. It is then translated back or decrypted back to its normal readable format using a secret key or password. Encryption help ensure that information that is intercepted halfway would remain unreadable because the user has to have the correct password or key for it.

78. IP addresses are displayed as a series of four decimal numbers that are separated by period or dots. Another term for this arrangement is the dotted decimal format. An example is 192.168.101.2

79. Authentication is the process of verifying a user's credentials before he can log into the network. It is normally performed using a username and password. This provides a secure means of limiting the access from unwanted intruders on the network.

80. Analog connections - using conventional telephone lines; Digital connections - using digital-grade telephone lines; switched connections - using multiple sets of links between sender and receiver to move data.

81. In the event that one link fails, there will always be another available. Mesh topology is actually one of the most fault-tolerant network topology.

82. The Institute of Electrical and Electronics Engineers(IEEE), is an organization composed of engineers that issues and manages standards for electrical and electronic devices. This includes networking devices, network interfaces, cablings and connectors.

83. There are 4 protocols that are being managed by this layer. These are ICMP, IGMP, IP and ARP.

84. A VLAN is required because at switch level there is only one broadcast domain, it means whenever new user is connected to switch this information is spread throughout the network. VLAN on switch helps to create separate broadcast domain at switch level. It is used for security purpose.

85. IPv6 , or Internet Protocol version 6, was developed to replace IPv4. At present, IPv4 is being used to control internet traffic, but is expected to get saturated in the near future. IPv6 was designed to overcome this limitation.IPv6 address length is 128 bit.

86. Mesh topology is a setup wherein each device is connected directly to every other device on the network. Consequently, it requires that each device have at least two network connections.

87. The maximum allowable length for a network segment using 100Base-FX is 412 meters. The maximum length for the entire network is 5 kilometers.

88. The uniform resource locator (URL) is the unique identifier of a web page. The address or URL of the current page you are on appears in the "Address Bar" of the web browser. You can go directly to a web page if you know its URL by simply typing the URL in the address bar.

89. Web server delivers (serves) content, such as web pages, using the Hypertext Transfer Protocol (HTTP), over the World Wide Web.

90. A web browser is a client that initiates communication by making a request for a specific resource. The server then responds with the content of that resource, or an error message if unable to do provide the contents due to any reason.

91. In computer networking, a Media Access Control address (MAC) is a unique identifier assigned to most network adapters or network interface cards (NICs) by the manufacturer for identification, and used in the Media Access Control protocol sub-layer.

92. Types of Transmission Modes
    - Simplex Transmission Mode.
    - Half Duplex Transmission Mode.
    - Full Duplex Transmission Mode.

93. In Simplex mode, the communication is unidirectional, as on a one-way street.

94. Half-duplex transmission mode of data in just one direction at a time. For example, a walkie-talkie.

95. Full-duplex data transmission means that data can be transmitted in both directions on a signal carrier at the same time. For example, on a local area network with a technology that has full-duplex transmission, one workstation can be sending data on the line while another workstation is receiving data.

96. Guided media, which are those that provide a conduit from one device to another, include twisted-pair cable, coaxial cable, and fiber-optic cable. Guided Transmission Media uses a "cabling" system that guides the data signals along a specific path.

97. Unguided media relates to data transmission through the air and is commonly referred to as wireless. The transmission and reception of data is carried out using antenna.

98. The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web, where hypertext documents include hyperlinks to other resources that the user can easily access.

99. The Domain Name System (DNS) is a hierarchical and decentralized naming system for computers, services, or other resources connected to the Internet or a private network.

100. An Internet Service Provider (ISP) is an organization that provides services for accessing, using, or participating in the Internet.

101. Integrated Services Digital Network (ISDN) is a set of communication standards for simultaneous digital transmission of voice, video, data, and other network services over the traditional circuits of the public switched telephone network.

102. Telnet is a protocol used on the Internet or local area network to provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection.

103. The Transmission Control Protocol is one of the main protocols of the Internet protocol suite. It originated in the initial network implementation in which it complemented the Internet Protocol. Therefore, the entire suite is commonly referred to as TCP/IP.

104. UDP (User Datagram Protocol) is an alternative communications protocol to Transmission Control Protocol (TCP) used primarily for establishing low-latency and loss-tolerating connections between applications on the internet.

105. The File Transfer Protocol (FTP) is a standard network protocol used for the transfer of computer files between a client and server on a computer network.

106. The World Wide Web, commonly known as the Web, is an information space where documents and other web resources are identified by Uniform Resource Locators, which may be interlinked by hypertext, and are accessible over the Internet.

107. A computer virus is a type of malicious software that, when executed, replicates itself by modifying other computer programs and inserting its own code.

108. Cookies are small files which are stored on a user's computer. They are designed to hold a modest amount of data specific to a particular client and website, and can be accessed either by the web server or the client computer.

109. Malicious Software refers to any malicious program that causes harm to a computer system or network. Malicious Software attacks a computer or network in the form of viruses, worms, trojans, spyware.

110. Hacking generally refers to unauthorized intrusion into a computer or a network. The person engaged in hacking activities is known as a hacker.

111. Cyber stalking is the use of the Internet or other electronic means to stalk or harass an individual, group, or organization.

112. A digital signature is a mathematical scheme for verifying the authenticity of digital messages or documents.

113. Snooping, in a security context, is unauthorized access to another person's or company's data.

114. Cyber crime is any criminal activity that involves a computer, networked device or a network.

115. Cyber law is the part of the overall legal system that deals with the Internet and cyberspace.

116. Cyber law is important because it touches almost all aspects of transactions and activities on and concerning the Internet, the World Wide Web and Cyberspace.

UNIT - II

1. HTML stands for Hyper Text Markup Language. It is a language of World Wide Web. It is a standard text formatting language which is used to create and display pages on the Web. It makes the text more interactive and dynamic. It can turn text into images, tables, links.

2. HTML tags are composed of three things: an opening tag, content and ending tag. Some tags are unclosed tags.

   HTML documents contain two things:

   ● content, and tags

   When a web browser reads an HTML document, the browser reads it from top to bottom and left to right. HTML tags are used to create HTML documents and render their properties. Each HTML tags have different properties.

   Syntax: <tag> content </tag>

3. No. There are some HTML tags that don't need a closing tag. For example: <image> tag, <br> tag

4. The HTML contains six types of headings which are defined with the <h1> to <h6> tags. Each type of heading tag displays different text size from another. So, <h1> is the largest heading tag and <h6> is the smallest one.
   For example:
   <h1>Heading no. 1</h1>
   <h2>Heading no. 2</h2>
   <h3>Heading no. 3</h3>
   <h4>Heading no. 4</h4>
   <h5>Heading no. 5</h5>
   <h6>Heading no. 6</h6>

5. The HTML provides an anchor tag to create a hyperlink that links one page to another page. These tags can appear in any of the following ways:

   ● Unvisited link - It is displayed, underlined and blue.

   ● Visited link - It is displayed, underlined and purple.

   ● Active link - It is displayed, underlined and red.

6. The HTML table tag is used to display data in tabular form (row * column).

7. There are many common lists which are used to design a page. You can choose any or a combination of the following list types:

   ● Ordered list - The ordered list displays elements in numbered format. It is represented by <ol> tag.

   ● Unordered list - The unordered list displays elements in bulleted format. It is represented by <ul> tag.

   ● Definition list - The definition list displays elements in definition form like in dictionary. The <dl>, <dt> and <dd> tags are used to define description list.

8. HTML elements communicate to the browser to render text. When the elements are enclosed by brackets <>, they form HTML tags. Most of the time, tags come in a pair and surround content.

9. No, you can use hyperlinks on text and images both. The HTML anchor tag defines a hyperlink that links one page to another page. The "href" attribute is the most important attribute of the HTML anchor tag.

   Syntax : Link Text

10. Marquee is used to put the scrolling text on a web page. It scrolls the image or text up, down, left or right automatically. You should put the text which you want to scroll within the <marquee>......</marquee> tag.

11. To make a picture a background image on a web page, you should put the following tag code after the </head> tag.

    <body background = "image.gif">

    Here, replace the "image.gif" with the name of your image file which you want to display on your web page.

12. Access specifiers are keywords in object-oriented languages that set the accessibility of classes, methods, and other members.

13. Types of access specifiers:

    In java we have 4 Access specifiers and they are as follows:
    i) Public
    ii) Private
    iii) Protected
    ii) Default (no specifier)

14. Dynamic HTML, or DHTML, is an umbrella term for a collection of technologies used together to create interactive and animated websites by using a combination of a static mark up language, a client-side scripting language, a presentation definition language, and the Document Object Model

15. Extensible Markup Language is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.

UNIT-III

1. SQL stands for the Structured Query Language. SQL is a standard query language used for maintaining the relational database and perform many different operations of data manipulation on the data. SQL initially was invented in 1970. It is a database language used for database creation, deletion, fetching rows and modifying rows, etc. sometimes it is pronounced as 'sequel.'

2. It appeared in 1974. SQL is one of the often used languages for maintaining the relational database. SQL. In 1986 SQL become the standard of American National Standards Institute (ANSI) and ISO(International Standard Organization) in 1987.

3. ● SQL is responsible for maintaining the relational data and the data structures present in the database.

    ● To execute queries against a database

    ● To retrieve data from a database

    ● To inserts records in a database

    ● To updates records in a database

    ● To delete records from a database

    ● To create new databases

    ● To create new tables in a database

    ● To create views in a database

    ● To perform complex operations on the database.

4. SQL refers to the Standard Query Language, which is not actually the programming language. SQL doesn't have a loop, Conditional statement, logical operations, it can not be used for anything other than data manipulation. It is

used like commanding (Query) language to access databases. The primary purpose of SQL is to retrieve, manipulate, update and perform complex operations like joins on the data present in the database.

5. There is four significant subset of the SQL:

- Data definition language (DDL): DDL is used to define the data structure it consists of the commands like CREATE, ALTER, DROP, etc.

- Data manipulation language (DML): DML is used to manipulate already existing data in the database. The commands in this category are SELECT, UPDATE, INSERT, etc.

- Data control language (DCL): DCL is used to control access to data in the database and includes commands such as GRANT, REVOKE.

- Transaction Control Language (TCL): transaction control commands are COMMIT, ROLLBACK.

6. Data definition language (DDL) is the subset of the database which defines the data structure of the database in the initial stage when the database is about to be created. It consists of the following commands: CREATE, ALTER and DELETE database objects such as schema, tables, view, sequence, etc.

7. Data manipulation language makes the user able to retrieve and manipulate data. It is used to perform the following operations.

- Insert data into database through INSERT command.

- Retrieve data from the database through SELECT command.

- Update data in the database through UPDATE command.

- Delete data from the database through DELETE command.

8. - Data control language allows you to control access to the database. DCL is the only subset of the database which decides that what part of the database should be accessed by which user at what point of time. It includes two commands GRANT and REVOKE.

- GRANT: to grant the specific user to perform a particular task

- REVOKE: to cancel previously denied or granted permissions.

9. A Database is an organized form of data. The database is the electronic system which makes data access, data manipulation, data retrieval, data storing and data management very easy and structured. Almost every organization uses the database for storing the data due to its easily accessible and high operational ease. The database provides perfect access to data and lets us perform required tasks.

The Database is also called a structured form of data. Due to this structured format, you can access data very easily.

10. Database Management is a collection of programs and files that allow a user to define structure of a database, store data into it, modify the structure and manipulate the data.

11. RDBMS stands for Relational Database Management System. It is a database management system based on a relational model. RDBMS stores the data into the collection of tables and links those tables using the relational operators easily whenever required. It facilitates you to manipulate the data stored in the tables by using relational operators. Examples of the relational database management system are Microsoft Access, MySQL, SQLServer, Oracle database, etc.

12. Primary key is a unique key in a relation which can uniquely identifies a tuple (row) in a given Relation.

13. If a key is available in a table as a primary key then this key is called foreign key in another table.

14. This is a rule which ensures that in DBMS relationships between records in related tables are valid. And that user don't accidently delete or change related data.

15. Mysql is an open source RDBMS which uses SQL.

16. If a column in a row has no value, then column is said to be null.

17. DISTINCT

18. CURDATE()

19. NOT NULL constraints impose a condition that value of a row cannot be left blank.

20. UPDATE EMPL;

    WHERE clause is missing in given query.

21. There is no need to write ALL and TABLE word in above query. Correct form is-DELETE FROM EMP;

22. Where clause is used to select particular rows that satisfy condition whereas having clause is used in connection with aggregate function, group by clause.

23. SQL Commands are classified into four categories:

    (i) Data Definition Language (DDL)- Commands that allow us to perform tasks related to data definition.
    Ex:-Create, Drop, Alter are the DDL commands.

    (ii) Data Manipulation Language (DML) - Commands that allows us to perform data manipulation.
    Ex:-Insert, select, update, delete are DML commands.

    (iii) Data Control Language (DCL) -Control the data access.

    Ex:-Grand command used to provide permission to users for data access.

    Revoke command is used to remove the permission from the user.

    (iv) Transaction Control Language (TCL)- Commands that allow us to manage and control the transactions.

    Ex:- COMMIT and ROLLBACK are TCL commands.

24. A transaction is a logical unit of a work that must succeed or fail in its entirely. It is an atomic operation which can be divided unto smaller operations.

25. Multiple transactions can be executed in one of the following two ways: (i) Serially (ii) Concurrently.

26. Savepoints are special operations that allow you to divide the work of a transaction into different segments. In case of a failure, you can execute rollbacks to the savepoint only, leaving prior changes intact.

27. COMMITTING a transaction means all the steps of a transaction are carried out successfully and all data changes are made permanent in the database. Transaction ROLLBACK means transaction has not been finished completely and hence all data changes made by the transaction in the database if any, are undone and the database returns to the state as it was before this transaction execution started.

28. The properties of transaction are:
    (i) Atomicity   (ii) Consistency
    (iii) Isolation   (iv) Durability

29. SQL supports following TCL commands BEGIN START TRANSACTION-Marks the beginning   of a transaction

    COMMIT- Ends the current transaction by saving database changes and starts a new transaction.

    ROLLBACK- Ends the current transaction by discarding changes and starts a new transaction.

    SAVEPOINT- Defines breakpoints for the transactions to allow partial rollbacks.

    SET AUTOCOMMIT- Enables or disable the default autocommit mode.

30. The SQL ORDER BY clause is used to sort the data in ascending or descending order, based on one or more columns.

    Syntax: Select Column-list from table-name

    [Where Condition]

    [Order BY Column1, Column2, ColumnN] [ASC|DESC];

UNIT-IV

1. E-business is any kind of business or commercial transaction that includes sharing information across the internet.

2. Mention some applications of e-governance.

    Some applications of e-governance:
    - Government to Citizen (G2C)
    - Consumer to Government (C2G)
    - Government to Government (G2G)
    - Government to Business (G2B)
    - Government to NGO (G2N)

3. Electronic commerce can be classified into four main categories.
    (i)   B2B
    (ii) B2C
    (iii) C2C
    (iv) C2B

4. Benefits of E-commerce are:
    - E-commerce provides the sellers with a global reach.
    - E- commerce will substantially lower the transaction cost.
    - It provides quick delivery of goods with very little effort on part of the customer.
    - 24x7 services.
    - Electronic commerce also allows the customer and the business to be in touch directly, without any intermediaries.

    ***