A WORD TO MY DEAR STUDENTS

It gives me great pleasure in presenting the Students' Support Material to all KV students of class XII.

The material has been prepared keeping in mind your needs when you are preparing for final exams and wish to revise and practice questions or when you want to test your ability to complete the question paper in the time allotted or when you come across a question while studying that needs an immediate answer but going through the text book will take time or when you want to revise the complete concept or idea in just a minute or try your hand at a question from a previous CBSE Board exam paper or the Competitive exam to check your understanding of the chapter or unit you have just finished. This material will support you in any way you want to use it.

A team of dedicated and experienced teachers with expertise in their subjects has prepared this material after a lot of exercise. Care has been taken to include only those items that are relevant and are in addition to or in support of the text book. This material should not be taken as a substitute to the NCERT text book but it is designed to supplement it.

The Students' Support Material has all the important aspects required by you; a design of the question paper, syllabus, all the units/chapters or concepts in points, mind maps and information in tables for easy reference, sample test items from every chapter and question papers for practice along with previous years Board exam question papers.

I am sure that the Support Material will be used by both students and teachers and I am confident that the material will help you perform well in your exams.

Happy learning!


Santosh Kumar Mall
Commissioner, KVS
FOREWORD

The Students' Support Material is a product of an in-house academic exercise undertaken by our subject teachers under the supervision of subject expert at different levels to provide the students a comprehensive, yet concise, learning support tool for consolidation of your studies. It consists of lessons in capsule form, mind maps, concepts with flow charts, pictorial representation of chapters wherever possible, crossword puzzles, question bank of short and long answer type questions with previous years' CBSE question papers.

The material has been developed keeping in mind latest CBSE curriculum and question paper design. This material provides the students a valuable window on precise information and it covers all essential components that are required for effective revision of the subject.

In order to ensure uniformity in terms of content, design, standard and presentation of the material, it has been fine tuned at KVS Hqrs level.

I hope this material will prove to be a good tool for quick revision and will serve the purpose of enhancing students' confidence level to help them perform better. Planned study blended with hard work, good time management and sincerity will help the students reach the pinnacle of success.

Best of Luck.

U.N. Khaware
Additional Commissioner (Acad.)
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IMPORTANT ABBREVIATIONS USED IN IP

2. MAC: Media Access Control
3. NIC: Network Interface Card
4. MODEM: Modulator Demodulator
5. FSF: Free Software Foundation
6. OSS: Open Source Software
7. FLOSS: Free Libre Open Source Software
8. GNU: GNU’s not UNIX
9. ODF: Open Document Format
10. W3C: World Wide Web Consortium
11. VoIP: Voice Over Internet Protocol
12. FTP: File Transfer Protocol
13. HTTP: Hyper Text Transfer Protocol
14. SMTP: Simple Mail Transfer Protocol
15. WWW: World Wide Web
16. PAN: Personal Area Network
17. LAN: Local Area Network
18. MAN: Metropolitan Area Network
19. WAN: Wide Area Network
20. HTML: Hyper Text Markup Language
21. XML: eXtensible Markup Language
22. DHTML: Dynamic Hyper Text Markup Language
23. CSS: Cascading Style Sheet
24. JVM: Java Virtual Machine
25. IDE: Integrated Development Environment
26. SQL: Structured Query Language
27. Wi-Fi: Wireless Fidelity
28. RDBMS: Relational Database Management System
29. DDL: Data Definition Language
30. DML: Data Manipulation Language
31. TCL: Transaction Control Language
32. ASCII: American Standard Code for Information Interchange
33. ISICI: Indian Standard Code for Information Interchange
34. ICT: Information and Communication Technology
CHAPTER- 1: COMPUTER NETWORKING

Network: A computer network is a collection of interconnected computers. Two computers are said to be interconnected if they are capable of sharing hardware, software and exchanging information.

Need or advantages for Networking:
1. Resource sharing
2. Reliability
3. Cost factor
5. Central Storage of data

Application of Network:
1. Sharing
2. Access to remote database
3. Communication facilities

Terminology of Network:

Nodes: Nodes refer to the computers that are attached to a network that can share resources of the network.

Server: A computer that facilitates the sharing of data, hardware and software on the network is known as server. Each server has unique name on the network. A server can be of two types:
   (i) Dedicated server
   (ii) Non dedicated server

Domain Name Vs URL: Domain name is unique name assigned to a web site. The URL is the complete address of web page on the website. e.g. URL: http://www.cbse.nic.in/index.html Here http is protocol and www.cbse.nic.in is domain name.

Domain Name Resolution: Domain Name resolution is the process of getting corresponding IP address from a domain name.

Network Interface Unit (NIU): A network interface unit is an interpreter that helps to establish a communication between the server and the client.

MAC Address: It refers to the physical address assigned by the NIC manufacturer. A MAC address is a 6 byte address with each byte separated by a colon. For Example: 20:B5:03:63:2E:FC (The first three bytes refer to manufacturer ID and last three card no.)

IP address: Every machine on a TCP/IP network has a unique identifying number, called IP address: For Example: 202.27.94.137 (also known as Internet Protocol address)

Transmission/ Communication Media
The communication channels which are used for actual physical transmission of data are known as transmission media. The transmission media is of two types: wired and wireless.

Wired Media (Guided Media):
It consists of physical wired medium to carry signals.

- Twisted pair cable: A twisted pair cable consists of minimum two insulated copper wires of about 1 mm thickness which are twisted together in a helical form. e.g. Telephone wire. LAN Cable.

Advantages:
1. It is easy to install and maintain
2. It is very cheap (Inexpensive)
Disadvantages:
1. It is not efficient in transmitting data for very long distance without a repeater.
2. Low bandwidth.

- **Co-Axial Cable:** It is a stiff copper wire, surrounded by insulating material. E.g. cable TV wire
  
  **Advantages:**
  1. High bandwidth (data transmission is better than twisted pair cable)
  2. Can be used for transmitting data over long distance.
  
  **Disadvantages:**
  1. Expensive than twisted pair cable
  2. It is not compatible with Twister pair cable.

- **Optical Fiber:** Optical fiber cables are made up of a glass core through which data is transmitted in the form of light signals.
  
  **Advantages:**
  1. Transmit data over long distance with security and high bandwidth.
  2. Immune to noise/external interference.
  
  **Disadvantages:**
  1. Very expensive and quite fragile (breakable).
  2. Connecting two optical fibers is a difficult process.

**Wireless Media (Unguided Media)**

It consists of electromagnetic waves which carry signals

- **Blue Tooth:** Bluetooth is a wireless technology for creating personal networks operating within a range of 10 meters.
  
  **Advantages:**
  1. It is a secure medium of transmitting data.
  2. It is a cheap mode of transmission.
  
  **Disadvantages:**
  1. It can work for short distance.
  2. It cannot go through walls and affected by distance, noise and heat.

- **Infrared:** The type of transmission that uses infrared light to send the data is known as infrared transmission. e.g.: Remote control of TV and AC.
  
  **Advantages:**
  1. It is a secure medium of transmitting data.
  2. It is a cheap mode of transmission.
  
  **Disadvantages:**
  1. It can work for short distance.
  2. It cannot go through walls and affected by distance, noise and heat.

- **Microwave:** Microwaves are high energy radio waves that are used for line of sight communication.
  
  **Advantages:**
  1. Suitable for high speed, long distance and overseas communication.
  2. No need for laying cable.
  
  **Disadvantages:**
  1. Microwave communication is an insecure communication.
  2. Microwave propagation of waves is susceptible to weather effects like Rain, thunder etc.
  3. Only straight line transmission is possible.

- **Radio wave/Radio Link**
  
  **The transmission** making use of radio frequencies is termed as radio wave transmission.
  
  **Advantages:**
  1. It is suitable for long distance and can be used for indoors and outdoors.
  2. Radio waves can travel in any direction (omnidirectional).
Disadvantages:
1. Radio waves communication is insecure communication.
2. Radio waves propagation is susceptible to weather effects like rain, thunderstorm.

e) Satellite Link: The satellite transmission is also a kind of line of sight transmission that is used to transmit signals throughout the world. Services like DTH cable TV, VSAT, GPS and Satellite phones etc. are offered by the satellite.

Advantages:
1. It can cover large area of earth.
2. Satellite proves best alternate where the laying out of cable is difficult and expensive.

Disadvantages:
1. High cost (very expensive) and complex Installation.
2. Signals sent to the earth can be tampered by external interference.

Network devices
Modem: MOdulator-DEModulator is a device that connects telephone line to computer. It converts digital signal to analog signal and vice versa.
Hub: Hub is a hardware device used to connect several computers together to form a Local Area Network. Hub broadcasts the message to the entire network.
Switch: Switch is an intelligent Hub, which is used to segment networks into different sub network called subnets. Switch is faster and efficient over Hub due to good traffic management capability.
Repeater: A repeater is a device that amplifies signals transmitted on the network. It is used to extend a network beyond the segment length of the wire used.
Router: The device which connects two similar networks and can handle different protocols.
Gateway: It is a device that connects dissimilar networks.
Bridge: A device that connects two similar networks.

Types of Network
There are mainly four types of network:
Local area Network (LAN): Small computer network that is confined to a local area, office or within a building are known as LAN. E.g. network within school campus.
Metropolitan Area Network (MAN): Metropolitan area network is the network spread over a city or nearby corporate offices. For example, a cable TV network.
Wide Area Network (WAN): This type of network spreads over large geographical area across countries and continents. WANs are generally used to interconnect several other types of networks such as LANs, MANs etc.
Personal Area Network (PAN): The PANs are small network, used to establish communication between computer and other hand-held devices in small proximity up to 10 meters using wired USB connectivity or wireless system like Bluetooth or Infrared.

Difference between LAN and WAN

<table>
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<th>WAN</th>
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<td>1. Diameter is in a few kilometers</td>
<td>1. Span across countries</td>
</tr>
<tr>
<td>2. Very low error rate.</td>
<td>2. High error rate as compare to LAN, MAN, PAN</td>
</tr>
<tr>
<td>3. Complete ownership by a single</td>
<td>3. Run by multiple organization</td>
</tr>
<tr>
<td>organization</td>
<td></td>
</tr>
<tr>
<td>4. Speed in MBPS (10-100 Mbps)</td>
<td>4. Normal speed 1-2 Mbps</td>
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Network Topologies

Network topologies refer to the way in which the nodes are interconnected in a network.

**Star Topology:** In star topology each node is directly connected to the central node (server/hub) by a single path.

**Advantages:**
1. Easy to install and Low cost.
2. A single node failure does not affect the entire network.
3. Problem diagnosis is easy due to central control.

**Disadvantages:**
1. Central node dependency, i.e. in case central node fails, the entire network fails.
2. Long cable is required because each node is directly attached to the server/central node.

**Bus or Linear Topology:** In this topology, a single length of the transmission medium is used on which various nodes are attached. It can transmit data in both directions.

**Advantages:**
1. Short cable length required
2. Easy to extend the network

**Disadvantages:**
1. Nodes must be intelligent.
2. Fault diagnosis is very difficult

**Tree Topology:** It is a variation of bus topology and has the shape of an inverted tree.

**Advantages:**
1. It is most suitable in networking multiple departments of a university where each unit works separately.
2. Fault identification is easy.

**Disadvantages**
1. As multiple segments are connected to a central hub, if central hub fails, it affects the entire network
2. Maintenance cost is high

**Network Protocol**

1. **Hypertext Transfer Protocol (HTTP):** HTTP is a communication protocol that is used to transfer information on the internet and WWW. HTTP is a request/response standard between a client and a server. A client is the end user and the server is the web site.

2. **Transmission Control Protocol (TCP):** TCP is responsible for verifying the correct delivery of data from client to server. Data can be lost in intermediate network. TCP adds support to detect errors or loss of data.

3. **Internet Protocol (IP):** IP is responsible for assigning 4 byte IP address to each packet.

4. **Point to Point Protocol (PPP):** It is a protocol used to establish a direct connection between two computers using Telephone lines.

**Remote Access Software:**

Today there are some softwares that provide you facility of accessing the computer remotely. Remote desktop software lets you access your computer and all its application over the Internet. Example: Team Viewer, Window Remote Desktop, Ammyy Admin etc.
Team Viewer: TeamViewer is a popular piece of software used for Internet-based remote access and support. Team Viewer Software can connect to any PC or server, so you can remotely control your partner’s PC as if you were sitting right in front of it.

Network Security Concept:
Cyber Law: Cyber law is a generic terms which refers to all the legal and regulatory aspects of internet and World Wide Web.
Firewall: It prevents unauthorized access to or from a private network. A firewall is used to control the traffic between computer networks.
Cookies: Cookies are the text messages sent by a web server to the web browser so that web server can keep track of the user’s activity on a specific web site.
Hackers: Gaining knowledge about someone’s private and sensitive information by getting accessibility of his computer system illegally. Hackers are more interested in gaining knowledge about computer system and possibly using this knowledge for playful planks.
Crackers: Crackers are the malicious programs who break into the secure system for some illegal or destructive purpose.

Network security threats:
Denial of Services (DoS): DoS attacks are those attacks that prevent the legitimate users from accessing or using the resources and information. These types of attacks may eat up all the resources of the system and computer become to a halt state.
Intrusion problem:
Snooping: It refers to unauthorized access of someone else data, e-mail, computer activity or data communication. It may comprise monitoring of Keystrokes pressed, Capturing of passwords and login information and interception of e-mails and other private information.
Eavesdropping: It the act of secretly listening / interpreting someone else’s private communication or information while data is on its way on the network.
Spyware: Spy ware is a program designed to spy on your activities and reports this data to people willing to pay it either for legal or illegal purposes. It is getting installed in your system without your consent as a file or gets downloaded from websites on Internet.
Spamming: Spamming refers to the sending of bulk-mail (junk-mail) by identified or unidentified sources.
Phishing: Phishing is a process of attempting to acquire sensitive information such as user name, passwords, credit card number, bank account details etc. using a trap-mail in which user himself discloses their private details.
Malicious Programs
Virus: Computer viruses are malicious and self-replicating codes/programs that cause damage to data and files on the computer system.
Worm: It is also a self-replicating program which eats entire disk space or memory. It copies itself until all the disk space or memory is filled.
Trojan Horse: It is a program that appears harmless (like utility program) but actually performs malicious functions such as deleting or damaging files.

Internet application:
SMS (Short Message Services): SMS is the transmission of short text message from one mobile to other mobile phone.
Voice Mail: Transfer of recorded message is known as voice mail.
E-Mail: E-mail allows a user to send or receive message electronically across the world on the computer.
Chat: Online textual talk in real time is called chatting.
Video Conferencing: A two way videophone conversation among multiple participants is called video conferencing.

Wireless/Mobile Communication:
GSM: It is a wireless communication medium that provides the user with roaming facility, good voice quality, SMS etc. through digital signals.
CDMA: It is a digital cellular technology that uses spread spectrum technique where the entire bandwidth is divided among several users for transmission of data. This allows multiple people on multiple cell phones over the same channel to share a bandwidth of frequencies.
WLL: Wireless local loop (WLL) technology simply means that the subscriber is connected to the nearest telephone exchange through a radio link instead of copper wires.
3G: It is the third generation of Wireless & Mobile technology. It is high-speed transmission with advanced multimedia access and global roaming. 3G is mostly used with mobile phones and handsets as a means to connect the phone to the Internet.
4G: It is fourth generation of wireless service, which refers to the next wave of high-speed mobile technologies that will be used to replace current 3G networks.

Cloud Computing: The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.


REVISION: Complete the following cross word puzzle using Network concept and terminology

1. (Across) Unauthorized access of someone else’s data, email, computer activity etc.
1. (Down) A computer that facilitates sharing of data, software & hardware resources on network.
2. (Across) Term used for ‘connecting cables’ or ‘connecting media’ across network.
3. (Down) Name given to the computers on a network.
4. (Down) Unique name assigned to a web site.
5. (Across) A device that amplifies and restores signals for long distance transmission.
6. (Across) An intelligent device that is used to connect several computers in a network.
7. (Down) The pattern of interconnection of nodes in a network.
8. (Down) A person gaining knowledge about someone’s private and sensitive information by getting accessibility of his computer system illegally.
9. (Down) A system prevents unauthorized access to or from private network.
10. (Across) Measures taken to protect the networking infrastructure from unauthorized access & misuse.

Very Short Answer Type Question:

1. What is networking?
2. Arrange the following communication channels in the ascending order of their data transfer rate.
   (i) Optical Fiber      (ii) Coaxial cable      (iii) UTP cable
3. Write two advantage and two disadvantages of Coaxial Cables, Twisted Pair Cables, Fiber Optics.
4. What is meant by transmission media? Give two examples of guided media and two examples of unguided media.
5. Which of the following is not a transmission media?
   i. Telephone Lines  ii. Coaxial Cable  iii. Modem iv. Microwave Systems
6. Why switch is called intelligent hub?
7. PACK N PICK is a food supply company with kitchen and market unit 110 meters away from each other. The company recently connected their networks using UTP cable to share the stock related information. But after joining their networks, they are not able to share the information due to loss of signal in between. Which device is to be installed for a smooth communication?
8. Two engineers in the same room have connected their Palm-tops using Bluetooth for working on a Group presentation. Out of the following, what kind of Network have they formed? LAN, MAN, PAN, WAN.
9. What do you mean by topology?
   Identify the type of Topology from the following:
   (i) If each node is connected with the help of independent cable with the help of a central switching (communication controller).
   (ii) If each node is connected with the help of a single co-axial cable.
10. A University would like to go in for networking of all the computers. Which topology would you recommend and why?
11. Lalit is transferring songs from his mobile to his friend’s mobile via Bluetooth connection. Name the network used by Lalit.
12. Which protocol is used for transfer of hypertext documents on the internet?
13. Ram wants to transfer hypertext documents on the Internet. Which protocol must be used for the same?
14. Samhita says that the following numbers indicate an address:
   i. 208.77.188.166
   What is the above address called? To which object/device is it assigned
15. Rohit is confused between the terms Domain Name and URL. Explain the difference with the help of appropriate examples of each.
16. When is a repeater used in a network?
17. What is domain Name?
19. Define the following terms:
   Cookies, firewall, snooping, PC Intrusion, spamming, Trojan horse.
21. Define Email.

**Short Answer Type Question:**
1. What is computer network? What are its advantages?
2. Differentiate between guided media and unguided media?
3. Differentiate between LAN and WAN?
4. Define Bluetooth, satellite link.
5. Define the following: Repeater, Gateway, Modem, Switch
6. Write any two advantages and disadvantages of star, tree and Bus topology.
7. What is IP address? Explain with example.
8. What is MAC address? Explain with example.
CHAPTER-2: OPEN SOURCE CONCEPTS

Open Source Software: Open Source Software can be freely used, changed, improved, copied and redistributed but it may have some cost for support and further development. Source Code is also available with OSS. It can be modified and redistributed with some guidelines of License.

FOSS/FLOSS: An OSS may come free of cost or with a payment of nominal charges that its developers may charge in the name of development and support of software. FLOSS (Free Livre and OSS) is both free software as well as OSS.

Proprietary software: Proprietary software is the software that is neither open nor free available. Its use requires special permission by the supplier or vendor. They must have some cost and Source code is also not given. It is the property of the developer organization. No change, copy and distribution is allowed.

Free software: Free Software are those which are freely accessible, freely used, changed, improved, copied and distributed. It provides all types of freedom. It has no cost and Source Code is also available with Free Software.

Free ware: Free ware is software which is available freely and can be copied and distributed but no modification is allowed as source code is not available.

Shareware: These software are freely used, copied and distributed for a certain period of time. After expiry, you have to purchase or uninstall them. Modification is not possible due to non-availability of the source code. These are the Demo version and freely distributed for trial purpose.

Free Software Foundation (FSF): FSF is a non-profit organization established to support free software movement. It has funded many software developers to develop free software under GNU GPL. It also works on legal and structural issues for the free software community.

Open Source Initiative (OSI): It specifies the criteria and defines the terms and specifications for Open Software.

Free & Open Source Products:

GNU: GNU refer to GNU’s not UNIX. It offers a wide range of free and open source software including application apart from operating system.

LINUX: Linux is a popular Open source operating system and can be downloaded from www.linux.org.

Mozilla Firefox: Freeware, free web browser, it can be download from www.mozilla.org.

Open Office: It is an office applications suite. It is intended to be compatible with most Operating Systems like Windows, Mac OS, UNIX and Linux and directly compete with Microsoft Office. It includes Write (Word Processor), Calc (Spread Sheets), Draw (Graphics program), Impress (Presentation), Math (Mathematical Formula editor) etc.

MYSQL: MySQL is most popular open source database system. MYSQL is a multi-user. It can work on many different platforms like Linux, Microsoft Windows, SUN OS etc. It can be downloaded from www.mysql.com.

JAVA NetBeans: Java NetBeans is a free open source, cross platform IDE with built in support for Java programming language. In fact Net beans run anywhere where there is JVM. It offers many features for application development.

APACHE: Apache web server (or HTTP server) is an open source web server available for many platform such ad Linux, Microsoft windows and other platform. Apache is designed as a set of
modules, enabling administrators to choose which features they wish to use and making it easy to add features to meet specific needs including handling protocols other than the web-standard HTTP. It is component of LAMP (Linux, apache, MySQL and PHP).

**PHP:** It is known as Hypertext Preprocessor. It is an OSS used for server side applications and developing dynamic web content. PHP allows easy interaction with large number of relational database systems such MySQL, Oracle, DB2, PostgreSQL etc. PHP runs on most major OS including windows, Mac OS X, UNIX, Linux

**W3C:** The World Wide Web consortium exists to realize the full potential of the web.

*Advantages of Open Source Software*
- Application and platform independence.
- Making the data accessible to all.

*Disadvantages of Open Source Software*
- Open source development process may not be well defined and the stages in the development process, such as system testing and documentation may be ignored.
- Not all OSS initiatives have been successful.

**Types of Standards:**

**Proprietary standards:** it is closed standard and users have to buy license to use them.

**Open standards:** Open standards are internationally accepted technical standards that guarantee that data can be exchanged or accessible across platforms and applications, even as technologies changes, It is freely available to all.

**Some common open standard formats are:**

**HTML:** HTML format is the standard language for the web.

**XML:** XML is open standard which is used to describe the data. It is text based markup language that allows storing data in structured format

**Open document Format (ODF):** Open document is an open, XML based file format. It is an open standard, supported by the IBM, Sun etc.

**Ogg Vorbis:** It is a new audio compression format. It is roughly comparable to other formats used to store and play digital music such as MP3 and mpeg-4 format. It is open, free, unpatented and loosely compression project from Xiph.org foundation.

**Indian Language Computing**

**ASCII:** American Standard Code for Information Interchange is widely used alphanumeric code in most microcomputers, minicomputers and in many mainframes. It is 7 bit code hence it can represent \( 2^7 = 128 \) characters.

**ISCl:** Indian Standard Code for Information Interchange (ISCII) is an 8 bit code capable of coding 256 characters. It retains all ASCII characters and also offers coding for Indian Scripts.

**Unicode:** Unicode is a 16 bit code used to incorporate almost all the language of the world including Indian language. It provides a unique number for every character. Indian scripts included in Unicode are Devnagari, Bengali, Gurumukhi, Gujarati, Oria, Tamil, Telegu, Kannada, and Malayalam.

**Font:** A Font refers to a set of displayable text characters called glyphs, having specific style and size. There are two categories of font: True Type Font and Open Type Font.

**Types of Fonts:**
True Type Font: It is developed by Apple and licensed to Microsoft. It is 8 bit font which is compatible with Microsoft Windows and MAC OS.

Open Type Font: It is the extension of the True Type Font Format which is 16 bits font and support Unicode characters.

Static Vs Dynamic Font:
Static Font: In static fonts, the character are designed and digitized and then stored in font files. Every time printing take place, same character will appear with same shape for example Times New Roman, Arial etc.

Dynamic Font: In Dynamic fonts, the characters are redefined at each occurrence. Dynamic fonts generate different font shape using certain parameter-values. All hand written fonts such as handwritten alphabets are dynamic fonts because of individual variations.

Indian Language Text Entry: There are two types of text entries:

1) Phonetic text entry: In this type of text entry, traditional keyboards with English keys are used. But while typing, the Indian alphabets are written phonetically i.e. the way they sound. So, for phonetic text entry, a combination of keys can be used to represent one Indian language character. English script and then converted to corresponding language word.

2) Key map Based Entry: In this method the keyboard keys are mapped to specific character using a key map. The whole arrangement of mapping the keyboard keys to specific language character is known as key map. A key map is internally stored as a table.

Very Short Answer Type Questions (1 Marks)

1. Write the names of any two free software?
2. Write the names of any proprietary software?
3. Write the names of two open sources software.
4. Which of the following is not a characteristic of Open Source Software?
   a. Its source code is available for modification
   b. It is owned by a company or an individual
   c. It can be downloaded from internet
5. Define the following terms:
   Free Software, Open source Software, Proprietary software, freeware, and shareware
6. Identify the free software out of the followings:
   Mozilla firefox, PHP, GNU, MS Office, MySQL, Linux
7. What is significance of Unicode?
8. Expand the followings:
   OSS, FLOSS, GNU, W3C, ASCII
9. Name the two encoding used for Indian language computing.
10. Name two Indian script included in Unicode.
11. Navneet is using software, which has been downloaded from internet and is available for one month. After one month he has to pay license fee for further use. Which software Navneet is using?
12. What is DoS (Denial of Service)? Explain briefly.
13. Which of the following are open standards?
   1) .ogg        2) .doc        3) .ttf        4) .jpeg
14. Which of the following are open standards & which are proprietary standards?
Short Answer Type Questions: (2Marks)

1. Difference between free software and open sources software with example.
2. What are the different standards?
3. What do you understand by ODF?
4. What is Ogg Vorbis?
5. What do you understand by TTF and OTF?
6. Mr. Dass is confused between Shareware and Open source software. Mention at least two points of difference to help him understand the same.
7. What is character encoding?
8. What is the difference between static and dynamic fonts?
UNIT-2

CHAPTER 3: JAVA GUI PROGRAMMING REVISION TOUR-I

Rapid Application Development: It describes a method of developing software through the use of pre-programmed tools or wizards. The pre-programmed tools or controls are simply dropped on a screen to visually design the interface of application. It enables program development in shorter time.

NetBeans Java IDE: It is a free, open-source, cross-platform IDE with built-in support for Java programming language. It has more advanced GUI building tools available in any open-source Java IDE.

Event: Occurrence of an activity.

Message: Information sent to the application or received from the application.

Types of Swing Components:
(a) Component: It is a self-contained graphic entity like JLabel, JTextField etc.
(b) Container: It can hold other components. It is of two types:
   (i) Top Level Container: Can be displayed directly on a desktop. Every swing application must have at least one top level container, i.e. JApplet, JDialog, JFrame.
   (ii) Non Top Level Container: Can be displayed within another top level container, i.e. JPanel, JScrollPane, JInternalFrame, JLayeredPane etc.

Child controls are controls inside a container control.

Java Character Set: It is the set of valid character set that a language can recognise. Java uses Unicode character set.

Data Types: Data Types are means to identify the type of data and associated operations of handling it.
Variables: It is a named memory location which holds a data value of a particular data type.

Variable declaration & Initialisation:
A variable with declared first value is said to be initialized variable. e.g. int rollno = 1;

Text Interaction:
(i) getText() Method : String name = nametf.getText();
(ii) setText() method: Stores or changes text in text based controls e.g. ranktf.setText("1");
(iii) Parse() Methods: Used to convert a string value into numeric value.
(iv) JOptionPane.showMessageDialog(): Displays a Message Box.

System.out.print(): It prints the desired output on output window.
System.out.println(): It prints the desired output on output window and also changes the line.

Variable Scope: Program region within which a variable is accessible. It is accessible within the set of braces it is declared in.

    if (...) {
        int x = 5;
        ....
    }
    System.out.println("The result is :" + x); //error

Constant: Named memory locations whose value can’t be changed in the program. It makes program easy to read, check & modify. e.g. final int rateofinterest = 10;

Operator: It represents particular task and the objects of the operation is called operands. It may be Unary (working on one operand, eg. unary -), binary (working on two operands, e.g. subtract -) or ternary (working on three operands, e.g. ?:).

Type Conversion: It is the process of converting one predefined data type into another. It has two forms:

- Implicit (Coercion): Compiler automatically performs conversion to the type of the largest operand in mixed mode expression.
- Explicit (Type casting): Done by programmer. Converting to or from Boolean is not permitted. : (type) expression e.g. (float) (x/5 * y + 5)

Programming Constructs: Flow of Control

![Diagram of Programming Constructs: Flow of Control]
Selection:

If statement;
if (expression)
    statement ;
if . . . else statement
if (expression)    statement 1 ;
else    statement 2;
Nested if:
if (expression) {
    if (expression)
        statement 1 ;
    [else
        statement 2;] }
else
    body of else;
if else if
if (expression)
    body ;
else if (expression)
    body;
. .
else    body;
Dangling else Problem:
if (expression)
    if (expression)    statement 1 ;
else    statement 2;
(Indentation indicates else for outer if but it actually matches with preceding If.)

The Switch Statement:

switch (expression)
{
    case constant 1 : statement sequence 1;
        break;       // value of expression must be byte, short, int or a char.
    case constant 2 : statement sequence 2;
        break;
    .
    [default : statement sequence n];  //default can be anywhere need not to be in last.
}
In absence of break in switch statement, Java will start executing all statements after the correct case. This phenomenon is called Fall-Through.

Iteration (Looping) statements:

(i) for loop     (ii) while loop     (iii) do-while loop
Parts of loop:
➢ Initialisation   Test Expression   Update Expression   Loop Body
for loop:
for (int i = 1; i <= 10; ++i)
System.out.print( i + " ");

Program to find factorial using for loop:

    int fact = 1, a;
    int num = Integer.parseInt(numtf.getText());
    for (a = 1; a <= num; a++){
        fact = fact*a;
    }  
    System.out.println("The factorial of “ + num + “ is “ + fact);
The While Loop: It is an Entry-controlled/Top-tested/Pre-Tested loop.

Program to find factorial using while loop:
```java
int num = Integer.parseInt(numtf.getText());
long i = num, fact = 1;
while (num != 0) {
    fact = fact *num;
    -- num; }
System.out.println("The factorial of " + i + " is " + fact);
```

The do-while Loop: It is an Exit-controlled/Bottom-Tested/Post-Tested loop. It executes at least once.

Syntax:
```java
do {statement ;
 } while (test-expression);
```

Example:
```java
char ch = 'A';
do {System.out.println(ch);
    ch++;
} while (ch <= 'Z');
```

Jump statement
- **Return:** To return from a function.
- **Break:** It is used to terminate the body of while, do-while, for or switch statement and transfers control to the statement following the body.
- **Continue:** It skips the rest of the loop (while, do-while or for) and starts the next iteration.

Solved Questions:

1. **Write a java code to find out whether a year (4 digit number stored in a variable) is a leap year.**
   ```java
   private void lybutActionPerformed(java.awt.event.ActionEvent evt) {
   long i = Long.parseLong(lytf.getText());
   if (i%100 ==0)
   if (i%400 ==0)
   System.out.println(i +  " is Leap Year");
   else System.out.println(i + " is Normal Century Year");
   else if (i%4==0)
   System.out.println(i + " is Leap Year");
   else System.out.println(i + " is not a Leap Year"); } 
   ```

2. **Write a java program to find the greatest out of three numbers.**
   ```java
   int a = Integer.parseInt(tf1.getText()), b = Integer.parseInt(tf2.getText());
   int c = Integer.parseInt(tf3.getText());
   if (a>b && a>c)
   System.out.println(a + " is greater");
   elseif (b>c) System.out.println(b + " is greater");
   else System.out.println(c + " is greater");
   ```
Sample Questions:

1. What will be content of the jTextArea1 after executing the following code:
   ```java
   for (int i=2;i<=5;i++)
   {
       jTextArea1.setText(jTextArea1.getText()+" "+Integer.toString(i*i));
   }
   ```

2. Write java code that takes value for side of a square in jTextField1 and calculate area of it which is to be displayed in jTextField2.

3. Item code consisting of 5 digits is stored in a integer type variable intItemCode. Write the code for keeping this itemcode in a String type variable called strItemCode.

4. What message will be displayed after the execution of the following code?
   ```java
   int age =64, relaxation = 4; modiage= age – relaxation;
   if (modiage < 60) jOptionPane.showMessageDialog(null, "Not Eligible");
   else jOptionPane.showMessageDialog(null, "Eligible");
   ```

5. Rewrite the following program code using if statement:
   ```java
   int c = jComboBox1.getSelectedIndex();
   switch(c)
   {
   case 0 : amount = bill; break;
   case 1 : amount = 0.9 * bill; break;
   case 2 : amount = 0.8 * bill; break;
   default : amount = bill;
   }
   ```
CHAPTER 4: JAVA GUI PROGRAMMING REVISION TOUR-II

FRAME
It is a top level window with title and border. It is created through JFrame component. It has title and border. Each project must have at least one frame.

<table>
<thead>
<tr>
<th>Swing controls</th>
<th>Methods</th>
<th>Properties</th>
</tr>
</thead>
</table>
| JButton        | getText(), setText() | • Background  
|               |          | • Enabled  
|               |          | • Font  
|               |          | • Foreground  
|               |          | • Text  
|               |          | • Label  |
| JLabel         | getText() | • Background  
|               |          | • Enabled  
|               |          | • Font  
|               |          | • Foreground  
|               |          | • Text  |
| JTextField     | getText(), isEditable(), isEnabled(), setText() | • Background  
|               |          | • Enabled  
|               |          | • Font  
|               |          | • Foreground  
|               |          | • Text  |
| JTextArea      | getText(), setText(), append() | • Background  
|               |          | • Enabled  
|               |          | • Font  
|               |          | • Foreground  
|               |          | • Selected  
|               |          | • Text  |
| JRadioButton   | getText(), setText(), isSelected(), setSelected() | • Background  
|               |          | • Enabled  
|               |          | • Font  
|               |          | • Foreground  
|               |          | • Buttongroup  
|               |          | • Selected  
|               |          | • Label  |
| JCheckBox      | getText(), setText(), isSelected(), setSelected() | • Buttongroup  
|               |          | • Font  
|               |          | • Foreground  
|               |          | • Label  
|               |          | • Selected  
|               |          | • Text  |
### Sample Questions:

1. What is a button group? What all controls can you put in it?
2. Write a statement to make JTextArea1 as un-editable.
3. Which control is to be used to select a country from the list of given countries?
4. What will be displayed in JTextArea1: JTextArea1.setText("cbse\nFinal_Exam\tIP")
5. In a Recreation Park when a group arrives, the number of people in the group and whether the group wants to enjoy the Water Park or not is entered. Entry fees is ₹ 500 per person. The person can choose to play at Water Park by selecting the checkbox. Rides of Water Park will cost ₹ 250 extra per person.

Write code for the following:

i. On the click of command button ‘Calculate’, textfield for ‘Entry Fees’ should display Entry Fees per person * Number of people. If ‘Water Park’ checkbox is selected, textfield for ‘Water Park Charges’ should display Water Park Charges per person * Number of people. Textfield for ‘Total Amount’ should display sum of Entry Fees and Water Park Charges for all the people in the group.

(ii) Write Java code to clear all Textboxes on the click of ‘Clear’ button.
(iii) Write Java code to close the application on the click of ‘Exit’ button.
CHAPTER 5: INTRODUCING CLASSES AND OBJECTS

Object Oriented Programming: The object oriented programming style emphasizes upon classes and objects. It incorporates the features of Data Abstraction, Encapsulation, inheritance and Polymorphism. Java is a pure object oriented language.

Class is a blueprint that represents a set of similar objects e.g. vehicle. Class is User Defined/Reference Data Types.

Polymorphism: Polymorphism is the ability for a message or data to be processed in more than one form. It is the ability to behave differently in different circumstances.

Object is an entity with unique identity, characteristics and behaviour.

Method is the action defined in the class which can be carried out on the data.

Purpose of using method:
(i) Cope with complexity (ii) Hide details (iii) Reuse.

Definition:
[access specifier] [modifier] return type method-name (parameter list)
{ body of the method}

- Access specifiers can be private, protected or public. Default is friendly.
- Modifiers can be final, static etc.
- Return type may be of any data type or void.
- Parameter list is a comma-separated list of variables also known as arguments.

Access Specifiers
It controls access to members of a class. It may be

- private: Can’t be accessed from outside the class.
- protected: Public to subclasses in any package and classes of same package but private to all other class.
- public: Directly accessible from all other classes.
- default access: If no specifier is used then the class has default access which is friendly or package access. Members with package access are not available to the classes or subclasses of other package.

Types of member in a class:

- **Instance member**: Defined without static keyword. Instance variables and instance methods are collectively called instance members. Each object created from such class will have its own copy of instance member. It is called as <object name>.method().
- **Static member**: It is declared using static keyword. It belongs to class as a whole and not to a particular object. It is called as <class name>.method().

    ```java
    float x = 25;
    float z = Math.sqrt(x); // class method.
    String s = “KVS”;
    String t = s.substring(0, 4); //instance method as it is called through object s
    ```

Creating objects:

    ```java
    city metro1, metro2;
    metro1 = new city();
    Or city metro1 = new city();
    ```
Sample Questions:
1. Define Object Oriented Programming (OOP).
2. Define a class with respect to OOP.
3. Define data encapsulation with reference to OOP.
CHAPTER 6: COMMONLY USED LIBRARIES

Libraries: It is a set of ready-made software routines that can be reused in new programs. Libraries are made available in a program using import statement e.g. import java.io.*;

String Library: It is a part of java language library java.lang, which is by default imported to the program. There are 3 classes to work with characters:

(i) **Character Class** whose instances can hold single character data.

(ii) **String Class** whose instances can hold unchanging string. Every time we change, a new object is created automatically.

String s = “Excellent”; or String s = new String(“Excellent”);

(iii) **StringBuffer Class** whose instances can hold mutable strings.

StringBuffer sb = new StringBuffer(); or StringBuffer sb = new StringBuffer(“First”); or StringBuffer sb = new StringBuffer(10); // to hold 10 characters

String s = “crack”, r = “rack”;

<table>
<thead>
<tr>
<th>Method Prototype</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>String toString()</td>
<td>r = s.toString(); Returns the string itself.</td>
</tr>
<tr>
<td>String concat(String)</td>
<td>Concats two strings. s = s.concat(r); -&gt; crackrack</td>
</tr>
<tr>
<td>str1 + str2</td>
<td>Concatenation operator. s = s + r ;</td>
</tr>
<tr>
<td>int length()</td>
<td>n = s.length() -&gt; 5</td>
</tr>
<tr>
<td>String toLowerCase()</td>
<td>r = s.toLowerCase();</td>
</tr>
<tr>
<td>String toUpperCase()</td>
<td>r = s.toUpperCase();</td>
</tr>
<tr>
<td>String trim()</td>
<td>r = s.trim(); Removes white spaces from both ends.</td>
</tr>
<tr>
<td>String substring(int beginindex, int endindex)</td>
<td>s.substring(1,3); =&gt; ra.</td>
</tr>
<tr>
<td>boolean equals(str)</td>
<td>b = s.equals(r);</td>
</tr>
<tr>
<td>boolean equalsIgnoreCase(str)</td>
<td>b = s.equalsIgnoreCase(r);</td>
</tr>
<tr>
<td>String valueOf()</td>
<td>r = s.valueOf(r); Returns string representation of passed argument i.e. 30 is returned as &quot;30&quot;.</td>
</tr>
</tbody>
</table>

valueOf()

int i = Integer.valueOf(k); Returns Integer representation of passed argument i.e. “30” is returned as 30. double x = Double.valueOf(k); //x becomes 30.0

String s = "art", r = "science";

StringBuffer sb = new StringBuffer(s);

Additional stringBuffer Methods:

<table>
<thead>
<tr>
<th>Method Prototype</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>append(x)</td>
<td>Adds x char at the end. sb.append(r); =&gt; artscience.</td>
</tr>
<tr>
<td>reverse()</td>
<td>sb.reverse(); =&gt; ecnieicstra</td>
</tr>
</tbody>
</table>
**Math Functions**: It is found in Math library and used as Math.sqrt(a*a + b*c)

<table>
<thead>
<tr>
<th>Function</th>
<th>Action</th>
<th>Function</th>
<th>Action</th>
<th>Function</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>pow(x,y)</td>
<td>X^y</td>
<td>ceil(x)</td>
<td>Round up</td>
<td>floor(x)</td>
<td>Round down</td>
</tr>
<tr>
<td>sqrt(x)</td>
<td>Root</td>
<td>abs(a)</td>
<td>Absolute</td>
<td>max(a,b), min(a,b)</td>
<td>Max, min</td>
</tr>
</tbody>
</table>

`round(x)`: Rounds off a number to its nearest integer. It argument is double then it returns long and for float it returns int. If the argument is NaN, then the result is zero. `Round(-4.5)` is -4. `Round(4.5)` is 5. (NaN means Not a Number).

**Sample Questions:**
1. What will be display in a jTextField1 after executing the following code?
   ```java
   int m= 16;       m=m+1;
   if (m<15)      jTextField. setText(Integer.toString(m));  else
   jTextField1.setText(Integer.toString(m+15));
   ```
2. What does round() return if a negative float value is passed to it?
3. Write code to display IP 12 CBSE in a dialog box (JOptionPane).
4. What will be the output of the following code: (i) Math.round(1.5) (ii) “Welcome”.toUpperCase().
5. What will be the value X1 after the execution of the following code?
   ```java
   String X1= "Graduate" ,X2="Post" ;  X1=X2. concat (X1) ;
   ```
CHAPTER 7: CONCEPT OF INHERITANCE

Inheritance: It is the capability of one class to derive properties from another class.

Need for Inheritance:
1. It ensures closeness with real-world models.
2. Reusability
3. Transitive nature of inheritance

Subclass & Super Class: The class being inherited is called super class or base class and the inheriting class is called sub class or inherited class. Thus subclass derives some features (data members and methods) from its super class.

Forms of Inheritance
- Single Inheritance: A Subclass inherits from only one base class.
- Multiple Inheritance: A subclass inherits from multiple base classes (not supported by Java).
- Hierarchical Inheritance: Many subclasses inherit from a single base class.
- Multilevel Inheritance: A subclass inherits from a class that itself inherits from another class. This shows transitive nature of inheritance.
- Hybrid Inheritance: Here a sub class inherits from multiple base classes and all of its base classes inherit from a single base class.

Defining Derived class:
Class <sub class name> extends <super class name> {
: // members of sub class}

Function Overloading: A function name having several definitions in the same scope that are differentiable by the number or types of their arguments (i.e. same name but different signature), is said to be an overloaded function. Functions with same name and same signature but different return type are not allowed. Functions with same name and signature are treated as re-declaration of first.

Need for Function Overloading: To cope with the changing behavior in different situations.

Declaration and Definition:
double a =0.0, b = 5.4, c = 8.9;
int d = 0, e = 5, f = 8;
a = sum(b,c);
d = sum(e,f);
System.out.println(a + ""," + d);
int sum( int a, int b){   //func 1
return (a+b); }
double sum( double x, double y){ //func 2
return (x+y); }

Example of Inheritance and constructors
package a;
class person {
int j = 4;
private int i = 5;
protected String name;
public String address;
person (String name, String address) {
this.name = name;
this.address = address;}
}
class student extends person {  //can’t access i
int rolno; int j = 1;
student (String name, String address, int rolno){
super(name, address);
this.rolno = rolno;}
public void display () {System.out.println(j + "," + super.j);} }  // j of class person is hidden

class employee extends person{
String dept;
employee (String name, String address, String dept){
super(name, address);
this.dept = dept;}}

class professor extends employee{
String inst;
professor(String name, String address, String dept, String inst){
super(name, address, dept);
this.institute = inst;}}
class p { }  // can’t access i,

package b;
class q { }

Sample Questions:
1. What is inheritance? Discuss its various forms.
2. Define base class and derived class. How are these related?
3. How does the visibility mode control the access of members in the derived class? Explain with examples.
CHAPTER 8: DATABASE CONNECTIVITY TO MYSQL

MYSQL provides connectivity for client applications developed in the Java programming language via JDBC driver, which is called “MYSQL Connector/J”.

There are four main classes in the JDBC API for database connectivity:

(i) **Driver Manager Class**: It locates and logs on to the database and returns a connection object.
(ii) **Connection Class**: It manages the communication between Java & MySQL.
(iii) **Statement Class**: It contains SQL string that is submitted to the database. An SQL Select statement returns a ResultSet object that contains the data retrieved as the result of SQL statement.
(iv) **ResultSet Class**: A result set is the logical set of records that are fetched from the database by executing a query and made available to the application program. It accesses, analyzes and converts data values returned by the SQL select statement.

Steps for Creating Database Connectivity Application:

(i) **Import the package required for database programming**:

```java
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.Statement;
import java.sql.ResultSet;
```

(ii) **Register the JDBC driver with Driver Manager**:

```java
Class.forName("java.sql.Driver"); or Class.forName("com.mysql.jdbc.Driver");
```

(iii) **Open a connection**:

```java
Connection conn = DriverManager.getConnection("jdbc:mysql://localhost:3306/test", "root", "tiger");
```

Test is the name of SQL database, root is user id and tiger is MySQL password.

(iv) **Execute a query**: Create an object of type Statement using createStatement() method. Then execute the SQL statement using executeQuery() method, in case of SELECT query, or executeUpdate() method, in case of UPDATE, INSERT or DELETE or Create Table query. It returns an object of resultSet type.

```java
Statement stmt = conn.createStatement();
String sql= "Select id, name from employee";
ResultSet rs = stmt.executeQuery(sql);
```

OR
sql = "delete from employee";
ResultSet rs = stmt.executeUpdate(sql);

**ResultSet Cursor:** When a ResultSet object is created, the cursor is placed just before the first row. To move the cursor to first row use rs.next() or rs.first(). rs.next() forwards the cursor by one row – since initially cursor is before the first row, first rs.next() will move the cursor to first row. Any following rs.next() commands forward the cursor by one row.

**(v) Extract data from result set:** This step is required if data is fetched from the database i.e., in case of SELECT query. To retrieve the data ResultSet.get<Type>() method is used. i.e., getInt(), getLong(), getString(), getFloat(), getDate() etc. All these method takes parameter as Column Name or Column Index. Column Index is the order of the column.

```java
int id = rs.getInt("id");       // if more than one column exists in result set with same
                                // Column Name then the first one is returned.
or int id = rs.getInt(1);       // if id is first field of table.
String name = rs.getString("name");
```

Retrieving data from result set if it contains multiple rows:
Use **rs.next() method**. In addition to moving a result-set by one row, it also returns true if cursor is positioned on a row and false if cursor is positioned after the last row.

```java
int id; String name;
while (rs.next()){
    id = rs.getInt(1);
    name = rs.getString(2); // display or process here.
}
```

**(v) Clean up the environment:** Close all database resources using close() method.
```
rs.close(); stmt.close(); conn.close();
```

**Sample Questions:**
1. What is a connection and a result set?
2. What does Driver Manager do?
3. Write a statement to open a connection object namely myconn for a MySQL database namely school.
4. What are the steps to connect to a database from the Java application?

**UNIT- 2: Questions & Answers**

**Very Short answer types questions**
1. Write the expression to print the value of a variable "Sum" of type int in a label.
   Ans: jLabel1.setText(""+Sum);
2. Name any two commonly used method of ListBox.
   Ans: getSelectedIndex() and getSelectedValue()
3. Write code to add an element ("IP") to a list (MyList) at the beginning of the list.
   Ans: MyList.add(0,"IP");
4. Write command to display a message dialog to display prompt as “Hi! Everybody”.
   Ans: JOptionPane.showMessageDialog(null,"Hi! Everybody");
5. How would you make a combo box editable? Ans: By setting its editable property to true.
6. Name the different list type controls offered by Java Swing.
   Ans: (i) jListBox (ii) JComboBox
7. In JDBC coding, what method is used to move to last record of the recordSet with name recSet?
   Ans: recSet.last();
8. What is the name of event listener interface for action events?
   Ans: ActionPerformed
9. Name the inheritance type which is not supported by JAVA.
   Ans: Multiple inheritance
10. What will be the value of jTextField1 after execution of following code:
    jTextField1.setText("Computer".subString(3,3));
    Ans: put
11. Name the character set supported by Java.
    Ans: Unicode.
12. What will be the value of b if initial value if a is 13 (i) b= ++a (ii) b= a++
    Ans: (i) 14 (ii) 13
13. Name the 4 essential class libraries that we need to import for setting up the connection with the database and retrieve data from the database.
    Ans: DriverManager, Connection, Statement, ResultSet
15. What will be displayed in jTextArea after executing the following? jTextArea1.setText("India \n is a great \t country");
    Ans: India is a great country.
16. Name any Swing control which is invisible on the Frame?
    Ans: ButtonGroup
17. How one can make a text field un-editable on a frame?
    Ans: jTextfield1.setEditable(false);
18. What is Message? Ans: A Message is the information/request sent to the application.
19. Which property of list box is used to add values in the list?
    Ans: Model Property

**Short Answers Type Questions (2 Marks)**

1. What are Access Specifiers? How Access is controlled for members of Super class?
   Ans: Access specifier tells a complier about the accessibility of a data member of a class in a java program.
   a) Private: Private members of a class can just be accessed inside the class and are hidden outside the class.
   b) Protected: A class member with protected access specifier can be inherited by a sub class but is not accessed outside the parent class.
   c) Public: A Class member with public access specifier is accessible outside the class.
   d) Default: These members are accessible only in the class that are in the same package class i.e., in their own classes
2. What is a Method (Function)?
   Ans: A Method or function is sequence of statement which is written to perform a specific job in the application.
3. What do you mean by parsing?
   Ans: The Parsing refers to converts textual data from GUI component into numeric type. Byte.parseByte(String s) – string into byte.
4. What is a variable? Explain with example.
   Ans: A variable is named memory location, which holds a data value of a particular data type. Example: double sum;
5. What is ‘Scope’ of a variable? Explain.
   Ans: The area of program within which a variable is accessible, is known as its scope. A variable can be accessed within the block where it is declared.
6. What is Focus?
   Ans: Focus is the ability to receive user input/ response through Mouse or Keyboard.
7. What is casting? When do we need it?
   Ans: Casting is a conversion, which uses the cast operator to specify the type name in parenthesis and is placed in front of the value to be converted. For example: Result = (float) total / count ; They are helpful in situations where we temporarily need to treat a value as another type.
8. How is the if...else if combination more general than a switch statement?
   Ans: 1. switch statement only compares for equality and if-else can evaluate multiple conditions.
      2. switch cannot handle ranges whereas if-else can.
      3. In switch only one variable can be compared.
9. What is the purpose of break statement in a loop?
   Ans: The break statement terminates the loop.
10. What is an abstract class and abstract method?
    Ans: An Abstract Class is the one that simply represents a concept and whose objects can’t be created. It is created through the use of keyword abstract. Abstract methods are methods with no method statements. Subclasses must provide the method statements for the inherited abstract methods.
11. What is a container and child control?
    Ans: A container is a special type of control that can hold other components. Some Swing Containers are jPanel, jFrame and jDialog. The components contained in a container are called child control.e.g Textfield,RadioButton.
12. Differentiate between JDBC and ODBC?
    Ans: JDBC (Java Database Connectivity) is developed by Sun Java for the purpose of connecting java applications with a variety of relation database systems like MySQL or Oracle. On the other hand, ODBC (Open Database Connectivity) is a system developed by Microsoft to connect Microsoft based programming application (like visual basic) with a variety of relational databases.
13. What are the main tasks of JDBC?
    Ans: Mainly JDBC perform the following:
      a) Establishes a connection with a relational database
      b) Sends SQL queries/ statements to the database
      c) Processes the results obtained from the database server.
Programming Problems

1. How many times, the following loop gets executed? i=0; while(i>20) {//Statements }
   Ans: 0 times

2. Write a java program to calculate the sum of all the No. divisible by 5 in the range 1 to 50.
   Ans: int sum=0; for(int i=1;i<=50;++i) { if(i%5==0) sum=sum+i; } jLabel1.setText(""+sum);

3. Write method in java that takes a number returns the sum of its digits.
   Ans: int sumdig(int n)
   { int sum=0, r;
     while(n!=0)
     { int r=n%10;
       n=n/10;
       sum=sum+r;
     } 
     return (sum);
   }

4. How many times, the following loop gets executed? int i=0; do { //Statements }while(i>20);
   Ans: 1 time.

5. Find the output of the code:
   int f=2, i=1; do {f*=i; }while(++i<5); jTextField1.setText (""+f);
   Ans: 48

6. Write the output :
   (i) jTextField1.setText("Hello".charAt(1));
   Ans: e
   (ii) jTextField1.setText("Pranam".substring(3));
   Ans: nam

7. Write the value stored in variable y after executing the following code:
   int x , y = 0; for(x=1;x<5;++x) y=x++;
   Ans: 3

8. What will be the contents of jTextfield after executing the following statement:
   int mynum=3; mynum=mynum-1; if(mynum>5) jTextField1.setText(Integer.toString(mynum));
   else jTextField1.setText(Integer.toString(mynum*4));
   Ans: 8

9. Find the output of the following code:
   int First=11; int Second=50; First++; if(First+Second>60) jLabel1.setText("Qualified");
   else jLabel1.setText("Not Qualified");
   Ans: Qualified

10. What will be the value of j and k after execution of the following code:
    int j=5,k=15; if(k>=j) {k=j; j=k;}
    Ans: j= 5  k= 5

11. Find the output
    int fnum=6, snum=9; if(fnum>1 | snum>6) if(fnum>6) jTextField1.setText("Code Worked");
    else jTextField1.setText("Code Might Work"); else jTextField1.setText("Code will not Work");
    Ans: Code Might Work

12. What will be the content of the jTextArea1 after executing the following code?
    int Num =2; do { jTextArea1.setText(Integer.toString(++Num)+"\n"); Num= Num + 1;
    }while(Num<=10);
13. String s = "Kendriya Vidyalaya"; jTextField1.setText(s.length()+"");     
    jTextField2.setText(Math.round(2.54)+"");
    Ans: 18, 3

14. Give the value of a after executing following Java code.
    int p=9,q=11,a=6,b=4; while(p<=q) { if(p%2==0) a=a+b; else a=a-b; p=p+1; }
    Ans: 2

15. What will be the output produced by following code fragment?
    float x=5, y=2; int z=(int)(x/y); switch(z) { case 1: x=x+2; case 2: x=x+3; default: x=x+1; }
    System.out.println("value of x:"+x);
    Ans: value of x: 9.0

16. Give the output of the following code:
    int m=50; while(m>0) { if(m<10)break; m=m-10; }
    System.out.println("m is"+m);
    Ans: m is 0

17. What will be the contents of jTextField1 and jTextField2 after executing the following code:
    String s = "Big Brother"; jTextField1.setText(s.length()+"");
    jTextField2.setText(s.toLowerCase());
    Ans: jTextField1: 11 jTextField2: Big Brother

**Errors finding and conversion questions:**

1. Rewrite the code after making correction.
   ```java
   int sum, value, inct; int i
   for(i=0; i<=10; i++)
       sum=sum+i;
   inct++;
   Ans: int sum, value, inct;
   for(int i=0; i<=10; i++)
       sum=sum+i;
   inct++;
   ```

2. The following code has some errors. Rewrite the corrected code.
   ```java
   int i=2, j=5;
   while(j>i) {
       jTextField1.setText("j is greater"; j--; ++i; }
   JOptionPane.showMessageDialog(null,"Hello");
   Ans: int i=2, j=5;
   while(j>i) {
       jTextField1.setText("j is greater"); j--; ++i; }
   JOptionPane.showMessageDialog(null,"Hello");
   ```

3. Find out errors and rewrite the code:
   ```java
   M=1; N=0;
   For(;m+n<19;++n)
   System.out.println("hello");
   M=m+10;
   ```
4. Rewrite the following program code using for loop:
   int i=0, sum=0; while(i<10) {sum+=i; i+=2; }
   Ans: int i, sum=0; for(i=0; i<10; i+=2) {sum+=i; }

5. The following code has some error(s). Rewrite the correct code.
   int y=3;
   switch(y);
   { case 1: System.out.print("Yes its One");
     Case 2: System.out.println("Yes its more than Two"); break;
     case else: System.out.print("Invalid Number");
   }
   Ans: int y=3;
   switch(y)
   { case 1: System.out.print("Yes its One"); break;
     case 2: System.out.println("Yes its more than Two"); break;
     default: System.out.print("Invalid Number");
   }

6. Rewrite the following code using while loop:
   int i, j;
   for(i=1; i<=4; i++) {
     for(j=1; j<=i; ++j) {
       System.out.print(j); }
   System.out.println();
   }
   Ans: int i=1, j;
   while(i<=4) {
     j=1;
     while (j<=i) {
       System.out.print(j); ++j;
     }
     i++;
   System.out.println();
   }

7. Rewrite the following code using while loop:
   int i, j;
   for (i=1, j=2; i<=6; i++, j+=2)
     System.out.println(i++);
   System.out.println("Finished!!!");
   Ans: int i=1, j=2;
   while (i<=6) {System.out.println(i++); i++; j+=2;}
   System.out.println("Finished!!!");

8. Write an alternative code (Using if) of given code that saves on number of comparisons.
   if (a==0) System.out.println("zero");
   if (a==1) System.out.println("one");
   if (a==2) System.out.println("two");
if (a==3) System.out.println("three");
Ans: if (a==0) System.out.println("zero");
else if (a==1) System.out.println("one");
else if (a==2) System.out.println("two");
else if (a==3) System.out.println("three");

9. Rewrite the following code using for loop.
   int i=0;
   while(++i<20) { if (i==8) break;
   System.out.println(i++); }
   Ans: int i;
   for (i=1; i<20; ++i) { if (i==8) break;
   System.out.println(i++); }

10. Rewrite the following if-else statement using switch-case statement.
    char ch = 'A';
    if (ch == 'A') System.out.println("Account");
    if ((ch == 'C') || (ch == 'G')) System.out.println("Admin");
    if (ch == 'F') System.out.println("Advisor");
    Ans: char ch = 'A';
    switch (ch) {
    case 'A': System.out.println("Account"); break;
    case 'C':
    case 'G': System.out.println("Admin"); break;
    case 'F': System.out.println("Advisor");
    }

11. Write the equivalent switch case for the following code:
    if (num1 == 1)
        jTextField1.setText("Number is one");
    else if (num1 == 2)
        jTextField1.setText("Number is two");
    else if (num1 == 3)
        jTextField1.setText("Number is three");
    else
        jTextField1.setText("Number is more than three");
    Ans: switch(num1) {
    case 1: jTextField1.setText("Number is one"); break;
    case 2: jTextField1.setText("Number is two"); break;
    case 3: jTextField1.setText("Number is three"); break;
    default: jTextField1.setText("Number is more than three");
    }

**Question Based on Application Design**

1. Design an application for Movie Booking system and answer the following questions?
   a) When the user selects different seat type, then its price should be displayed in the Label.
   b) If the user enters an invalid no of seats i.e. less than 1, then an error message should be displayed in the dialog box.
c) When the user click at the Book Seats button, then total amount (calculated as no. of seats * price per seat) should be displayed along with payment method, next to the push button. Price per seat depend upon the seat type: Stall 625/- Circle 750/- Upper Circle 850/- Box 1000/-

Ans:
(a) if (jRadioButton1.isSelected())
   jLabel2.setText("625");
if (jRadioButton2.isSelected()) jLabel2.setText("750");
if (jRadioButton3.isSelected()) jLabel2.setText("850");
if (jRadioButton4.isSelected()) jLabel2.setText("1000");

(b) int s = Integer.parseInt(jTextField1.getText());
if (s < 1) JOptionPane.showMessageDialog(null, "Error! Enter at least one seat.");

(c) int s = Integer.parseInt(jTextField1.getText());
int p = Integer.parseInt(jLabel2.getText());
int tp = s * p;
if (jRadioButton5.isSelected())
   jLabel5.setText("Cash Payment of “ + tp);
if (jRadioButton6.isSelected())
   jLabel5.setText("Visa Payment of “ + tp);
if (jRadioButton7.isSelected())
   jLabel5.setText("American Exress Payment of “ + tp);
if (jRadioButton8.isSelected())
   jLabel5.setText("Master Card Payment of “ + tp);

2. Design the following application and answer the questions that follow:
   (a) Write the code for the Clear button to clear all the text fields and check box. Set the default choice in the radio button as Fixed Deposit.
   (b) Write the code for the calculate button to calculate compound interest and amount and display the values in the txtInterest and txtAmount depending on principal, rate and time.
Rate is calculated based on the time according to the following table:

<table>
<thead>
<tr>
<th>Account</th>
<th>Time</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Deposit</td>
<td>&lt;=2</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>&gt;2 and &lt;=5</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>&gt;5</td>
<td>10%</td>
</tr>
<tr>
<td>Recurring Deposit</td>
<td>&lt;=2</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>&gt;2 and &lt;=7</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>&gt;7</td>
<td>12%</td>
</tr>
</tbody>
</table>

An additional rate of 2% is given to the senior citizens i.e. if the Senior citizen (chkSR checkbox) is checked.

Ans:

(a) jTextField1.setText("");
    jTextField2.setText("");
    jTextField3.setText("");
    jRadioButton1.setSelected(true);
    jCheckBox1.setSelected(false);

(b) int p = Integer.parseInt(jTextField1.getText());
    int t = Integer.parseInt(jTextField2.getText());
    int r = 0;
    if (jRadioButton1.isSelected())
        { if (t <= 2) r = 8;
        else if( t > 2 && t <= 5) r = 9;
        else r = 10; }
    else { if (t <= 2) r = 9;
        else if (t > 2 && t <= 7) r = 10;
        else r = 12; }
    if (jCheckBox1.isSelected()) r = r + 2;
    float amt = p*Math.pow((1+(r/100)),t);
    float ci = amt - p;
    txtInterest.setText("" + ci);
    txtAmount.setText("" + amt);
3. Consider the following application and answers the following questions:

![Student Record]

The grading criteria for the two streams are given below:

<table>
<thead>
<tr>
<th>Stream</th>
<th>Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical</td>
<td>&gt;=80</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>&gt;=60 and &lt;80</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>&lt;60</td>
<td>C</td>
</tr>
<tr>
<td>Non-Medical</td>
<td>&gt;=75</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>&gt;=50 and &lt;75</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>&lt;50</td>
<td>C</td>
</tr>
</tbody>
</table>

a) Write code for Calculate Percentage button to calculate the Percentage after finding the total marks of I term and II term. Also ensure that NCC cadet gets an increment of 3% in their percentages.

b) Write code for Calculate grade button to calculate the grade depending up on the stream selected according to the given criteria.

Ans:
(a) `int f = Integer.parseInt(jTextField1.getText());
    int s = Integer.parseInt(jTextField2.getText());
    int tot = f + s;
    float p = tot / 2;
    if (jCheckBox1.isSelected()) p = p + 3;
    jLabelp.setText("" + p);

(b) String g;
    if (jRadioButton1.isSelected())
    { if(p >= 80) g = "A";
      else if(p >= 60 && p<80) g = "B";
      else g = "C";
    }
else { if(p >= 75) g = "A";
    else if(p >= 50 && p<75) g = "B";
    else g = "C"; }
    jLabelp.setText("" + p);
jLabelg.setText("" + g);

4. Mrs. Anju works in a Manufacturing company. To calculate total wages he has developed the following GUI in NetBeans. Male and female workers are respectively paid Rs. 350/- per day and Rs. 400/- per day. Skilled workers are paid extra at the rate of Rs. 200/- day. Male and female workers from rural areas are paid 20% less per day.
   a. When Calculate Wage button is clicked, the total wages is calculated as per the given criteria and displayed in total wage textbox.
   b. When Clear button is clicked, all the textboxes should be cleared and radio button, checkbox should be selected.
   c. Close the application when Quit button is pressed.

Ans:
(a) int w = 0;
    int d = Integer.parseInt(jTextField2.setText());
    if (jRadioButton1.isSelected())
        w = 350;
    else w = 400;
    if (jCheckBox1.isSelected())
        w = w + 200;
    if (jRadioButton3.isSelected())
        w = w - (w * 20) / 100;
    int cw = d * w;
    jLabel6.setText("" + cw);
(b) jTextField1.setText("");  
    jTextField2.setText("" );
    jRadioButton1.setSelected(false);
    jRadioButton2.setSelected(false);
jRadioButton3.setSelected(false);
jRadioButton4.setSelected(false);
jCheckBox.setSelected(false);
(c) System.exit(0);

5. The following interface has been built for an Ice-Cream Parlor using Netbeans. The parlor offers three varieties of ice-cream - vanilla, strawberry, chocolate. Vanilla ice-cream costs Rs. 40, Strawberry Rs. 45 and Chocolate Rs. 55. A customer can choose one or more ice-creams, with quantities more than one for each of the variety chosen. To calculate the bill, parlor manager selects the appropriate check boxes according to the varieties of ice-cream chosen by the customer and enter their respective quantities.

Write Java code for the following:

a. On the click event of the button 'Calculate', the application finds and displays the total bill of the customer. It first displays the rate of various ice-creams in the respective text fields. If a user doesn't select a check box, the respective ice-cream rate must become zero. The bill is calculated by multiplying the various quantities with their respective rate and later adding them all.
b. On the Click event of the clear button all the text fields and the check boxes get cleared.
c. On the click event of the close button the application gets closed.

Ans:
(a) int r1, r2, r3, q1, q2, q3, a1, a2, a3, gt;
    if (jchkStrawberry.isSelected()) jTxtPriceStrawberry.setText("35");
    else jTxtPriceStrawberry.setText("0");
    if (jChkChocolate.isSelected()) jTxtPriceChocolate.setText("50");
    else jTxtPriceChocolate.setText("0");
    if (jChkVinella.isSelected()) jtxtPriceVinella.setText("30");
    else jtxtPriceVinella.setText("30");
    r1 = Integer.parseInt(jTxtPriceStrawberry.getText());
    r2 = Integer.parseInt(jTxtPriceChocolate.getText());
    r3 = Integer.parseInt(jtxtPriceVinella.getText());
    q1 = Integer.parseInt(jTxtQtyStrawberry.getText());
    q2 = Integer.parseInt(jTxtQtyChocolate.getText());
6. Ms. Radha works in a shopping mall. To calculate net payable amount she has developed the following GUI in NetBeans.

The shop accepts payments in three modes-Cash, Debit Card, Credit Cards.

The discount given as per mode of payment is as follows:

<table>
<thead>
<tr>
<th>Mode of payment</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>12%</td>
</tr>
<tr>
<td>Debit Card</td>
<td>Nil</td>
</tr>
<tr>
<td>Credit Card</td>
<td>8%</td>
</tr>
</tbody>
</table>

If the Member check box is checked then the customer gets an additional discount of 5% on net payable amount.

I. Write the code to make the textfields for Discount( txtDiscount ) and Net Payable (txtNetPayable) uneditable.

II. Write code to do the following-
   a) When Calculate button is clicked the discount and net payable amount is calculated as per the given criteria and displayed in discount and net payable text boxes.
   b) When Clear button is clicked all the text boxes should be clear.
III. Close the application when Exit button is pressed.
Ans: I. txtDiscount.setEditable(false);
      txtNetPayable.setEditable(false);

II. (a) double q, p, d=0, np, fp, d1=0, d2, amt;
      q=Double.parseDouble(qtytf.getText());
      p=Double.parseDouble(pricetf.getText());
      amt=q*p;
      if (cashrb.isSelected())
        d=amt*0.12;
      else if (dcrb.isSelected())
        d=amt*0.0;
      else if (ccrb.isSeleted())
        d=amt*0.08;
      np=amt-d;
      if (mcb.isSelected())
        d1=np*0.05;
      fp=np-d1;
      d2=d+d1;
      disctf.setText(""+d2);
      nptf.setText(""+fp);
      (a) qtytf.setText("");
      pricetf.setText("");
      disctf.setText("");
      nptf.setText("");

IV. System.exit(0);

7. Alpha Chemicals PVT ltd has asked his programmer to develop the following GUI application in Netbeans:

<table>
<thead>
<tr>
<th>Class of City</th>
<th>Rate of Service Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>5% of sales price</td>
</tr>
<tr>
<td>II</td>
<td>10% of sales price</td>
</tr>
<tr>
<td>III</td>
<td>15% of sales price</td>
</tr>
</tbody>
</table>

Write java code for the following:
a. To calculate service charges depending on the selection of radio button. This code will execute after click on the calculate service charges?
b. To calculate net price when Calculate Net price button will be clicked.
c. When exit button will be clicked application should be automatically closed.

Ans:

(b) float q = Float.parseFloat(jTextField2.getText());
    float p = Float.parseFloat(jTextField3.getText());
    float sp = q * p;
    jLabelsp.setText(“” + sp);
    float sc;
    if (jRadioButton1.isSelected())
        sc = (5 * sp) / 100;
    else if (jRadioButton2.isSelected())
        sc = (10 * sp) / 100;
    else
        sc = (15 * sp) / 100;
    jLabelsc.setText(“” + sc);
    (b) float sp = Float.parseFloat(jLabelsp.getText());
    float sc = Float.parseFloat(jLabelsc.getText());
    float np = sp + sc;
    jLabelnp.setText(“”+np);
    (c) System.exit(0);
Crossword

Across:
1. To enforce mutual exclusion.
2. To mimic the click of a button.
3. Class containing SQL string for connectivity
4. Property of a list to set list data
5. Java Database Connectivity
6. A property of JPasswordField
7. A property of JTextArea
8. Function to compare two strings
9. Rapid Application Development
10. Keyword to declare constant

Down:

Answers:
CHAPTER 9: WEB APPLICATION DEVELOPMENT

Web Application: A web application refers to an application which sends and receives information through WWW over internet. It may include hypertext, multimedia, GUI etc.

Web Browser: A client program that enables the user to browse, search and collect information from the web is known as a web browser. It sends the request from the client/user to server for a specific resource and the server then responds with the content of that resource. E.g. Internet explorer, Mozilla Firefox, Google chrome, Opera.

Web server: Web servers are computers on internet on which web pages are stored. Web server stores the web pages and responds to the request made by web browser. E.g.: Apache web server, Microsoft Internet Information Server (IIS), Netscape Enterprise Web server.

URL: The unique address of the website is known as uniform Resource Locator (URL). E.g. the web site of KVS has an address or URL called http://www.kvsangathan.nic.in. It has following parts:-

- **Protocol**: It specifies the type of protocol (set of rules) to be followed by server. Exam: http, https etc.
- **Domain Name**: It specifies the name of the web server on the internet including domain name like .com, .org, .edu or country domain like .in, .ca etc.
- **Directory path**: It specifies Location of file/web page on the server.
- **Object Name**: It specifies the name of specific web page or file like index.html.

Example: http://cbse.nic.in/welcome.aspx

Communication with Web server: The internet on WWW works on client server computing model. In this model client has web browser which works as web client and other machine (remote machine) which request the pages from web server. A web server follows some protocols like HTTP, HTTPS, FTP etc.

Client Server Computing: Client server computing refer to a network setup in which program, documents and information reside on the server and client can connect with the server using network to access the information. It is of two types:

1. **Static Web Pages**: Static Web pages display the exact information whenever anyone visits it, until you alter that page's source code.
2. **Dynamic Web pages**: Dynamic Web pages are capable of producing different content for different visitors from the same source code file. The website can display different content based on what operating system or browser the visitor is using, whether user is using a PC or a mobile device, or even the source that referred the visitor.

Examples:
- **Client side computing**: Java script, VB Script.
- **Server side computing**: ASP (Active Server Page), PHP (Personal Home Page), JSP (Java Server Page).

Some commonly used internet protocols:
- **Protocol**: A protocol is a set of rules to govern communication between two computers in a network.
- **HTTP (Hyper Text Protocol)**: It is used on WWW for transferring web pages and files contained in web pages such as images.
- **FTP (File Transfer Protocol)**: It is used for transferring files from one machine to the other.
- **SMTP (Simple Mail Transfer Protocol)**: It is used for email.
- **Telnet**: It is used to open remote machine access (telnet) session.
Very Short Answer Type Question (1 Marks)
1. What is URL?
2. Explain WWW.
3. Identify the client side and server side technologies.
   - Java Script, ASP (Active Server Pages), PHP (Hypertext Pre Processor), JSP (Java Server Pages)
4. In the URL http://kvsangathan.nic.in/Circulars.aspx What is the http component?
5. A program that serves requested web pages or documents are known as:
   - (I) Web page    (ii) URL    (iii) Web server    (iv) None of these.
6. The address of a web site/ resources on the internet is known as:
   - (I) HTTP       (ii) URL    (iii) WWW       (iv) None of these.
7. Identify from the following which is not a web browser:
   - (I) Mozilla Firefox    (ii) Opera    (iii) Netscape Navigator    (iv) MS Word
8. Identify web server software from the following:
   - (I) Apache        (ii) MS Word    (iii) Mozilla Firefox    (iv) HTML

Short Answer Type Question (2 Marks)
1. What is URL? What are its components? Explain with example.
2. What is a protocol? Write the names of any two internet protocols.
3. What is a Web Browser? Write the names of any two web browsers.
4. What is client server computing?
5. Difference between static web page and dynamic web page.
CHAPER 10: HTML-1 BASIC HTML ELEMENTS

HTML

Hyper Text markup language (HTML) is used to create web pages or web documents. It tells the web browser how to display text, pictures and links on the screen. HTML provides various markup elements. Using these elements we can specify various parts of a web page and formatting of web page. Basically HTML is used to design the layout of a document with hyperlink.

Elements of HTML:

HTML is made up of elements called Tags and Attributes.

Tags: A tag is coded HTML command within angular <> bracket. It is not case sensitive. There are two types of tags Empty tags and Container tags.

Attribute: An Attribute is a special word used inside tag to specify additional information of tag such as color, alignment etc.

Container and Empty Tags

There are two types of Tags – one that requires a starting as well as ending tag and another that requires just a starting tag and not an ending tag.

Container Tag: A container tags requires starting tag and as well as ending tag. Example: <Title>…..</Title>, <HEAD>…….</HEAD>

Empty Tag: Empty Elements have only a starting tag and no ending tag. e.g. <HR> inserts a horizontal rule and <BR> breaks a line.

Structure of HTML Document:

```html
<html>
    <head>
        <title>KVS</title>
    </head>
    <body>
        Kendriya Vidyalaya Sangathan
    </body>
</html>
```

Commonly used Empty tags:

- `<!...Comment..>`
  It is used to define comments in HTML. This can be viewed in the HTML but is not displayed in web browser.
  Example: `<!.... This text to display in window....>`

- `<BR>` Break Line
  BR tag is used to break line. It displays remaining text in the next line.
  Example: Kendriya Vidyalaya Sangathan <BR> New Delhi

- `<HR>` Horizontal Ruler
  HR tag is used to insert a Horizontal line across the browser window. The attributes of HR tag are size, width and color.
  Example: `<HR Size=10, Color= Red, Width 50%>

- `<BASEFONT>`
  This tag is used to define the default size of the font, where font is not defined. Attributes of `<Basefont>` tags are size, face and color.
Example: <BASEFONT size=5 color= Green Face="Arial">

Commonly used Container tags

<HTML>....</HTML>

This tag is used to mark begin and end of HTML document. It may contain <Head> and <Body> tag.

Example: <HTML><HEAD> <TITLE> KVS </TITLE> </HEAD></HTML>

<TITLE>........</TITLE>

It specifies the title and is displayed in the title bar of the web browser.

Example: <TITLE>Title of your webpage</TITLE>

<HEAD>............</HEAD>

It is used to specify the document header. It contains information like title, style etc.

Example: <HEAD>Contains elements describing the document</HEAD>

<BODY>...............</BODY>

This tag is used to define the content of the documents. It may contain text, images, multimedia, tables, list, form etc. Attributes of <Body> tags are bgcolor, background, link, Vlink, Alink, text, leftmargin, topmargin.

Example: <BODY>The content of your page</BODY>

<IMG>...........</IMG>

This tag is used to display images (.jpg, bmp, .gif etc) in web pages. Attributes of <img > tag are src, width, height, align, border.

Example: <IMG SRC=" Location", BORDER="5" Align="Left" width ="40", Height="50”>

<A>........</A>

It specifies Active link of the other web page. When mouse is roll over the text, the mouser pointer is automatically converted into the hand shaped cursor.

Example: <A HREF="http://www.yourdomain.com/">Visit Our Site</A>

Other tags:

<B>........</B> : To make text bold

/I>........</I> : To make text Italic

<U>........</U> : To make text underline
Logical and Physical Text Styles

HTML has two types of styles for individual word or sentences:

1. Logical Styles
2. Physical Styles

Logical Text Styles

Logical Text: Logical text Styles are general descriptions. Each browser handles a logical style in its own way.

- `<DFN>` : For a word being defined. Typically displayed in italics.
- `<EM>` : For emphasis. Typically displayed in italics.
- `<CITE>` : For titles of books, films etc. Typically displayed in italics.
- `<STRONG>` : For strong emphasis. Typically displayed in bold.
- `<CODE>` : For computer code. Displayed in a fixed width font.
- `<KBD>` : For user keyboard entry. Typically displayed in plain fixed- width font.
- `<VAR>` : For a variable, where you will replace the variable with specific information typically displayed in italics.

Physical Text Styles

Physical Text styles indicate the specific type of appearance for a section e.g. , bold, italics etc.

- `<B>` : Bold text
- `<I>` : Italic text
- `<U>` : underline text
- `<TT>` : type writer text (Fixed-width font)

Very Short Answer Type Question (1 Marks)

1. HTML tags must be written within______________.
2. What is the correct structure of HTML tags?
3. The IMAGE tag uses the ______ attribute to specify the URL of the image to be displayed.
4. Which tag is used to embed an image in an HTML document?
5. What is HTML?
6. What is the use of TITLE tag in HTML?
7. How to change the background color of the HTML page?
8. What are the different levels of Headings?
9. What is the use of `<BR>` tag ?
10. What all tags required in every HTML page?
11. Write the properties of `<FONT>` tag.
12. Write the code in HTML to set color as Red and text “I am learning HTML” as blue.
13. How would you display title in your web page?
14. Write the code in HTML to set the image “Book. jpg” stored in “Photos” folder in D; Drive as the background of your web page.
Short Answer Type Question (2 Marks)
1. What is use of comments? Which tag is used for comments?
2. Differentiate between container and empty elements.
3. What are logical and Physical Text Styles?
4. Differentiate between <BR> and <P> tag.
5. What is the use of <IMG> tag? Also write its properties.
CHAPTER 11: HTML-II : LISTS, TABLES AND FORMS

Lists in HTML
There are three basic types of lists in HTML. The lists may be nested as well.

i) Unnumbered or Unordered List
ii) Numbered List or Ordered List
iii) Definition List

Unordered lists <UL> - are indented lists with a special bullet symbol in front of each item. <LI> - denotes the beginning of each new list item.

<UL>
   <LI> Apples
   <LI> Bananas
   <LI> Grapefruit
</UL>

An ordered numbered list are indented list with numbers in front of each item. <LI> denotes the beginning of each new list item.

<OL>
   <LI> Apples
   <LI> Bananas
   <LI> Grapefruit
</OL>
• **Definition Lists `<DL>`** - A definition Lists are indented lists without any bullet symbol or any number in front of each item.
  `<DT>` stands for definition term.
  `<DD>` stands for definition description.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Attributes</th>
<th>Description</th>
<th>CODE</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container element</td>
<td>compact</td>
<td>Used in case definition terms are very short.</td>
<td><code>&lt;DL&gt;</code></td>
<td>Computer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><code>&lt;DT&gt;</code></td>
<td>It is an electronic device which processes data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><code>&lt;DD&gt;</code></td>
<td>into information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tables in HTML :-**
The HTML table model allows you to arrange data – text, preformatted text, images, links, forms, form fields, other tables etc. into rows and columns of cells.

```html
<TABLE> ..........</TABLE> defines a table object.
<TR> ..........</TR> defines a table row.
<THEAD>........</THEAD> defines header section of table.
<TFOOT>........</TFOOT> defines footer section of table.
<TBODY>........</TBODY> defines body section of table.
<TD>.........</TD> defines a table data (cell value).
<TH>.........</TH> defines column header.
<CAPTION>.........</CAPTION> defines caption of table.
```

**Cell spacing & cell padding**:
Space between cells is cellspacing & space between cell border & cell data is cell padding

**Row span vs cols span**:
Span of a cell in respect of columns is row span. Colspan is span of a cell in respect of columns

**HTML Forms**
HTML forms are means to collect information / data from the site-visitor or client. It is done with the help of controls that collect the information and send it over. Forms contain some GUI controls to interact with users.

Some of the important controls are:-
- Button
  - Submit button
  - Reset button
  - Push button
- Checkboxes
- Radio Button
- Combo boxes
- Password
Text Input (Text field, Text area etc.)

**CREATING FORM:-**

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>String</td>
<td>Specifies the name of the form</td>
</tr>
<tr>
<td>Action</td>
<td>Script or URL</td>
<td>It specifies the script or email-ID or URL which will receive data.</td>
</tr>
<tr>
<td>Method</td>
<td>Get</td>
<td>Specifies how the form-data is submitted.</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>Get – form data is submitted as URL variables.</td>
</tr>
<tr>
<td></td>
<td>Form</td>
<td>Post – form data is submitted as HTTP post.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Form – opens a new form as per specified URL.</td>
</tr>
</tbody>
</table>

Example : `<Form Method = Get Action = “www.yahoo.com”>`

Commonly used method is:-
`<Form Method = Post Action = “mailto:kvs@gmail.com”>`

- **Adding Input Controls on the Form :-**

Example :  
```html
<INPUT TYPE = "Text" Name =" Vidyalaya Name">
<INPUT TYPE = "Submit" Name = “Button1” Value = “Submit”>
```

**Very Short Answer Type Question (1 Marks)**

1. Differentiate between `<UL>` and `<OL>` tags.
2. What is wrong with following coding?
   `<OL type= “a” start = “d”>`
3. What is the difference between Cellpadding and Cellspacing ?
4. Which attributes are used to give border to a table?
5. What for are Rowspan and Colspan attributes used?
6. What is the use of Form in HTML?
7. What is the difference between radio button and check box control?
8. What is the role of ALIGN attribute of `<TABLE>` tag?

**Short Answer Type Question (2 Marks)**

1. What is the use of `<TD>` and `<TR>` tag?
2. How is spacing in cells of table controlled?
3. Name the attributes used for following?
   a) Setting the cell width.   b) Setting cells background colour.
   c) Changing the cell span.   d) Aligning cell contents vertically.
4. How would you indent a single word and put a square bullet in front of it?
5. Write code to produce following HTML tables?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Give two attributes of Table element of HTML.
CHAPTER 12: XML (eXTENSIBLE MARKUP LANGUAGE)

**Introduction to XML:** XML (eXtensible markup Language) is a markup language like HTML. But XML is different from HTML in the sense that HTML describe how to display and format the data text and images in the browser whereas XML is used to describe the data. It is text based markup language that allows storing data in structured format. A system that allows new markup languages is known as Meta language. A Meta Language is a language that is used to define other language.

**XML VS HTML**

<table>
<thead>
<tr>
<th>HTML</th>
<th>XML</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTML document formats and displays web pages data.</td>
<td>XML documents carry data along with their description.</td>
</tr>
<tr>
<td>HTML tags are predefined.</td>
<td>XML tags are not predefined. You can create and define new tags as per your needs.</td>
</tr>
<tr>
<td>HTML tags may not have closing tag.</td>
<td>XML tags must have a closing tag.</td>
</tr>
<tr>
<td>HTML tags are not case-sensitive.</td>
<td>XML tags are case – sensitive.</td>
</tr>
<tr>
<td>HTML documents are directly viewable in a browser.</td>
<td>XML documents can be viewed only if proper style sheet file is also available along with XML file.</td>
</tr>
</tbody>
</table>

**Features of XML:**
1. XML is Free.
2. XML can be used to store data. Application can be written to store and retrieve information.
3. XML is extensible. XML allows the user to create his own tags and documents structure.
4. XML is W3C recommendation.
5. XML is platform independent.

**Cascading Style Sheet (CSS):** Cascading is a collection of formatting rules that control the appearance of content (Font, color, size, alignment & appearance etc) in a web page. A stylesheet is made up of style rules that tell a browser how to present a document. There are two types of CSS.

1. Internal Cascading Sheet
2. External Cascading Sheet.

**Advantages of XML:**
1. It is easy as HTML.
2. It is fully compatible with application like Java.
3. It is portable language. It can be used on network with multiple platforms.
4. It is platform independent.
5. It is extensible language. You can create your own tags and document structure.

**Short Answer Type question (2 Marks)**

1. What is HTML?
2. What is XML? What do you mean by extensible in XML?
3. What is XML? Write 02 differences between XML and HTML?
4. Write down the difference between HTML and XML.
5. Write down the four features of XML?
6. What is role of style sheet in XML?
7. What is CSS? Also write types of CSS.
UNIT 3
CHAPTER 13: DATABASE FUNDAMENTALS - MYSQL REVISION TOUR

Database: Collection of logically related data stored in a structure format.
DBMS: Software used to manage databases is called Data Base Management System (DBMS).
RDBMS: A DBMS used to manage Relational Databases is called an RDBMS (Relational Data Base Management System). Some popular RDBMS software available are: Oracle, MySQL, Sybase, and Ingress.

Benefits of using a DBMS are:
- Redundancy can be controlled
- Inconsistency can be avoided
- Data can be shared
- Security restrictions can be applied.

MySQL: It is an Open Source RDBMS Software. It is available free of cost.

Relation/Table: A table refers to a two dimensional representation of data arranged in columns (also called fields or attributes) and rows (also called records or tuples).

Key: A column or a combination of columns which have some specific characteristics in a relation e.g. are Primary Key, Candidate Key and Foreign Key etc.

Primary Key: The group of one or more attribute(s) used to uniquely identify each row/tuple of a relation/table is called its Primary Key.

Candidate Key: A group of columns which can be set as the primary key of a relation is called a candidate key because it is one of the candidates available to be the primary key of the relation.

Alternate Key: A candidate key of a table which is not set as primary key is called its Alternate Key.

Degree is the number of columns/attributes in the table.
Cardinality is the number of rows/tuples in a table.

SQL (Structured Query Language): It is the language used to manipulate and manage databases and tables within them using an RDBMS. There are following four types of SQL commands:

1. DDL (Data Definition Language): Deals with the Structure (create, remove, or modify) of databases and tables e.g. CREATE, DROP, ALTER.
2. DML (Data Manipulation Language): Used to manipulate data/ values within tables e.g. INSERT, UPDATE, DELETE.
3. DCL (Data Control Language): Used to control the access to the databases and tables e.g. GRANT, REVOKE.
4. TCL (Transaction Control Language): Used to manage and control the transaction e.g. COMMIT, ROLLBACK, SAVEPOINT

Some Commonly used DDL Command are as follows:

<table>
<thead>
<tr>
<th>SNo</th>
<th>Command, Syntax and Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Command : Create Database</td>
</tr>
<tr>
<td></td>
<td>Syntax: Create database &lt;Database Name&gt;;</td>
</tr>
<tr>
<td></td>
<td>Purpose: Creates a database with specified name</td>
</tr>
<tr>
<td>2</td>
<td>Command : Create Table</td>
</tr>
<tr>
<td></td>
<td>Syntax: Create Table &lt;Table Name&gt; ( &lt;Column Name1&gt;, Data Type1,&lt;Column Name2&gt;, Data Type2);</td>
</tr>
<tr>
<td></td>
<td>Purpose: Creates a table with specified name</td>
</tr>
<tr>
<td>No.</td>
<td>Command</td>
</tr>
<tr>
<td>-----</td>
<td>------------------</td>
</tr>
<tr>
<td>3</td>
<td>Alter Table</td>
</tr>
<tr>
<td>4</td>
<td>Use</td>
</tr>
<tr>
<td>5</td>
<td>Select Database()</td>
</tr>
<tr>
<td>6</td>
<td>Show tables;</td>
</tr>
<tr>
<td>7</td>
<td>Show databases;</td>
</tr>
<tr>
<td>8</td>
<td>Insert</td>
</tr>
<tr>
<td>9</td>
<td>Select</td>
</tr>
<tr>
<td>10</td>
<td>Describe</td>
</tr>
<tr>
<td>11</td>
<td>Update</td>
</tr>
</tbody>
</table>

Following are the clauses which can be used with select command

<table>
<thead>
<tr>
<th>SNo</th>
<th>CLAUSE</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DISTINCT</td>
<td>Used to display distinct values from a column of a table</td>
</tr>
<tr>
<td>2</td>
<td>WHERE</td>
<td>Used to specify the condition based on which rows of a table are displayed</td>
</tr>
<tr>
<td>3</td>
<td>BETWEEN</td>
<td>Used to define the range of values within which the column values must fall to make a condition true. It include both upper and lower values.</td>
</tr>
<tr>
<td>4</td>
<td>IN</td>
<td>Used to select values that match any values in a list of specified values</td>
</tr>
<tr>
<td>5</td>
<td>LIKE</td>
<td>Used for pattern matching of string data using wildcard characters % and _</td>
</tr>
<tr>
<td>6</td>
<td>IS NULL/ NOT</td>
<td>Used to select rows in which the specified column is NULL (or is NOT NULL)</td>
</tr>
<tr>
<td>NULL</td>
<td>ORDER BY</td>
<td>Used to display the selected rows in ascending or descending order of the specified column</td>
</tr>
</tbody>
</table>

### String Functions:

<table>
<thead>
<tr>
<th>SN</th>
<th>Name &amp; syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LENGTH()</td>
<td>Returns the length of a column or a string in bytes</td>
</tr>
<tr>
<td>2</td>
<td>CONCAT(Str1, Str2)</td>
<td>Returns a string that result from concatenating the arguments.</td>
</tr>
<tr>
<td>3</td>
<td>INSTR(Str, Substr)</td>
<td>Returns the position of the first occurrence of substring (substr) in the string(str)</td>
</tr>
<tr>
<td>4</td>
<td>Lower(str) or LCASE(Str)</td>
<td>Returns the argument &lt;str&gt; in lowercase</td>
</tr>
<tr>
<td>5</td>
<td>Upper(str) or UCASE(Str)</td>
<td>Returns the argument &lt;str&gt; in uppercase</td>
</tr>
<tr>
<td>6</td>
<td>LEFT(Str, n)</td>
<td>Returns the first n character from the string</td>
</tr>
<tr>
<td>7</td>
<td>RIGHT(Str, n)</td>
<td>Returns the last n character from the string</td>
</tr>
</tbody>
</table>

### Numeric Functions:

<table>
<thead>
<tr>
<th>SN</th>
<th>Name &amp; syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>POWER(X,Y) or POW(X,Y)</td>
<td>Returns the values raised to the power of y</td>
</tr>
<tr>
<td>2</td>
<td>ROUND(X)</td>
<td>Rounds the argument X to the nearest Integer</td>
</tr>
<tr>
<td>3</td>
<td>ROUND(x,d)</td>
<td>Rounds the argument X to d decimal places</td>
</tr>
<tr>
<td>4</td>
<td>Truncate(x,d)</td>
<td>Truncate the argument x to d decimal places</td>
</tr>
</tbody>
</table>
CALCULATOR FUNCTIONALITY USING SELECT STATEMENT

SELECT 5+68;
SELECT 5+68 FROM DUAL;
SELECT ECODE, SAL_AMT*12 FROM SALARY;

TO KNOW CURRENT DATE
SELECT CURDATE();

DISPLAY DATA WITH OTHER HEADING
SELECT SAL_AMT*12 AS “ANNUAL SALARY” FROM SALARY
SELECT 22/7 AS PI;

HANDLING NULLS
SELECT NAME, BIRTH, DEATH FROM ABC;
SELECT NAME, BIRTH, IFNULL(DEATH, “ALIVE”) FROM ABC;

PUTTING TEXT IN SELECT QUERY
SELECT EMPNAME, ‘GETS THE SALARY PER MONTH’ SAL_AMT FROM SALARY;

USE OF RELATIONAL OPERATORS:  = , >, < , >=, <=, <>
SELECT * FROM EMPLOYEE WHERE ECODE<>2001;

USE OF LOGICAL OPERATORS:  OR / || , AND / && , NOT / !
SELECT * FROM EMPLOYEE WHERE ECODE=2001 OR EMPNAME=’RAVI KUMAR’;
SELECT * FROM EMPLOYEE WHERE ECODE=2001 AND EMPNAME=’RAVI KUMAR’;
SELECT * FROM EMPLOYEE WHERE (NOT ECODE=2001);

BETWEEN
SELECT ECODE, EMPNAME FROM SALARY WHERE SAL_AMT BETWEEN 20000 AND 50000;
SELECT ECODE, EMPNAME FROM SALARY WHERE SAL_AMT NOT BETWEEN 20000 AND 50000;

Date and Time Functions:

<table>
<thead>
<tr>
<th>SN</th>
<th>Name &amp; syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CURDATE()</td>
<td>Returns the current date in YYYY-MM-DD format YYYYMMDD format, depending on whether the function is used in a string or numeric context</td>
</tr>
<tr>
<td>2</td>
<td>NOW ()</td>
<td>Returns the current date and time in YYYY-MM-DD HH:MM:SS</td>
</tr>
<tr>
<td>3</td>
<td>SYSDATE()</td>
<td>Returns the current date and time in YYYYMMDD HHMMSS.uuuuuuu format</td>
</tr>
<tr>
<td>4</td>
<td>DATE(expr)</td>
<td>Extracts the date part of date or datetime &lt;exp&gt;</td>
</tr>
<tr>
<td>5</td>
<td>MONTH(date)</td>
<td>Returns the numeric month from the specified date in the range 0 to 12. It returns 0 for dates such as ‘0000-00-00’ or ‘2010-00-00’ that have a zero month part</td>
</tr>
<tr>
<td>6</td>
<td>YEAR(date)</td>
<td>Returns the year for specified date in the range 0 to 9999. It returns 0 for the ‘Zero’ date. Returns values like 1998, 2016 etc.</td>
</tr>
<tr>
<td>7</td>
<td>DAYNAME(date)</td>
<td>Returns the name of the weekday for specified date</td>
</tr>
<tr>
<td>8</td>
<td>DAYOFMONTH(date)</td>
<td>Returns the day of month in the range 0-31</td>
</tr>
<tr>
<td>9</td>
<td>DAYOFWEEK(date)</td>
<td>Returns the day of week in number as 1 for Sunday, 2 for Monday and so on</td>
</tr>
<tr>
<td>10</td>
<td>DAYOFYEAR(date)</td>
<td>Returns the day of the year for given date in numeric format in the range 1 to 366.</td>
</tr>
</tbody>
</table>
IN
SELECT * FROM EMPLOYEE WHERE CITY IN ('DELHI','MUMBAI','BANGALORE');
LIKE
SELECT * FROM EMPLOYEE WHERE EMPNAME LIKE 'A%'; -- Starts with A.
SELECT * FROM EMPLOYEE WHERE EMPNAME LIKE '----'; -- Exact four characters.
SELECT * FROM EMPLOYEE WHERE EMPNAME LIKE '---%'; -- At least three characters.
NULL
SELECT * FROM EMPLOYEE WHERE EMPNAME IS NULL;
ORDER BY
SELECT * FROM EMPLOYEE ORDER BY EMPNAME;
SELECT * FROM SALARY WHERE SAL_AMT >50000 ORDER BY ECODE DESC;
USING ALIAS
SELECT ECODE SAL_AMT*12 "ANNUAL SALARY" FROM SALARY ORDER BY "ANNUAL SALARY"
STRING FUNCTION
SELECT CHAR(65); -- To display the character against ASCII CODE 65.
SELECT CONCAT(ECODE, EMPNAME) AS "CODENAME" FROM EMPLOYEE; -- To merge two columns.
SELECT RTRIM(EMPNAME) FROM EMPLOYEE; -- Removes space from right side of empname.
SELECT LTRIM(EMPNAME) FROM EMPLOYEE; -- Removes space from left side of empname.
SELECT TRIM(EMPNAME) FROM EMPLOYEE; -- Removes space from both sides of empname.
NUMERIC FUNCTION
SELECT ECODE, MOD(15,6) FROM DUAL; -- display remainder 3.
SELECT MOD(SAL_AMT,1000) FROM SALARY;
SELECT POWER(5,3) FROM DUAL; -- Calculate 5 raise to power 3. i.e.125.
SELECT ROUND(15.193, 1) FROM DUAL; --- Display 15.2 (Round off)
DATE/TIME FUNCTION
CURDATE()/CURRENT()DATE()
SELECT CURDATE(); -- Display system date.
SELECT DATE('2010-04-13 01:02:33'); -- Display 2010-04-13 (date only).
SELECT MONTH('2010-04-13'); --- Display month only i.e. 04.
SELECT YEAR('2010-04-13'); --- Display year only i.e. 2010.

PRACTICE EXERCISES
Consider a database LOANS with the following table:

<table>
<thead>
<tr>
<th>AccNo</th>
<th>CustName</th>
<th>LoanAmount</th>
<th>Installment</th>
<th>Intrate</th>
<th>StartDate</th>
<th>Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R K Gupta</td>
<td>300000</td>
<td>36</td>
<td>12.00</td>
<td>19-07-2009</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>S P Sharma</td>
<td>500000</td>
<td>48</td>
<td>10.00</td>
<td>22-03-2008</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>K P Jain</td>
<td>300000</td>
<td>36</td>
<td>NULL</td>
<td>08-03-2007</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M P Yadav</td>
<td>800000</td>
<td>60</td>
<td>10.00</td>
<td>06-12-2008</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>S P Sinha</td>
<td>200000</td>
<td>36</td>
<td>12.50</td>
<td>03-01-2010</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>P Sharma</td>
<td>700000</td>
<td>60</td>
<td>12.50</td>
<td>05-06-2008</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>K S Dhall</td>
<td>500000</td>
<td>48</td>
<td>NULL</td>
<td>05-03-2008</td>
<td></td>
</tr>
</tbody>
</table>
Write SQL commands for the tasks 1 to 35 and write the output for the SQL commands 36 to 40:

**Create Database and use it**
1. Create the database LOANS.
2. Use the database LOANS.

**Create Table / Insert Into**
3. Create the table LoanAccounts and insert tuples in it.

**Simple Select**
4. Display the details of all the loans.
5. Display the AccNo, CustName, and LoanAmount of all the loans.

**Conditional Select using Where Clause**
6. Display the details of all the loans with less than 40 instalments.
7. Display the AccNo and LoanAmount of all the loans started before 01-04-2009.
8. Display the IntRate of all the loans started after 01-04-2009.

**Using NULL**
9. Display the details of all the loans whose rate of interest is NULL.
10. Display the details of all the loans whose rate of interest is not NULL.

**Using DISTINCT Clause**
11. Display the amounts of various loans from the table LoanAccounts. A loan amount should appear only once.
12. Display the number of instalments of various loans from the table LoanAccounts. An instalment should appear only once.

**Using Logical Operators (NOT, AND, OR)**
13. Display the details of all the loans started after 31-12-2008 for which the number of instalments are more than 36.
14. Display the CustName and LoanAmount for all the loans which do not have number of instalments 36.
15. Display the CustName and LoanAmount for all the loans for which the loan amount is less than 500000 or intrate is more than 12.
16. Display the details of all the loans which started in the year 2009.
17. Display the details of all the loans whose LoanAmount is in the range 400000 to 500000.
18. Display the details of all the loans whose rate of interest is in the range 11% to 12%.

**Using IN Operator**
19. Display the CustName and LoanAmount for all the loans for which the number of instalments are 24, 36, or 48.

**Using BETWEEN Operator**
20. Display the details of all the loans whose LoanAmount is in the range 400000 to 500000.
21. Display the details of all the loans whose rate of interest is in the range 11% to 12%.

**Using LIKE Operator**
22. Display the AccNo, CustName, and LoanAmount for all the loans for which the CustName ends with 'Sharma'.
23. Display the AccNo, CustName, and LoanAmount for all the loans for which the Cust_Name ends with 'a'.
24. Display the AccNo, CustName, and LoanAmount for all the loans for which the
Cust_Name contains 'a'

25. Display the AccNo, CustName, and LoanAmount for all the loans for which the
Cust_Name does not contain 'P'.

26. Display the AccNo, CustName, and LoanAmount for all the loans for which the
CustName contains 'a' as the second last character.

Using ORDER BY clause

27. Display the details of all the loans in the ascending order of their LoanAmount.
28. Display the details of all the loans in the descending order of their StartDate.
29. Display the details of all the loans in the ascending order of their LoanAmount and within
LoanAmount in the descending order of their StartDate.

Using UPDATE, DELETE, ALTER TABLE

30. Change the interest rate 11.50% for all the loans for which interest rate is NULL.
31. Increase the interest rate by 0.5% for all the loans for which the loan amount is more than
400000.
32. For each loan replace Interest with (LoanAmount*IntRate*Instalments) 12*100.
33. Delete the records of all the loans whose start date is before 2007.
34. Delete the records of all the loans of 'K.P. Jain'
35. Add another column Category of type CHAR(1) in the Loan table.

SOLVED CBSE QUESTIONS

1. Mrs. Sharma is the class teacher of Class ‘XII A’ She wants to create a table ‘Student’ to store
details of her class.
   (i) Which of the following can be the attributes of Student table?
       a) RollNo  b) “Amit”  c) Name   d) 25
   (ii) Name the Primary key of the table ‘Student’. State reason for choosing it.
       Ans. i. a) RollNo     b) Name
       ii. Primary Key: RollNo as it will be unique for each student of the class.

2. While creating the table Employee, Mr. John forgot to include the field EMPNO, now how to
insert the EMPNO field with integer data type and 10 size into the Employee table?
   Ans: Alter Table Employee
       Add (EMPNO int(10));

3. While creating the table Student last week, Ms. Sharma forgot to include the column
GamePlayed. Now write a command to insert the Gameplayed column with VARCHAR data type
and 30 size into the Student table?
   Ans. Alter Table Student Add (GamePlayed VARCHAR(30));

4. Sujata has created a table in MySQL. Later on she found that the width of name column is not
sufficient for entering some long names. She wants to increase the width of the name column.
Which command she should give to do this.
   Ans: Alter Table.

5. While creating a table “MobDet”, Kavita forgot to set primary key for the table. Write the
statement to set the column MobileNo as the primary key of the table.
   Ans.: Alter Table MobDet add primary key MobileNo;

6. Write a command to add a NOT NULL constraint on fees column of a student table.
   Ans.: Alter table student MODIFY fees int(4) NOT NULL;
CHAPTER – 14: DATABASE TRANSACTIONS

Database transaction - A database transaction is a logical unit of work that must either succeed or fail in its entirety.

ACID properties of database transaction –
• Atomicity- Atomicity ensures either all-or-none operations of a transaction are carried out.
• Consistency-This property ensures that database remains in a consistent state before the start of transaction and after the transaction is over.
• Isolation-Isolation ensures that executing transaction execution in isolation i.e. is unaware of other transactions executing concurrently in the system.
• Durability-This property ensures that after the successful completion of a transaction i.e when a transaction COMMITs, the changes made by it to the database persist i.e. remain in the database irrespective of other failures.

TCL commands supported by SQL:-
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.
Syntax : COMMIT ;
COMMIT WORK;
ROLLBACK - Ends the current transaction by discarding changes and starts a new transaction.
Syntax : ROLLBACK ;
ROLLBACK WORK;
SAVEPOINT - Defines breakpoints for the transactions to allow partial rollbacks.
Syntax : SAVEPOINT <savepoint-name> ; e.g. – SAVEPOINT MARK1;
To rollback the transaction till the bookmark named MARK1, we can write the following:-
ROLLBACK TO SAVEPOINT MARK1;
SET AUTOCOMMIT-Enables or disable the default auto commit mode. By default the autocommit mode is true or 1.
@@autocommit- This command is used to check the status of autocommit.

Short Answer Type Questions (2 Marks)

1. What is the concept of Database transaction?
2. Describe briefly the ACID Properties of the Transaction?
3. Describe the following command
   a) COMMIT   b) ROLLBACK   c) SAVEPOINT
4. What will happen when COMMIT statement is issued?
5. What will happen when ROLLBACK statement is issued?
6. Write one difference between COMMIT and ROLLBACK command?
CHAPTER 15: MORE ON SQL-GROUPING RECORDS AND TABLE JOINS

SQL Aggregate (Group) Function: These functions operate on a group of rows instead of a single row. That is why these functions are known as group or aggregate functions. Some important group functions are as follows:

<table>
<thead>
<tr>
<th>Rollno</th>
<th>Sname</th>
<th>Subject</th>
<th>Marks</th>
<th>grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>SUMIT</td>
<td>MATHS</td>
<td>95</td>
<td>A</td>
</tr>
<tr>
<td>002</td>
<td>SHERRY</td>
<td>IP</td>
<td>96</td>
<td>A</td>
</tr>
<tr>
<td>003</td>
<td>SUMAN</td>
<td>IP</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>004</td>
<td>LALIT</td>
<td>HINDI</td>
<td>84</td>
<td>B</td>
</tr>
<tr>
<td>005</td>
<td>RAHUL</td>
<td>MATHS</td>
<td>88</td>
<td>B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of the Function</th>
<th>Purpose/Use</th>
<th>Syntax or Example</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX()</td>
<td>Returns the MAXIMUM values in a specified column</td>
<td>Mysql&gt; select max(marks) from student;</td>
<td>96</td>
</tr>
<tr>
<td>MIN()</td>
<td>Returns the MINIMUM values in a specified column</td>
<td>Mysql&gt; select min(marks) from student;</td>
<td>75</td>
</tr>
<tr>
<td>SUM()</td>
<td>Returns the SUM of values in a given column/expression.</td>
<td>Mysql&gt; select sum(marks) from student;</td>
<td>438</td>
</tr>
<tr>
<td>AVG()</td>
<td>Returns the AVERAGE value in a specified column/expression.</td>
<td>Mysql&gt; select avg(marks) from student;</td>
<td>87.6</td>
</tr>
<tr>
<td>COUNT()</td>
<td>Returns the total number of non null values in a column.</td>
<td>Select Count(*) from student;</td>
<td>4</td>
</tr>
<tr>
<td>COUNT(*)</td>
<td>Returns the total no of rows</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

TYPES OF FUNCTIONS:

Single Row Function: It works with a single row at a time. A single row function returns a result for every row of the queried table.

Multiple Row or Group Function: It works with data of multiple rows at a time and returns aggregate values.

The main difference between these two functions is in the number of rows they act upon.

Grouping Result by using Group By: The GROUP BY clause is used in a select statement in conjunction with aggregate functions to group the result based on DISTINCT or ALL values in a column. Grouping can be done by column name, or with aggregate functions in which case the aggregate produces a value for each group. Example:

Mysql> select count (marks) from student Group By subject;

OUTPUT:
HINDI 1
MATHS 2
IP 2

Mysql> select SUM (marks) from student Group by Subject;

OUTPUT:
HINDI 84
Conditions on Group-Having Clause: We can use any condition on group, if required. HAVING clause is used to apply a condition on a group.

Mysql> select SUM (marks) from student Group By subject having MAX(marks)>80;

OUTPUT:
HINDI  84
MATHS  183
IP      96

Mysql> select SUM (marks) from student Group By subject having COUNT(*)>1;

OUTPUT:
MATHS  2
IP      2

JOINS: A join is a query that combines rows from two or more tables. In a query involving join, more than one table is listed in FROM clause separated by comma (,).

EXAMPLE: SELECT * FROM EMP1, DEPT;

CROSS JOIN (Cartesian product): Cartesian product of two tables is a table obtained by pairing each row of one table with each row of the other. It contains all the columns of both tables.

<table>
<thead>
<tr>
<th>SN</th>
<th>Pcode</th>
<th>scode</th>
<th>code</th>
<th>Name</th>
<th>qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P101</td>
<td>S002</td>
<td>P101</td>
<td>SOAP</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>P102</td>
<td>S003</td>
<td>P101</td>
<td>SOAP</td>
<td>20</td>
</tr>
<tr>
<td>1</td>
<td>P101</td>
<td>S002</td>
<td>P102</td>
<td>OIL</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>P102</td>
<td>S003</td>
<td>P102</td>
<td>OIL</td>
<td>10</td>
</tr>
</tbody>
</table>

This table will contain \((2*2=4)\) rows and \((3+3=6)\) Columns.

EQUI JOINS:
The Joins, in which a column is compared for equality, is called Equi-Join. The Join Column is a column which is common in both tables.

SQL Statement: Select * FROM Order, product where order.pcode=product.pcode;

(After Equi Join following output will be produced)

<table>
<thead>
<tr>
<th>SN</th>
<th>Pcode</th>
<th>scode</th>
<th>Pcode</th>
<th>Name</th>
<th>qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P101</td>
<td>S002</td>
<td>P101</td>
<td>SOAP</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>P102</td>
<td>S003</td>
<td>P102</td>
<td>OIL</td>
<td>10</td>
</tr>
</tbody>
</table>
NON EQUI JOINS:
Non equi join is a query that specifies some relationship other than equality between the columns. It means that records are joined on the condition other than Equal operator (<?, <>, =>, <=) for joining column.

NATURAL JOINS: The join in which one of the identical columns exist, is called Natural Join. The natural join is much similar to Equi-Join, records are joined on the equality condition of joining column except that the common column appears one time.

(After Natural Join following output will be produced)

<table>
<thead>
<tr>
<th>SN</th>
<th>Pcode</th>
<th>scode</th>
<th>Name</th>
<th>qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P101</td>
<td>S002</td>
<td>SOAP</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>P102</td>
<td>S003</td>
<td>SOAP</td>
<td>20</td>
</tr>
</tbody>
</table>

Joining Tables Using Join Clause of SQL Statement: MySQL offer two ways by which you may join two or more tables. One is using multiple tables with FROM clause and using JOIN keyword with FROM clause.

Using multiple tables with FROM clause
Select * from Student, Stream where student.scode= stream.scode;

Table: Student        Table: Stream
<table>
<thead>
<tr>
<th>RNO</th>
<th>Name</th>
<th>Subject</th>
<th>Fee</th>
<th>scode</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>RAM</td>
<td>MATHS</td>
<td>1000</td>
<td>S101</td>
</tr>
<tr>
<td>102</td>
<td>SHAM</td>
<td>ECO</td>
<td>800</td>
<td>C102</td>
</tr>
<tr>
<td>103</td>
<td>RITU</td>
<td>ENG</td>
<td>500</td>
<td>H103</td>
</tr>
<tr>
<td>104</td>
<td>SHERRY</td>
<td>PHY</td>
<td>1200</td>
<td>S101</td>
</tr>
</tbody>
</table>

OUTPUT

<table>
<thead>
<tr>
<th>RNO</th>
<th>Name</th>
<th>Subject</th>
<th>Fee</th>
<th>scode</th>
<th>Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>RAM</td>
<td>MATHS</td>
<td>1000</td>
<td>S101</td>
<td>Science</td>
</tr>
<tr>
<td>102</td>
<td>SHAM</td>
<td>ECO</td>
<td>800</td>
<td>C102</td>
<td>Commerce</td>
</tr>
<tr>
<td>103</td>
<td>RITU</td>
<td>ENG</td>
<td>500</td>
<td>H103</td>
<td>Humanities</td>
</tr>
<tr>
<td>104</td>
<td>SHERRY</td>
<td>PHY</td>
<td>1200</td>
<td>S101</td>
<td>Science</td>
</tr>
</tbody>
</table>

Using multiple tables with FROM clause
Select RNO, Name from student join streams on student.scode= streams.scode where stream="Science"

OUTPUT

<table>
<thead>
<tr>
<th>RNO</th>
<th>Name</th>
<th>Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>RAM</td>
<td>Science</td>
</tr>
<tr>
<td>104</td>
<td>SHERRY</td>
<td>Science</td>
</tr>
</tbody>
</table>
**UNION**:- The UNION operator is used to combine the result-set of two or more SELECT statements. Notice that each SELECT statement within the UNION must have the same number of columns. The columns must also have similar data types. Also, the columns in each SELECT statement must be in the same order.

Syntax : UNION

```
SELECT column_name(s) FROM table1
UNION
SELECT column_name(s) FROM table2;
```

**Note:** The UNION operator selects only distinct values by default. To allow duplicate values, use the ALL keyword with UNION.

**Syntax :- UNION ALL**

```
SELECT column_name(s) FROM table1
UNION ALL
SELECT column_name(s) FROM table2;
```

**Note:** The column names in the result-set of a UNION are usually equal to the column names in the first SELECT statement in the UNION. The number of Columns must be same in both the tables.

```
SELECT * FROM a;
+-----+
| x  | y  |
+-----+
| 1  | A  |
| 2  | B  |
| 3  | C  |
| 4  | D  |
SELECT * FROM b;
+-----+
| x  | y  |
+-----+
| 1  | A  |
| 3  | C  |

Union:
SELECT * FROM a UNION SELECT * FROM b;
+-----+
| x  | y  |
+-----+
| 1  | A  |
```
INTERSECTION

First, let's explain what an INTERSECT query is. An INTERSECT query returns the intersection of 2 or more data sets. If a record exists in both data sets, it will be included in the INTERSECT results. However, if a record exists in one data set and not in the other, it will be omitted from the INTERSECT results.

Intersect Query

**Explanation:** The INTERSECT query will return the records in the shaded area. These are the records that exist in both Dataset1 and Dataset2.

**Syntax** The syntax for the INTERSECT operator in MySQL is:

```sql
SELECT expression1, expression2, ... expression_n
FROM tables
[WHERE conditions]
INTERSECT
SELECT expression1, expression2, ... expression_n
FROM tables
[WHERE conditions];
```
Although there is no INTERSECT operator in MySQL, you can easily simulate this type of query using either the **IN clause** or the **EXISTS clause**, depending on the complexity of the INTERSECT query.

### Very Short Answer Type Question (1 Marks)

1. What is single row and multiple row functions?
2. What is the significance of Group By clause in MYSQL?
3. What is Join? How many types of joins are there?
4. What are joins? Why are they used?
5. How natural join differs from Equi Join?
6. What is the Cartesian product of two tables? Is it same as an Equi-join?
7. There is a column C1 in a table T1. The following two statements:
   
   ```sql
   SELECT COUNT(*) FROM T1;
   SELECT COUNT(C1) FROM T1;
   ```
   
   are giving different outputs. What may be the possible reason? What is the significance of NOT NULL constraints?
8. There are two tables T1 and T2 in a database. Cardinality and degree of T1 are 2 and 4 respectively. Cardinality and degree of T2 are 3 and 2 respectively. What will be the degree and Cardinality of their Cartesian product?
9. Do aggregate Functions consider Null values? Does NULL play any role in actual calculations?
10. Write a query to delete a column pincode from the table employee?
11. Write a query to display the highest marks of each subject where Max marks is more than 90 from table student
12. Write a statement to disable the constraints of table.
13. Write a query to display the number of employees in each department in table emp.
Short Answer Type Question (2 Marks)

1. Difference between WHERE and HAVING clause in MySQL? Explain with the help of an example.

2. Consider the tables Doctors and Patient given below:

   TABLE: DOCTORS
<table>
<thead>
<tr>
<th>DocID</th>
<th>DocName</th>
<th>Department</th>
<th>OPDdays</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>K.K.Mathur</td>
<td>ENT</td>
<td>TTS</td>
</tr>
<tr>
<td>102</td>
<td>Ashish Sharma</td>
<td>Paed</td>
<td>MWF</td>
</tr>
<tr>
<td>201</td>
<td>Vivek Khurana</td>
<td>Ortho</td>
<td>MWF</td>
</tr>
</tbody>
</table>

   TABLE: PATIENT
<table>
<thead>
<tr>
<th>PatNo</th>
<th>PatName</th>
<th>Department</th>
<th>DocID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AKASH</td>
<td>ENT</td>
<td>101</td>
</tr>
<tr>
<td>2</td>
<td>NEHA</td>
<td>Ortho</td>
<td>102</td>
</tr>
<tr>
<td>3</td>
<td>SUNITA</td>
<td>ENT</td>
<td>101</td>
</tr>
</tbody>
</table>

3. With reference to these two tables, write a SQL query for (i) and (ii) and output for (iii).

   (1) Display Patient Name, Patient No and corresponding doctor name for each patient.
   (2) Display the list of all patients who’s OPDdays are ‘TTS’.
   (3) SELECT OPDdays, count(*) FROM Doctors, Patients WHERE Doctors.Department=Patients.Department GROUP BY OPDdays;

4. In a database there are two table BOOKS and ISSUES.

   Table: BOOKS
<table>
<thead>
<tr>
<th>Book_ID</th>
<th>Book_Name</th>
<th>Author_Name</th>
<th>Publisher</th>
<th>Price</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>L01</td>
<td>Maths</td>
<td>Raman</td>
<td>ABC</td>
<td>70</td>
<td>20</td>
</tr>
<tr>
<td>L02</td>
<td>Science</td>
<td>Agarkar</td>
<td>DEF</td>
<td>90</td>
<td>15</td>
</tr>
<tr>
<td>L03</td>
<td>Social</td>
<td>Suresh</td>
<td>XYZ</td>
<td>85</td>
<td>30</td>
</tr>
<tr>
<td>L04</td>
<td>Computer</td>
<td>Sumita</td>
<td>ABC</td>
<td>75</td>
<td>7</td>
</tr>
<tr>
<td>L05</td>
<td>Telugu</td>
<td>Nannayya</td>
<td>DEF</td>
<td>60</td>
<td>25</td>
</tr>
<tr>
<td>L06</td>
<td>English</td>
<td>Wordsworth</td>
<td>DEF</td>
<td>55</td>
<td>12</td>
</tr>
</tbody>
</table>

   Table: ISSUES
<table>
<thead>
<tr>
<th>ISSUE_ID</th>
<th>Book_ID</th>
<th>Qty_Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>L02</td>
<td>13</td>
</tr>
<tr>
<td>19</td>
<td>L04</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>L05</td>
<td>21</td>
</tr>
</tbody>
</table>

   i. How many rows and how many columns will be there in the Cartesian product of these two tables?
   ii. Which column in the 'ISSUES' table is the foreign key?

5. Consider the table staff and salary given below:

   Table: staff
<table>
<thead>
<tr>
<th>ID</th>
<th>NAME</th>
<th>DEPT</th>
<th>SEX</th>
<th>DATE_OF_J</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Siddharth</td>
<td>SALES</td>
<td>M</td>
<td>2001-01-01</td>
</tr>
<tr>
<td>104</td>
<td>Raghav</td>
<td>FINANCE</td>
<td>M</td>
<td>2006-02-14</td>
</tr>
<tr>
<td>107</td>
<td>Prateek</td>
<td>RESEARCH</td>
<td>M</td>
<td>2002-07-02</td>
</tr>
<tr>
<td>114</td>
<td>Dilip</td>
<td>SALES</td>
<td>M</td>
<td>2003-05-15</td>
</tr>
</tbody>
</table>
6. With reference to these tables, Write commands in SQL for (i) and (ii) and output for (iii) below:
   i. Display NAME, BASIC, ALLOWANCE of all staff who are in “SALES” department
   ii. Display the average salary of all the staff working in “FINANCE” department using the table staff and salary. SALARY=BASIC+ALLOWANCE.
   iii. SELECT NAME, COMM FROM staff, salary where (staff.ID=salary.ID);
Lesson 16: Table and Integrity Constraints

Integrity Constraints are the rules that a database must follow at all times. Various Integrity constraints are as follows:-

1. **Not Null**: It ensures that we cannot leave a column as null i.e. a value has to be supplied for that column.
2. **Unique**: Ensures that each row for a column must have a unique value. A column(s) can have null value but the values cannot be duplicated.
3. **Primary Key**: - Primary key is used to identify the record uniquely in the table. A combination of a NOT NULL and UNIQUE means that a column cannot have duplicated values and not even a null value.
4. **Default**: Specifies a default value for a column. If no value is specified while inserting records then default value will be inserted.
5. **Check**: Ensures that the value in a column meets a specific condition. It is used to limit the range of values that can be inputted in to a column
6. **Foreign Key**: Ensure the referential integrity of the data in one table to match values in another table

Create Table with Constraints: You can create table with constraints using create table. Constraints can be added at the time of table creation or can be added later on. For example:

**CREATE TABLE Student**

```
(  
    RollNo   Integer   Primary Key,  
    Regno   Integer   Unique,  
    NAME    Char(20),  Not Null,  
    Gender  Char(1),  
    Age      Integer      Check age>=5,  
    Admfee   integer Default 5000
  );
```

Viewing Constraints and their Columns:

Syntax:
DESC <TABLENAME>;
DESC STUDENT//Shows detailed information about the table STUDENT

Alter Table
The purpose of alter table are as follows:-
1. **Adding Column to a table:** To add a new column to a table, you can use ALTER TABLE command as per syntax given below:-

   ALTER TABLE <Table Name>
   ADD [COLUMN] <Column data Type> ;
   ALTER TABLE EMPLOYEE
   ADD MOBILE_NO INTEGER;

   A new column by the name Mobile_No will be added to the table

2. **Deleting Column:** To delete a column from the table, the DROP command as per syntax given below:-

   ALTER TABLE <Table Name>
   DROP [COLUMN]<Column Name> ;
   ALTER TABLE  EMPLOYEE
   DROP [COLUMN] MOBILE_NO;

   *It will delete the column MOBILE_NO from the table EMPLOYEE*

3. **Modifying Data Type(s) of a column(s):** To modify a column of a table, you can use MODIFY command as per syntax given below:-

   ALTER TABLE <Table Name>
   MODIFY  <Column Name>  <Column Definition>;
   ALTER  TABLE  EMPLOYEE
   MODIFY SALARY INTEGER(8);

   *It will change the width of a salary field from 5 to 8*

   **To modify a column of a table with constraints:**

   ALTER TABLE <Table Name>
   MODIFY <Column Name> <Column Definition> constraints
   ALTER TABLE EMPLOYEE
   MODIFY EMP_NO INTEGER (10) PRIMARY KEY;

   *It will modify the EMP_NO and EMP_NO is now working as primary key*

4. **Adding Constraints:** You can also use ALTER TABLE command to add constraints to your existing table.

   **Syntax:**

   ALTER TABLE <Table Name>
   ADD <Constraint name>(column name)
   ALTER TABLE EMPLOYEE
   ADD PRIMARY KEY (EMP_ID);

   *It will define the EMP_ID as primary key*

   **Removing Constraints:** You can also use ALTER TABLE command to delete or remove constraints from your existing table

   **Syntax:**

   ALTER TABLE <Table Name>
   DROP <Constraint Name>
   ALTER TABLE EMPLOYEE
   DROP PRIMARY KEY;

   *It will delete the primary key constraint of a table*
Enabling/Disabling Constraints: You can enable or disable constraints, but only primary key constraint cannot be disabled, it can only be deleted. Other constraints like Foreign Key, Not Null etc. can be enabled or disabled.

Syntax TO ENABLE:
SET FOREIGN_KEY_CHECKS=1;

Syntax TO DISABLE:
SET FOREIGN_KEY_CHECKS=0;

Dropping Tables: To delete or drop tables from database, you can use DROP TABLE COMMAND. With Drop Table command, My SQL also removes the description of the table along with all constraints.

Syntax:
DROP TABLE TABLE NAME
DROP TABLE EMPLOYEE;

It will DROP table employee from the database

Very Short Answer Type question (1 Marks)

1. What is the use of ALTER TABLE Command?
2. What are integrity constraints? Write the names of the integrity constraints.
3. What is Primary key Constraint?
4. What is Foreign key constraint?
5. What is difference between Unique and Primary Key?
6. Write SQL command to view the constraints of emp table.
7. What is NULL?
8. What is the significance of NOT NULL constraint?
9. Write a query to add new column aadharno in a table student.
10. Write a query to modify data type (char to int) of the existing column emp_id of emp table.
11. Write a query to delete a column pincode form a table employee.
12. Can constraints be added in an existing table? How?
13. Write a statement to enable and disable the constraints of table.
14. When a Primary key constraint is included in a table, what other constraints does this imply?

Short Answer Type questions (2 Marks)

1 Write SQL command to create table Coach the following table structure.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCode</td>
<td>Integer</td>
<td>PRIMARY KEY</td>
</tr>
<tr>
<td>Name</td>
<td>Varchar(20)</td>
<td>NOT NULL</td>
</tr>
<tr>
<td>ACode</td>
<td>Integer</td>
<td>FOREIGN KEY which refer the Acode in Table Activity</td>
</tr>
<tr>
<td>City</td>
<td>Varchar(20)</td>
<td>Default = “delhi”</td>
</tr>
</tbody>
</table>

2 Write a command to create following table with P_ID as foreign key from person table. The "Orders" table is:

<table>
<thead>
<tr>
<th>O_Id</th>
<th>OrderNo</th>
<th>P_Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>77895</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>44678</td>
<td>3</td>
</tr>
</tbody>
</table>
3. What are different constraints? Explain any two with example.

4. Ms. Shilpa created two tables with Deptno as Primary key in Table1 and Foreign Key in Table2, while inserting a row in Table2, Ms. Shilpa is not able to enter a value in the column Deptno. What could be the possible reason there for it?

5. Write a MySQL command for creating a table "CLUB" whose structure is given below:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Datatype</th>
<th>Size</th>
<th>Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEMBER_No</td>
<td>Integer</td>
<td>10</td>
<td>Primary key</td>
</tr>
<tr>
<td>Member_Name</td>
<td>Varchar</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Join_Date</td>
<td>Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member_Type</td>
<td>char</td>
<td>1</td>
<td>Not Null</td>
</tr>
<tr>
<td>Charges</td>
<td>Decimal</td>
<td>10,2</td>
<td></td>
</tr>
</tbody>
</table>
6. **Answer the question based on the table VOTER given below:**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Data type</th>
<th>Size</th>
<th>Constraints</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_id</td>
<td>INT</td>
<td>8</td>
<td>Primary key</td>
<td>Voter identification</td>
</tr>
<tr>
<td>Vname</td>
<td>VARCHAR</td>
<td>25</td>
<td>Not null</td>
<td>Name of the voter</td>
</tr>
<tr>
<td>Age</td>
<td>INT</td>
<td>3</td>
<td>Check&gt;17</td>
<td>Age should not be less than 17</td>
</tr>
<tr>
<td>Address</td>
<td>VARCHAR</td>
<td>30</td>
<td></td>
<td>Address of voter</td>
</tr>
<tr>
<td>Phone</td>
<td>VARCHAR</td>
<td>10</td>
<td></td>
<td>Phone number of the voter</td>
</tr>
</tbody>
</table>

**REVISION:** Complete the following crossword puzzle using RDBMS (MySQL) concept and commands:

1. Logical unit of work that must succeed or fail entirely. (Across)
2. Number of attributes in the table. (Down)
3. Special features that specify rules for the data in a table (Down)
4. Statement to undo work done in the current transaction (Down)
5. Statement that adds one or more records to any single table in a relational database. (Across)
6. Combines records from two tables (Down)
7. Returns the number of rows returned by the query. (Down)
8. Statement to save changes made by a transaction. (Across)
9. Statement which is used to pull information from a table. (Across)
10. Operator to define the range of values. (Down)
UNIT 4
CHAPTER 17: IT APPLICATIONS

Front End: The front end application interacts with the user and collects input from the user. For example: E-mail sign up form or any application where a user enters data.

Back End: The backend is an application or program that is not visible to the user but that processes the user requests as received from the front end. The back end handles all database accesses through one or more servers. For Example: MYSQL, Oracle, MS-Access etc.

Impact of ICT on Society:
ICT stands for (Information and communication Technology). ICT has impacted the society in a much wider way than any other technologies. The social and economic impacts are as follows:-

Social Impact of ICT on Society:

Social Benefits:
1. Employment Generation
2. Social Networking
3. Education Sector

Economic Benefits:
1. Faster Growth of Economy
2. Global Market
3. Net Banking
4. Ease and Availability

E-Governance: E-governance refers to the application of electronic means in governance with an aim of fulfilling the requirements of common man at affordable costs and in fastest possible time. All government services are accessible to common man in his/her locality and ensure efficiency, transparency and reliability of such services at affordable cost to realize the basic needs of the common man.

Some popular E-Governance sites in India:-
http://www.Incometaxindia.gov.in
http://www.passport.gov.in
http://www.India.gov.in

Social impact of E-Governance:
1. E-governance improves the efficiency and transparency of administration and service.
2. E-governance reduces waiting time before the work is done.
3. E-governance controls the corruption to some extent.

Some issues that have impacted the Society in a not so positive manner:
1. People living in rural area could not benefit from the E-Governance because of lack of computerization in these areas.
2. Lack of awareness about E-Governance program among the people.
3. All government services are not online. So manual method cannot be avoided.

E-Commerce/E-Business: E-Commerce describes the process of buying, selling of products, information and services via computer network using internet

Some popular E-Business sites in India:-
http://www.irctc.co.in
http://www.licindia.in
http://www.amazon.com

**Advantages of E-Business to customers:**
1. It reduces the cost of the products.
2. Customers can access international market.
3. Improves the customer service by offering 24X7 access to market

**Social impact of E-Business:**
1. Online availability of various options at remote places also.
2. Increase in online shopping habits.
3. Increase in online payments.

**Some issues that have impacted the Society in a not so positive manner**
1. Poor telecom, Internet services and infrastructure for reliable connectivity.
2. Lack of trust. Sometimes customers do not receive goods even after online payments up to their expectations.

**E-learning:** E-Learning describes as a means of teaching and learning through computer or e-technology like Internet, CD-ROM, DVD, Audio etc. It provides an opportunity to learn almost anytime, anywhere.

**Some popular E-Learning sites:-**
- http://www.w3schools.com
- http://www.exelearning.org
- http://www.cbsecsnip.in

**Advantages:**
1. Study can be done anytime (24 X 7 hours available) and anywhere
2. It reduces the cost of study.
3. Self-paced and self-motivational learning

**Social impact:**
1. Boon for working class.
2. It helps the students to continue their studies, who has left out the school for any reason.
3. Availability of the same course to millions.

**Short Answer Type Question:**
1. Give two addresses of most commonly used e-learning sites.
2. Write the name of two web portals commonly used for e-Governance.
3. Give the domain name of two popular e-Commerce sites.
4. Write two advantages of E-Business.
5. What is Back end? Explain its functions.
6. What is Front end? Explain its functions.
7. What social impact does e-Governance have on society?
8. What benefit does an e-business offer to the customers/common man?
9. How e-Learning has benefitted the society?
10. Mr. Kartik is working as a Manager in Flash Telecom. He wants to create the form with the following functions. Choose appropriate controls from Text Field, Label, Radio Button, Check Box, List Box, Combo Box, and Command Button and write in the third column.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Control Used to</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enter Name of Customer</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Enter Mobile No.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Select Connection Type</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Display total Amount of Bill</td>
<td></td>
</tr>
</tbody>
</table>

11. Bhavna is creating a form for Railway Reservation. Help her to choose the most appropriate controls from List Box, Combo Box, Text Field, Text Area, Radio Button, Check box, label and Command button for the following entries from user:
(i) A message "Enter Destination" in front of a Text Field.
(ii) An input to choose Male or female for Gender.
(iii) An input for berth type from drop down list.
(iv) An input for Entering Passenger Name.
Crossword

Across:
1. Banking through Internet
2. Graphical User Interface
3. To select multiple options
4. Process of buying and selling via computer
5. Interface with which user interacts
6. End that processes user request in an application

Down:
1. Buying and selling of goods and services within organisation
2. Railway Reservation Portal
3. Website for Virtual Learning
4. Learning core via computer, internet.

Ans
 CBSE ANNUAL PAPER-2013  
INFORMATICS PRACTICES (065)  

i) All questions are compulsory  
ii) Answer the questions after carefully reading the text.

1 (a) Which wireless communication channel is most appropriate in each of the following situations?  
i Communication in a hilly area.  
ii Very fast communication between two offices in two different countries.  

(b) With what aim UNICODE was developed?  

(C) Expand the following file extensions:  
   (i) ODF  
   (ii) XML  

(d) Give one example of URL and one example of domain name.  

(e) What is the use of repeater in a Network? How is it different from Hub?  

(f) Give two characteristics of Star Topology. Also, show it using a diagram with interconnection of 5 computers.  

(g) What is Snooping?  

2 (a) Name method is used to extract value of Index while using ListBox in Java.  

(b) What is the difference between the use of isSelected() and setSelected() methods used with JCheckBox in Java?  

(c) Name any two commonly used methods of jComboBox control.  

(d) Name any two attributes used in <img> tag of HTML  

(e) How many times the following loops will execute? Which one of them is Entry Controlled and which one is Exit Controlled?  

<table>
<thead>
<tr>
<th>Loop 1</th>
<th>Loop 2</th>
</tr>
</thead>
</table>
| int j=8, total=0; while(j>1)  
| {}             | int j=8,total=0; do  
| total+=j;      | {}             |
| j -=2;         | total+=j;      |
| }              | j=2;           |
|                | jWhile (j>1);  |

(f) What will be displayed in jTextField1 and jTextField2 after the execution of the following loop?  

int Total =0 ,End=10;  
for (int Turn=1,Turn<=End; Turn+=2)  
    Total++;  
}jTextField1.setText(Integer.toString(Total));  
}jTextField2.setText (Integer.toString(Turn));  

(g) Differentiate between the <BR> and <HR> tags of HTML with suitable example.  

3 (a) Write a command to add a NOT NULL constraint on FEES column of a student table  

(b) Write SQL command to create a SAVEPOINT called AI.  

(c) Define Foreign Key with reference to RDBMS.  

(d) Table BANK has 2 rows and 3 columns. Table CUSTOMER has 4 rows and 3 columns. What will be the cardinality and degree of the Cartesian product of them?  

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(e) There is column HOBBY in a Table CONTACTS. The following two statements are giving different outputs. What may be the possible reason?

   SELECT COUNT(*) FROM CONTACTS;
   SELECT COUNT(HOBBY) FROM CONTACTS;

(f) Name the methods used to convert one type of data to another in the following statement of java.

   int Num = Integer.parseInt(jTextField1.getText());
   jTextField2.setText(Integer.toString(Num));

(g) Mr. Tandon is using table EMP with the following columns.

   ECODE, DEPT, ENAME, SALARY

   He wants to display all information of employees (from EMP table) in ascending order of ENAME and within it in ascending order of DEPT. He wrote the following command, which did not show the desired output.

   SELECT * FROM EMP ORDER BY NAME DESC, DEPT;

   Rewrite the above query to get the desired output.

4 (a) What will be the content of jTextArea1 and JTextField1 after the execution of the following statements?

   i) jTextArea1.setText(“Go\t Green\nINDIA”);
   ii) String Message = “All The Best”;
       jTextField1.setText(Message.length() -6) + “ “);

(b) Rewrite the following program code using a while loop statement:

   int Last = Integer.parseInt(jTextField1.getText());
   for (int C=1; C<=Last; C++)
       jTextArea1.setText(Integer.toString(C));

(c) Observe the following code carefully and find which statement will never get executed in the code.

   int Count=1; // Statement 1
   do // Statement2
   {
     // Statement3
     if (Count <15) // Statement4
       jTextField1.setText(“Jump”); // Statement5
     else // Statement6
       jTextField1.setText(“STOP”); // Statement7
     Count+=4; // Statement8
   } // Statement9
   while(t<=15); // Statement10

(d) Write java statement to make jButton1 disabled.

(e) What will be displayed in JTextField1 after the execution of the following code?

   int Sum, One=3, Two=5;
   Sum =One + Two ++;
   jTextField1.setText(Integer.toString(Sum)) ;
   jTextField2.setText(Integer.toString(Two)) ;

(f) What will be the contents of Text1 and Text2 after the following code is executed?

   String Text2, Text1;
Text1 = “Good Morning”; 
Text2 = “India”; 
Text1 = Text2.concat(Text1);

(g) Shekhar is a junior programmer at Ducom Enterprises. He created the following GUI in Netbeans.

Help him to write code for the following:

i To calculate Income Tax to be paid and display in jTextField4 on the click of Command Button ‘Calculate Income Tax’ as per the following condition:
   If the basic is less than 50000 then Income Tax = Basic*0.2
   And if is greater or equal to 50000 then Income Tax = Basic*0.3

ii To calculate Salary and display in JTextField5 on the click of Command Button “Calculate Salary”.
   Hint:
   Salary = (Basic + DearnessAllowance + HouseRentAllowance) - IncomeTax.

iii To clear all Text Fields on the click of Command Button “Clear”

5 (a) What is the use of UPDATE statement in SQL? How is it different from ALTER statement?

(b) Mr. Shankar created a table VEHICLE with 3 rows and 4 columns. He added 1 more row to it and deleted one column. What is the cardinality and degree of the Table VEHICLE?

(c) Consider the following table named “GYM” with details about fitness items being sold in the store. Write command of SQL for (i) to (iv) and output for (v) to (vii)

<table>
<thead>
<tr>
<th>ICODE</th>
<th>INAME</th>
<th>PRICE</th>
<th>BRANDNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>G101</td>
<td>Power Fit Exerciser</td>
<td>20000</td>
<td>Power Gymea</td>
</tr>
<tr>
<td>G102</td>
<td>Aquafit Hand Grip</td>
<td>1800</td>
<td>Reliable</td>
</tr>
<tr>
<td>G103</td>
<td>Cycle Bike</td>
<td>14000</td>
<td>Ecobike</td>
</tr>
<tr>
<td>G104</td>
<td>Protoner Extreme Gym</td>
<td>30000</td>
<td>Coscore</td>
</tr>
<tr>
<td>G105</td>
<td>Message Belt</td>
<td>5000</td>
<td>Message Expert</td>
</tr>
<tr>
<td>G106</td>
<td>Cross Trainer</td>
<td>13000</td>
<td>GTC Fitness</td>
</tr>
</tbody>
</table>

i To display the name of all the items whose name starts with “A”.
ii To display ICODE and INAME of all items, whose Brandname is Reliable or Coscore.
iii To change the Brandname to “Fit Trend India” of the item whose ICODE as “G101”.
iv Add a new row for a new item in GYM with the details “G107” “Vibro Exerciser”, 21000, “GTC Fitness”
(a) Write SQL command to create the table Vehicle with given constraint

```
TABLE: VEHICLE

<table>
<thead>
<tr>
<th>COLUMN_NAME</th>
<th>DATATYPE(SIZE)</th>
<th>CONSTRAINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challan_No</td>
<td>Decimal(10)</td>
<td>Primary Key</td>
</tr>
<tr>
<td>Ch_date</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>RegNo</td>
<td>Char(10)</td>
<td></td>
</tr>
<tr>
<td>Offence</td>
<td>Decimal(3)</td>
<td></td>
</tr>
</tbody>
</table>
```

(b) In a database Karnataka_Sangam there are two tables with the instances given below:

**Table: STUDENTS**

<table>
<thead>
<tr>
<th>ADMNO</th>
<th>NAME</th>
<th>CLASS</th>
<th>SEC</th>
<th>RN</th>
<th>ADDRESS</th>
<th>PHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1211</td>
<td>Meena</td>
<td>12</td>
<td>D</td>
<td>4</td>
<td>A-26</td>
<td>2345678</td>
</tr>
<tr>
<td>1212</td>
<td>Vani</td>
<td>10</td>
<td>D</td>
<td>1</td>
<td>B-25</td>
<td>5456789</td>
</tr>
<tr>
<td>1213</td>
<td>Meena</td>
<td>12</td>
<td>A</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1214</td>
<td>Karish</td>
<td>10</td>
<td>B</td>
<td>3</td>
<td>AB-234</td>
<td>4567890</td>
</tr>
<tr>
<td>1215</td>
<td>Suraj</td>
<td>11</td>
<td>C</td>
<td>2</td>
<td>ZW12</td>
<td>4345677</td>
</tr>
</tbody>
</table>

**TABLE: SPORTS**

<table>
<thead>
<tr>
<th>ADMNO</th>
<th>GAME</th>
<th>COACHNAME</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1215</td>
<td>Cricket</td>
<td>Mr. Rai</td>
<td>A</td>
</tr>
<tr>
<td>1213</td>
<td>Volleyball</td>
<td>Ms. Chadha</td>
<td>B</td>
</tr>
<tr>
<td>1211</td>
<td>Volleyball</td>
<td>Mr. Govardhan</td>
<td>A</td>
</tr>
<tr>
<td>1212</td>
<td>Basket Ball</td>
<td>Mr. Tiwari</td>
<td>B</td>
</tr>
</tbody>
</table>

Write MySql queries for the following:

i. To count how many addresses are not having NULL values in the address column of students table.

ii. To display Name, Class from STUDENT table and the corresponding Grade from SPORTS table.

iii. To display Name of the student and their corresponding Coach names from STUDENTS and SPORTS tables.

(c) Answer the questions (i) to (ii) used on the following table:

**Table: FACULTY**

<table>
<thead>
<tr>
<th>FNO</th>
<th>FName</th>
<th>AGE</th>
<th>DEPARTMENT</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>Moksha</td>
<td>40</td>
<td>Biology</td>
<td>A</td>
</tr>
<tr>
<td>123</td>
<td>Malini</td>
<td>35</td>
<td>Maths</td>
<td>A</td>
</tr>
<tr>
<td>125</td>
<td>Akshat</td>
<td>43</td>
<td>English</td>
<td>B</td>
</tr>
<tr>
<td>130</td>
<td>Nishant</td>
<td>27</td>
<td>Maths</td>
<td>B</td>
</tr>
</tbody>
</table>

i. Identify the Primary Key in the Table Faculty.

ii. Write SQL Command to change the grade of Nishant to “A”

7 (a) How popularity of e-commerce has benefited a common man? Give the domain
name of one popular e-Commerce site.

(b) Give two addresses of most commonly used e-learning sites.

(c) Shobhit is creating a form for his company. Help her to choose most appropriate controls from ListBox, ComboBox, TextField, TextArea, RadioButton, CheckBox, Label and Command Button for the following entries

<table>
<thead>
<tr>
<th>S.No</th>
<th>Function</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To select citizenship from a list of countries</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>To allow to input grade out of ‘A’ to ‘D’</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>To allow selecting one or many food items</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>To allow entering feedback in the form of a paragraph</td>
<td></td>
</tr>
</tbody>
</table>
CBSE ANNUAL PAPER-2014
INFORMATICS PRACTICES

Time allowed: 3 hours  Maximum Marks: 70

Instructions:
(i) All questions are compulsory.
(ii) Answer the questions after carefully reading the text

1 (a) Why is switch called an intelligent hub?  
(b) What was the objective behind developing UNICODE?  
(c) Expand the following terms:  
   i OSS  
   ii ODF  
(d) What is the use of repeater in a Network?  
(e) Identify the following device:  
   i A device that is used to connect different types of networks. It performs the necessary translation so that the connected networks can communicate properly.  
   ii A device that converts data from digital bit stream into an analog signal and vice versa  
(f) Write one advantage and one disadvantage of using Optical fibre cable.  
(g) Distinguish between Open Source Software and Proprietary Software.

2 (a) Is a string containing a single character same as a char?  
(b) Write a statement in Java to declare a String type variable with a name City.  
(c) Distinguish between ‘/’ and ‘%’ operators.  
(d) Which tag attributes of HTML are used to  
   i Insert a picture in the web page.  
   ii Insert an empty line in the web page.  
(e) What will be the values of variables agg and agg1 after the execution of the following loops?

<table>
<thead>
<tr>
<th>Loop 1</th>
<th>Loop 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>int a=9,agg=9;</td>
<td></td>
</tr>
<tr>
<td>while(a&gt;10)</td>
<td></td>
</tr>
<tr>
<td>{</td>
<td></td>
</tr>
<tr>
<td>agg+=a;</td>
<td></td>
</tr>
<tr>
<td>a--2;</td>
<td></td>
</tr>
<tr>
<td>}</td>
<td></td>
</tr>
<tr>
<td>int b=9,agg1=0;</td>
<td></td>
</tr>
<tr>
<td>do</td>
<td></td>
</tr>
<tr>
<td>{</td>
<td></td>
</tr>
<tr>
<td>agg1+=b;</td>
<td></td>
</tr>
<tr>
<td>b--2;</td>
<td></td>
</tr>
<tr>
<td>} while(b&gt;10);</td>
<td></td>
</tr>
</tbody>
</table>

(f) What will be displayed in JTextArea1 after the execution of the following loop?  
   for (int l=5;l>=2;l--)  
   JTextArea1.setText(jTextArea1.getText()+"+Integer.toString(l*l));

(g) Give two attributes of Table element of HTML.  

3 (a) Distinguish between ALTER TABLE and UPDATE commands of MySQL.  
(b) Mention two categories in which MySQL commands are broadly classified.  
(c) Give two characteristics of Primary Key.  
(d) A table FUNFOOD has 13 rows and 17 columns. What is the cardinality and degree of
(e) A numeric column MONEY contains 34567.7896. Write a command to truncate MONEY
i. Up to 2 decimal places. (i.e. expected result 34567.78)
ii. Up to -3 places. (i.e. expected result 34000)

(f) What happens when “ROLLBACK” command is issued in a transaction process?

(g) Shanya Khanna is using a table Employee. It has the following columns. Admno, Name, Agg, Stream
[column Agg contains Aggregate marks]
She wants to display highest Agg obtained in each Stream.
She wrote the following statement:
SELECT Stream, MAX(Agg) FROM Employee;
But she did not get the desired result. Rewrite the above query with necessary changes to help her get the desired output.

4.

(a) Define Object Oriented Programming.

(b) Rewrite the following Java code using a Switch Case statement :
int option=Integer.parseInt(jTextField1.getText());
if (option==1)
jTextField2.setText("Regular employee");
else if (option==2)
jTextField2.setText("On Probation");
else if (option==3)
jTextField2.setText("Visiting faculty");
else if (option==4)
jTextField2.setText("On Contract");
else
jTextField2.setText("Invalid option!");

(c) What will be the value X1 after the execution of the following code :
String X1="Spread",X2="PEACE";
X1=X2.concat(X1);

(d) Write Java statement to make a JTextField1 disabled

(e) What will be displayed in jTextArea1 after the execution of the following code :
int G=1;
do{
jTextArea1.setText(Integer.toString(G++));
G=G+1;
} while(G<=5);

(f) Give the output of the following Java code :
String name="Chennai Express";
int TM=name.length(),TN;
TN=80-TM;
jTextField2.setText(Integer.toString(TM));
jTextField3.setText(Integer.toString(TN));

(g) Mr. Rangaswami works at a Recreation Park as a system analyst. He has created the following GUI. When a group arrives at the Recreation Park, the number of people in the group and whether the group wants to enjoy the Water Park or not is entered. Entry fees is Rs.500 per person. The person can choose to play at Water Park by selecting the checkbox. Rides of Water Park will cost Rs. 250 extra per person.

Help him to write code for the following:

i On the click of command button ‘Calculate’, textfield for ‘Entry Fees’ should display Entry Fees per person * Number of people. If Water Park’ checkbox is selected, textfield for ‘Water Park Charges’ should display ‘Water Park Charges ‘ per person * Number of people. Textfield for ‘Total Amount’ should display sum of Entry Fees and Water Park Charges for all the people in the group.

ii Write Java code to clear all Textboxes on the click of ‘Clear’ button.

iii Write Java code to close the application on the click of ‘Exit’ button.

(a) What is the difference between “%” and “_” wild card characters with reference to LIKE clause of MySQL?

(b) Name a function of MySQL used to give the first occurrence of a string2 in string1.

(c) Consider the following table named “EXAM” with details of marks. Write command of MySQL for (i) to (iv) and output for (v) to (vii).

Table: EXAM

<table>
<thead>
<tr>
<th>Adno</th>
<th>SName</th>
<th>Percentage</th>
<th>Clsection</th>
<th>Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>R001</td>
<td>Sushant</td>
<td>90.2</td>
<td>12A</td>
<td>Science</td>
</tr>
<tr>
<td>R002</td>
<td>Vaidyanath</td>
<td>80.5</td>
<td>12B</td>
<td>Humanities</td>
</tr>
<tr>
<td>R003</td>
<td>Miara</td>
<td>68.9</td>
<td>12B</td>
<td>Science</td>
</tr>
<tr>
<td>R004</td>
<td>Niara</td>
<td>96.0</td>
<td>12A</td>
<td>Commerce</td>
</tr>
<tr>
<td>R005</td>
<td>Shinjini</td>
<td>88.9</td>
<td>12D</td>
<td>Commerce</td>
</tr>
</tbody>
</table>
percentage.
ii To display Adno, Name, Percentage and Stream of those students whose name is less than 6 characters long.
iii To add another column Bus_Fees with datatype and size as Decimal (8, 2).
iv To increase percentage by 2% of all the Humanities students.
v SELECT COUNT(*) FROM Exam;
vi SELECT SName, Percentage FROM EXAM WHERE Name LIKE "N%";
vii SELECT ROUND(Percentage,0) FROM EXAM WHERE Adno="R005";

(a)
Write MySQL command to create the table ‘Toyz’ with the following structure and constraint.

<table>
<thead>
<tr>
<th>Column_Name</th>
<th>Data_Type</th>
<th>Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toy_no</td>
<td>Int(10)</td>
<td>Primary Key</td>
</tr>
<tr>
<td>Toy_name</td>
<td>Varchar(20)</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Char(10)</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>Decimal(8,2)</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>Varchar(15)</td>
<td></td>
</tr>
</tbody>
</table>

(b) In a Database – SAMS and VENDOR are two tables with the following information.
Write MySQL queries for (i) to (iii), based on tables SAMS and VENDOR:

<table>
<thead>
<tr>
<th>ICode</th>
<th>IName</th>
<th>Price</th>
<th>Colour</th>
<th>VCode</th>
</tr>
</thead>
<tbody>
<tr>
<td>S001</td>
<td>Refrigerator</td>
<td>20000</td>
<td>Blue</td>
<td>P01</td>
</tr>
<tr>
<td>S002</td>
<td>Mobile Phone</td>
<td>45000</td>
<td>Black</td>
<td>P02</td>
</tr>
<tr>
<td>S003</td>
<td>LCD</td>
<td>60000</td>
<td>Silver</td>
<td>P03</td>
</tr>
<tr>
<td>S004</td>
<td>Washing Machine</td>
<td>12500</td>
<td>Smoke</td>
<td>P01</td>
</tr>
<tr>
<td>S005</td>
<td>Air Conditioner</td>
<td>16000</td>
<td>White</td>
<td>P03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VCode</th>
<th>VName</th>
</tr>
</thead>
<tbody>
<tr>
<td>P01</td>
<td>Satish</td>
</tr>
<tr>
<td>P02</td>
<td>Manoj</td>
</tr>
<tr>
<td>P03</td>
<td>Subodh</td>
</tr>
<tr>
<td>P04</td>
<td>Jacob</td>
</tr>
</tbody>
</table>

i To display ICode, IName and VName of all the vendors, who manufacture "Refrigerator."
ii To display IName, ICode, VName and Price of all the products whose price is more than 20000.
iii To display vendor names and names of all items manufactured by vendor whose
code is “P03”.

(c) With reference to SAMS table, which column should be set as the Primary key? Which column is the foreign key? Give reasons.

7 (a) Define e-Business. Name one popularly used e-Business website.

(b) How does e-governance help in reducing corruption? Write two points.

(c) Suruchi works for a Shopping Mart. She wants to create controls on a form for the following operations: Choose most appropriate controls out of TextBox, Label, RadioButton, ListBox, ComboBox, CheckBox and Command button.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enter the Item Code</td>
</tr>
<tr>
<td>2</td>
<td>Select Item Size (from a list of sizes)</td>
</tr>
<tr>
<td>3</td>
<td>Enter Quantity</td>
</tr>
<tr>
<td>4</td>
<td>Submit the Form</td>
</tr>
</tbody>
</table>
Instructions:
(i) All questions are compulsory.
(ii) Answer the questions after carefully reading the text.

1. A school with 20 stand-alone computers is considering networking them together and adding a server. State 2 advantages of doing this.
   (a) Distinguish between LAN and WAN.
   (b) What is the purpose of Modem in network?
   (c) Write one example of IP Address.
   (d) Define ‘Domain Name Resolution’.
   (e) Name two threats to security in a network. What is the role of Firewall in Network security?
   (f) Write one advantage and one disadvantage of Open Source software over Proprietary software.

2. Write the value of variable ‘c’ after execution of the following code:
   (a) int d; int c;
       d=7;
       c = (5*++d)%3;
       What is the difference between jTextField and jPasswordField components?
   (b) In a SWITCH statement, what is the purpose of ‘default’ section?
   (c) After typing the HTML code using a text editor, how do you see how it would look as a web page?
   (d) Write Java code to assign the value 500 to variable x. Increase the value of x by 50 and store it in variable y.
   (e) Write the output that will be generated by the code given below:
       int i;
       i = 7;
       int r;
       r=8;
       while (i<=10)
           {
               System.out.println(r*i);
               i = i+2;
           }
   "‘With XML there are no predefined tags’ – Explain in brief with the help of an example.

3. What is MySQL?
(b) Is NULL value the same as 0 (zero)? Write the reason for your answer.

(c) Write the UPDATE command to increase the commission (Column name: COMM) by 500 of all the Salesmen who have achieved Sales (Column name: SALES) more than 200000. The table’s name is COMPANY.

(d) While using SQL pattern matching, what is the difference between ‘_’ (underscore) and ‘%’ wildcard symbols?

(e) How is Primary key constraint different from Unique key constraint?

(f) Write one similarity and one difference between CHAR and VARCHAR data types.

(g) What is a Transaction? Which command is used to make changes done by a Transaction permanent on a database?

4. (a) The following code has some error(s). Rewrite the correct code Underlining all the corrections made.

```java
int marks, temperature;
marks = jTextField1.getText();
temperature = Integer.parseInt(jTextField2.getText());
if (marks < 80) and (temperature >= 40)
{
    System.out.println("Not Good");
}
else;
{
    System.out.println("OK");
}
```

(b) How many times will the following WHILE loop execute?

```java
int y = 7, sum = 0;
while (y<= 15)
{
    sum = sum + y;
    y = y+2;
}
```

(c) Rewrite the following program code using IF ELSE IF instead of SWITCH statement

```java
String tour;
int cl = Integer.parseInt(jTextField1.getText());
switch (cl)
{   case 8:  tour = "\n You are going to Camp Ramgarh";
    break;
    case 9:  tour = "\n You are going to Manali, Rohtang Pass";
    break;
    case 10: tour = "\n You are going to Chail";
    break;
    default:  tour = " No School tour for you this time";
}
```

(d) Write the values of sum and x after execution of the following code:

```java
int sum, x;
sum = 7;
```
x = 5;
sum = sum + (x++);

(e) What will be the contents of jTextField1 and jTextField2 after executing the following code:

```java
String s = "Best";
jTextField1.setText(s.length() + "
", )
jTextField2.setText(s.toUpperCase());
```

(f) The students of “Shiksha Vidyalaya” work for different extracurricular activities like 'Community Outreach Programme', 'Swachh Bharat Abhiyan' and 'Traffic Safety Club'. The programmer at the school has developed a GUI application as shown below:

```
Shiksha Vidyalaya

Enter Roll Number
Enter Name

☐ Community Outreach Programme
☐ Swachh Bharat Abhiyan
☐ Traffic Safety Club

Calculate Total Score    Stop    Clear

Total Score
```

• A student can participate in more than one activities.
• Each student gets 10 points for each activity – namely Community Outreach Programme, Swachh Bharat Abhiyan and Traffic Safety Club.

Help the programmer to write code for the following:

i When 'Calculate Total Score' button is clicked, the points for each activity (that is selected) should be displayed in the text field in front of that activity’s checkbox and the Total Score should be displayed in the appropriate Text field.

ii When Clear button is clicked, all the Textfields and Checkboxes should be cleared.

iii When Stop button is clicked, the application should close.

5. Distinguish between Single Row and Aggregate functions of MySQL. Write one example of each.
(b) Consider the following table named “SOFTDRINK”. Write commands of SQL for (i) to (iv) and output for (v) to (vii).

Table : SOFTDRINK

<table>
<thead>
<tr>
<th>DRINKCODE</th>
<th>DNAME</th>
<th>PRICE</th>
<th>CALORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Lime and Lemon</td>
<td>20.00</td>
<td>120</td>
</tr>
<tr>
<td>102</td>
<td>Apple Drink</td>
<td>18.00</td>
<td>120</td>
</tr>
<tr>
<td>103</td>
<td>Nature Nectar</td>
<td>15.00</td>
<td>115</td>
</tr>
<tr>
<td>104</td>
<td>Green Mango</td>
<td>15.00</td>
<td>140</td>
</tr>
<tr>
<td>105</td>
<td>Aam Panna</td>
<td>20.00</td>
<td>135</td>
</tr>
<tr>
<td>106</td>
<td>Mango Juice Bahaar</td>
<td>12.00</td>
<td>150</td>
</tr>
</tbody>
</table>

i. To display names and drink codes of those drinks that have more than 120 calories.

ii. To display drink codes, names and calories of all drinks, in descending order of calories.

iii. To display names and price of drinks that have price in the range 12 to 18 (both 12 and 18 included).

iv. Increase the price of all drinks in the given table by 10%.

v. SELECT COUNT(DISTINCT(PRICE)) FROM SOFTDRINK;

vi. SELECT MAX (CALORIES) FROM SOFTDRINK;

vii. SELECT DNAME FROM SOFTDRINK WHERE DNAME LIKE “%Mango%”;  

(c) What is the degree and cardinality of ‘SOFTDRINK’ TABLE?

6. Write MySQL command to create the Table ‘LIBRARY’ with given constraints.

(a) Table : LIBRARY

<table>
<thead>
<tr>
<th>COLUMN_NAME</th>
<th>DATATYPE (SIZE)</th>
<th>CONSTRAINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BookId</td>
<td>Int(10)</td>
<td>Primary Key</td>
</tr>
<tr>
<td>BookName</td>
<td>Varchar(40)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Type</td>
<td>Char(4)</td>
<td></td>
</tr>
<tr>
<td>Author</td>
<td>Varchar(40)</td>
<td></td>
</tr>
<tr>
<td>No_Copies</td>
<td>Int(6)</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>Decimal(8,2)</td>
<td></td>
</tr>
</tbody>
</table>

(b) In a Database Company, there are two tables given below:

Table : SALES

<table>
<thead>
<tr>
<th>SALESMANID</th>
<th>NAME</th>
<th>SALES</th>
<th>LOCATIONID</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>ANITA SINGH ARORA</td>
<td>250000</td>
<td>102</td>
</tr>
<tr>
<td>S2</td>
<td>Y.P. SINGH</td>
<td>1300000</td>
<td>101</td>
</tr>
<tr>
<td>S3</td>
<td>TINA JAISWAL</td>
<td>1400000</td>
<td>103</td>
</tr>
<tr>
<td>S4</td>
<td>GURDEEP SINGH</td>
<td>1250000</td>
<td>102</td>
</tr>
<tr>
<td>S5</td>
<td>SIMI FAIZAL</td>
<td>1450000</td>
<td>103</td>
</tr>
</tbody>
</table>

Table : LOCATION

<table>
<thead>
<tr>
<th>LOCATIONID</th>
<th>LOCATIONNAME</th>
</tr>
</thead>
</table>
Write SQL queries for the following:

i. To display SalesmanID, names of salesmen, LocationID with corresponding location names.

ii. To display names of salesmen, sales and corresponding location names who have achieved sales more than 1300000.

iii. To display names of those salesmen who have ‘SINGH’ in their names.

iv. Identify Primary key in the table SALES. Give reason for your choice.

v. Write SQL command to change the LocationID to 104 of the Salesman with ID as S3 in the table ‘SALES’.

7. (a) How does e-learning allow students to study at their own pace?
   (b) How does e-governance empower citizens? Write one point.
   (c) Sabeena is creating a form for the hotel where she works. Help her to choose most appropriate controls from ListBox, ComboBox, TextField, TextArea, RadioButton, Checkbox, Label, and Command Button for the following entries:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To input name</td>
</tr>
<tr>
<td>2</td>
<td>To allow enter gender out of M or F</td>
</tr>
<tr>
<td>3</td>
<td>To allow selecting type of room out of Deluxe, SemiDeluxe, General</td>
</tr>
<tr>
<td>4</td>
<td>To allow entering preferences of guest in the form of a paragraph</td>
</tr>
</tbody>
</table>
1. (a) Two doctors have connected their mobile phones to transfer a picture file of a person suffering from a skin disease. What type of network is formed? Which communication media out of Coaxial cable, Optical fiber, Bluetooth, Satellite link should be used to transfer the file?

(b) State reason why Star topology requires more cable length than Bus topology.

(c) “Open Source Software developers work for the good of community”. Is this statement true? Give reason.

(d) What happens during ‘Domain Name Resolution’?

(e) How is ‘Denial of service’ attack, a threat to Network security?

2. (a) Identify the odd one out of the following statements. State reason for your choice.

(i) switch
(ii) do while
(iii) while
(iv) for

(b) What is the difference between setVisible() and setEnabled() methods?

(c) What is the difference between the following statements (i) and (ii)?

(i) a=5;
(ii) if(a = = 5)
   x=3;

(d) Write the output in jTextField1 if depcode is 3.

switch (depcode)
{ case 1 : allowance=4000;
  break;
  case 2 : allowance=3200;
  break;
  default : allowance=1000;
}
jTextField1.setText( " " +allowance);

(e) Sandhya is creating a webpage. She is entering HTML code on her computer. In between, she keeps pressing ‘Refresh’ / ‘Reload’ button on her browser. What is the purpose?

(f) What does ‘XML’ stand for? How is the purpose of HTML different from XML?

(g) Write Java code (statements) to declare Y as integer variable. Then, assign the value 30 to a variable Y. Increase the value of Y by 5 and store the increased value in Z.

3. (a) What is MySQL?

(b) Charvi is inserting “Sharma” in the “LastName” column of the “Emp” table but an error is being displayed. Write the correct SQL statement.

   INSERT INTO Emp(‘Sharma’)VALUES(LastName);

(c) Kunal created the following table with the name ‘Friends’:

<table>
<thead>
<tr>
<th>FriendCode</th>
<th>Name</th>
<th>Hobbies</th>
</tr>
</thead>
<tbody>
<tr>
<td>F101</td>
<td>Bijoy</td>
<td>Swimming</td>
</tr>
</tbody>
</table>
Now, Kunal wants to delete the ‘Hobbies’ column. Write the MySQL statement.

Mrs. Sen entered the following SQL statement to display all Salespersons of the cities “Chennai” and ‘Mumbai’ from the table ‘Sales’.

**Table : Sales**

<table>
<thead>
<tr>
<th>Scode</th>
<th>Name</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Aakriti</td>
<td>Mumbai</td>
</tr>
<tr>
<td>102</td>
<td>Aman</td>
<td>Chennai</td>
</tr>
<tr>
<td>103</td>
<td>Banit</td>
<td>Delhi</td>
</tr>
<tr>
<td>104</td>
<td>Fauzia</td>
<td>Mumbai</td>
</tr>
</tbody>
</table>

SELECT * FROM Sales WHERE City='Chennai' AND City='Mumbai';

Rewrite the correct statement, if wrong or write statement is correct.

i Name two Aggregate (Group) functions of SQL.

ii Consider the table:

**Table : Company**

<table>
<thead>
<tr>
<th>SID</th>
<th>SALES</th>
</tr>
</thead>
<tbody>
<tr>
<td>S101</td>
<td>20000</td>
</tr>
<tr>
<td>S103</td>
<td>NULL</td>
</tr>
<tr>
<td>S104</td>
<td>10000</td>
</tr>
<tr>
<td>S105</td>
<td>15000</td>
</tr>
</tbody>
</table>

What output will be displayed by the following SQL statement?

SELECT AVG(SALES) FROM Company;

Given below is the ‘Stu’ table:

<table>
<thead>
<tr>
<th>RNO</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amit</td>
</tr>
<tr>
<td>2</td>
<td>Bhishm</td>
</tr>
</tbody>
</table>

The following statements are entered:

SET AUTOCOMMIT = 0;
INSERT INTO Stu VALUES(5, 'Rahul');
COMMIT;
UPDATE Stu set name='Rahuliya' where Rno= 5;
SAVEPOINT A;
INSERT INTO Stu VALUES(6, 'Cristina');
SAVEPOINT B;
INSERT INTO Stu VALUES(7, 'Fauzia');
SAVEPOINT C;
ROLLBACK TO B;

Now what will be the output of the following statement?
SELECT * FROM Stu;

Consider the table ‘Hotel’ given below:
Table: Hotel

<table>
<thead>
<tr>
<th>EMPID</th>
<th>Category</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>E101</td>
<td>MANAGER</td>
<td>60000</td>
</tr>
<tr>
<td>E102</td>
<td>EXECUTIVE</td>
<td>65000</td>
</tr>
<tr>
<td>E103</td>
<td>CLERK</td>
<td>40000</td>
</tr>
<tr>
<td>E104</td>
<td>MANAGER</td>
<td>62000</td>
</tr>
<tr>
<td>E105</td>
<td>EXECUTIVE</td>
<td>50000</td>
</tr>
<tr>
<td>E106</td>
<td>CLERK</td>
<td>35000</td>
</tr>
</tbody>
</table>

Mr. Vinay wanted to display average salary of each category. He entered the following SQL statement. Identify error(s) and rewrite the correct SQL statement.

```sql
SELECT Category, Salary FROM Hotel GROUP BY Category;
```

4. (a) When is if-else if statement preferred over switch statement? 1
(b) What is the purpose of break statement? 1
(c) What will be displayed in jTextField1 and jTextField2 after the following code is executed:
   ```java
   int t;
   int s;
   s = 2;
   t = (4*s++)/2;
   jTextField1.setText(""+t);
   jTextField2.setText(""+s);
   ```
(d) Write the contents of jTextField1, jTextField2, jTextField3 and jTextField4 when the following statements are executed:
   ```java
   String x;
   String str = "Java";
   x = str.concat("study");
   double a = 7.8765;
   jTextField1.setText(x.length()+" ");
   jTextField2.setText(x.toUpperCase());
   jTextField3.setText(x.substring(2,5));
   jTextField4.setText(Math.round(7.8765)+" ");
   ```
(e) Rewrite the following code using WHILE loop:
   ```java
   int sum = 0;
   for(int i=9; i>=1; i--)
   {
     if(i%3==0)
       sum=sum+i;
     else
       sum=sum−i;
   }
   ```
(f) The following code has error(s). Rewrite the correct code underlining all the corrections made:

98
int x=10;
int y=50;
do;
{
x+5=x;
y-5=y;
while(x<=y);
}

Vijay has developed software for planning personal budget. A screenshot of the same is shown below:
Total Income, Expenses of Bills (Water/Electricity), Groceries, Entertainment, other expenses and whether money is to be sent to Hostel are entered by the user. Sum of Expenses, Grand Total of Expenses and Savings are calculated and displayed by the program. Write the code to do the following:

i When ‘CALCULATE’ button is clicked, Sum of Expenses, Total Expenses and Savings should be calculated and displayed in appropriate text fields.
- Sum of Expenses is calculated by adding expenses on Bills (Water/Electricity), Groceries, entertainment and other expenses.
- Grand Total of Expenses is calculated according to the following criteria:
  If ‘Money to be sent to Hostel’ checkbox is selected, 3000.00 is to be added to the sum of expenses. If it is not selected, Grand Total of Expenses is the same as sum of expenses.
- Savings = Total Income – Grand Total of Expenses.

ii When ‘CLEAR’ button is clicked, all text fields and checkbox should be cleared.

iii When ‘CLOSE’ button is clicked, the application should close.

5. (a) Anita has created the following table with the name ‘Order’.

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>OrderId</td>
<td>Primary Key</td>
</tr>
<tr>
<td>OrderDate</td>
<td>Not Null</td>
</tr>
</tbody>
</table>
One of the rows inserted is as follows:

<table>
<thead>
<tr>
<th>OrderId</th>
<th>OrderDate</th>
<th>OrderAmount</th>
<th>StoreId</th>
</tr>
</thead>
<tbody>
<tr>
<td>O101</td>
<td>2015-02-12</td>
<td>34000</td>
<td>S104</td>
</tr>
</tbody>
</table>

i. What is the data type of columns OrderId and OrderDate in the table Order?

ii. Anita is now trying to insert the following row:

<table>
<thead>
<tr>
<th>OrderId</th>
<th>OrderDate</th>
<th>OrderAmount</th>
<th>StoreId</th>
</tr>
</thead>
<tbody>
<tr>
<td>O102</td>
<td>NULL</td>
<td>59000</td>
<td>S105</td>
</tr>
</tbody>
</table>

Will she be able to successfully insert it? Give reason.

(b) Write the output of the following SQL queries:

i. SELECT MID('BoardExamination',2,4);

ii. SELECT ROUND(67.246,2);

iii. SELECT INSTR('INFORMATION FORM','FOR');

iv. SELECT DAYOFYEAR('2015-01-10');

(c) Write commands in SQL for (i) to (iv) and output for (v) and (vi).

### Table: Store

<table>
<thead>
<tr>
<th>StoreId</th>
<th>Name</th>
<th>Location</th>
<th>City</th>
<th>NoOfEmployees</th>
<th>DateOpened</th>
<th>SalesAmount</th>
</tr>
</thead>
<tbody>
<tr>
<td>S101</td>
<td>Planetfashion</td>
<td>KarolBagh</td>
<td>Delhi</td>
<td>7</td>
<td>2015-10-16</td>
<td>300000</td>
</tr>
<tr>
<td>S102</td>
<td>Trends</td>
<td>Nehru Nagar</td>
<td>Mumbai</td>
<td>11</td>
<td>2015-08-09</td>
<td>400000</td>
</tr>
<tr>
<td>S103</td>
<td>Vogue</td>
<td>Vikas Vihar</td>
<td>Delhi</td>
<td>10</td>
<td>2015-06-27</td>
<td>200000</td>
</tr>
<tr>
<td>S104</td>
<td>Superfashion</td>
<td>Defence Colony</td>
<td>Delhi</td>
<td>8</td>
<td>2015-02-18</td>
<td>450000</td>
</tr>
<tr>
<td>S105</td>
<td>Rage</td>
<td>Bandra</td>
<td>Mumbai</td>
<td>5</td>
<td>2015-09-22</td>
<td>600000</td>
</tr>
</tbody>
</table>

i. To display name, location, city, SalesAmount of stores in descending order of SalesAmount.

ii. To display names of stores along with SalesAmount of those stores that have ‘fashion’ anywhere in their store names.

iii. To display Stores names, Location and Date Opened of stores that were opened before 1st March, 2015.

iv. To display total SalesAmount of each city along with city name.

v. SELECT distinct city FROM store;

vi. SELECT Name, length (name), left (name, 3) FROM Store where NoOfEmployees<3;

6. (a) Write SQL query to create a table ‘Event’ with the following structure:

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>EventId</td>
<td>Varchar(5)</td>
<td>PRIMARY KEY</td>
</tr>
<tr>
<td>EventName</td>
<td>Varchar(30)</td>
<td>NOT NULL</td>
</tr>
<tr>
<td>Location</td>
<td>Varchar(50)</td>
<td></td>
</tr>
<tr>
<td>ClientID</td>
<td>Integer</td>
<td></td>
</tr>
</tbody>
</table>
(b) Consider the tables given below:

<table>
<thead>
<tr>
<th>Table: Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>TeacherId</td>
</tr>
<tr>
<td>T101</td>
</tr>
<tr>
<td>T102</td>
</tr>
<tr>
<td>T103</td>
</tr>
<tr>
<td>T104</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table: Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>CourseId</td>
</tr>
<tr>
<td>C101</td>
</tr>
<tr>
<td>C103</td>
</tr>
<tr>
<td>C104</td>
</tr>
<tr>
<td>C105</td>
</tr>
</tbody>
</table>

1. Which column is used to relate the two tables?  
2. Is it possible to have a primary key and a foreign key both in one table? Justify your answer with the help of table given above.

(c) With reference to the above given tables, write commands in SQL for (i) and (ii) and output for (iii):

1. To display CourseId, TeacherId, Name of Teacher, Phone Number of Teachers living in Delhi.
2. To display TeacherID, Names of Teachers, Subjects of all teachers with names of Teachers starting with ‘S’.
3. SELECT CourseId, Subject, TeacherId, Name, PhoneNumber FROM Faculty, Course WHERE Faculty.TeacherId = Course.TeacherId AND Fee>=5000;

(a) “In e-Business, customers should shop only when they trust the e-store provider for payment methods”-Justify the statement.

(b) Which of the following statements is NOT true in e-Governance? Rewrite the statement after correcting it.

1. Online applications and tracking of status of applications should be provided.
2. Citizens should not be required to submit documents in physical form.
3. Online Forms should be made tricky so that only well-educated users can enter data.
4. Government should interact with citizens and enlighten them about different schemes through social media and web based platforms.
Ms. Arora is creating a form for accepting Visa applications. Help her to choose most appropriate controls out of ListBox, ComboBox, TextField, TextArea, RadioButton, CheckBox, Label and CommandButton for the following entries:

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>To enter EMAIL ID</td>
</tr>
<tr>
<td>2.</td>
<td>To choose GENDER</td>
</tr>
<tr>
<td>3.</td>
<td>To enter NATIONALITY from countries given as options.</td>
</tr>
<tr>
<td>4.</td>
<td>To enter REMARKS in the form of a paragraph about the purpose of visit.</td>
</tr>
</tbody>
</table>
Q1

(a) Ms. Pooja is interested in transferring song. Suggest two suitable wireless options she may use for doing the same.

(b) Surjit wants to upload/download files from/to a remote internet server. Write the name of the relevant communication protocol, which will let him do the same.

(c) It is technology on computer networks whose purpose is to prevent unwanted networking connection according to some filtering/blocking rules. What is it?

(d) Which of the following are open standards?
1) .ogg  (2) .doc  (3) .ttf  (4) .jpeg

(e) What is DoS (Denial of Service)? Explain briefly.

(f) Differentiate between Dedicated and Non-dedicated server.

(g) List out any four advantages of Open Standards.

Q2

(a) Which property of jLabel swing control is used to specify the image during design time?

(b) Which statement is used to terminate the loop before its maturity?

(c) Which HTML tag and corresponding attributes are used to establish default font size for entire page?

(d) What is the difference between <UL> and <OL> tag?

Write the output of:

```java
int a=1,b=2;
if( ++ b <5 )
{
  a*=b;
}
System.out.println("a=\"a+\"b=\"+b);"

(e) Write a program in java that reads 2 integers and displays their sum in JOptionPane.

(f) Write 4 features of XML.

Q3

(a) Mr. Ganesh wants to give moderation of 5 marks to all students those have below 30 marks. Name the command for this purpose.

Correct the following SQL command

```sql
SELECT stdname FROM STUDENT
WHERE stdname=NULL;
```

(b) Which commands in MySql is used to make any Database current Database and see the list of tables in that data base?
(d) A table ACCOUNT has 5 columns and 3 rows. 3 more rows are inserting into the table and 2 columns get deleted. What is the degree and cardinality of the table?

ItemName, Price, Qty field of ITEM table are given below.

(e)

<table>
<thead>
<tr>
<th>ItemName</th>
<th>Price</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bat</td>
<td>500</td>
<td>5</td>
</tr>
<tr>
<td>Chair</td>
<td>2000</td>
<td>10</td>
</tr>
<tr>
<td>Table</td>
<td>5000</td>
<td>6</td>
</tr>
</tbody>
</table>

Based on the given information find the output of the following Queries

i. Select count (*) from ITEM where price >=2000.

ii. Select avg(price * Qty) from ITEM

(f) Differentiate between Primary key and Unique key?

(g) What are important transaction properties?

Q4

(a) ABC Sales Enterprise wants developed software to make the bill for their customer. GUI for the application given below.

Write the java statement for the following requirements

i. Write the statement to make the text fields (txtDiscount) and txtNet uneditable

ii. Calculate discount and net amount for calculate button based on the following criteria.
### Table

<table>
<thead>
<tr>
<th>Sales Amount</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;=5000</td>
<td>5</td>
</tr>
<tr>
<td>&gt;=3000</td>
<td>3</td>
</tr>
<tr>
<td>&gt;=1000</td>
<td>1</td>
</tr>
</tbody>
</table>

**iii** Write the statement to clear all text fields when clicking the clear button

**iv** Write the java statement for the exit button to close the application.

**Predict the output of the following.**

(b) int val1=5, val2=10;
for (int i=1; i<=2; i++)
{
    System.out.println("" + val1++ + "," + --val2);
}

**What will be the content of jTextField1 after executing the following statement?**

jTextField1.setText("Informatics",substring(2,5));

**Rewrite the following program code using if else if statement**

switch(ch)
{
    case 'a' : System.out.println("It is a.");
        break;
    case 'b' : System.out.println("It is b.");
        break;
    case 'c' : System.out.println("It is c.");
        break;
}

**Find the error in the following code and correct it. Underline the correction.**

do
{
    system.out.println(i++);
} while (i<10)

**Rewrite the following program code using do while loop**

int i=1, sum=0;
while(i<15)
{
    sum+=i;
    i+=2;
}

**What will be the contents of JTextField1 and JTextField2 after executing the following code**

jTextField1.setText(Math.round(2.5)+"");
jTextField2.setText("Micro".concat("System"));

Q5
(a) Explain the purpose of DDL and DML statement. Give two examples of each.

(b) Write the output of the following SQL queries.
   i) SELECT INSTR('CORPORATE FLOOR','OR');
   ii) SELECT MID('Welcome',3,4);
   iii) SELECT SIGN(-15);
   iv) SELECT ROUND(15.193,1);

(c) Write the SQL command for the following on the basis of given table

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Department</th>
<th>Dateofadm</th>
<th>Salary</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jugal</td>
<td>34</td>
<td>Computer</td>
<td>10/01/97</td>
<td>12000</td>
<td>M</td>
</tr>
<tr>
<td>2</td>
<td>Sharmila</td>
<td>31</td>
<td>History</td>
<td>24/03/98</td>
<td>20000</td>
<td>F</td>
</tr>
<tr>
<td>3</td>
<td>Sandeep</td>
<td>32</td>
<td>Maths</td>
<td>12/12/96</td>
<td>30000</td>
<td>M</td>
</tr>
<tr>
<td>4</td>
<td>Sangeeta</td>
<td>35</td>
<td>History</td>
<td>01/07/99</td>
<td>40000</td>
<td>F</td>
</tr>
<tr>
<td>5</td>
<td>Rakesh</td>
<td>42</td>
<td>Maths</td>
<td>05/09/97</td>
<td>25000</td>
<td>M</td>
</tr>
<tr>
<td>6</td>
<td>Shyam</td>
<td>50</td>
<td>History</td>
<td>37/06/98</td>
<td>30000</td>
<td>M</td>
</tr>
<tr>
<td>7</td>
<td>Shivam</td>
<td>44</td>
<td>Computer</td>
<td>25/02/97</td>
<td>21000</td>
<td>M</td>
</tr>
<tr>
<td>8</td>
<td>Shalakha</td>
<td>33</td>
<td>Maths</td>
<td>31/07/97</td>
<td>20000</td>
<td>F</td>
</tr>
</tbody>
</table>

i) To show all information about the teachers of History department.
ii) To list the names of female teachers who are in Maths department.
iii) To list names of all teachers with their date of admission in ascending order.
iv) To insert a new row in the TEACHER table with the following data:
   17,'Harish', 26,'History', '13/05/95', 23000,'M'
v) Give the output of the following SQL statements.
   (a) Select COUNT(DISTINCT department) from TEACHER;
   (b) Select MAX(Age) from TEACHER where SEX='F';
   (c)Select AVG(Salary) from TEACHER where SEX='M';
   (d) Select SUM(Salary) from TEACHER where Date<{12/07/96};

Q6
(a) Write SQL command to create the following table structure.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCode</td>
<td>Integer</td>
<td>PRIMARY KEY</td>
</tr>
</tbody>
</table>
Consider the following tables ‘Company’ and ‘Model’ shown below.

**Table : Company**

<table>
<thead>
<tr>
<th>Compid</th>
<th>CompName</th>
<th>CompHO</th>
<th>CompPerson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Titan</td>
<td>Okhla</td>
<td>Arjun k.</td>
</tr>
<tr>
<td>2</td>
<td>Maxima</td>
<td>Shahdara</td>
<td>R.S.Agrawal</td>
</tr>
<tr>
<td>3</td>
<td>Anjata</td>
<td>Najafgarh</td>
<td>Dhiraj Goyel</td>
</tr>
</tbody>
</table>

**Table : Model**

<table>
<thead>
<tr>
<th>ModelID</th>
<th>CompID</th>
<th>ModelCost</th>
</tr>
</thead>
<tbody>
<tr>
<td>T020</td>
<td>1</td>
<td>2000</td>
</tr>
<tr>
<td>M032</td>
<td>4</td>
<td>2500</td>
</tr>
<tr>
<td>M039</td>
<td>2</td>
<td>7000</td>
</tr>
<tr>
<td>A167</td>
<td>3</td>
<td>800</td>
</tr>
<tr>
<td>T024</td>
<td>1</td>
<td>1200</td>
</tr>
</tbody>
</table>

(i) Identify foreign key in Model table and primary key in Company Table

(ii) Check every value in CompID column of both tables. Do you find any discrepancy?

(c) Consider the tables Doctors and Patient given below:

**Table : Doctors**

<table>
<thead>
<tr>
<th>DocID</th>
<th>DocName</th>
<th>Department</th>
<th>OPD_days</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>K.K.Mathur</td>
<td>ENT</td>
<td>TTS</td>
</tr>
<tr>
<td>102</td>
<td>Ashish Sharma</td>
<td>Paed</td>
<td>MWF</td>
</tr>
<tr>
<td>201</td>
<td>Vivek Khurana</td>
<td>Ortho</td>
<td>MWF</td>
</tr>
</tbody>
</table>

**Table : Patients**

<table>
<thead>
<tr>
<th>PatNo</th>
<th>PatName</th>
<th>Department</th>
<th>DocID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Akash</td>
<td>ENT</td>
<td>101</td>
</tr>
<tr>
<td>2</td>
<td>Sameer</td>
<td>Ortho</td>
<td>201</td>
</tr>
<tr>
<td>3</td>
<td>Rahul</td>
<td>ENT</td>
<td>101</td>
</tr>
<tr>
<td>4</td>
<td>Neha</td>
<td>Paed</td>
<td>102</td>
</tr>
<tr>
<td>5</td>
<td>Manoj</td>
<td>Ortho</td>
<td>201</td>
</tr>
</tbody>
</table>

With reference to these two tables, write a SQL query for (i) and (ii) and output for (iii).

Display Patient Name, Patient No and corresponding doctor name for each patient.
li Display the list of all patients who’s OPD_days are ‘TTS’.

iii SELECT OPD_days,count(*) FROM Doctors,Patients
WHERE Doctors.Department=Patients.Department GROUP BY OPD_days;

Q7
(a) What is Back end? Explain its functions.
(b) How has our society benefited from E-commerce? Mention any two points?
(c) What controls would you suggest for following types of inputs?
   i To display some information
   ii Enter password
   iii To choose more than one subject from a set of subjects
   iv To enter multiline text
MARKING SCHEME

1.

a) Bluetooth and Infrared. - ½ mark each
b) FTP (File Transfer Protocol) -1 Mark for correct answer
c) Firewall -1 Mark for correct answer
d) Open standard formats are : (1) .OGG (2) JPEG -1 mark
e) DoS (Denial of Service) : Types of attacks that prevent the legitimate users of the System from accessing or using the resources, information or capabilities of the system. -1 mark
f) Non-Dedicated Server: On small networks,a workstation which serve as a server as well as normal workstation is known as non-dedicated server. It is not completely dedicated for serving . Dedicated Server: On big networks, a server reserved only for server’s different activities is known as dedicated server. -1 mark each
g) Advantages of Open Standards: - ½ mark each
   (1) Making the data accessible to all.
   (2) Application and Platform independence
   (3) Diversity and interoperatibility in the industry
   (4) Offers diverse choices for users.

2.

a) Which property of jLabel box is used to specify the image during design time?
   Icon (1 mark for correct answer)
b) Which statement is used to terminate the loop before its maturity? break; (1 mark for any of the correct answer)
c) Which HTML tag and corresponding attributes are used to establish default font size for entire page?
   <BASEFONT> tag and SIZE attribute (1/2 mark for each correct answer)
d) What is the difference between <UL> and <OL> tag?
   <UL> tag is used for unordered list of items and <OL> tag is used for ordered list of items.
   (1 mark for correct difference)
e) What will be the value of a and b after execution of the following code:
   int a=1,b=2;
   if( + +b <5){
      a* = b;
   }
   Ans:- a= 12, b=4
   (2 mark for each correct value)
f) import javax.swing.JOptionPane;
   int n1=Integer.parseInt(JOptionPane.showInputDialog("enter first number");
   int n2=Integer.parseInt(JOptionPane.showInputDialog("enter second number");
int sum=n1+n2;
JOptionPane.showMessageDialog(null,"the sum of two nos. is"+sum);
½ mark for importing library and 1 mark for taking corresponding Input and adding them 
and ½ mark for correct display

(g) Write some features of XML.
- XML is designed to carry data, Not to display data.
- XML is self-descriptive
- XML is platform independent.
- XML can be used to Create new Languages

½ mark for each point (any 4)

3 a) UPDATE(1 Mark for correct answer)
b) SELECT stdname FROM STUDENT WHERE stdname IS NULL; (1 Mark )
c) USE<database name> and Show tables command
d) Degree: 3, Cardinality: 6 (1/2 for degree and ½ for cardinality).
e) a) 1  b) 17500
f) Only one Primary Key in a table. More than one Unique key can be in a table. Primary
   Key cannot accept NULL value, Unique key can accept max. one NULL value.
   (1 mark for each difference)
g) ½ marks for each ACID property.(2marks)

4. i) txtDiscount.setEditable(False);
   txtNet.setEditable(False);
   ii) int sales=Integer.parseInt(txtSales.getText());
   if (sales>=5000)
         dis=.05;
   else
       if (sales>=3000)
             dis=.03;
       else
           if (sales>=1000)
                 dis=.01;
           int net=sales-(dis*sales);
           txtNet.setText(""+net);
   iii)txtsales.setText(" ");
       txtDiscount.setText(" ");
       txtNet.setText(" ");
   a) Predict the output of the following.
   int val1=5, val2= 10;
   for (int i=1; i<=2;i++)
     { System.out.println(""+-val2 +"," + val1++);}
   b) 9,5
      8,6
   ½ mark each line of correct output.
   c) What will be the content of jTextField1 after executing the following
statement? jTextField1.setText("Informatics.substring(2,5));
Output: forma 1 mark for correct output.

(d) Rewrite the following program code using if else if
if (ch=='a')
System.out.println("It is a.");
else if (ch=='b')
System.out.println("It is b.");
else if (ch=='c')
System.out.println("It is c."); 2 mark for correct conversion

(e) Find the error in the following code and correct it. Underline the
    correction.
    do {
        System.out.println
        (i++); }
    while (i<10)
    ▪ Initial value of i missing
    ▪ System.out.println(i++);
    ▪ while (i<=10)
    ▪ semicolon missing ½ mark for each error

(f) Rewrite the following program code using do while loop
int i=1, sum=0;
while(i<15)
{ sum+=i;
i+=2;
}
Ans: int i=1, sum=0;
do
{ sum+=i;
i+=2;
}while(i<5);

(g) What will be the contents of JTextField1 and JTextField2 after executing the
    following code
    jTextField1.setText(Math.round(2.5)+"");
jTextField2.setText("Micro".concat("System"));
    Output: 3, MicroSystem
    1 mark for each correct answer.

5

a) DDL –Data Definition Language , Create table, Alter table etc ( ( 1 Mark) DML –Data Manipulation Language, Delete, Insert, Update ( 1 Mark)
b) (i) 2
   (ii) lcom
   (iii) -1
   (iv) 15.2
(½ Mark for each correct answer)

c) i) Select * from TEACHER where Department ="History";
(ii) Select Name from TEACHER where Sex='F and department ="Maths";
(iii) Select name from TEACHER ORDER BY DateOfAdm ASC;
(iv) Insert into TEACHER values(17,'Harish',26,'History','13/05/95',23000,'M')
( 1 Mark for each correct statement )
v) a) 3
b) 35
c) 23600
d) NULL or no output
( ½ Mark for each correct answer)

Que :6
a) CREATE TABLE COACH
   ( PCode integer primary key, Name varchar(20) NOT NULL, ACode
   integer , Foreign Key(ACode) references Activity(Acode) );
( FOR CORRECT QUERY SYNTAX 1 MARK & CONDITION 1 MARK )
b) (1) ModelId –primary in Model table & CompId –primary in Company table { each correct one ½ mark}
   (2) In CompId column of Model table consists a row value 4 which is not in defined in company table
   (Parent table) ( 1 mark)
c) (1) SELECT PatName, PatNo, DocName FROM DOCTORS, PATIENTS
       WHERE DOCTOR.DOCID=PATIENT.DOCID;
   (2) SELECT * FROM PATIENTS
       WHERE DOCTOR.DOCID=PATIENT.DOCID
       AND OPD_Days='TTS';
   (3) Output :
       OPD_days       Count(*)
       TTS            2
       MWF            3

7. a) What is Back end? Explain its functions
Software used for storing huge amount of data. It can manipulate the data inside the database in an efficient manner. Ex. MySql
   1 mark for each valid point
b) How has our society benefited from E-Commerce? Mention any two points.
   1 marks each for writing any 2 benefits of E-Commerce.
c) What controls would you suggest for following types of inputs ?
   (i) To display some information - Text Field
   (ii) Enter password - Password field
   (iii)To choose more than one subject from a set of subjects. – List box
   (iv)To enter multiline text –Text Area  1/2 mark each for correct control
PREPARATION FOR EXAMINATION

1. Write down how many exams you have and the days on which you have to sit them. Then organize your study accordingly.

2. Organize your study space and make sure you feel as comfortable and able to focus as possible.

3. Use flowcharts and diagrams and condense your revision notes into one-page diagrams.

4. One of the most effective ways to prepare for exams is to practice on old papers.

5. Explain your answers with peer group and clear your doubts with the help of teachers.

6. Students should let go off the cramming part as it is not a good method of studying. Instead of this, they should make short notes while studying.

7. Studies have shown that for long-term retention of knowledge, taking regular breaks really helps.

8. Plan your exam well in advance and make sure you get everything ready well in advance of the exam - don't leave it to the day before to suddenly realize you don't know the way, or what you're supposed to bring. Check all the rules and requirements, and plan your route and journey time. If possible, do a test run of the trip; if not, write down clear directions.

9. What you eat can really have an impact on energy levels and focus. Keep your body and brain well-fueled by choosing nutritious foods. Drink a lot of water.

10. When students write neatly and present their answer sheet in a proper way, they have more chances of securing high marks.