Prepared by VRKS SASTRY TANIKELLA
CJL in CSE, GJC, KOTHAPETA, E.G.Dt.

IPE MARCH 2023

1227

Total No. of Questions – 18

Total No. of Printed Pages – 2 **Regd. No.** | | | | | | | | | | |

COMPUTER FUNDAMENTALS AND MS – OFFICE
Paper I
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. **What are the different number system ?**
2. **What are the components used in second generation computers?**
3. **Expand GUI, CUI, BIOS, and MS DOS?**
4. **Define an operating system.**
5. **What are the tabs in the Ribbon?**
6. **What are the shortcuts for OPEN and SAVE a file?**
7. **What is Header and Footer?**
8. **What is spread sheet ?**
9. **What are the alignments in MS Excel ?**
10. **What is Template ?**

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. **Write about Generation of computers.**
12. **Write about any six internal commands.**
13. **Write the step wise procedure to create, edit and save word.**
14. **Write about spell checker.**
15. **Write about Mail Merge.**
16. **Write and explain any six functions of Excel.**
17. **Write about charts of MS Excel.**
18. **Write about formatting a text in PowerPoint.**

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PROGRAMMING IN 'C'
Paper I
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. **What is Flowchart?**
2. **Write an algorithm to print biggest of given two numbers.**
3. **Who invented 'C' language.**
4. **What is a variable ?**
5. **What is a constant ?**
6. **What is an array ?**
7. **List the types of arrays.**
8. **What is a procedure ?**
9. **What are the advantages of function ?**
10. **What is structure ?**

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. **Draw a flowchart to find the biggest of given three number**
12. **What are the data types in 'C' ? Explain them.**
13. **What are the conditional statements in 'C'? Explain them.**
14. **Write a 'C' program to find sum of 1 to n numbers using while loop.**
15. **Write a 'C' program to read and print an array of elements.**
16. **Write the syntax of one, two and three dimensional array.**
17. **Write a 'C' program to find factorial of a given number.**
18. **Explain the array of structures.**

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ACCOUNTANCY AND TALLY
Paper I
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. **Define capital.**
2. **What is an Account?**
3. **Define Journal.**
4. **What is Ledger?**
5. **Define Invoice.**
6. **What is Cash Book?**
7. **Define Pass Book.**
8. **Define Trial Balance.**
9. **Define Balance Sheet.**
10. **What are the function keys used in tally?**

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. **Explain different Accounting concepts in detail.**
12. **Explain different types of Accounts with their rules.**
13. **Explain different types of Subsidiary Books in detail.**
14. **Prepare Single column cash book in the books of SMR Food Plaza.**

2022 December

1.	**Started business with cash**	**10,000**
2.	**Machinery purchased**	**2,000**
3.	**Goods sold for cash**	**500**
4.	**Paid to Karthik**	**1,500**
6.	**Stationary**	**500**
10.	**Sales**	**1,000**
12.	**Paid to Ravi**	**2,000**
14.	**Received from Mahalakshmi**	**1,200**
16.	**Sold goods for cash**	**2,000**
22.	**Wages**	**500**
25.	**Charges**	**400**
30.	**Salaries paid**	**1,000**

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15. Explain the importance of Bank Reconciliation statement.

16. Prepare the Trial Balance from the following balances.

	Rs.
Cash in hand	**5,000**
Debtors	**10,000**
Creditors	**6,000**
Purchases	**15,000**
Sales	**20,000**
Capital	**30,000**
Buildings	**18,000**
Salaries	**2,000**
Furniture	**4,000**
Opening Stock	**2,000**

17. Write the procedure to prepare final account.

18. Write the procedure to create company in tally.

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2227

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OOPS AND JAVA
Paper II
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. **What is an object?**
2. **Define variable.**
3. **Write the syntax of if… else statement.**
4. **Define an array.**
5. **What is nested loop?**
6. **What are the advantages of using methods?**
7. **Define package.**
8. **Write the types of errors.**
9. **What is multitasking?**
10. **What is an applet?**

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. **Explain the features of Java.**
12. **Explain the operators in Java.**
13. **Explain the looping statements in Java.**
14. **Write a Java program to sort 'N' numbers in an Array.**
15. **Write and explain types of inheritances.**
16. **Explain the types of packages.**
17. **How to handle the exception in Java?**
18. **Explain creating a thread with example.**

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RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)
Paper II
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. **What is database.**
2. **Define schema and subschma.**
3. **What is domain?**
4. **What are the symbols used in ER diagram?**
5. **What is tuple?**
6. **What is primary key?**
7. **What are the different data types in SQL?**
8. **Write different DDL commands.**
9. **What is system?**
10. **What are the fact finding techniques?**

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. **Explain about different data models.**
12. **What are the functions of DBA?**
13. **Explain the mapping constraints with neat diagram.**
14. **Draw an ER diagram by showing the relationship between a student and bank.**
15. **Explain about relational data model.**
16. **Write any Six Codd rules.**
17. **Explain any three DML commands with example.**
18. **Explain different stages of Software Development Life Cycle in detail (SDLC).**

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DATA COMMUNICATION AND COMPUTER NETWORKS
Paper II
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. **Define Bandwidth.**
2. **What is a Network ?**
3. **Expand BBN, GAN.**
4. **What are LAN components?**
5. **Define protocol.**
6. **What are the layers of TCP / IP model ?**
7. **What is a browser ? List types of browsers.**
8. **What is an E – mail ?**
9. **What is HDD ?**
10. **What is a trouble shooting?**

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. **Explain about various communication channels.**
12. **Explain about network topologies.**
13. **Explain different types of computer networks.**
14. **Explain function of modem with a neat diagram.**
15. **What are the layers in OSI models? Explain briefly.**
16. **What is an internet? Explain advantages and disadvantages of internet.**
17. **How do you send and receive an E – mail with attachment?**
18. **Explain the concept of various trouble shoots in printer.**

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Paper I
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. What are the different number system ?

A)

Number System	Base	Numbers used
Binary Number System	2	0 and 1
Octal Number System	8	0 to 7
Decimal Number System	10	0 to 9
Hexa Decimal Number System	16	0 to 9, A,B,C,D,E,F

2. What are the components used in second generation computers?

A) Transistors are used as components in second generation computers.

3. Expand GUI, CUI, BIOS, and MS DOS?

A) **G.U.I. :** Graphical User Interface.
C.U.I. : Character User Interface. (OR) Command / Commandline User Interface
BIOS : Basic input/output System(BIOS) Program.
MS DOS: Micro Soft Disk Operating System.

4. Define an operating system.

A) **Operating System:** Operating System is a system software. The operating system is a collection of programs that control the operation of all hardware and other resources in the computer system. It works like a mediator between computer and the hardware.

Ex: MS – DOS, WINDOWS, UNIX, LINUX

5. What are the tabs in the Ribbon?

A) **Ribbon:** The ribbon is the panel at the top portion of the document It has seven tabs:

MSWORD: Ribbon has seven tabs Home, Insert, Page Layout, References, Mailings, Review, and View that contain many new and existing features of Word

(OR)

MS- Excel: Home, Insert, Page Layout, Formulas, Data, Review, and View.

(OR)

MS- POWER POINT: Home, Insert, Design, Animations, Slide Show, Review and View.

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6. What are the shortcuts for OPEN and SAVE a file?

A) **Open**: Ctrl+ O
Save: Ctrl+ S

7. What is Header and Footer?

A) Header & Footer: Header and Footer information such as page numbers, date, or title, first, decide if you want the information in the header (at the top of the page) or in the Footer (at the bottom of the page);

Note: Header will be displayed on the top of the page.
Footer will be displayed at the Bottom of the page.

8. What is spread sheet ?

A) Spread Sheet: A spreadsheet is an electronic document that stores various types of data. There are vertical columns and horizontal rows.

9. What are the alignments in MS Excel ?

A) Alignment: Allows for the horizontal and vertical alignment of text, wrap text, shrink text, merge cells and the direction of the text.

10. What is Template ?

A) Template: template is a pattern or blueprint or model or "Starter" document contain starting content or boilerplate text.

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. Write about Generation of computers.

A) The Computer Generations :

1. First Generation Computers (1950's) :

These computers which used vacuum tubes (valves) as major electronic component . The advantage of vacuum tubes technology is that it made the advent of Electronic digital computer. Vacuum tubes were only electronic devices available during those days which made computing
possible.

2. Second Generation Computers (1960's) :

Around 1955 a device called Transistor replaced the bulky electric tubes in the first generation computer. Transistors are smaller than electric tubes and have higher operating speed. They have no filament and require no heating. Manufacturing cost was also very low. Thus the size of the computer got reduced considerably.

3. Third Generation Computers (1970's) :

The third generation computers were introduced in 1964. They used Integrated Circuits (ICs). These ICs are popularly known as Chips. A single IC has many transistors, registers and capacitors built on a single thin slice of silicon. So it is quite obvious that the size of the computer got further reduced. Computers of this generation were small in size, low cost, large memory and processing speed is very high.

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4. Fourth Generation (1980's) :

The present day computers that you see today are the fourth generation computers that started around 1975. It uses large scale Integrated Circuits (LSIC) built on a single silicon chip called microprocessors. Due to the development of microprocessor it is possible to place computer's central processing unit (CPU) on single chip. These computers are called microcomputers. Later very large scale Integrated Circuits (VLSIC) replaced LSICs.

Thus the computer which was occupying a very large room in earlier days can now be placed on a table. The personal computer (PC) that you see in your college is a Fourth Generation Computer.

5.Fifth Generation (Late 1990's) :

These computers use optic fiber technology to handle Artificial Intelligence, expert systems, Robotics etc., these computers have high processing speeds and are more reliable.

12. Write about any six internal commands.

A) CLS: This command is used to Clear the Screen.

Syntax: CLS

DATE: This command is used to display or change the system date. The date format is MM / DD / YYYY.

Syntax: DATE

TIME: This command is used to display or change the system time. The time format is HH / MM / SS. The time must to be entered in 24 hrs internally.

Syntax: TIME

DEL: This command is used to delete a file from the disk.

Syntax: DEL < FILE_NAME>

COPY : This command is used to copy the contents of one file to another files.

Syntax: COPY < SOURCE FILE NAME> <TARGET FILE NAME>

COPY CON: To create a new file with the same content.

Syntax: COPY CON <FILE NAME>

REN: This command is used to change the name of an existing file

Syntax: REN <OLD FILE NAME> <NEW FILE NAME>

VER: This command is used to display the current MS.DOS version number.

Syntax: VER

MD: (Make Directory) This command is used to create a new directory.

Syntax: MD <Directory Name>

CD: (Change Directory) To move from one directory to another directory.

Syntax: CD <DIRECTORY NAME>

DIR (DIRECTORY): This command is used to display the files and folder in the current working directory.

Syntax: DIR

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DIR /P: This command is used to display the directories in page wise.
Syntax: dir / p

DIR / W: This command is used to display the directories in width wise
Syntax: dir/w

13. Write the step wise procedure to create, edit and save word.

A) To Create a New Document:

- Select "Start" button form the desktop.
- Select All Programs from "Start button" options
- Select "Microsoft Office" option.
- Select "Microsoft Word 2007" from the options of "Microsoft Office".

Edit a Document:

- Making modifications in a document is known as editing.
- Editing may be any one of the copy, cut, paste, undo and redo.
- For any modification first we have to select the data.
- For copy, cut and paste we can select the icons from "Clipboard" options of "Home" tab.

Save a Document:

- Click the **Microsoft Office Button**
- Click **Save** or **Save As** or Press CTRL+S on the keyboard, or Click the **File** icon on the Quick Access Toolbar.
- Go to the location where we want to save the document in the hard disk
- Provide name at "Filename".
- Select "Save" button.

14. Write about spell checker.

A) Spell check: Used to check the spelling and grammar mistakes typed in a document. The wrong words will be highlighted by red color under line. We can correct the mistakes typed in the document with this facility.

Procedure:

- Place the cursor at the beginning of the document or the beginning of the section that you want to check
- Click the **Review** Tab on the Ribbon.
- Click **Spelling & Grammar** on the Proofing Group.
- Any errors will display a dialog box that allows you to choose a more appropriate spelling or phrasing.
- If you wish to check the spelling of an individual word, you can right click any word that has been underlined by Word and choose a substitution.

15. Write about Mail Merge.

A) Mail Merge: Mail merge is a very useful and powerful feature of MS-Word. It is used to print personalized form letters. The form letters have the same contents but are sent to many persons.

Ex: Business reply letters, call letters and notice for a meeting.

In this facility, all address data is stored one file. The format of the letter is stored in another file. Those are a) Main Document
b) Data source file

Selecting Recipients for Mail Merge Letters:

- Click Start Mail Merge on the Mailings ribbon and select the type of document you'd like to create.
- Click Select Recipients on the Mailings ribbon to add recipients to the mailing.

We can opt to create a new database of recipients. You can also opt to use an existing list or Outlook contacts.

Adding Recipients to Your Mail Merge Database: In the New Address List Box, begin entering your contacts.

Each set of fields is referred to as an entry. To add additional recipients, click the New Entry button. To delete an entry, select it and click Delete Entry. Click Yes to confirm the deletion.

Adding and Deleting Mail Merge Fields

You may wish to delete or add fields types to your mail merge document.

Once you've added all your recipients, click OK on the New Address List dialog box. Name the data source and click Save.

Inserting a Merge Field in Your Document

To insert a field into your document, click Insert Merge Field on the Mailings ribbon. Select the field you would like to insert. The field name appears where you have the cursor located in your document.

You can edit and format the text surrounding the field. Formats applied to the field will carry over to your finished document. You can continue to add fields to your document.

Previewing Your Mail Merge Letters

To preview the letters, click Preview Results on the Mailings ribbon.

Correcting Errors in Mail Merge Fields

You cannot alter the data in the merge document. Instead, you'll need to fix it in the data source.

To do this, click Edit Recipient List on the Mailings ribbon. In the box that opens, you can alter the data for any of your recipients. When you're done, click OK.

Finalizing Your Mail Merge Documents:

After you've reviewed your documents, you're ready to finalize them by completing the merge. Click the Finish & Merge button on the Mailings ribbon.

16. Write and explain any six functions of Excel.

A) Function: A function is a predefined program to perform an action. Excel's worksheet functions are powerful tools that perform complex computations. Functions consists of **Function Names** and **Arguments.**

Types of Functions:

Worksheet functions are classified into nine categories.

a. Database functions
b. Date and Time functions
c. Financial functions.
d. Information functions
e. Logical functions

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f. Look up reference Trigonometric functions
g. Statistical functions
h. Text functions

Math and Trigonometric functions: Math and trig functions can refer to cell references, names or plain old numbers.
Statistical functions: Statisticians will want to check out many statistical functions from AVDEV( ) to ZTEST( ).
Text functions: Used to manipulate or analyze strings of text in cells. CLEAN( ) will strip away any non printing characters stored in a cell.
Date and Time functions: Some of the Date and Time functions simply return current data
Financial functions: Many of the functions can be used together, or can be included as arguments, one within other.
Information functions: Some functions inspect things and report back. Some functions are able to check things external to Excel.
Logical functions: These are used to check the logic.

Mathematical functions:

1. FACT: Returns the factorial of a number.
Syntax FACT(number)
Example: FACT(B2) gives 120 because B2 in Figure -1 contains 5 i.e (1 x 2 x 3 x 4 x 5 = 120).

2. POWER: Returns the results of a number raised to a power
Syntax: POWER(number,power)
Example: POWER(B2,E2) gives result 25 because ($5^2 = 25$)
3. SQRT: Finds the square root of a value in the cell.
Syntax: SQRT(number)
Example: SQRT(C2) gives 2 because square root of 4 is 2.

4. SUM: The **SUM** function adds all the numbers that you specify as arguments.
Syntax: SUM(number1, [number2],[number3],[number4],…)
Example: SUM(A2:E2) Gives the result 20 because(3 + 5 +4 + 6 + 2 = 20)

5. SUMIF: You use the **SUMIF** function to sum the values in a range that meet criteria that you specify.
Syntax: SUMIF(RANGE , CRITERIA)
Example: SUMIF(A2:E2,">4") Gives result 11 because (5 + 6).

6. MOD: Returns the remainder after number is divided by divisor. The result has the same sign as divisor.
Syntax: MOD(number, divisor)
Number is the number for which you want to find the remainder.
Divisor is the number by which you want to divide number.
Ex1: MOD(10,6) gives result 4 because remainder is 4 when 10 is divided by 6..

Statistical functions: Average, Count, Max, min.

1. **Average**: Returns average(arithmetic mean) of its arguments
   Syntax: average(number1,number2,..)

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Example: Average(a2:e2) gives result 4 because (3+5+4+6+2)/5 = 4

2. **Count:** The **COUNT** function counts the number of cells that contain numbers, and counts numbers within the list of arguments.
   Syntax: Count(value1,[value2] ,...)
   The COUNT function syntax has these arguments:
   value1 Required. The first item, cell reference, or range within which you want to count numbers.
   value2, ... Optional. Up to 255 additional items, cell references, or ranges within which you want to count numbers.
   Example
   Count(a4:e4) gives result 3 because (12,8,4 are 3 values)

3. COUNTA: The **COUNTA** function counts the number of cells that are not empty in a range.

Syntax: COUNTA(value1, [value2], ...)
The **COUNTA** function syntax has the following arguments:

- **value1** Required. The first argument representing the values that you want to count.
- **value2, ...** Optional

Ex: counta(A4:E4) gives the result 4 because the range contains 4 values.

4. COUNT BLANK: Counts empty cells in a specified range of cells.

Syntax: COUNTBLANK(range)
Range is the range from which you want to count the blank cells.
Example:
Countblank(A4:E4) gives result 1 because the range contains one blank.

5. COUNTIF: The **COUNTIF** function counts the number of cells within a range that meet a single criterion that you specify. For example, you can count all the cells that start with a certain letter, or you can count all the cells that contain a number that is larger or smaller than a number you specify. For example, suppose you have a worksheet that contains a list of tasks in column A, and the first name of the person assigned to each task in column B. You can use the **COUNTIF** function to count how many times a person's name appears in column B and, in that way, determine how many tasks are assigned to that person. For example:

=COUNTIF(F2:F25,"Nancy")
COUNTIF(range, criteria)
The **COUNTIF** function syntax has the following arguments:
range Required. One or more cells to count, including numbers or names, arrays, or references that contain numbers. Blank and text values are ignored.
criteria Required. A number, expression, cell reference, or text string that defines which cells will be counted. For example, criteria can be expressed as 32, ">32", B4, "apples", or "32".
Ex:
Countif(A4:E4,">10") gives result 1 because the range contains only one value that is greater than 10.

6. MAX: Returns the maximum value in the range

MAX(number1,number2,...)
Number1, number2, ... are 1 to 255 numbers for which you want to find the maximum value.
Ex : max(A2:E2) gives result 6 because 6 is the maximum value in that range.

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7.MIN: Returns the minimum value in the range
MIN(number1,number2,...)
Number1, number2, ... are 1 to 255 numbers for which you want to find the minimum value.

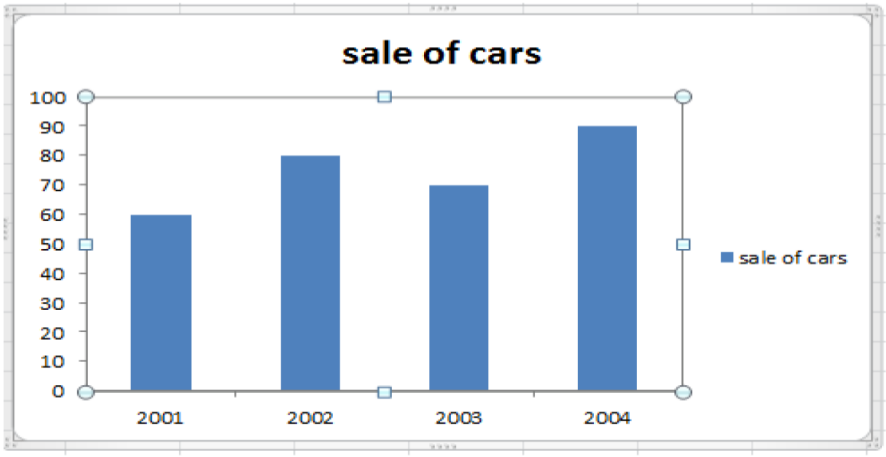
Ex : max(A2:E2) gives result 2 because 6 is the minimum value in that range.

17. Write about charts of MS Excel.

A) Charts are used to display series of numeric data in a graphical format to make it easier to understand large quantities of data and the relationship between different series of data. Here charts are prepared from the following table.

	A	B
1	Maruthi show room	
2	vijayawada branch	
3	Year	sale of cars
4	2001	60
5	2002	80
6	2003	70
7	2004	90

Column charts Data that is arranged in columns or rows on a worksheet can be plotted in a column chart. Column charts are useful for showing data changes over a period of time or for illustrating comparisons among items.



Line charts: Data that is arranged in columns or rows on a worksheet can be plotted in a line chart. Line charts can display continuous data over time, set against a common scale, and are therefore ideal for showing trends in data at equal intervals. In a line chart, category data is distributed evenly along the horizontal axis, and all value data is distributed evenly along the vertical axis.

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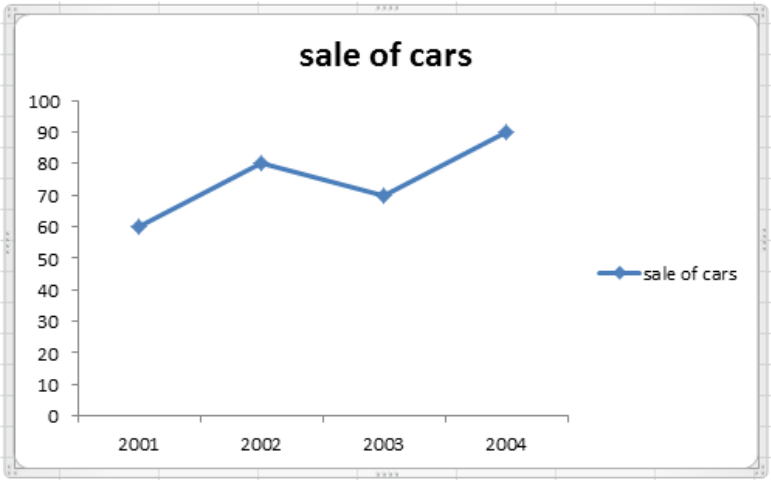
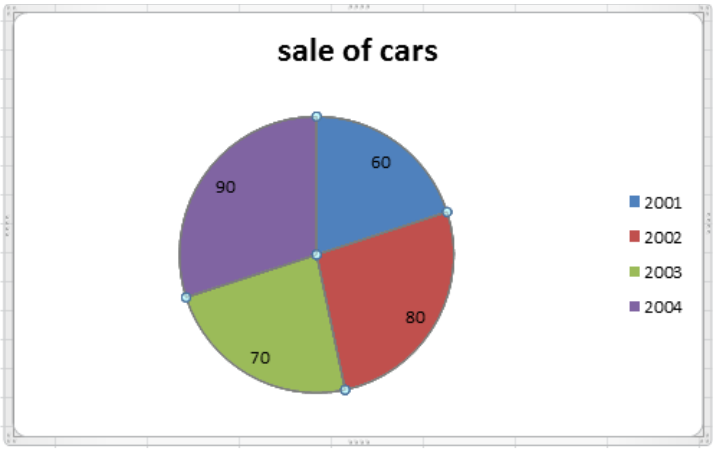
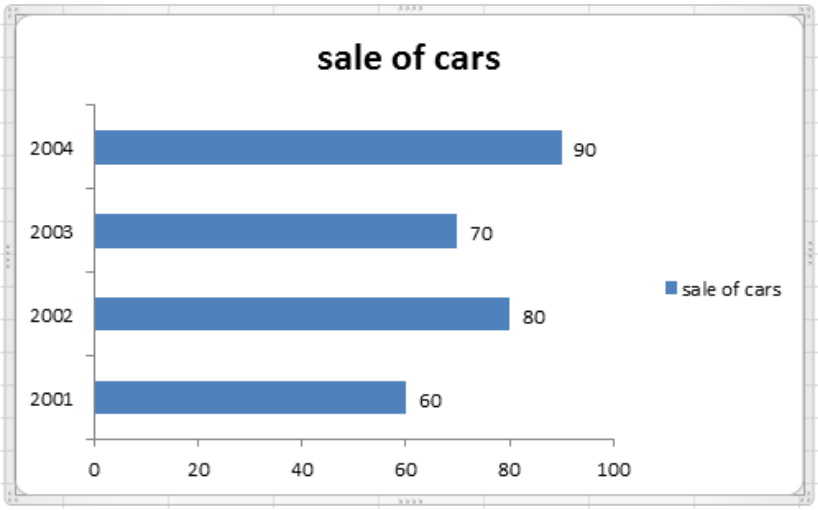


Pie charts Data that is arranged in one column or row only on a worksheet can be plotted in a pie chart. Pie charts show the size of items in one data series, proportional to the sum of the items. The data points in a pie chart are displayed as a percentage of the whole pie.



Bar charts Data that is arranged in columns or rows on a worksheet can be plotted in a bar chart. Bar charts illustrate comparisons among individual items.



Area charts: Data that is arranged in columns or rows on a worksheet can be plotted in an area chart. Area charts emphasize the magnitude of change over time, and can be used to draw attention to the total value across a trend. For example, data that represents profit

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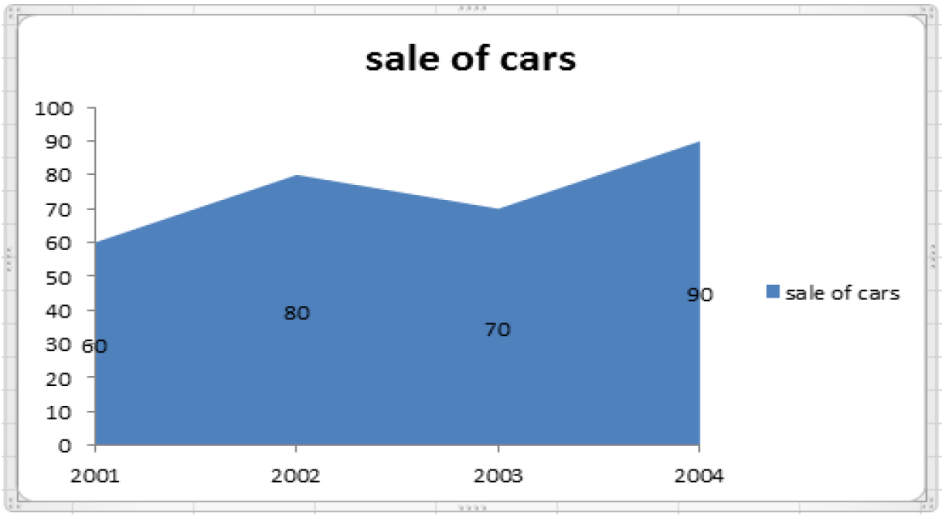
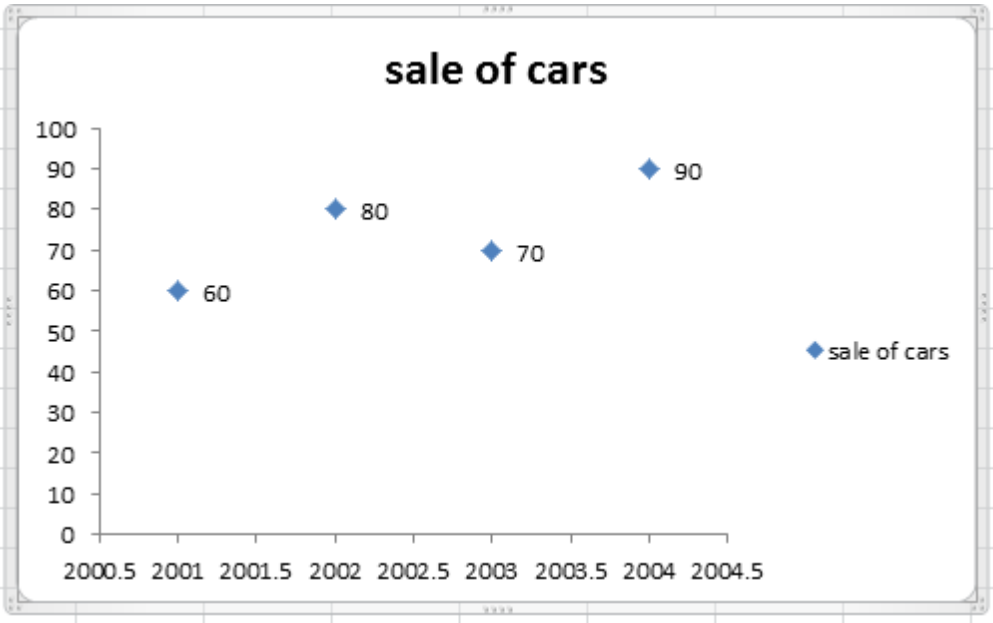
over time can be plotted in an area chart to emphasize the total profit. By displaying the sum of the plotted values, an area chart also shows the relationship of parts to a whole.



XY (scatter) charts: Data that is arranged in columns and rows on a worksheet can be plotted in an xy (scatter) chart. Scatter charts show the relationships among the numeric values in several data series, or plots two groups of numbers as one series of xy coordinates.

A scatter chart has two value axes, showing one set of numeric data along the horizontal axis (x-axis) and another along the vertical axis (y-axis). It combines these values into single data . points and displays them in irregular intervals, or clusters. Scatter charts are typically used for displaying and comparing numeric values, such as scientific, statistical, and engineering data.



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18. Write about formatting a text in PowerPoint.

A) Change Font Typeface::

- Click the **arrow** next to the font name and choose a font.
- Remember that you can preview how the new font will look by highlighting the text, and hovering over the new font typeface.

To change the font size:

- Click the **arrow** next to the font size and choose the appropriate size, or
- Click the **increase or decrease** font size buttons.

Font Styles and Effects:

Font styles are predefined formatting options that are used to emphasize text. They include: Bold, Italic, and Underline. To add these to text:

- Select the text and click the **Font Styles** included on the Font group of the Home tab or
- Select the text and right click to display the font tools

To change the text color:

- Select the text and click the **Colors** button included on the Font Group of the Ribbon, or
- Highlight the text and right click and choose the colors tool.
- Select the color by clicking the down arrow next to the font color button.

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Prepared by VRKS SASTRY TANIKELLA
CJL in CSE, GJC, KOTHAPETA, E.G.Dt.

IPE MARCH 2023

1228

Total No. of Questions – 18

No. of Printed Pages – 2 **Regd. No.** | | | | | | | | | | |

PROGRAMMING IN 'C'
Paper I
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. What is Flowchart?

A) Flow Chart: Flow chart is diagrammatical representation of program flow to solve a given problem.

2. Write an algorithm to print biggest of given two numbers.

A) Algorithm to print biggest of two integer numbers:

Step 1: Start

Step 2: Declare two variable a and b of type integer.

Step 3: Read the values for a and b

Step 4: Check if a > b

a) if a>b
b) print a is big
c) else
d) print b is big.

Step 5: Stop

3. Who invented 'C' language.

A) Dennis M. Ritchie invented 'C' . language at AT & T Bell laboratories in 1970's

4. What is a variable ?

A) Variable: Variables are the names of the objects, whose values can be changed during the program execution.

5. What is a constant ?

A) Constants are those, which do not change, during the execution of the program. Constants may be categorized in to:

- Numeric Constants
- Character Constants
- String Constants

6. What is an array ?

A) *Array:* An array is a collection of similar type of data elements which are stored in consecutive memory locations under a common variable name

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7. List the types of arrays.

A) ***Arrays are two types:***

1) Single dimensional array
   Ex: int salary[10];
2) Multi dimensional array
   Ex: float matrix[10][10];

8. What is a procedure ?

A) Procedure: Commonly used program modules that are called procedures. Then you can (call) a procedure whenever you want to do the task.

9. What are the advantages of function ?

A) The main advantages of using a function are:

- Easy to write a correct small function.
- Easy to read and debug a function.
- Easier to maintain or modify such a function.
- Small functions tend to be self documenting and highly readable
- It can be called any number of times in any place with different parameters.

10. What is structure ?

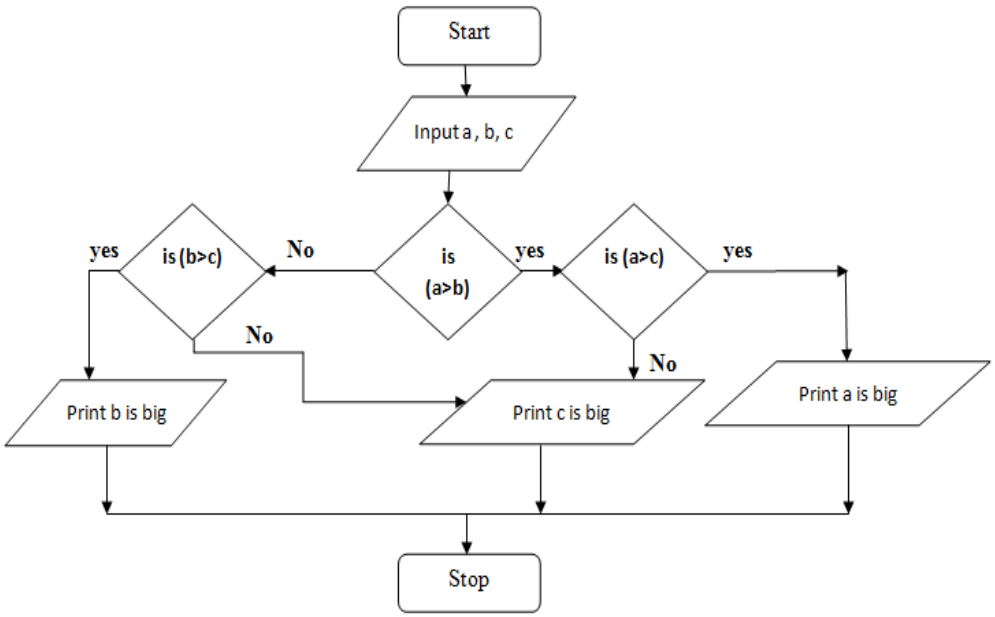
A) Structure is a collection of heterogeneous type of data i.e. different types of data.

SECTION – B 5 X 6 = 30

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. Draw a flowchart to find the biggest of given three numbers.

A)



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12. What are the data types in 'C' ? Explain them.

A)

Type	Size (in Bytes)	Range
char or signed char	1	-128 to 127
unsigned char	1	0 to 255
int or signed int	2	-32,768 to 32,767
unsigned int	2	0 to 65,535
short int or signed short int	1	-128 to 127
long int or unsigned long int	4	-2,147,483,648 to 2,147,483,647
unsigned long int	4	0 to 4,294,967,295
float	4	-3.4 *e -38 to + 3.4 *e +38
double	8	-1.7 *e -308 to – 3.4 * e +308
long double	10	-3.4 * e-4932 to +3.4 * e +4932

13. What are the conditional statements in 'C'? Explain them.

A) conditional statements: The conditional expressions are mainly used for decision making. The following statements are used to perform the task of the conditional operations.

a. if statement.
b. if-else statement.
c. nested else-if statement.
d. nested if –else statement.
e. switch statement.

a. if statement: The **if statement** is used to express conditional expressions. If the given condition is true then it will execute the statements otherwise skip the statements.

The simple structure of '**if**' statement is

i. if (< conditional expression>)
statement-1;
(or)

The conditional expression is evaluated, if the expression is true the statements will be executed. If the expression is false the statements are skipped and execution continues with the next statements.

Example: a=20; b=10;

```
if ( a > b )
        printf ("big number is %d" ,a);
```

b. if-else statements: The conditional expression is evaluated and if the expression is true the **true block statements** will be executed. If the expression is false the **false block statements** will be executes.

Syntax: **if (test expression) {**
true block statements;
}
else {
false block statements;
}

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Example:

```
if ( a> b )
        printf ("a is greater than b");
else
        printf ("a is not greater than b");
```

c. Nested else-if statements: If some situations if may be desired to nest multiple **if-else** statements. In this situation one of several different course of action will be selected.

Syntax

```
if ( <exp1> )
        Statement-1;
else if ( <exp2> )
        Statement-2;
else if ( <exp3> )
        Statement-3;
else
        Statement-4;
```

When a logical expression is encountered whose value is true the corresponding statements will be executed and the remainder of the nested else if statement will be bypassed. Thus control will be transferred out of the entire nest once a true condition is encountered.

The final **else** clause will be apply if none of the exp is true.

d. nested if-else statement: It is possible to nest if-else statements, one within another. There are several different forms that nested if-else statements can take.

The most general form of two-layer nesting is

```
if(exp1)
        if(exp2)
                Statement-1;
        else
                Statement-2;
else
        if(exp3)
                Statement-3;
        else
                Statement-4;
```

One complete **if-else** statement will be executed if **expression1** is true and another complete **if-else** statement will be executed if **expression1** is false.

e. switch statement: A switch statement is used to choose a statement among several alternatives.

Syntax:

```
switch (variable)
{
case  label1:          statements1;
case  label2:          statements2;
      _____
      _____
default:          statements  n;
}
```

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Where label1, label 2 ,— — — are either integer constants or character constants. When the switch statement is executed the variable is evaluated and control is transferred directly to the group of statements whose case label value matches the value of the value. If none of the case label values matches to the value of the variable then the default part statements will be executed.

14. Write a 'C' program to find sum of 1 to n numbers using while loop.

A)) /* program to find sum of 1 to n natural number using while loop */

```
#include<stdio.h>
main ( )
{
int i, n, s;
printf ("enter the value to n \n");
scanf ("%d", &n);
s=0;
i=1;
while (i ≤n){
s= s+i;
i=i+1;
}
printf ("\n the sum value of 1 to n natural no' s is %d \n", s);
}
```

15. Write a 'C' program to read and print an array of elements.

A) /*creating a single dimensional array of numbers and displaying them*/

```
#include<stdio.h>
#include<conio.h>
main( ){
int i,j,n,a[10];
clrscr();
printf("\n how many elements:");
scanf("%d",&n);
printf("\n enter %d values : ",n);
for(i=0;i<n;++i)
scanf("%d",&a[i]);
printf("\n given array\n");
for(j=0;j<n;++j)
printf("\t%d",a[j]);
getch();
}
```

Output:

```
how many elements:5
enter 5 values :
25      36      14      89      71
given array
25      36      14      89      71
```

16. Write the syntax of one, two and three dimensional array.

A) One dimensional Arrays.
Two dimensional Arrays
Multi dimensional Arrays

Syntax to one dimensional array:

Data _type Array _ name [size];
Ex:- int A [10];

Syntax to two- dimensional array:

Data-type Array-name [row-size] [column-size];

Ex:- int A [10] [10];

Syntax to Multi dimensional Array:

Data-type Array-name [size] [row-size] [column size]
Ex:- int A [10] [10] [10];

17. Write a 'C' program to find factorial of a given number.

A) /* program to find factorial value of a given number*/

Program:

```
#include<stdio.h>
#include<conio.h>
main()
{
int i,n,fact=1;
clrscr();
printf("\n Enter a number n: ");
scanf("%d",&n);
for(i=1;i<=n;++i)
fact=fact*i;
printf("\n Factorial of %d is %d",n,fact);
getch();
}
```

Output:

```
Enter a number n: 6
Factorial of 6 is 720
```

(OR)

/* program to find factorial value of a given number using regursion*/

Program:

```
# include<stdio.h>
    main ( )
    {
    int n, f;
    printf(" \n enter any value \n");
    sacnf("%d", &n);
```

```
f= fact (n);
printf(" factorial of %d is", n, f);
getch ( );
}

fact (int n)
        {
          if(n==1)
          return (1)
          else

        return (n* fact (n-1));
        }
```

18. Explain the array of structures.

A) Arrays of Structures Contain Arrays

Arrays of structures can be defined and in that type of structure variables of array type can be used as members.

Example

```
struct mark
{
        int empno;
        char ename[20];
        float   salary;
   }  mark[50];
```

In the above, mark is an array of 50 elements and such element in the array is of structure type rk. The structure type rk, in turn contains ename as array type which is a member of the structure. Thus mark is an array of sutures and these structures in turn holds character names in array ename.

The initialization of the above type can be done as:

```
{
7777, ' Prasad' , 56800.00}
};
i.e  mark[0] . empno = 7777;
    mark[0] . eame  = 'Prasad';
     mark[0] . salary =  56800.00
```

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CJL in CSE, GJC, KOTHAPETA, E.G.Dt.

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ACCOUNTANCY AND TALLY
Paper I
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. Define capital.

A) **Capital:** The Amount of Money, Assets, Goods or Money's worth introduced by the owner to start or to maintain the business.

2. What is an Account?

A) **Account:** Account is a summary of relevant transactions at one place relating to a particular head. An account will be represented in the form of " T ". Debit and Credit refer to left side and right side of the account respectively.

3. Define Journal.

A) **Journal** : Journal is called as book of Primary Entry or Book of Original Entry. Because, All business transactions are first entered in this book in chronological order. A journal is a book in which all the day to day accounting transactions were written in accounting terms in chronological order.

4. What is Ledger?

A) **Ledger:** Ledger is a main book which contains all the accounts in which the transactions recorded in the books of original entry are transferred. Ledger is also called the "***Book of Secondary Entry***", because the transactions are finally incorporated in the ledger.

5. Define Invoice.

A) **Invoice:** Invoice is a document received by the trader from the supplier along with the goods by stating that, the goods are supplied as per the order along with the price, discount offered, and other terms and conditions. This document is called as "Inward Invoice".

6. What is Cash Book?

A) **Cash book**: Cash book is a very popular subsidiary book maintained by all business organizations irrespective of their nature, as big or small. All the cash transactions of a business are primarily recorded in cash book.

There are different kinds of cash books maintained by the business organisation depending on the size of business. Those are

- Simple Cash Book (or) Single Column Cash Book
- Double Column Cash Book
- Triple Column Cash Book
- Analytical Petty Cash Book

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7. Define Pass Book.

A) Pass Book: Bank maintains an account for each customer in its book. All the deposits done by the customer are recorded on the credit side of customer account and all the withdrawals done by the customer are recorded on the debit side of the customer account. A copy of this account is regularly sent to the customer by the bank. This copy is called "***Pass Book***".

8. Define Trial Balance.

- According to J.R.Batliboi Trial balance is a statement, prepared with the debit and credit balances of ledger to test the arithmetical accuracy of the books.
- According to Carter "Trial balance is the list of debit and credit balances, taken out from ledger . It also includes the balances of cash and bank taken from cash book".
- According to Spicer and Peglar, " A trial balance is a list of all the balances standing on the ledger accounts and cash book of a concern at any given date.

9. Define Balance Sheet.

A) Balance sheet: Balance Sheet may be defined as "an orderly statement representing assets, properties, capital and liabilities of the business on a particular date".

It is the statement prepared to find out financial position i.e., assets and liabilities of business on a given date. The balance sheet explains that what a business owns (assets) and what the business owes to others (liabilities) on a given date.

The balance sheet is prepared on the basis of trial balance. Only real and personal accounts are taken into consideration in the preparation of balance sheet.

10. What are the function keys used in tally?

A)

Function Key	Purpose
F1	Select a Company
F1 (Alt+F1)	Shut Company, Detailed display of Profit & Loss Account or Balance sheet etc. while in those screens.
F2	Date
F2(Alt+F2)	To change accounting period
F3	Company information
F3 (Alt+F3)	To change company basic data or information.
F4	Contra Entry
F5	Payment
F6	Receipt
F7	Journal
F8	Sales
F8 (Alt+F8)	Credit Note
F9	Purchase
F9 (Alt+F9)	Debit Note
F 10	Reverse Journal
F10 (Alt+F10)	Memos
F11	Features
F12	Configuration

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SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. Explain different Accounting concepts in detail.

A) Accounting is the language of business. To make the language convey the same meaning to all people, as far as practicable, and to make it full of meaning, accountants have agreed on a number of concepts which they try to follow. These are given below:

1. Business Entity Concept
2. Money Measurement Concept
3. Cost Concept
4. Going Concern Concept
5. Dual – Aspect Concept
6. Realisation concept
7. Accural Concept
8. Matching Concept
9. Accounting Period Concept

1. **Business Entity Concept:** Accountants treat business as separate from the owner; then it becomes possible to record transactions of the business with the owner also. Without such differentiation, the affairs of the firm will all be mixed up with the private affairs of the owner and the true picture of the business will not be available.
2. **Money Measurement Concept:** Accounting records only those transactions which are expressed in terms of money, though inventory rerecords are also kept in some cases. It should be remembered that money allows various things of different nature to be added up together and dealt with. The use of a building and the use of clerical services can be added up only through money values and not otherwise.
3. **Cost Concept:** Transactions are entered in the books of account at the amounts actually involved. It prevents random values being put on transactions. This concept is used mainly in acquisition of assets. In other words, the amount to be recorded is objectively arrived at as a result of the mutual agreement of two parties involved.
4. **Going Concern Concept:** It is assumed that the business will exist for a long time and transactions are recorded from this point of view. This concept requires difference between expenditure as long term benefitting expenditure (Ex: pre paid insurance) and short term benefitting expenditure (Ex: Salaries).
5. **Dual – Aspect Concept:** Dual Aspect Concept is the core of the double-entry bookkeeping. It provides the very basis of recording business transactions in the books of accounts. Dual Aspect Concept assumes that every transaction has two-sided effects, i.e. it affects two accounts in their respective opposite sides. Therefore, the transaction should be recorded at two places. It means, both the aspects of the transaction must be recorded in the books of accounts.

   The concept of duality is commonly expressed in terms of fundamental accounting equation:

   Assets = Liabilities + Capital

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The above accounting equation states that the assets of a business are always equal to the claims of owner/owners and the outsiders this claim is also termed as **capital or owner's equity** and that of outsiders, as **liabilities or creditors' equity**. According to this concept for every debit, there is a correspondence credit and vice versa. Every transaction has two aspects. These two aspects may be:

1. An increase in asset and decrease in other assets
2. An increase in asset and simultaneously increase in liability
3. A decrease in asset and increase in another asset
4. A decrease in asset and decrease in liability

6. **Realisation concept:** Revenue should be accounted for only when it is actually realized or it has become certain that the revenue will be realized. This signifies that revenue should be recognized only when the services are rendered or the sale is affected. However, in order to recognize revenue, actual receipt of cash is not necessary, but the organization should be legally entitled to receive the amount for the services rendered or the sale affected.
7. **Accrual Concept:** The accrual concept in accounting means that expenses and revenues are recorded in the period they occur, whether or not cash is involved. The benefit of the accrual approach is that financial statements reflect all the expenses associated with the reported revenues for an accounting period.
8. **Matching Concept:** The matching concept is an accounting practice whereby firms recognize revenues and their related expenses in the same accounting period. Firms report revenues, that is, along with the expenses that brought them. The purpose of the matching concept is to avoid misstating earnings for a period.
   A) **Accounting Period Concept:** An accounting period is the span of time covered by a set of financial statements. This period defines the time range over which business transactions are accumulated into financial statements, and is needed by investors so that they can compare the results of consecutive time periods.

12. Explain different types of Accounts with their rules.

A) The accounts in double entry system are classified into three categories:

1. Personal accounts
2. Real accounts
   a) Tangible accounts
   b) Intangible accounts
3. Nominal accounts

1. **Personal Accounts:** Personal accounts may be further classified into two categories:
   a) **Natural Personal Accounts**: An account related to any individual like Bheemesh, Sitharam, Prasad, or Suresh is called as a *Natural Personal Account*.
   b) **Artificial Personal Accounts**: An account related to any artificial person like M/s Siri Motors LLP, M/s TATA MOTORS Ltd, M/s Reliance Industries, etc., is called as an *Artificial Personal Account*.

Rule: **Debit the Receiver**
Credit the Giver

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2. Real Accounts: Every Business has some assets and every asset has an account. Thus,

asset account is called a real account. There are two type of assets:

a) **Tangible** Assets are having physical existence, which we can touch and see. Ex: Buildings, Furniture, Plant and Machinery.
b) **Intangible** assets does not have any physical existence, but their possession gives rise to some rights and benefits to the proprietor or owner.
Ex: Royalty, Copy rights, Goodwill, Trademarks.

Accounting treatment for both type of assets is same.

Rule: **Debit what comes in**
Credit what goes out

3. Nominal Accounts: These accounts are related to incomes and expenses or profits and losses of business concern. Ex: Salary Account, Rent Account, Electricity Account, Discount Account, Commission Account, Interest Account

Rule: **Debit all Expenses and Losses**
Credit all Incomes and Gains

13. Explain different types of Subsidiary Books in detail.

A) Different types of Subsidiary Books

There are 8 types of subsidiary books used for different purposes. Those are:

1. Purchase Book
2. Purchase Returns Book
3. Sales Book
4. Sales Returns Book
5. Cash Book
6. Bills Receivable Book
7. Bills Payable Book
8. Journal Proper

Purchase Book Goods purchased on credit are recorded in this book. The cash purchases of goods and Purchase of Assets (Furniture, Machinery etc.) are not recorded. The invoice or bills received from the supplier by the firm are the source documents for recording entries in this book.

Purchase Book

Date	Particulars	Inward Invoice No.	L.F.No	Amount Rs.

Purchase Returns Book: The goods returned to the supplier purchased on credit are recorded in this book. As the goods are going out from the firm, this book is also called as '***Returns Outward Book***". For every return a Debit Note is prepared and is sent to the supplier. Each debit note is serially numbered and dated.

Purchases Returns Book

Date	Particulars	Debit Note No.	L.F.No	Amount Rs.

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Sales Book: The goods sold on credit are recorded in this book. The cash sales of goods and Sale of Assets (Furniture, Machinery etc.) are not recorded. The Outward invoice or bills prepared by the trader are the source documents for recording entries in this book. Sales book also called as '***Sales Day book or Sales Journal***'.

Sales Book

Date	Particulars	outward Invoice No.	L.F.No	Amount Rs.

Sales Returns Book: The goods returned by the customers sold for credit are recorded in this book. As the goods are coming into the firm, this book is also called as "***Returns Inward Book***". On receipt of goods from the customer, credit note is prepared and serially numbered and dated.

Sales Returns Book

Date	Particulars	Credit Note No.	L.F. No	Amount Rs.

Cash Book: In this book, all the transactions relating to cash receipts and cash payments are recorded. It starts with the cash or bank balance at the beginning of the period. It gives the closing balance at the end of the period. It is the only subsidiary book which acts as both Journal and Ledger.

Bills Receivable Book: A trader draws bills on the debtors for the amount due from them, such bills drawn by the traders and duly accepted by the debtors are called '***Bills receivable'***. The amount on bills to be received is entered in bill receivable book. This book contains the details of the bill date, acceptor's name, amount, term, place of payment etc.

Bills Receivable Book

No. Of Bill	Date Received	Date of bill	From whom received	Drawer	Acceptor	Where payable	Term	Due date	Ledger Folio	Amount	Cash book folio	Remarks

Bills Payable Book: Every business organisation accepts the bills to the creditors, like wholesalers or manufacturers for the purchase of goods on credit. Such bills drawn by creditors and accepted by traders are called bills payable and they are recorded in a separate book called ***'Bills Payable Book'***.

Bills Payable Book

No. of bill	Date of bill	To whom given	Drawer	Payee	Where payable	Term	Due date	Ledger Folio	Amount paid	Date of Payment	Cash Book Folio	Remarks

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Journal Proper: This book is maintained to record transactions, which do not find place in other seven Subsidiary Books. The Journal Proper also known as '***Journal Residual*** '. The format of Journal Proper is similar to the ordinary journal.

14. Prepare Single column cash book in the books of SMR Food Plaza.

2022 December

1.	**Started business with cash**	**10,000**
2.	**Machinery purchased**	**2,000**
3.	**Goods sold for cash**	**500**
4.	**Paid to Karthik**	**1,500**
6.	**Stationary**	**500**
10.	**Sales**	**1,000**
12.	**Paid to Ravi**	**2,000**
14.	**Received from Mahalakshmi**	**1,200**
16.	**Sold goods for cash**	**2,000**
22.	**Wages**	**500**
25.	**Charges**	**400**
30.	**Salaries paid**	**1,000**

Dr. **Single column cash book in the books of SMR Food Plaza as on 31-03-2017** Cr.

Date	Particulars	L.F.	Amount Rs.	Date	Particulars	L.F.	Amount Rs.
2022 Dec 1	To Capital A/c		10,000	2017 Dec 2	By Machinery A/c		2,000
3	To Sales A/c		500				
14	To Mahalakshmi A/c		1,200	4	By Karthik A/c		1,500
16	To Sales A/c		2,000	6	By Stationery A/c		500
				12	By Ravi A/c		2,000
				22	By Wages A/c		500
				25	By Charges A/c		400
				30	By Salaries A/c		1,000
				31	By Balance c/d		5800
			13,700				13,700
Apr-01	To Balance b/d		5800				

15. Explain the importance of Bank Reconciliation statement.

A) **Bank Reconciliation Statement:** The statement prepared to reconcile the balances of cash book and pass book is called ***"Bank Reconciliation statement"***. i.e. The Bank Reconciliation statement is a statement prepared to reconcile the difference between the balances as per the bank column of the cashbook and passbook at any given date.

Significance:

- To locate the mistakes or errors on either side.
- To Enable the business concern to get up – to – date record of transactions from the bank.
- To Ensure proper evidence of payment
- To Enable the business to identify the cheques deposited at bank by the business but not collected in time.
- To prevent the frauds and misappropriations

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16. Prepare the Trial Balance from the following balances.

	Rs.
Cash in hand	**5,000**
Debtors	**10,000**
Creditors	**6,000**
Purchases	**15,000**
Sales	**20,000**
Capital	**30,000**
Buildings	**18,000**
Salaries	**2,000**
Furniture	**4,000**
Opening Stock	**2,000**

Trial Balance

S.L.No	Particulars	Amount Dr. Rs.	Amount Cr. Rs.
1.	Cash in hand	5,000	
2.	Debtors	10,000	
3.	Creditors		6,000
4.	Purchases	15,000	
5.	Sales		20,000
6.	Capital		30,000
7.	Buildings	18,000	
8.	Salaries	2,000	
9.	Furniture	4,000	
10.	Opening stock	2,000	
		56,000	**56,000**

17. Write the procedure to prepare final account.

A) After having checked the accuracy of the books of accounts through preparation of Trial Balance, businessman wants to ascertain the profit earned or loss suffered during the year and also the financial position of his business at the end of the year. For this purpose he prepares 'Final Accounts' which are also termed as 'Financial Statement'. These include the following:

1) Trading Account
2) Profit and Loss Account
3) Balance Sheet

Trading Account: An account is to be prepared to know the results of trading activities carried during the accounting period is termed as ***"Trading account"***. Trading account is a nominal account. The trading expenses should be debited and the trading incomes should be credited to this account. The outcome of the trading account is either gross profit or gross loss. The trading account is to be prepared to find out the difference between actual cost of goods sold and sale proceeds.

Cost of goods sold = Purchase price of the goods + Expenses incurred on purchases.

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Cost of Goods Sold = Opening Stock + Net Purchases (Cash + Credit – Returns) +Direct Expenses – Closing Stock of Goods

Gross Profit / Loss = Net Sales – Cost of Goods Sold

Profit and Loss Account: **Profit and Loss Account** is a nominal account, so all the expenses and losses should be debited and all the incomes and gains to be credited to Profit & Loss account. The balance of Profit & Loss Account is either net profit or net loss and the same is to be added to / deducted from Capital Account in Balance Sheet.

Balance sheet: Balance Sheet may be defined as "an orderly statement representing assets, properties, capital and liabilities of the business on a particular date".

It is the statement prepared to find out financial position i.e., assets and liabilities of business on a given date. The balance sheet explains that what a business owns (assets) and what the business owes to others (liabilities) on a given date.

The balance sheet is prepared on the basis of trial balance. Only real and personal accounts are taken into consideration in the preparation of balance sheet.

18. Write the procedure to create company in tally.

A) new company can be created using the following steps.

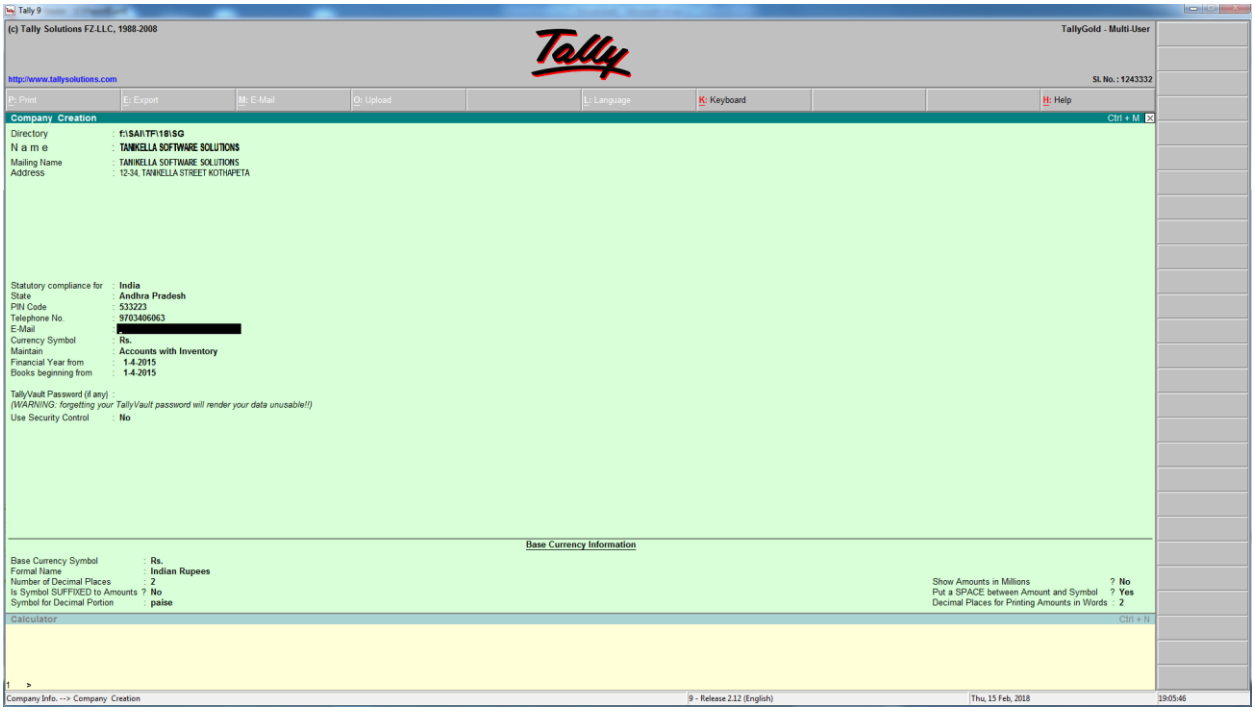
Step 1 : Start '! programs '!tally 7.2/ tally 9.0

or

Step 2: double click on tally icon on desktop

Step 3 : Select the option create company from company information screen

Step 4 : the company creation window gets opened and user can enter all the details of company like Name of company , Mailing name , Company address , Email address of company VAT Regd no if any , using of currency symbols as Rs. the financial year of company.



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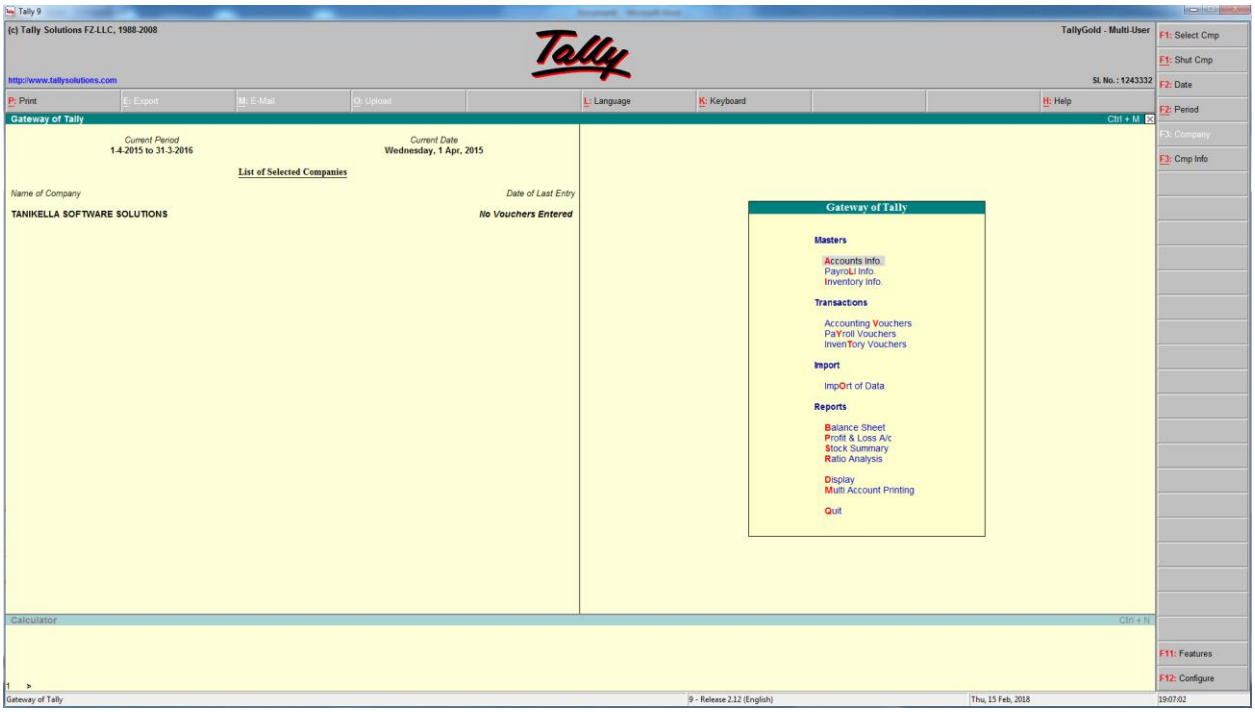
Then click on yes button to accept the details, and company gets created .



Prepared by VRKS SASTRY TANIKELLA
CJL in CSE, GJC, KOTHAPETA, E.G.Dt.

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OOPS AND JAVA
Paper II
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. What is an object?

A) **Object:** Object is a basic runtime entity having state and behavior. They may represent a person, a place, or any item that the program may handle.

The characteristics of an object are:

a) State: Represents the data of an object
b) Behavior: Represents the behavior of an object.
c) Identity: The unique ID is used internally by the JVM to identify each object uniquely.

2. Define variable.

A) VARIABLE: These are the names of the objects whose values can be changed during the program execution.

3. Write the syntax of if… else statement.

A) if …… else statement: The if…..else statement is an extension of the simple if statement. If the test expression is true then statements under if will be executed else statements under else will be executed.

Syntax: if (test expression)

```
{
        true block statements;
}
else
{
        false block statements;
}
```

Ex: if (a>b) big = a; else big = b;

4. Define an array.

A) Array: An array is defined as a set of homogeneous (same datatype) data items which are stored in consecutive memory locations under a common variable name.

Data_type arrayname = new arrayname[size];

5. What is nested loop?

A) Nested loop: A looping statement is in another looping statement is called nested loop.

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6. What are the advantages of using methods?

A) METHOD: A Java method is a collection of statements that are grouped together to perform an operation.

The advantages of a method are:

- Code reusability.
- Code optimization.

7. Define package.

A) Package: Packages are a way of grouping a variety of classes and or interfaces together. The grouping is done according to their functionality. Packages are act like containers for classes.

Syntax:

1. To create a package:
   package package_name;
2. To import a package:
   import package_name.*;

8. Write the types of errors.

A) Errors in java are basically three types those are

- Compile Time errors
- Run time errors
- Logical errors

9. What is multitasking?

A) Multitasking: It is an operating system concept in which multiple tasks are performed simultaneously.

10. What is an applet?

A) Applet: An applet is a Java program that runs in a Web browser. An applet can be a fully functional Java application because it has the entire Java API.

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. Explain the features of Java.

A) Features of Java:

1.Object Oriented: In java everything is an Object. Java can be easily extended since it is based on the Object Model.

2.Platform Independent: Platform means an operating system such as windows, unix, linux, etc., If a java program is compiled, it is compiled into platform independent byte code. This byte code can run on any platform. Hence we can say that the java is platform independent.

3. Simple: Java is designed to be easy to learn. If we understand the basic concept of OOP java would be easy to master.

4,Secure: With java's secure feature it enables to develop virus – free, tamper – free systems. Authentication techniques are based on public – key encryption.

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5.Architetural – Neutral: Java compiler generates an architecture – neutral object file format which makes the compiled code to be executable on many processors with the presence Java runtime system.

6. Portable: We may carry the java byte code to any platform.

7. Robust: Java makes an effort to eliminate error prone situations by emphasizing mainly on compile time error checking and runtime checking.

8. Multi – threaded: With java's multi-threaded feature it is possible to write programs that can do many tasks simultaneously. This design feature allows developers to construct smoothly running interactive applications.

9. Interpreted: Java byte code is translated on the fly to native machine instructions and is not stored anywhere. The development process is more rapid and analytical since the linking is an incremental and light weight process.

10. High Performance: With the use of Just – In – Time compilers Java enables high performance.

11. Distributed: Java is designed for the distributed environment of the internet.

12. Dynamic: Java programs can carry extensive amount of run-time information that can be used to verify and resolve accesses to objects on run – time.

12. Explain the operators in Java.

A) Java provides a rich set of operators to manipulate variables we can divide all the java operators in to the following groups.

a) Arithmetical operators.
b) Relational operators.
c) Logical operators.
d) Bit wise operators.
e) Assignment operators.
f) Increment and decrement operators.
g) Conditional operators.

Arithmetic Operators: Arithmetic Operators are used to perform arithmetic operations on two operands. These will return result in the form of value.

Ex: a and b are integer variables and assigned a=8 and b=5 then

Operator	Purpose	Arithmetic Expression	Result
+	Addition	a+b	13
-	Subtraction	a-b	3
*	Multiplication	a*b	40
/	Division	a / b	1
%	Remainder after integer division	a%b	3

Relational Operators: There are six relational operators supported by Java language. These returns result in the form of 'true' or 'false'.

Ex: a, b and c are integer variables and assigned 5, 8 and 10 respectively.

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Operator	Purpose	Relational Expression	Result
>	is Greater than	a>b	False
<	is Less than	(a+b)<c	True
> =	is Greater than or equal to	a>=5	True
< =	is Less than or equal to	b < = a	False
= =	is Equal to	c = = 10	True
! =	is Not equal to	a != b	True

Logical Operators: The logical operators are &&(and) , ||(or) and !(not).

&& (and) : If both operands are true then the logical &&(and) is true.

a	b	a && b
0	0	0
0	1	0
1	0	0
1	1	1

|| (or) : If either operand is true then the logical ||(or) is true.

a	b	a || b
0	0	0
0	1	1
1	0	1
1	1	1

! (not) : It negates the operand.

a	!a
0	1
1	0

Ex: a, b and c are integer variables and assigned 3, 5 and 10 respectively.

Operator	Purpose	Expression	Result
&&	And	(a>b) && (c>a)	False
||	Or	(a>b) || (c>a)	True
!	Not	!(a>8)	True

BITWISE and BIT SHIFT OPERATORS: bitwise and bit shift operators are used to manipulate the contents of variables at a bit level according to **binary** format.

Symbol	Name of the Operator	Example
~	Unary bitwise complement	~op2
&	Bitwise AND	op1 & op2
|	Bitwise inclusive OR	op1 | op2

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^	Bitwise exclusive OR	op1 ^ op2
<<	Signed left shift	op1 << op2
>>	Signed right sift	op1 >> op2
>>>	Unsigned right shift	op1 >>> op2

ASSIGNMENT OPERATORS: Assignment operators are used to assign the value of an expression. The simple assignment operator is '=' (the equals symbol).

Operator	Expression	Equivalent
+=	x+=a	x=x+a
- =	x-=a	x=x-a
*=	x*=a	x=x*a
/=	x/=a	x=x/a
%=	x%=a	x=x %a
<<=	x<<=2	x=x << 2
>>=	x>>2	x=x >> 2
&=	x&=2	X = x & 2
^=	x ^= 2	x = x ^ 2
|=	x |= 2	x = x | 2

INCREMENT AND DECREMENT OPERATORS: There are two Increment or decrement operators ++ and --. The operators ++ adds 1 to the operand while – subtracts 1. Both are unary operators and are used in the following form:

```
++m;  or m++;
--m; or  m--;
```

++i : This is called prefix increment. A prefix operator first adds 1 to the operand and then the result is assigned to the variable.

i++ : This is called postfix increment. A postfix operator first assigns the value to the variable on left and then increments the operand.

- - i : This is called prefix decrement. A prefix operator first decrements 1 to the operand and then the result is assigned to the variable.

i - - : This is called postfix decrement. A postfix operator first assigns the value to the variable on left and then decrements the operand.

13. Explain the looping statements in Java.

A) Looping statements in java are three, those are

1) while loop

2) do – while loop

3) for loop

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while loop: The while loop is an "entry – controlled" loop. The test condition is evaluated first and if the condition is true, then the body of the loop is executed this process repeated until the test condition is false. If, the test condition is false then the control is transferred to the statement immediately following the loop.

Syntax:

```
while (test_condition)
{
        Body of the loop;
  }
```

2. do – while loop: The **do-while** loop is bottom tested loop. The body of the loop will be executed at least once even the condition is false because the condition will be evaluated after execution of the loop body.

Syntax: initialization;

```
do{
        Body of the loop;
}while (test_condition);
```

for loop: The execution of for loop is as follows

a) Initialization of the control variables is done first.

b) The value of the control variable is tested using the test condition. If the test condition is true the body of the loop will be executed otherwise loop will be terminated.

c) When the body of the loop is executed, the control is transferred back to the for statement and control variable will be updated.

Syntax: for(exp1; exp2; exp3) {

```
        Body of the loop
    }
```

exp1 : Initialization Expression.
exp2 : Condition or Control Expression.
exp3 : Update Expression.

14. Write a Java program to sort 'N' numbers in an Array.

A) Program:

```
// Program to Sort an Array of integers
import java.util.*;
class ArraySort{
public static void main(String args[]){
int i,n,a[ ] ;
System.out.print("How many values in an array:  ");
Scanner in = new Scanner(System.in);
n = in.nextInt();
a = new int[n];  //specifies array size
System.out.println("enter  "+n+"  values line by line:");
for(i=0;i<n;++i){
System.out.print("enter a value: ");
a[i] = in.nextInt();}
System.out.println("Given Array");
for(i=0;i<n;++i){
System.out.print("\t"+a[i]);}
// for array sorting
```

```
Arrays.sort(a);
System.out.println("\nSorted Array in ascending order");
for(i=0;i<n;++i){
System.out.print("\t"+a[i]);}
}
}
```

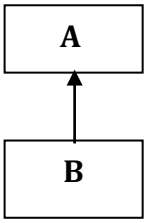
Compilation: D:\javalab>javac ArraySort.java
Execution: D:\javalab>java ArraySort
How many values in an array: 6
enter 6 values line by line:
enter a value: 12
enter a value: 8
enter a value: 45
enter a value: 78
enter a value: 11
enter a value: 18
Given Array 12 8 45 78 11 18
Sorted Array in ascending order 8 11 12 18 45 78

15. Write and explain types of inheritances.

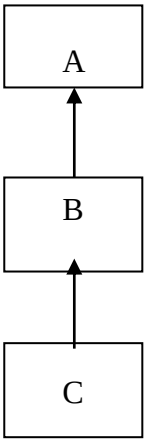
A) Types of inheritance are

1) Single inheritance
2) Multilevel inheritance
3) Hierarchical inheritance
4) Multiple inheritance
5) Hybrid inheritance

1. Single Inheritance: It refers to a child and parents class relationship where a class extends the another class.



2. Multilevel inheritance: It refers to a child and parent class relationship where a class extends the child class for example class C extends class B and class B exit ends class A



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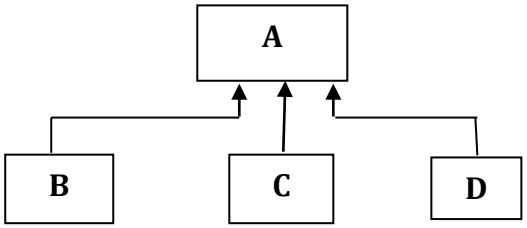
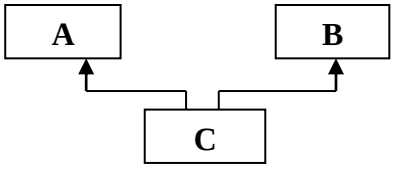
3. Hierarchical Inheritance: It refers to a child and parent class relationship where more than one classes extends the same class. For example, classes B,C and D extends the same class A .



4. Multiple Inheritance : It refers to the concept of are extending more than one classes. Which means a child class had two parent classes. For example class C extends both classes A and B. But java doesn't support multiple inheritance read more about it here.



Note: Multiple inheritance is the ability of a single class to inherit from multiple classes. Java does not have this capability in case of class . but it is supported in case of interface because there in no ambiguity as implementation is provided by the implementation class.

5. Hybrid Inheritance : Combination of more than one type of inheritance is a single program. For example A & B extends class C and another class D extends class A then this is a Hybrid inheritance example because it is a combination of single and hierarchical inheritance.

16. Explain the types of packages.

A) Java API Packages: Java API provides a large number of classes grouped into different packages according to functionality like lang, util, io, awt, net Etc., Each package provides different functionality to our java program.

Package	Purpose
java.lang	It includes classes for primitive types, strings, math functions, threads and exceptions.
java.util	Language utility classes such as vectors, hash tables, random numbers, date etc.,
java.applet	Classes for creating and implementing applets.
java.awt	Includes classes for windows, buttons, list, menus and so on.
java.io	Input or output support classes.

Syntax: To import a package:

import package_name.*;

User – Defined Package: A package which is defined by a programmer which is not already existed in the Java API.

Steps involved in creating our own package are:

1) Declare the package at the beginning of a file using the form
   package <package_name>;
2) Define the class that is to be put in the package and declare it **"public'.**
3) Create a subdirectory under the directory where the main source files are stored.
4) Store the listing as the classname.java file in the subdirectory created.
5) Compile the file. This creates " **.class** " file in the subdirectory.

Note: The subdirectory name must match the package name exactly.

Ex:

```
package package2;
public class ClassX
{
  public void displayX( )
  {
    System.out.println("Class X");
  }
}
```

17. How to handle the exception in Java?

A) When there is an exception, the user data may be corrupted. This should be tackled by the programmer by carefully designing the program by using the following three steps.

Step 1(try): The programmer should observe the statements in his program where there may be a possibility of exceptions. Such statements should be written inside a **try** block. A try block looks like as follows

```
try {
        statements;
}
```

Step 2 (catch): The programmer should write the catch block where he should display the exception details to the user. This helps the user to understand that there is some error in the program. Catch block looks like as follows:

```
catch(Exceptionclass ref) {
        statements;
}
```

The **Throwable class** of **printStackTrace()** method fetches exception details from the exception details from the exception stack and displays them. The **'Throwable'** class is the super class of all errors and exceptions in the java language.

Throw is used to force an exception by the programmer.

Step 3 (finally): The programmer should perform cleanup operations like closing the files and terminating the threads in the finally block. The statements inside the finally block are executed irrespective of whether there is an exception or not. The finally block looks like as follows.

```
finally {
        Statements;
}
```

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18. Explain creating a thread with example.

A) There are two ways to create a thread:

1. By extending Thread class
2. By implementing Runnable interface.

Runnable interface: The Runnable interface should be implemented by any class whose instances are intended to be executed by a thread. Runnable interface have only one method named run().

public void run(): is used to perform action for a thread.

Starting a thread:start( ) method **of Thread class is used to start a newly created thread. It performs following tasks:**

- A new thread starts(with new callstack).
- The thread moves from New state to the Runnable state.
- When the thread gets a chance to execute, its target run() method will run.

Example by implementing Runnable interface

```
class Multi implements Runnable{
public void run(){
System.out.println("thread is running...");
}

public static void main(String args[ ]){
Multi m1=new Multi( );
Thread t1 =new Thread(m1);
t1.start();
 }
}
```

Output:thread is running...

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Prepared by VRKS SASTRY TANIKELLA
CJL in CSE, GJC, KOTHAPETA, E.G.Dt.

IPE MARCH 2023

2228

Total No. of Questions – 18

Total No. of Printed Pages – 2 **Regd.No.** | | | | | | | | | | |

RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)
Paper II
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. What is database.

A) Database: A database is a collection of logically related information that is organized in a systematic manner so that it can easily be accessed, managed, and updated.

2. Define schema and subschma.

A) Schema: The schema is the physical arrangement of the data as it appears in the DBMS.

Sub-Schema: The subschema is the logical view of the data as it appears to the application program.

3. What is domain?

A) Domain: Domain is a pool of values of a specific attribute. Separate domains for separate attributes.

4. What are the symbols used in ER diagram?

A) Symbols used in E-R diagram are:
Lines, Double Lines, Rectangles , Double Rectangles , Ellipses, Double ellipses ,Dashed ellipses , Diamonds.

5. What is tuple?

A) Tuple: Tuple is a row or record of a table .

6. What is primary key?

A) Primary key: The Primary key of a relational data base table is a column name which uniquely identifies each record in the table.

7. What are the different data types in SQL?

A) varchar , varchar2 , numb, long, date ,etc

8. Write different DDL commands.

A) DDL commands: create, alter and drop.

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9. What is system?

A) System: System is an interacting elements joined together for a common objective. The word "System" is derived from the greak word "Systema" which means an organized relation ship.

Ex: Financial accounting system, net Banking system etc.,

10. What are the fact finding techniques?

A) 1. Observation
2. Interviews
3. Questioners
4. Random Sampling
5. Official records
6. Random Review

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

11. Explain about different data models.

A) Different data models are

1. Object based data models
2. Record – based data models
3. Physical data models

1. Object base data models: Object-based logical models are used in describing data at logical and view levels. They are characterized by the fact they provide flexible structuring capabilities and allow data constraints to be specified explicitly. There are many different data models, some of them are

I. The Entity-relationship model.
II. The Object-oriented model.
III. The semantic data model.
IV. The Functional data model.

2. Record based data models: In Record based data models; the database is structured in fixed formats records of several types. Each record defines fixed number of fields (attributes) and each field is fixed length. These models are used to specify the overall logical structure of the database and are used in describing the database at conceptual level.

The three widely accepted record – based data models are:

a) Relational model
b) Network model
c) Hierarchical model

3. Physical data models: Physical data model are used to describe data at the lowest level. In contrast to logical data models, there are few number of physical data models which are in use. Very few physical data models have been proposed so far. Two of these well known models are the unifying model and the frame memory model.

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OR

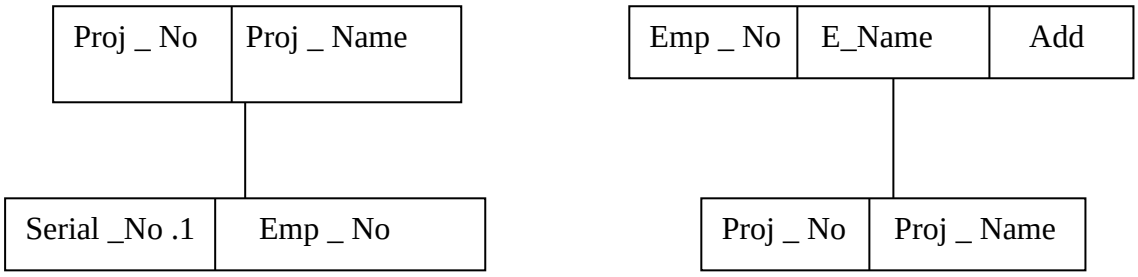
A) Data Model: A "Data Model" is a collection of concepts that can be used to describe the strcture of a database. Data model is a collection of conceptual tools to describe data, data relationships data cemantics and consistency constraints.

There are 3 types of data models.

1. Hierarchical Data Model
2. Network Data Model
3. Relational Data Model.

1. Hierarchical Data Model: This model is introduced in the information management system developed by the IBM in 1968. This relates records by the **Parent / Child** or **Supervisor / Sub-ordinate** relationship. This model like a hierarchical tree structure which is used to contract a hierarchy of records in the form of branches and nodes as the model its name.

Information which is closely related in a Parent – Child structure is stored together n the form of logical unit. Here a parent unit may have many child units. But a child unit can have only one parent unit. This model a permit to basic types of relationship namely **One – to – One** and **One – to – Many** relationships. The relation is Irreflexive , Anti symmetric and Transitive.



2. Network Data Model: It is quite similar to hierarchical data model. But it has slite improvement here we can have multiple parent – child relationships i.e. many – to – many relation ships can be represent when designing this the model one has to been establish relation between records at the time of creation of database. This model helps in rapid any easy access to data has we have multiple access paths to the reords.

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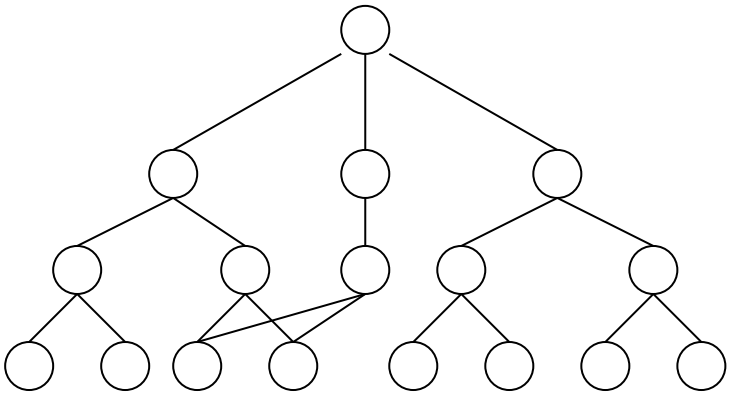

3. Relational Data Model: Relational data has usually consists many relations, that are related in various ways. A Relational Data Base schema **S** is a set of relational schemas **S = { R_1, R_2, ..., R_m }** and a set of integrity constraints i.e. A relational data base state DB of **S** is a set of relation states **DB = { r_1, r_2, r_3, ... ,r_m}**
such that " r_i " is a state of " R_i " and such that the " r_i " relation states satisfy the integrity constraints specified in IC.

Relational model uses a collection of tables to represent both data and the relational ships among those data. Each table ;as multiple columns and each column as a unique name.

Ex:
Customer:

Customer Name	Social Security	Address	Account No
Prasad	192-84	Hyd	A – 101
Imran	019-28	Sec'bad	A – 215
Ravi	022-224	Charminar	A – 305
Prasad	190-84	Banglore	A – 201
Smith	009-282	Delhi	A - 405

Account:

Account No	Balance
A – 101	500
A – 215	800
A – 305	400
A – 201	900
A - 405	750

In the above two tables there is a relationship between customer name and customer account numbers

1. Prasad Account No -101 has 500 as Balance.
2. Prasad Account No – 201 has 900 as Balance.

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12. What are the functions of DBA?

A) The functions or responsibilities of DBA includes

1. Schema Definition.
2. Storage Structure and access method definition.
3. Schema physical Organization and Modification.
4. Granting of authorization for data access .
5. Routine maintenance.

1. Schema Definition: The DBA creates the original database schema by executing a set of definition statements in the DDL.

2.Storage structure and access Method Definition: DBA will decide the actual storage structure and different access methodologies for the database.

3.Schema Physical Organization and Modification: The DBA carries out changes to the schema and physical organization to reflect the changing needs of the organization, are to alter the physical organization to improve performance.

4. Granting of Authorization for data access: By granting different types of authorization, the database administrator can regulate which of the database various users can access.

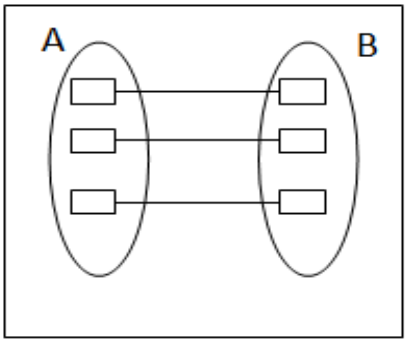
5. Routine Maintenance: DBA is the final authority to regulate the daily activities.

13. Explain the mapping constraints with neat diagram.

A) There are 4 types of mapping constraints.

1. ONE – to – ONE relationship
2. MANY – to – ONE relationship
3. ONE – to – MANY relationship
4. MANY – to – MANY relationship

1. ONE – to – ONE relationship: An entity in A is associated with at most one entity in B , An entity in B is also associated with at most one entity in A.



ONE – to – ONE relationship

Example : Relationship between the entities principal and college. i.e., Principals can lead a single college and a principal can have only one college.

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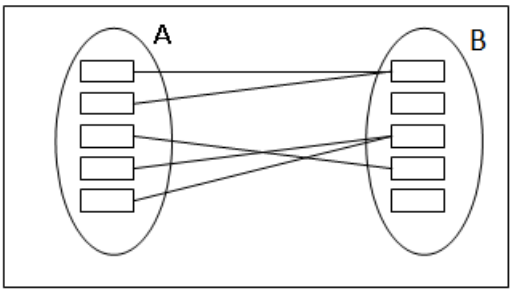
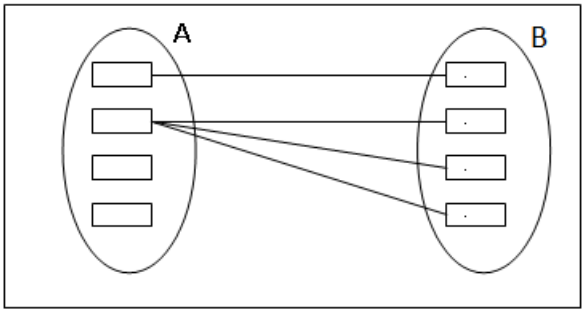
2. Many – to – One relationship: An entity set in A is associated with at most one entity in B, An entity in B however can be associated with any number of entities in A.



Many – to – One relationship

Example: Relationship between the entities Districts and state .i.e. many districts belong to a single state but many states cannot belong to single district.

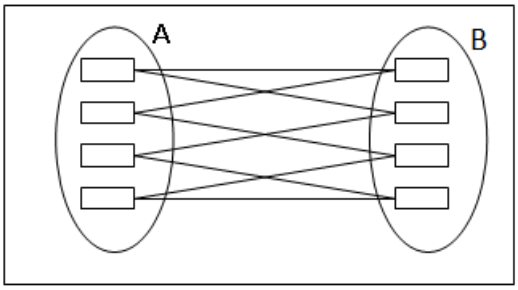
3. ONE – to - MANY relationship: An entity set A is associated with any number of entities in B. An entity in B, however can be associated with at most one entity in A.



ONE – to - MANY relationship

Example: Relationship between the entities class and student i.e., a class can have many students but a student cannot be in more than one class at a time**.**

4. MANY – to – MANY relationship: An entity set A is associated with any number of entities in B and an entity set in B is associated with any number of entities in A.



MANY – to – MANY relationship

Example: Relationship between the Entities College and course .i.e. a college can have many courses and course can be offered by many colleges.

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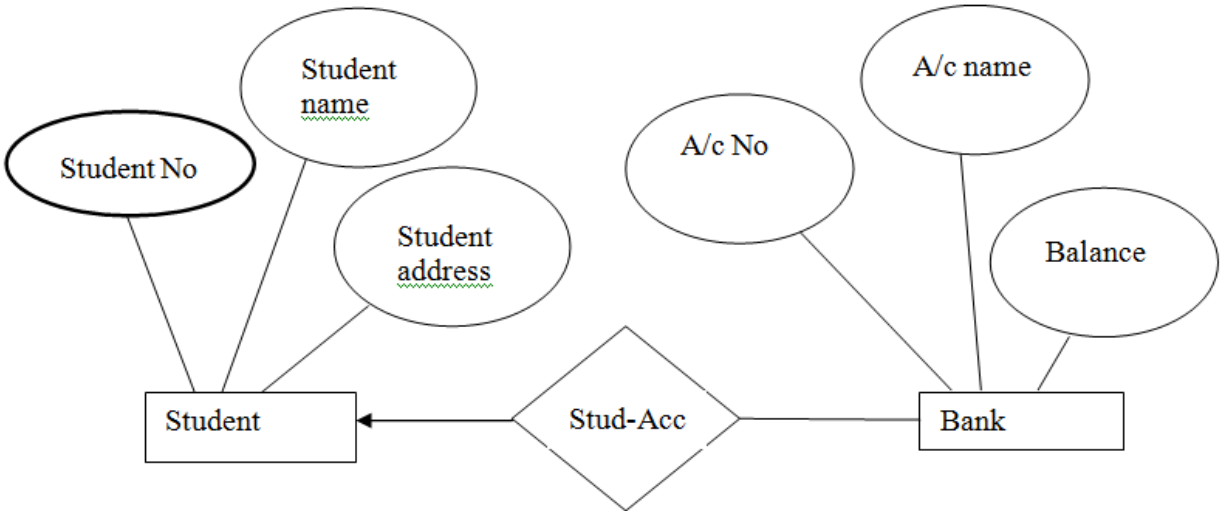
14. Draw an ER diagram by showing the relationship between a student and bank.

A)



15. Explain about relational data model.

A) Relational Database : One of the major advantages of using a relational database is its structural flexibility. It allows the users to retrieve the data in any combination

A relation is a two-dimensional array, consisting of horizontal rows and vertical columns. Each row, column ie a cell contains a unique value and no two rows are identical with respect to one another.

Relations are commonly referred as tables.. Every column in a database table acts as attribute since the meaning of the column is same for every row of the database .A row consists of a set of fields and hence commonly referred as a record.

Properties of Relational Database: The important properties of a relational database are listed below:

1. A relational database is a collection of relations.

2. The database tables have a row column format.

3. Operators are available either to join or separate columns of the database table.

4. Relations are formed with respect to data only.

5. The tables can be accessed by using simple non-procedural statements.

6. The data is fully independent, that is it will be the same irrespective of the access path used.

Structure of Relational Database: Relational database systems are the most common DBMS today. These relational DBMSs organize data into separate structures called **tables,** which can be **linked** via common information to make data storage more efficient. A relational DBMS has the following basic components:

fields - a separate piece of information which describe the data item.

records – collection of fields.

tables – collection of records.

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database - the collection of tables i.e the complete information.

A relational database consists of a collection of tables, each of which is assigned a unique name. A row in a table represents a relationship among a set of values.

Consider the EMPLOYEE table as under.

EMPNO	EMPNAME	DESIGN	SALARY
101	BHEEMESH	ENGINEER	50000
102	SASTRY	DOCTOR	40000
103	PRASAD	LECTURER	35000

(OR)

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16. Write any Six Codd rules.

A) Edgar F. Codd, proposed thirteen rules (numbered zero to twelve) and said that if a Database Management System meets these rules, it can be called as a Relational Database Management System.

1) **0 – Single Foundation Rule**
2) **1 – Information Rule**
3) **2 – Guaranteed Access**
4) **3 – Systematic Treatment of NULL values.**
5) **4 – Active online catalogue**
6) **5 – Comprehensive data sublanguage.**
7) **6 – View updation Rule**
8) **7 – High level UPDATE, INSERT, DELETE**
9) **8 – Physical Data Independence**
10) **9 – Logical Data Independence**
11) **10 – Integrity Independence**
12) **11 - Distribution Independence**
13) **12 – Non – Subversion**

1) **Single Foundation Rule:** RDBMS must manage every aspect of the database entirely through using its relational capabilities without using any external language.

2) **Information Rule:** The information can be represented in one and only one way that is tables also known as relations. This rules emphasis fact that the information can be stored in rows and columns.

3) **Guaranteed Access:** The access to table follows the sequence of table name, tuple attribute. This also states that at the intersection or each column and row there should be one and only one value a data. The value of a data must be logically addressable by using combination of data name, column name and value. Every step of data access is identified where the access to the work area involve qualifying the user name and password.

4) **Systematic Treatment of NULL values:** One should be able to operate with NULL values. The operation with the NULL values should be performed using single command. The treatment of NULL should be independent of data type. NOT NULL value should be provided if gives of these NULL values are included there should force no problems for applications using and manipulating them.

5) **Active On – Line catalogue:** RDBMS should maintain data dictionary tables to keep tack of current state of the database. These are special tables which keep track of the current state of the database. These tables contains information about table techniques, views column definitions synonyms and every other type of objects updated automatically.

6) **Comprehensive Data Sub Languages:** RDBMS should have comprehensive Data Definition Language, Data Control Language, Data Manipulation Language. All the operation on database should be supported by the data language which is path and parcel of the package.

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7) **View Updation Rule:** One can feel that any view can be updated, but in real practice one cannot update all views as some views are based on aggregating and virtual columns which make them impossible to be update.

8) **High Level UPDATE, INSERT, DELETE:** An RDBMS must be capable of doing more than just retrieving the relational data. It should able to do insert, Update and Delete data items with the use of single command for each operation. It should able to do this operation are more than one row also.

9) **Physical Data Independence:** The recording on the data should be left to the description of the type of system used that is whenever data is retrieved it should be independent of the storage structure and representation a change in the storage strategy should no effect the performance of data.

10) **Logical Data Independence:** The data should be independent of logic involved in programming if at all the database design is changed then the programs should be independent of these changes. That is once the programs are committed by effort should not effect by this effort should not be effect should logic depending level.

11) **Integrity Level Independence:** The data available should force no limitations interms of integration. The limits of the system used should only be taken into consideration. The integrity constraints specific to particular relational database must definable in relational data sub-language and storage in the data dictionary not in application programs.

12) **Distribution Independence:** This is one of the most popular and important aspect for any RDBMS. This implies fact the system should look like a centralized system to the user even if it is distributed across. It is important as the user should face difficulties. While accessing data, if it is at remote server the RDBMS should not take care of it imposing no problems to the user.
13) **Non – Subversion Rule:** Incase if RDBMS users help of any low language it must not bypass any integrity rules or constraints of the relational language thus any operation must be governed by the relation rules.

17. Explain any three DML commands with example.

A) ***Data Manipulation Language (DML):*** DML is used to perform typical manipulations like retrieval insertion and deletion and modification of the data the commands are as follows

a) INSERT
b) DELETE
c) UPDATE
d) SELECT

INSERT: INSERT command is used to insert data values in to a database table.

Syntax: INSERT into table_name (coumn_name, column_name) values (expression) **;**

Example: SQL> INSERT into emp (emp_id, emp_name, emp_sal) values (E1001, ‘sastry’, 2000)**;**

DELETE: DELETE command is used to delete the data from the database table.

Syntax: DELETE from table_name WHERE <search condition> **;**

Example: SQL>DELETE from emp WHERE emp_sal < 5000;

UPDATE: "UPDATE" command is use to change or modify database table. We can perform UPDATE operation in two ways.

a) To update all the rows / records of a table.
b) To update a single or set of records of a table.

Syntax: UPDATE table_name SET column_name = expression, column_name = expression WHERE column_name = expression;

Example:
SQL> UPDATE emp SET sal = 3200 WHERE ename = 'smith';

SELECT: "SELECT" command is used to retrieve data from a database table. We can SELECT the data from a table for two purposes.

a) To select all rows / records of a table.
b) To select specific records of a table.

Syntax:

a) SELECT * from table_name;
b) SELECT column_name, column_name from table_name WHERE search_condition;

Example:

a) SQL> SELECT * from emp;
b) SQL> SELECT epic , emp_name from employee WHERE dept='production' **;**

18. Explain different stages of Software Development Life Cycle in detail (SDLC).

A) System Development Life Cycle :

The stages involved during System Development Life Cycle are ::

1. Recognition of need
2. Feasibility study
3. Analysis
4. Design
5. Implementation
6. Post implementation and maintenance

1. Recognition of need: This gives a clearer picture of what actually the existing system is. The preliminary investigation must define the scope of the project and the perceived problems, opportunities and directives that triggered the project.

2. Feasibility Study: The goal of feasibility study is to evaluate alternative system and to purpose the most feasible and desirable system for development. In the process of feasibility study, the cost and benefits are estimated with greater accuracy. If cost and benefit can be quantified, they are tangible ; if not , they are called intangible.

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3. **System Analysis:** System analysis is an in-depth study of end user information needs that produces functional requirements that are used as the basis for the design of a new information system.

4. **System Design**: System design can be viewed as the design of user interface, data, process and system specification .

5. **System Implementation:** Implementation is the stage where theory is converted into practical. The implementation is a vital step in ensuring the success of new systems. Even a well designed system can fail if it is not properly implemented.

6. **Post Implementation and Maintenance**: Once a system is fully implemented and being operated by end user, the maintenance function begins. Systems maintenance is the monitoring, evaluating and modifying of operational information system to make desirable or necessary improvements.

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Prepared by VRKS SASTRY TANIKELLA
CJL in CSE, GJC, KOTHAPETA, E.G.Dt.

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DATA COMMUNICATION AND COMPUTER NETWORKS
Paper II
(English Version)

Time: 3 Hours **Max. Marks : 50**

SECTION A **10 X 2 = 20**

Note: (i) Answer ALL questions.
(ii) Each question carries TWO marks.

1. Define Bandwidth.

A) **Bandwidth :** Bandwidth means the amount of data that can be transferred from one point to another in a given time period (usually a second). Bandwidth is usually expressed in bits per second (bps) or Bytes per second(Bps).

2. What is a Network ?

A) **Network:** A computer network is a group of computer systems and other hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users.

3. Expand BBN, GAN.

A) BBN: Back Bone Networks
GAN: Global Area Networks

4. What are LAN components?

A) Server, client, hub, switch, repeater, router, NIC, Cables, Network operating system.

5. Define protocol.

A) **Protocol:** A **network protocol** defines rules and conventions for communication between network devices.

6. What are the layers of TCP / IP model ?

A)

a) Network Layer
b) Internet layer
c) Transport layer
d) Application Layer

7. What is a browser ? List types of browsers.

A) **Browser:** A browser is software that is used to access the internet.

Types of browsers are Google chrome, Mozilla Firefox, Internet explorer, Netscape navigator and opera etc.,

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8. What is an E – mail ?

A) **E – mail:** E-mail (Electronic Mail) is an electronic version of sending a letter. You can send e-mail from your computer at any time of the day to any address around the world and your electronic letter will arrive at its destination seconds after you send it, even if the receiver lives on the other side of the world.

9. What is HDD ?

A) **HDD: HDD (Hard Disk Drive)** is a Secondary storage device which stores data **permanently.**

10. What is a trouble shooting?

A) **Trouble shooting:** **Trouble shooting** is a process in which certain measures and processes are collectively used to identify and fix problems which are encountered with in a NETWORK or any Hardware device. Trouble shooting can be both **manual** and **automatic.**

SECTION – B **5 X 6 = 30**

Note: (i) Answer ANY FIVE questions.
(ii) Each question carries SIX marks.

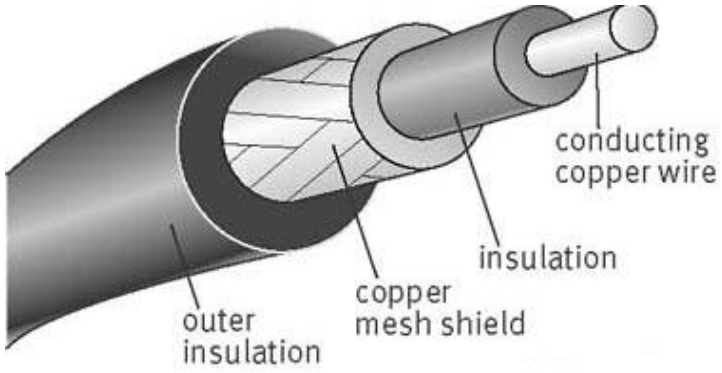
11. Explain about various communication channels.

A) The communication channels are

-Coaxial cable
-Twisted pair
-Microwaves
-Fiber optics

1. Coaxial cable: These cables consist of an inner copper wire of varying thickness surrounded by insulation and other shielding. Their stiffness caused network administrators difficulty in installing and maintaining thin net and thick net.

A type of wire that consists of a center wire surrounded by insulation and then a grounded shield of braided wire. The shield minimizes electrical and radio frequency interference.



Coaxial cabling is the primary type of cabling used by the cable television industry and is also widely used for computer networks, such as Ethernet. Although more expensive than standard telephone wire, it is much less susceptible to interference and can carry much more data.

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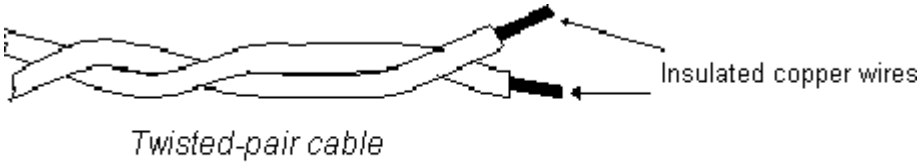
2. Twisted pair: A twisted pair consists of two insulated copper wires typically about 1 mm thick. The wires are twisted together in a helical form. The purpose of twisting the wires is to reduce electrical interference from similar pairs close by. The following figure illustrates the twisted pair (two parallel wires constitute a simple antenna; a twisted pair does not).

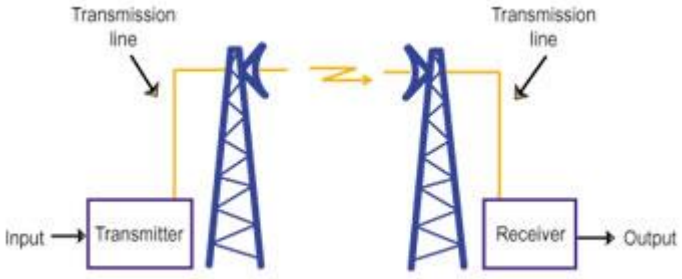


Twisted-pair cable

Twisted pair is the ordinary copper wire that connects home and many business computers to the telephone company.

3.Microwaves: Microwave communication is a method of transmitting information or energy by the use of radio waves whose wavelengths are conveniently measured in small numbers of centimeter; these are called *microwaves*. This part of the radio spectrum ranges across frequencies of roughly 1.0 gigahertz (GHz) to 30 GHz.

Microwave radio transmission is commonly used in point-to-point communication systems on the surface of the Earth, in satellite communications, and in deep space radio communications. Other parts of the microwave radio band are used for radars, radio navigation systems, sensor systems, and radio astronomy.



4.Optical fiber: An optical fiber is a flexible, transparent fiber made of high quality extruded glass (silica) or plastic, slightly thicker than a human hair. It can function as a waveguide, or "light pipe", to transmit light between the two ends of the fiber.

An Optical fiber cable has a cylindrical shape and consists of three concentric sections; the core, the cladding and the jacket. The core is the innermost section and consists of fiber made of glass or plastic. The core has diameter in the range 8-100 micrometers. Each fiber is surrounded by its own cladding, which is a glass or plastic coating that has optical properties different from those of core. The interface between the core and the cladding acts as a reflector to confine light that would otherwise escape the core. The jacket is composed of plastic and other material layered to protect against moisture, abrasion, crushing and other environmental damage.

Optical fibers are widely used in communications, which permits transmission over longer distances and at higher bandwidths (data rates) than other forms of communication.

Most telephone company long-distance lines are now made of optical fiber.

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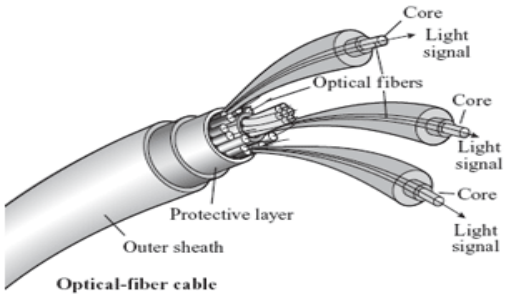
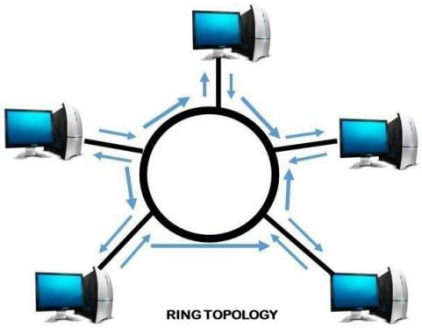


12. Explain about network topologies.

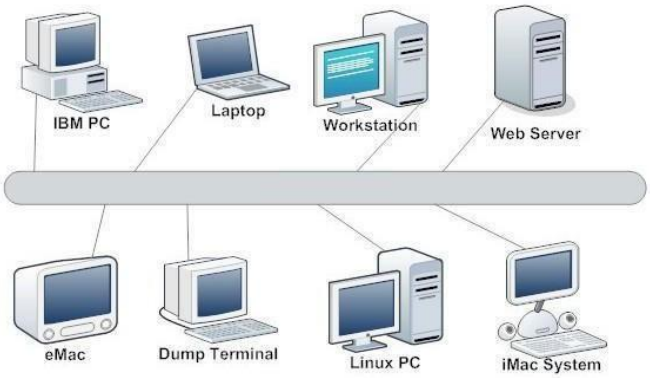
A) Some common network topologies include ring, bus, star, tree and mesh configurations. These topologies are defined below:

Ring Topology: In this topology,

- Devices are connected from one to another to form a ring shape.
- Each host is connected to the next and the last node is connected to the first.
- A data token[1] is used to grant permission for each computer to communicate.



Bus Topology: In this topology, all hosts are connected to the backbone cable in a linear fashion



Star Topology: In this topology,

- All hosts are connected to a single point of concentration.
- Usually uses a hub[3] or switch[4] as a center node.
- Range limits are about 100 meters from the hub

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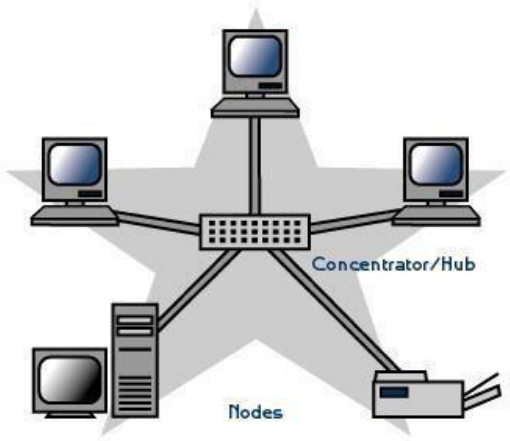
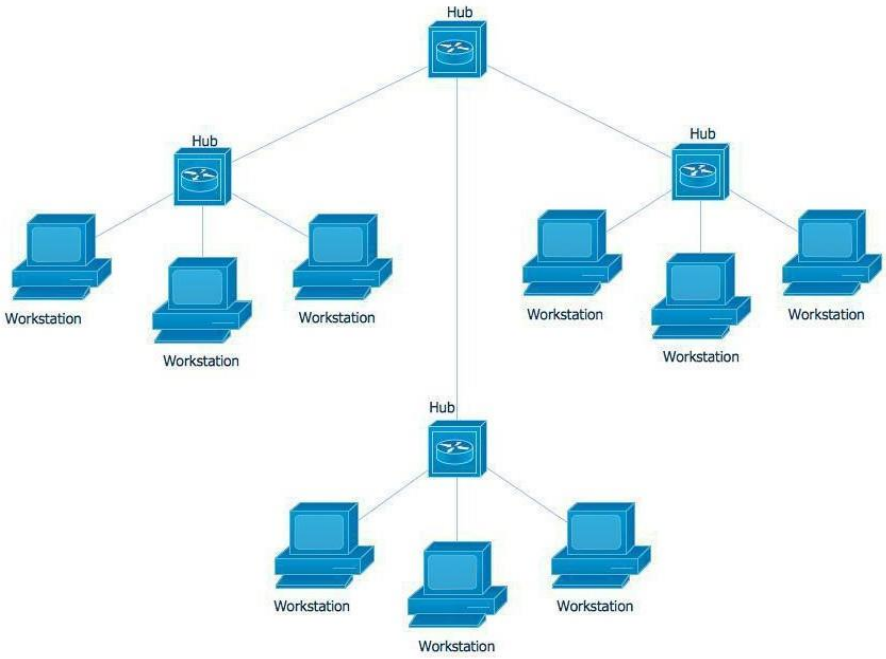
- Data on a star network passes through the hub or concentrator before continuing to its destination.



Tree Topology: One "root" node connects to other nodes, which in turn connect to other nodes, forming a tree structure. Information from the root node may have to pass through other nodes to reach the end nodes.



Mesh Topology: In this topology, Each host is connected to all the other hosts.

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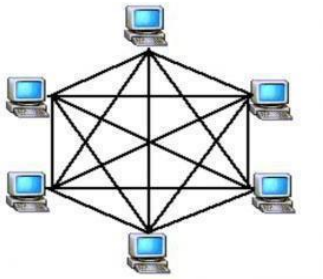
Mesh Topology



13. Explain different types of computer networks.

A) Different types of computer networks:

Depending upon the geographical area covered by a network, it is classified as:

– Local Area Network (LAN)
– Metropolitan Area Network (MAN)
– Wide Area Network (WAN)
– Personal Area Network (PAN)

LAN(Local Area Network): A LAN is a network that is used for communicating among computer devices, usually within an office building or home.

- Is limited in size, typically spanning a few hundred meters, and no more than a mile
- Is fast, with speeds from 10 Mbps to 10 Gbps
- Requires little wiring, typically a single cable connecting to each device
- Has lower cost compared to MAN's or WAN's

MAN(Metropolitan Area Network):

• A MAN is a large computer network that usually spans a city or a large campus.
• A MAN is optimized for a larger geographical area than a LAN, ranging from several blocks of
buildings to entire cities.
• A MAN might be owned and operated by a single organization, but it usually will be used
by many individuals and organizations.
• A MAN often acts as a high speed network to allow sharing of regional resources.
• A MAN typically covers an area of between 5 and 50 km diameter.
• Examples of MAN: Telephone company network that provides a high speed DSL to customers and cable TV network.

WAN(Wide Area Network):

• WAN covers a large geographic area such as country, continent or even whole of the world.
• A WAN is two or more LANs connected together. To cover great distances, WANs may transmit
data over leased high-speed phone lines or wireless links such as satellites.
• Multiple LANs can be connected together using devices such as bridges, routers, or gateways, which enable them to share data.
• The world's most popular WAN is the Internet.

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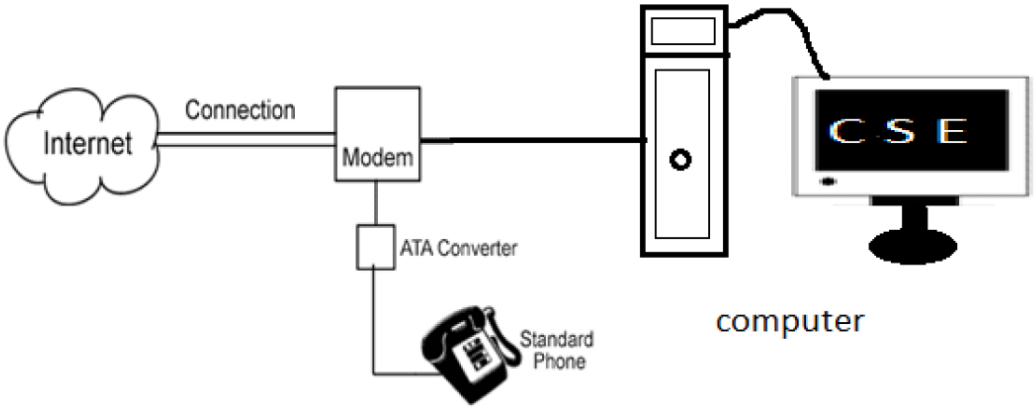
PAN(Personal Area Network:

• A PAN is a network that is used for communicating among computers and computer devices (including telephones) in close proximity of around a few meters within a room
• It can be used for communicating between the devices themselves, or for connecting to a larger
network such as the internet.
• PAN's can be wired or wireless
• A personal area network (PAN) is a computer network used for communication among computer devices, including telephones and personal digital assistants, in proximity to an individual's body.
• The devices may or may not belong to the person in question. The reach of a PAN is typically a few meters.

14. Explain function of modem with a neat diagram.

A)

MODEM(Modulator–DEModulator): A modem is a device that enables a computer to transmit data over telephone or cable lines . Computer information is stored digitally, whereas information transmitted over telephone lines is in the form of analog waves. A modem converts the Digital signals into analog signals (Modulate) and converts the Analog signal into Digital signal(Demodulate). Modem is only device to connect our computer with internet. The following diagram explains how the connections are made.
Modems are mainly two types internal modems and external modems



Internal Modems: Internal modems are basically integrated on a chip. These are put up into the PCI slots of the computer. There is no need of any external power supply for internal modems. These modems use the power supply of the PC. Their installation in PC is quite very simple

External Modems: A serial cable connection is needed to connect an external modem to a PC. These modems use their own power supplies. These modems have their independent controls.

External modems are many types as like Cable modem and DSL modem, etc.,

15. What are the layers in OSI models? Explain briefly.

A) The model is called the ISO-OSI (Open Systems Interconnection) Reference Model because it deals with connecting open systems—that is, systems that are open for communication with other systems. Network functionality is divided into seven layers.

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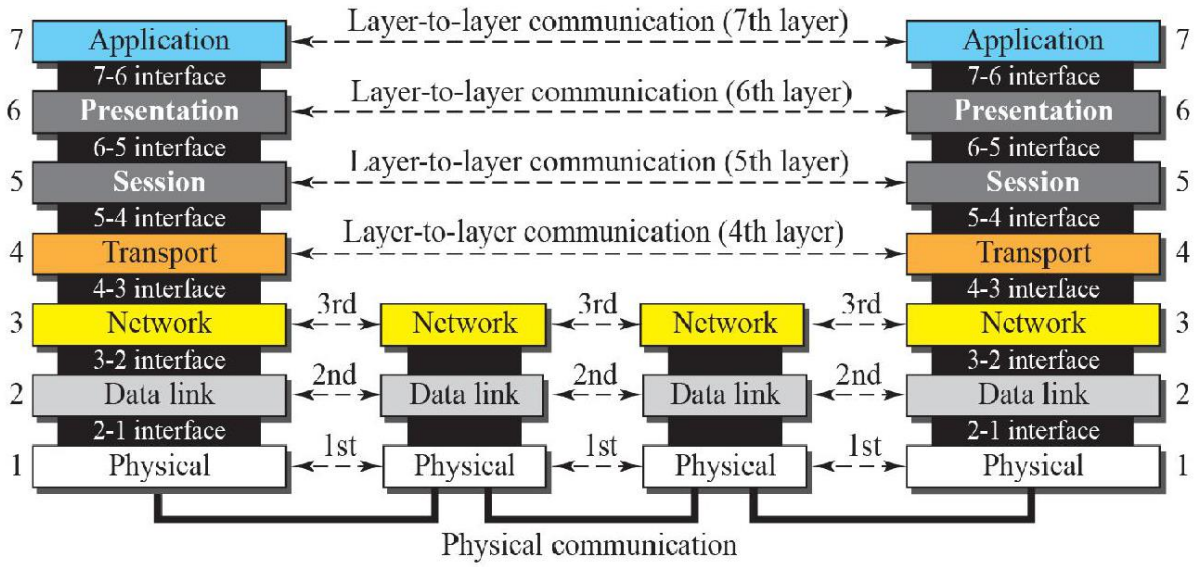
The principles that were applied to arrive at the seven layers can be briefly summarized as follows:



OSI Reference Model

1. PHYSICAL LAYER: The physical layer coordinates the functions required to transmit a bit stream over a physical medium.

The physical layer is concerned with the following:

Physical characteristics of interfaces and media - The physical layer defines the characteristics of the interface between the devices and the transmission medium. **Representation of bits -** To transmit the stream of bits, it must be encoded to signals. The physical layer defines the type of encoding.

Data Rate or Transmission rate - The number of bits sent each second – is also defined by the physical layer.

Synchronization of bits - The sender and receiver must be synchronized at the bit level. Their clocks must be synchronized.

Line Configuration - In a point-to-point configuration, two devices are connected together through a dedicated link. In a multipoint configuration, a link is shared between several devices. **Physical Topology -** The physical topology defines how devices are connected to make a network. Devices can be connected using a mesh, bus, star or ring topology.

Transmission Mode - The physical layer also defines the direction of transmission between two devices: simplex, half-duplex or duplex.

2. DATA LINKLAYER: It is responsible for transmitting frames from one node to next node. The other responsibilities of this layer are

Framing - Divides the stream of bits received into data units called frames.

Physical addressing – If frames are to be distributed to different systems on the network, data link layer adds a header to the frame to define the sender and receiver.

Flow control- If the rate at which the data are absorbed by the receiver is less than the rate produced in the sender, the Data link layer imposes a flow control mechanism.

Error control- Used for detecting and retransmitting damaged or lost frames and to prevent duplication of frames. This is achieved through a trailer added at the end of the frame.

Access control -Used to determine which device has control over the link at any given time. It is responsible for **Hop to Hop** delivery.

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3. NETWORK LAYER: This layer is responsible for the delivery of packets from source to destination. It is mainly required, when it is necessary to send information from one network to another. The other responsibilities of this layer are

Logical addressing - If a packet passes the network boundary, we need another addressing system for source and destination called logical address.

Routing – The devices which connects various networks called routers are responsible for delivering packets to final destination.

It is responsible for **Host** to **Host** delivery.

4. TRANSPORT LAYER:

- It is responsible for **Process to Process** delivery.
- It also ensures whether themes age arrives in order or not.

The other responsibilities of this layer are

Port addressing - The header in this must therefore include a address called port address. This layer gets the entire message to the correct process on that computer.

Segmentation and reassembly - The message is divided into segments and each segment is assigned a sequence number. These numbers are arranged correctly on the arrival side by this layer.

Connection control - This can either be **connectionless or connection-oriented.** The connectionless treats each segment as a individual packet and delivers to the destination. The connection-oriented makes connection on the destination side before the delivery. After the delivery the termination will be terminated.

Flow and error control - Similar to data link layer, but process to process take place.

5. SESSION LAYER: This layer establishes, manages and terminates connections between applications. The other responsibilities of this layer are

Dialog control - This session allows two systems to enter into a dialog either in half duplex or full duplex.

Synchronization-This allows to add checkpoints into a stream of data.

6. PRESENTATIONLAYER: It is concerned with the syntax and semantics of information exchanged between two systems.

The other responsibilities of this layer are:

Translation – Different computers use different encoding system, this layer is responsible for interoperability between these different encoding methods. It will change the message into some common format.

Encryption and decryption-It means that sender transforms the original information to another form and sends the resulting message over the network. and vice versa.

Compression and expansion-Compression reduces the number of bits contained in the information particularly in text, audio and video.

7. APPLICATIONLAYER: This layer enables the user to access the network. This allows the user to log on to remote user. The other responsibilities of this layer are

FTAM (file transfer, access, mgmt) - Allows user to access files in a remote host.

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Mail services - Provides email forwarding and storage.

Directory services - Provides database sources to access information about various sources and objects.

Network virtual terminal (Remote log-in)

Accessing the World Wide Web

16. What is an internet? Explain advantages and disadvantages of internet.

A) **Internet** : The **Internet** is the publicly available worldwide system of interconnected computer networks that transmit data by packet switching over the Internet Protocol (IP). It is made up of thousands of other, smaller business, academic, and government networks.

1. Email:E-mail is an online correspondence system. With e-mail you can send and receive instant electronic messages, which works like writing letters. Your messages are delivered instantly to people anywhere in the world, unlike traditional mail that takes a lot of time. Email is now an essential communication tools in business. It is also excellent for keeping in touch with family and friends. The advantages to email is that it is free (no charge per use) when compared to telephone, fax and postal services.

2.Information: Any kind of information on any topic under the sun is available on the Internet. The 'search engines' on the Internet can help you to find data on any subject that you need. There is a huge amount of information available on the internet for just about every subject known to man, ranging from government law and services, trade fairs and conferences, market information, new ideas and technical support.

3.Services: Many services are now provided on the internet such as online banking, job seeking and applications, railway reservations , flight reservations and hotel reservations etc.,

Disadvantages of Internet:

1. Personal Information: If you use the Internet, your personal information such as your name, address, etc. can be accessed by other people. If you use a credit card to shop online, then your credit card information can also be 'stolen' which is same as giving a blank check to someone.

2.Pornography: This is a very serious issue concerning the Internet, especially when it comes to young children. There are thousands of pornographic sites on the Internet which are harmful to the young children .

3. Spamming: This refers to sending unsolicited e-mails in bulk, which serve no purpose and unnecessarily clog up the entire system. Such illegal activities are frustrating for all Internet users, and so instead of just ignoring it, we should make an effort to try and stop these activities so that using the Internet can become that much safer.

17. How do you send and receive an E – mail with attachment?

A)

Sending an E-mail:

To Send an e-mail , sender must have email-id(user name and password), receiver's email-id , message , subject of the mail and location of a file to be attached etc.,

1. You must open your email account provider such as gmail, yahoo or rediff etc.,
2. Login into your email-id by using user name and password.

3. After logged in , click on compose
4. Enter address of the receiver(s) in the "To" field
5. you must write the subject that means email is for what purpose in the "subject"field
6. you must write in the contents of your email in message box.
7. If you want to attach files , click on attach and give the location of a file to be attached.
8. Finally , click on "Send" to send.

If everything is correct , then you will be noticed that
"your message has been sent, view message"

Receiving an E-mail :

To receive an e-mail , receive must have email-id (user name and password),

1. You must open your email account provider such as gmail, yahoo or rediff etc.,
2. "Login" into your email-id by using user name and password.
3. After logged in, click on inbox to see all the Emails you have received.

4. After opening the Inbox you will see the person and the subject who have sent you the mail.
5. Clicking on it will open the mail and you can see the data which have been sent to you.
6. If an attachment is there, then you can view or download by clicking.
7. There will be a reply option in case if you want to reply to the sender.
8. you can save the message and attachments if you want.

18. Explain the concept of various trouble shoots in printer.

A) A **printer** is an external hardware output device that takes the electronic data stored on a computer or other device and generates a hard copy of it.

Trouble Shooting A Printer:

When a printer is unable to print, there may be a possibility that either the printer is experiencing a hardware or software problem. Before testing the software, it is always recommended that the printer is tested for hardware issues first.

Testing Hardware :

1. Check that paper is loaded and that there are no paper jams.
2. Check the cable connections. Both the power cable and data cables (e.g., USB cable) going from printer and to your computer.
3. Verify that the printer power indication light is turned.
4. Verify that the printer has no flashing lights or Red or Orange lights. Having red, orange, or any other flashing lights indicates malfunctioning of printer.
5. Run a self-test on the printer. Running a self-test should print a basic page of information indicating the printer is physically working. Your users manual should have the instructions for printing a self-test. If your printer does not print a self-test, it's a good possibility that there is a defect or misconfiguration with your printer, and you should contact the printer manufacturer.

Testing Software Windows users:

1. If possible, make sure your printer can print using the above hardware tests.

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2. Install the printer software provided with your printer. If no software was provided with your printer, see the printer driver's page for a listing of printer drivers. Drivers are required for your printer to properly work with the operating system.

3. Click Start, Settings, and Printers. Within the printer's window, verify that your printer manufacturer and model is listed.

4. Print a test page by right-clicking the printer icon and then click the Properties option and click print test page. If the test page does not print, download the latest drivers from your printer manufacturer. For a list of printer drivers, see our printer driver's index.

5. If the page prints successfully, get back into the printers window, right-click the printer and ensure that there is a check next to Set as default. Newer versions of Windows also show a check next to the printer icon once it has been set as the default printer.

Once the printer is set as default, click Start, Run, type notepad, and press Enter. In Notepad, type a test message and click File and Print. If the printer also prints successfully from this program, but you are still unable to print from another program, it is likely that program has an issue and not your printer.

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