HIGHER SECONDARY – SECOND YEAR

STUDY MATERIAL

XII - COMPUTER APPLICATIONS

NAME	
STD & GROUP	

PREPARED BY

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PROVERB

As Nelson Mandela says,

"***Education*** is the ***most powerful weapon*** which you can use to change the world."

As Bill Gates says,

"Don't compare yourself with anyone in this world… if you do so, you are insulting yourself."

PREFACE

- **"CS KNOWLEDGE OPENER" Computer Applications**" for standard XII has been prepared in accordance with the New Textbook released by the Government of Tamil Nadu.
- Each chapter consists of an Important Terms / Definition and Answers to the Textbook Questions, Which gives a summary of the concepts presented in the text in a simple and lucid language.
- It is hoped that this book in the present form will satisfy all types of learners and help them improve their learning potential, apart from mentally preparing them to face any type of questions in the examinations.
- This Study Material is prepared from Revised Edition Book 2020.
- Our aim is to make all the students who study this study material to score high marks in theory.

NOTE

- This Study material is meant for educational purposes.
- No part of this study material may be reproduced or transmitted in any form or by any means, without permission.
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TOP TIPS TO SCORE GOOD MARKS IN YOUR BOARD EXAMINATION

I. ALWAYS FEEL POSITIVE:-

- Always be positive and think positive to get positive vibes around you which make you to succeed in your life.
- Trust god and pray god regularly regarding your ambition.
- Make your friends and surroundings to think positively.
- Take care of your health.
- Respect your parents and teachers and get blessings before the exams.

II. STUDY PLAN:-

- Make a perfect chart of study plan for each and every subject.
- Fix the time for studying and doing your daily activities.
- Spend more time for revision and reduce other things for a month.
- Avoid usage of mobile phone and TV for a month atleast.

SUBJECT WISE PLAN:

- For all the subject you will be having four parts of questions.
  - One Mark
  - Two Mark
  - Three Mark
  - Five Mark
- Spend atleast five hours to go through all the book back one mark and other important one marks thoroughly to score centum.
- Then Concentrate in two and three mark questions which you are thorough in all the lesson and selective questions in chapter which you feel tough.
- In five mark you will be having either or choice and already you have an idea about it to attend all the questions, so revise those questions and chapters thoroughly.
- At last in the final day before exam go through chapter wise all the questions you have read before 8 pm at the night.
- Wake up 4.30 in the early morning and give a glance over the book.
- Get ready early and keep all your writing things ready without forget anything.
- And reach your center earlier.

III. EXAM TIMING:

- Maintaining of time is the very important one in the exam.
- First utilize the question paper reading time perfectly and choose the well-known questions and number of question to write in every part correctly.
- Read and understand the questions properly.
- First read from five marks, three marks, two marks and choose the questions correctly.
- Atlast come to one mark and choose the correct options.
- If your writing time is started, write all your information correctly as the guidance of your invigilators.
- Then try to complete the answers part wise.
- Part number and question number is very important.
- Try to attend the compulsory question without ignoring.
- Then first of all finish the one mark question within 15 to 20 minutes.
- Two marks = 40 minutes
- Three marks= 45 minutes
- Five marks = 1.10 minutes
- Always leave last five to ten minutes to check the paper once again, check all the questions are attended and also question number.

PUBLIC QUESTION PATTERN (THEORY)

PART – I	Choose the Correct Answers	MCQ	15x1=15
PART – II	Answer any Six Questions. Question No.24 Compulsory	Out of 9 Questions	6x2=12
PART – III	Answer any Six Questions. Question No.33 Compulsory	Out of 9 Questions	6x3=18
PART – IV	Answer all the Questions	OR Type Questions	5x5=25
TOTAL			**70**

PUBLIC PRACTICAL PATTERN

Internal Marks	15
External Marks	15
TOTAL	**30**

TABLE OF CONTENTS
COMPUTER APPLICATIONS – II YEAR

1. MULTIMEDIA AND DESKTOP PUBLISHING

Section – A

Choose the best answer **(1 Mark)**

1. _____ refers to any type of application that involves more than one type of media such as text, Graphics, video, animation and sound.

a) an executable file b) desktop publishing **c) multimedia** d) hypertext

2. One of the disadvantages of the multimedia is its __

a) cost b) adaptability c) usability d) relativity

3. Expand JPEG

a) joint photo experts gross **b) Joint Photographic Experts Group**

c) joint processor experts group d) joint photographic expression group

4. You need hardware, software and _____to make multimedia

a) Network b) compact disk drive **c) good idea** d) programming knowledge

5. Match the following by choosing the right one

1. Text – TGA
2. Image – MIDI
3. Sound – MPEG
4. Video – RTF

a. 1, 2, 3, 4 b. 2, 3, 4, 1 **c. 4, 1, 2, 3** d. 3, 4, 1, 2

6. Find the odd one on the following which is not an image format.

a) TIFF b) BMP **c) RTF** d) JPEG

7. _____ is the process displaying still images they give continuous movement.

a) Text formats b) Sound c) MP3 **d) Animation**

8. The live telecasting of real time program through Internet is known as ____

a) Web casting b) web hosting c) data manipulation d) none of the above

9. GIF use _____ color look up table

a) 8 bit **b) 13 bit** c) 8 MB d) 13 MB

10. RTF file format was introduced by_____

a) TCS **b) Microsoft** c) Apple d) IBM

Section-B

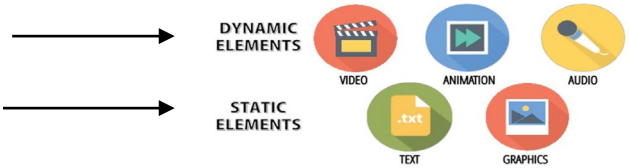
Answer the following questions **(2 Mark)**

1. Define Multimedia and their features.

- The term multimedia comprises of two words, "multi" and "medium".
- Multi ⟶ Many and Media ⟶ Medium.
- Multimedia is an integration of **many types of media** like **text, graphics, images, audio, animation, video** etc on a single medium in the same information unit.

2. List out Multimedia Components

- Multimedia has five major components like text, images, sound, video and animation.



3. Classify the TEXT component in multimedia.

- Text is classified as static and dynamic text.

1) Static Text

- Static text, the text or the words will remain static as a heading or in a line, or in a paragraph.

2) Hypertext

- Hypertext is text which contains links to other texts.
- A Hypertext is a system which consists of **nodes, the text and the links between the nodes**, which **defines the paths** for accessing the text in non-sequential ways.

4. Classify the IMAGE component in multimedia

- Images are generated by the computer in two ways, as bitmap or raster images and as vector images.

1) Raster or Bitmap Images

- The common and comprehensive form of storing images in a computer is raster or bitmap image.

2) Vector Images

- Drawing elements or objects such as lines, rectangles, circles and so on to create an image are based on Vector images.

5. Define Animation and their features

- Animation is the process of **displaying still images** so quickly so that they give the impression of **continuous** movement.
- Animations may be in two or three dimensional.
  - Two dimensional animations occur on the flat X and Y axis of the screen.
  - Three dimensional animations occur along the three axis X, Y and Z.

6. List out image file formats

1. TIFF (Tagged Image File Format)
2. BMP (Bitmap)
3. DIB (Device Independent Bitmap)
4. GIF (Graphics Interchange Format)
5. JPEG (Joint Photographic Experts Group)
6. TGA (Tagra)
7. PNG (Portable Network Graphics)

7. List out audio file formats

1. WAV (Waveform Audio File Format)
2. MP3 (MPEG Layer-3 Format)
3. OGG
4. AIFF (Audio Interchange File Format)
5. WMA (Windows Media Audio)
6. RA (Real Audio Format)

8. List out video file formats

1. AVI (Audio/Video Interleave)
2. MPEG (Moving Picture Experts Group)
3. WMV (Windows Media Video)
4. 3GP
5. FLV (Flash Video)

9. Define Multimedia Production.

- In the multimedia application, after the pre-production activities, the production phase starts.
- This phase includes the activities like background music selection, sound recording and so on.
- Text is incorporated using OCR software, Pictures shot by digital camera, and Video clips are shot, edited and compressed.

10. List out Multimedia Production team members

- The Multimedia Production team comprises of members like Script writer, Production manager, Editor, Graphics Architect, Multimedia Architect, Programmer, and Web Master.

Section-C

Answer the following questions **(3 Mark)**

1. Briefly explain about Multimedia Components.

MULTIMEDIA COMPONENTS:

1) Text

- Texts such as **Static Text, Hypertext** are the basic components used for communication.

2) Image

- Images such as **Bitmap or Raster images**, **Vector images** acts as an vital component in multimedia

3) Animation

- Animation (**Path Animation, Frame Animation**) is the process of displaying still images so quickly so that they give the impression of continuous movement.

4) Sound

- Sound (**MIDI , Digital Audio**) is a meaningful speech in any language and providing the pleasure of music, special effects and so on.

5) Video

- Video is defined as the display of recorded event, scene etc.
- **Analog Video, Digital Video** are the powerful way to convey information in multimedia applications are embedding of video.

2. Describe the features and techniques of animation

- Animation is the process of **displaying still images** so quickly that they give the impression of **continuous** movement.
- The least frame rate of at least **16 frames** per second gives the impression of smoothness.
- Natural looking should be at least **25 frames** per second.
- Animations may be in **two or three dimensional**.
- The two basic **types of animations** are **Path animation and Frame animations.**

3. Write roles and responsibilities of Production team members

a. Production Manager

- The role of production manager is to define, and coordinate, the production of the multimedia project in time and with full quality.

b. Content Specialist

- Content specialist is responsible for performing all research activities concerned with the proposed application's content.

c. Script Writer

- The script writer visualizes the concepts in three dimensional environments

d. Text Editor

- The Text Editor checks the flow of text, structure and correct it grammatically.

e. Multimedia Architect

- The multimedia architect integrates all the multimedia building blocks using an authoring tools.

4. Describe the various file formats in multimedia

1. Text File Formats

- RTF(Rich Text Format)
- Plain text

2. Image File Formats

- TIFF (Tagged Image File Format)
- BMP (Bitmap)
- DIB (Device Independent Bitmap)
- GIF (Graphics Interchange Format)
- JPEG (Joint Photographic Experts Group)
- TGA (Tagra)
- PNG (Portable Network Graphics)

3. Digital Audio File Formats

- WAV (Waveform Audio File Format)
- MP3 (MPEG Layer-3 Format)
- OGG
- AIFF (Audio Interchange File Format)
- WMA (Windows Media Audio)
- RA (Real Audio Format)

4. Digital Video File Formats

- AVI (Audio/Video Interleave)
- WMV (Windows Media Video)
- FLV (Flash Video)
- 3GP
- MPEG (Moving Picture Experts Group)

5. Explain animation industry and their scope

- Indian animation industry is anticipated to grow faster than the IT industry.
- The industry has grown to a multibillion net worth standard.
- The manpower crunch needs to be decreased with animators.
- There are hundreds and thousands of job opportunities lying around open for animators.

- Work opportunities for quality animators and related professionals exist in the following sectors :-
  - Advertising
  - Online and Print News Media
  - Film & Television
  - Cartoon production
  - Theater
  - Video Gaming
  - E-learning

Section - D

Answer the following questions: **(5 Mark)**

1. Explain in detail Process of Multimedia.

The phases for development of complex multimedia projects are,

1. Conceptual Analysis and Planning:

- Conceptual analysis identifies a appropriate theme, budget and content availability on that selected theme.
- Copyright issues also are considered in this phase.

2. Project design:

- Once the theme is finalized objectives, goals, and activities are drawn for the multimedia project.
- General statements ⟶ Goals.
- Specific statements ⟶ Objectives.
- Activities are series of actions which contribute to the Project design phase.

3. Pre-production:

Based on the planning and design the project is developed.

STEPS IN PRE-PRODUCTION:

- **Budgeting** for each phases like consultants, hardware, software, travel, communication and publishing is estimated for all the multimedia projects.
- **Multimedia Production Team** comprises of members playing various roles and responsibilities like Script writer, Production manager, Editor, Graphics Architect, Multimedia Architect and Web Master.
- **Hardware Selection** includes the selection of fastest CPU, RAM and huge monitors, sufficient disc for storing the records.
- **Software Selection and File Formats** depends on the funds available for the project.
- **Defining the Content** is the "stuff " provided by content specialist to the multimedia architect
- **Preparing the structure:**
  - A detailed structure must have information about all the steps.
  - This structure defines the activities, responsible person and the start/end time for each activity.

4. Production:

- In the multimedia application, after the pre-production activities, the production phase starts.
- This phase includes the activities like background music selection, sound recording and so on.
- A pilot project is ready by this time.

5. Testing:

- The complete testing of the pilot product is done before the mass production to ensure that everything is right, and avoiding the failure after launch.
- It is tested using different browsers, and deployed in the server if it is a local multimedia.
- After the testing processes are over, the product is incorporated with valid suggested changes.

6. Documentation:

- User documentation is a mandatory feature of all multimedia projects.
- The documentation has all the valuable information's starting from the system requirement till the completion of testing.

7. Delivering the Multimedia Product: Are best delivered on CD/DVD or in the website.

2. Explain in detail Techniques of Animation

- **Animation** is the process displaying still images so quickly so that they give the impression of continuous movement.
- In animation the **screen object is a vector image** in animation.
- Using numerical transformations the movement of that image along its paths is calculated for their defining coordinates.
- The least frame rate of **at least 16 frames per second** gives the impression of smoothness
- Natural looking should be at least **25 frames per second**.
- Animation tools are very powerful and effective.
- Animations may be in **two or three dimensional**.
  - **Two dimensional** animation , bring an image alive, occurs on the flat **X and Y axis** of the screen.
  - **Three dimensional** animations occurs along the **three axis X, Y and Z**.
- The two basic **types of animations** are,
  - **Path animation** involves moving an object on a screen that has a constant background.
    - **Example:** A cartoon character may move across the screen regardless of any change in the Background or the character.
  - **In frame animations**, multiple objects are allowed to travel simultaneously and the background or the objects also changes.

3. Explore the opportunities in Animation filed movie industry.

- In the past, students that complete an animation course or a visual effects course could find job opportunities only in the film industry.
- In India, the VFX domain, or the animation and visual effects industry, has been growing stronger and stronger in recent years.
- Animation and visual effects requirements for massive international projects such as HBO's top TV series and Marvel's hits Infinity War and Black Panther was outsourced to Indian companies in Mumbai and Pune.
- The surge in demand for animation and visual effects experts has led to a significant increase in the number of students enrolling for a VFX course.

- As such, a student that completes a 3D animation course can hope to build a rewarding and satisfying career in the Media and Entertainment field these days.
- A number of job opportunities are opening up on a daily basis and the aim of this article is to provide some information about the various sectors that are currently hiring animation and visual effects professionals

4. Explain in detail about production team Roles and Responsibilities

1. Production Manager

- The role of production manager is to define, and coordinate, the production of the multimedia project in time and with full quality.
- The production manager should be an expertise in the technology, good at proposal writing, good communication skills and budget management skills.

2. Content Specialist

- Content specialist is responsible for performing all research activities concerned with the proposed application's content.

3. Script Writer

- The script writer visualizes the concepts in three dimensional environments and if needed uses the virtual reality integration into the program.

4. Text Editor

- The content of a multimedia production always must flow logically and the text should always be structured and correct grammatically.

5. Multimedia Architect

- The multimedia architect integrates all the multimedia building blocks like graphics, text, audio, music, video, photos and animation by using an authoring software.

6. Computer Graphic Artist

- Computer Graphic Artist deals with the graphic elements of the programs like backgrounds, bullets, buttons, pictures editing,3-D objects, animation, and logos etc.

7. Audio and Video Specialist

- Audio and Video Specialist are needed for dealing with narration and digitized videos to be added in a multimedia presentation.
- They are responsible for recording, editing sound effects and digitizing.

8. Computer Programmer

- The computer programmer writes the lines of code or scripts in the appropriate language.
- These scripts usually develop special functions like developing the software to give the size and shape of video windows controlling peripherals and so on.

9. Web Master

- The responsibility of the web master is to create and maintain an Internet web page.
- They convert a multimedia presentation into a web page.
- Final multimedia product is ready for consultation is a joint effort of the entire team.

5. Explain about different file formats in multimedia files

1. Text File Formats

- RTF(Rich Text Format)
  Rich Text Format is the primary file format introduced in 1987 by Microsoft
- Plain text
  Plain text files can be opened, read, and edited with most text editors.

2. Image File Formats

- **TIFF (Tagged Image File Format)**

➢ This format is common in desktop publishing world (high quality output)
➢ Supported by almost all software packages.
➢ Recent versions of TIFF allows image compression
➢ This format is comfortable for moving large files between computers.

- **DIB (Device Independent Bitmap)**

➢ Allows the files to be displayed on a variety of devices.

- **GIF (Graphics Interchange Format)**

➢ GIF is a compressed image format.
➢ This file format is best suitable for graphics that uses only limited colors
➢ 13-bit Color look up table is used by the GIF format to identify its color values.

- **JPEG (Joint Photographic Experts Group)**

➢ JPEG was designed to attain maximum image compression.
➢ It uses lossy compression technique.
➢ It works good with photographs, naturalistic artwork

3. Digital Audio File Formats

- **AIFF (Audio Interchange File Format)**

➢ A standard audio file format used by Apple which is like a WAV file for the Mac.

- **WAV (Waveform Audio File Format)**

➢ It is the most popular audio file format in windows for storing uncompressed sound files.

- **MP3 (MPEG Layer-3 Format)**

➢ MPEG Layer-3 format is the most popular format for storing and downloading music.

- **WMA (Windows Media Audio)**

➢ **It is a popular windows media audio format owned by Microsoft. WMA is a file extension used with windows media player.**

- **RA (Real Audio Format)**

➢ Real Audio format is designed for streaming audio over the Internet.

4. Digital Video File Formats

- **AVI (Audio/Video Interleave)**

➢ AVI is the video file format for Windows.
➢ Here sound and picture elements are stored in alternate interleaved chunks in the file.

- **MPEG (Moving Picture Experts Group)**

➢ MPEG is the standards for digital video and audio compression.

2. AN INTRODUCTION TO ADOBE PAGEMAKER

Section – A

Choose the best answer **(1 Mark)**

1. DTP stands for _____

(a) Desktop Publishing (b) Desktop Publication (c) Doctor To Patient (d) Desktop Printer

2. _____ is a DTP software.

(a) Lotus 1-2-3 **(b) PageMaker** (c) Maya (d) Flash

3. Which menu contains the New option?

(a) File menu (b) Edit menu (c) Layout menu (d) Type menu

4. In PageMaker Window, the area outside of the dark border is referred to as _____.

(a) page **(b) pasteboard** (c) blackboard (d) dashboard

5. Shortcut to close a document in PageMaker is _____

(a) Ctrl + A (b) Ctrl + B (c) Ctrl + C **(d) Ctrl + W**

6. A _____ tool is used for magnifying the particular portion of the area.

(a) Text tool (b) Line tool **(c) Zoom tool** (d) Hand tool

7. _____ tool is used for drawing boxes.

(a) Line (b) Ellipse **(c) Rectangle** (d) Text

8. Place option is present in_____ menu.

(a) File (b) Edit (c) Layout (d) Window

9. To select an entire document using the keyboard, press _____

(a) Ctrl + A (b) Ctrl + B (c) Ctrl + C (d) Ctrl + D

10. Character formatting consists of which of the following text properties?

(a) Bold (b) Italic (c) Underline **(d) All of these**

11. Which tool lets you edit text?

(a) Text tool (b) Type tool (c) Crop tool (d) Hand tool

12. Shortcut to print a document in Pagemaker is _____

(a) Ctrl + A **(b) Ctrl + P** (c) Ctrl + C (d) Ctrl + V

13. Adobe PageMaker is a **page layout** software.

14. **Title Bar** is the topmost part of the PageMaker window.

15. **Scrolling** is the process of moving up and down or left and right through the document window.

16. **Ellipse** tool is used to draw a circle.

17. The Insert pages option is available on clicking the **Layout** menu.

18. Match the following.

1. Cut	-	(i) Ctrl + Z	Ctrl + X ⟶	Cut	
2. Copy	-	(ii) Ctrl + V	Ctrl + C ⟶	Copy	
3. Paste	-	(iii) Ctrl + X	Ctrl + V ⟶	Paste	
4. Undo	-	(iv) Ctrl + C	Ctrl + Z ⟶	Undo	**1. (iii) 2. (iv) 3. (ii) 4. (i)**

19. Choose the odd man out.

i. Adobe PageMaker, QuarkXPress, Adobe In Design, **Audacity**

ii. File, Edit, Layout, Type, **Zip**

iii. Pointer Tool, Line tool, **Hide Tool**, Hand Tool

iv. Bold, Italic, **Portrait**, Underline

20. Choose the correct statement.

i. (a) Text can be selected using mouse only.

(b) Text can be selected using mouse or the keyboard.

ii. **(a) DTP is an abbreviation for Desktop publishing.**

(b) DTP is an abbreviation for Desktop publication.

21. Choose the correct pair

(a) Edit and Cut (b) Edit and New (c) Undo and Copy **(d) Undo and Redo**

Section-B

Answer the following questions **(2 Mark)**

1. What is desktop publishing?

- Desktop publishing (abbreviated DTP) is the creation of page layouts for documents using DTP Software.

2. Give some examples of DTP software.

- Popular DTP software are **Adobe PageMaker, Adobe InDesign, QuarkXPress**, etc.

3. Write the steps to open PageMaker.

- We can open Adobe PageMaker using the command sequence,
- **Start→All Programs → Adobe → Pagemaker 7.0 → Adobe PageMaker 7.0.**

4. How do you create a New document in PageMaker?

To create a new document,

I. Choose **File → New** in the menu bar. (or) Press **Ctrl + N** in the keyboard.
II. Now **Document Setup dialog box** appears.
III. Enter the appropriate settings for your new document in the Document Setup dialog box.
IV. Click on **OK.** Now a new document called **Untitled - 1** opens on the screen.

5. What is a Pasteboard in PageMaker?

- A document page is displayed within a dark border.
- The area outside of the dark border is referred to as the pasteboard.
- Data placed in the pasteboard is not visible when you print the document.
- Pasteboard is used to temporarily hold elements while designing your document.

6. Write about the Menu bar of PageMaker.

- Menu Bar contains the following menus,
  - **File, Edit, Layout, Type, Element, Utilities, View, Window, Help.**
- When you click on a menu item, a pull down menu appears.
- There may be sub-menus under certain options in the pull-down menus.

7. Differentiate Ellipse tool from Ellipse frame tool.

Ellipse Tool			Used to draw circles and ellipses.
Ellipse Frame Tool			Used to create elliptical placeholders for text and graphics.

8. What is text editing?

- Editing means making changes to the text.
- Editing is the process of inserting and deleting words, correcting errors, moving and copying text in the document.

9. What is text block?

- In PageMaker the text of the document can be typed inside a **text block.**
- **Text tool is used** to create text blocks.
- After creating a Text block, you can type the text directly into the text block.
- You cannot see the borders of a text block until you select it with the pointer tool.

10. What is threading text blocks?

- A Text block can be connected to other text block to enable the flow of text.
- Text blocks that are connected in this way are **threaded**.
- The process of connecting text among Text blocks is called **threading text**.

11. What is threading text?

- Text blocks that are connected are said to be **threaded**.
- The process of connecting text among Text blocks is called **threading text**.

12. How do you insert a page in PageMaker?

To insert pages

1. Go to the page where you want to insert.
2. Choose **Layout→ Insert Pages** in the menu bar. The **Insert Pages** dialog box appears.
3. Type the number of pages you want to insert.
4. To insert pages after the current page, choose 'after' from the pop-up menu.
5. Click on Insert.
6. The new pages are inserted in your publication

Section-C

Answer the following questions **(3 Mark)**

1. What is PageMaker? Explain its uses.

- Adobe PageMaker is **a page layout software**.
- It is used to design and produce documents that can be printed.
- Page layout software includes tools that allow you to easily position text and graphics on document pages.
- **Example:** Creating a newsletter that includes articles and pictures on each page using PageMaker.

2. Mention three tools in PageMaker and write their keyboard shortcuts.

Sl.No	Tools	Keyboard Shortcut
1	Pointer Tool	F9
2	Rotating Tool	Shift + F2
3	Line Tool	Shift + F3

3. Write the use of any three tools in PageMaker along with symbols.

Tool	Tool box	Cursor	Use
Pointer Tool			Used to select, move, and resize text objects and graphics.
Text Tool			Used to type, select, and edit text.
Rotating Tool			Used to select and rotate objects.

4. How do you rejoin split blocks?

Rejoining Split Blocks:

To rejoin the two text blocks,

1. Place the cursor on the bottom handle of the second text block, click and drag the bottom handle up to the top.

2. Then place the cursor on the bottom handle of the first text block, and click and drag the bottom handle down if necessary.

5. How do you link frames containing text?

- To link Frames containing text,
  1. Draw a **second frame** with the Frame tool of your choice.
  2. Click the **first frame** to select it.
  3. Click on the **red triangle** to load the text icon.
  4. Click the **second frame**.
  5. PageMaker flows the text into the second frame.

6. What is the use of Master Page?

- Any text or object that you place on the master page will appear on the entire document pages to which the master is applied.
- Master Pages commonly contain repeating logos, page numbers, headers, and footers.
- Master items cannot be selected on a document page.

7. How do you insert page numbers in Master pages?

1. Click on Master Pages icon.
2. Then click on Text Tool. Now the cursor changes to I - beam.
3. Then Click on the left Master page where you want to put the page number.
4. Press Ctrl + Alt + P.
5. The page number displays as 'LM' on the left master page.
6. Similarly click on the right Master page where you want to put the page number.
7. Press Ctrl + Alt + P.
8. The page number displays as 'RM' on the right master page, but will appear correctly on the actual pages.

Section - D

Answer the following questions: **(5 Mark)**

1. Explain the tools in PageMaker toolbox.

Tool	Toolbox	Cursor	Use
Pointer Tool			Used to select, move, and resize text objects and graphics.
Text tool			Used to type, select, and edit text.
Rotating tool			Used to select and rotate objects.
Cropping tool			Used to trim imported graphics.
Line tool			Used to draw straight lines in any direction.
Constrained line tool			Used to draw vertical or horizontal lines.
Rectangle tool			Used to draw squares and rectangles.
Rectangle frame tool			Used to create rectangular placeholders for text and graphics.
Ellipse tool			Used to draw circles and ellipses.
Ellipse frame tool			Used to create elliptical placeholders for text and graphics.
Polygon tool			Used to draw polygons.
Polygon frame tool			Used to create polygonal placeholders for text and graphics.
Hand tool			Used to scroll the page (an alternative to the scroll bar)
Zoom tool			Used to magnify or reduce an area of the page.

2. Write the steps to place the text in a frame.

To place text in a Frame,

1. Click on one of a Frame tool from the Toolbox.
2. Draw a frame with one of PageMaker's Frame tools (Rectangle frame tool or Ellipse Frame Tool or Polygon frame Tool). Make sure the object remains selected.
3. Click on File. The File menu will appear.
4. Click on Place. The Place dialog box will appear.
5. Locate the document that contains the text you want to place, select it.
6. Click on Open.
7. Click in a frame to place the text in it. The text will be placed in the frame.

3. How can you convert text in a text block to a frame?

- After created text in a text block, if you want to convert it to a frame.
- You can do this by using these steps.

1. Draw the **frame** of your choice using one of the PageMaker's Frame tool.
2. Select the text block you want to insert in the frame.
3. Click the frame while pressing the Shift key. Now both elements will be selected.
4. Choose **Element > Frame > Attach Content** on the Menu bar.
5. Now the text appears in the frame.

4. Write the steps to draw a star using polygon tool?

Drawing a Star using Polygon tool

- **To draw a Star**

1. Click on the **Polygon tool** from the toolbox. The cursor changes to a **crosshair**.
2. Click and drag anywhere on the screen. As you drag, a Polygon appears.
3. Release the mouse button when the Polygon is of the desired size.
4. Choose **Element > Polygon Settings** in the menu bar. Now Polygon Settings dialogue box appears.
5. Type 5 in the Number of sides text box.
6. Type 50% in Star inset textbox.
7. Click OK. Now the required star appears on the screen.

3. INTRODUCTION TO DATABASE MANAGEMENT SYSTEM

Section – A

Choose the best answer **(1 Mark)**

1. Which language is used to request information from a Database?

a) Relational b) Structural **c) Query** d) Compiler

2. The ---------- diagram gives a logical structure of the database graphically?

a) Entity-Relationship b) Entity c) Architectural Representation d) Database

3. An entity set that does not have enough attributes to form primary key is known as

a) Strong entity set **b) Weak entity set** c) Identity set d) Owner set

4. ---------- Command is used to delete a database.

a) Delete database database_name b) Delete database_name

c) drop database database_name d) drop database_name

5. MySQL belongs to which category of DBMS?

a) Object Oriented b) Hierarchical **c) Relational** d) Network

6. MySQL is freely available and is open source.

a) True b) False

7. ---------- represents a "tuple" in a relational database?

a) Table **b) Row** c) Column d) Object

8. Communication is established with MySQL using

a) SQL b) Network calls c) Java d) API's

9. Which is the MySQL instance responsible for data processing?

a) MySQL Client **b) MySQL Server** c) SQL d)Server Daemon Program

10. The structure representing the organizational view of entire database is known as -------- in MySQL database.

a) Schema b) View c) Instance d) Table

Section-B

Answer the following questions **(2 Mark)**

1. Define Data Model and list the types of data model used.

- A data model that determines the logical structure of a database and fundamentally determines in which manner data can be stored, organized and manipulated.

Types of Data Model

- Hierarchical Database Model
- Network model
- Relational model
- Object-oriented database model

2. List few disadvantages of file processing system.

- **Data Duplication** – Same data is used by multiple resources for processing, thus created multiple copies of same data wasting the spaces.
- **High Maintenance** – Access control and verifying data consistency needs high maintenance cost.
- **Security** – Less security provided to the data.

3. Define Single and multi-valued attributes.

- **Single Valued Attributes**
  - A single valued attribute contains only one value for the attribute and they don't have multiple numbers of values.
  - **Example:** Age
- **Multi Valued Attributes**
  - A multi valued attribute has more than one value for that particular attribute.
  - **Example:** Degree

4. List any two DDL and DML commands with its Syntax.

Data Definition Language (DDL)

Commands	Description	Syntax
CREATE	Used to create database or tables	CREATE database databasename;
DROP	Deletes a database or table.	DROP database databasename;

Data Manipulation Language (DML)

Commands	Description	Syntax
INSERT	Adds new rows into database table.	INSERT INTO tablename VALUES (value1, value2);
DELETE	Deletes the records from the table.	DELETE from tablename WHERE columnname=”value”;

5. What are the ACID properties?

ACID Properties – The acronym stands for Atomicity, Consistency, Isolation and Durability.

6. Which command is used to make permanent changes done by a transaction?

- The **TCL(Transaction Control Language)** command **“COMMIT”** helps the database to save data permanently.

7. What is view in SQL?

- **Views** – A set of stored queries.
- A VIEW in SQL is a logical subset of data from one or more tables.
- View is used to restrict data access.

8. Write the difference between SQL and MySQL.

SQL	MySQL
▪ SQL – Structured Query Language is not a database.	▪ MySQL is a database management system
▪ Used to access the database	▪ Allows managing relational databases

9. What is Relationship and List its types.

- In Entity Relationship Model, relationship exists between two entities.
- Three types of relationships are,
    1. One-to-One relationship
    2. One-to-Many relationship
    3. Many-to-Many relationship

10. State few advantages of Relational databases.

➢ The features of RDBMS are

- High Availability
- High Performance
- Robust Transactions and support
- Ease of management
- Less cost

Section-C

Answer the following questions **(3 Mark)**

1. Explain on Evolution of DBMS.

- The concept of storing the data started before 40 years in various formats.
- Punched card technology was used to store the data.
- The file systems were known as predecessor of database system.
- Various access methods in file system were indexed, random and sequential access.
- The file system had more limitations to overcome this DBMS was introduced.

2. What is relationship in databases? List its types.

- In Entity Relationship Model, relationship exists between two entities.
- Three types of relationships are,
    - One-to-One relationship
    - One-to-Many relationship
    - Many-to-Many relationship

3. Discuss on Cardinality in DBMS.

- Cardinality is defined as the number of items that must be included in a relationship.
- Cardinality is a number of entities in one set mapped with the number of entities of another set via the relationship.
- Three classifications in Cardinality are one-to-one, one-to-many and Many-to-Many.

4. List any 5 privileges available in MySQL for the User.

List of privileges available in MySQL

Select_priv	User can select rows from database tables.
Insert_priv	User can insert rows into database tables.
Update_priv	User can update rows of database tables.

Delete_priv	User can delete rows of database tables.
Create_priv	User can create new tables in database.

5. Write few commands used by DBA to control the entire database.

- The Database Administrator (DBA) uses few commands are known as Administrative MySQL Commands to control the entire database.

1. USE Database – This command is used to select the database in MySQL

mysql > use test;

Database changed

2. SHOW Databases – Lists all the databases available in the database server.

mysql > show databases;

3. SHOW Tables – Lists all the tables available in the current database we are working in.

mysql > show tables;

Section - D

Answer the following questions: **(5 Mark)**

1. Discuss on various database models available in DBMS.

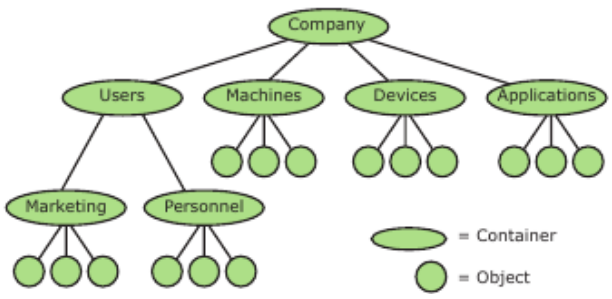
- The database technology came into existence in terms of models with relational and object-relational behavior.

Types of Data Model:

- Hierarchical Database Model
- Network model
- Relational model
- Object-oriented database model

i) Hierarchical Database Model

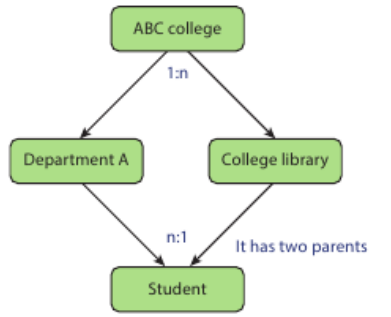
- Hierarchical database model was IMS, **IBM's first DBMS**.
- In this model each record has information in **parent/ child relationship like a tree structure**.
- The collection of records was called as **Record Types / Tables.**
- The individual **records are equal to rows**.
- **Advantages:** Less redundant data, Efficient Search, Data Integrity and Security.
- **Limitations:** Complex to implement and difficulty in handling many to many relationships.



ii) Network model

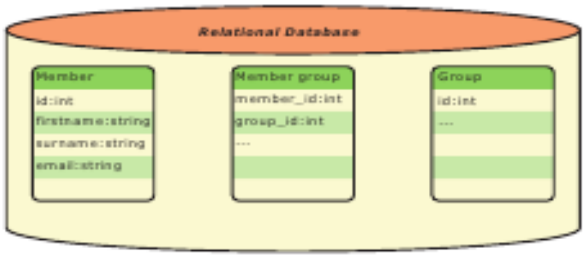
- Network model is similar to Hierarchical model except that in this model each member can have more than one owner.

- The many to many relationships are handled in a better way.
- This model identified the three database components such as,
- **Network schema:** Schema defines all about the structure of the database.
- **Sub schema:** Controls on views of the database for the user
- **Language for data management:** Basic procedural for accessing the database.



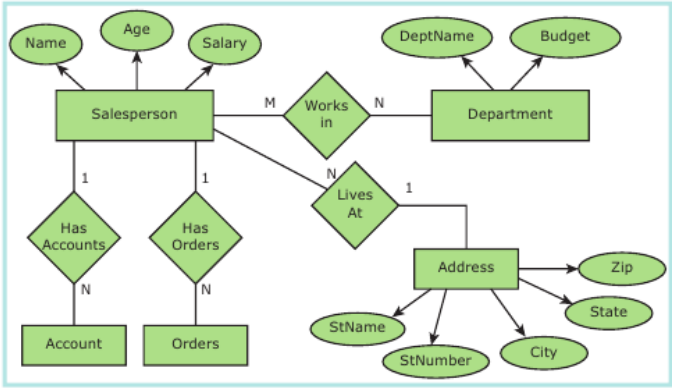
iii) Relational Model

- Oracle and DB2 are few commercial relational models in use.
- Relational model is defined with two terminologies Instance and Schema.
- **Instance** – A table consisting of rows and columns
- **Schema** – Specifies the structure including name and type of each column.
- A relation (table) consists of unique attributes (columns) and tuples (rows).



iv) Object-Oriented Database Model

- This model is the combination of **OOP's concepts and database technologies** and also serves as the base of Relational model.
- Object oriented model uses small, reusable software known as **Objects.**
- These are stored in object oriented database.
- This model efficiently manages large number of different data types.
- Complex behaviors are handled efficiently using OOP's concepts.



2. List the basic concepts of ER Model with suitable example.

- ER model consists of a collection of entities where each of these entities will be interconnected with each other with conditions and dependencies.

ER Modeling Basic Concepts

The basic concepts of ER model consists of

1. Entity or Entity type

2. Attributes

3. Relationship

Entity or Entity type

An Entity can be anything a real-world object or animation which is easily identifiable by anyone even by a common man.

An entity is represented by a rectangular box.

Example: In a company's database Employee, HR, Manager are considered as entities

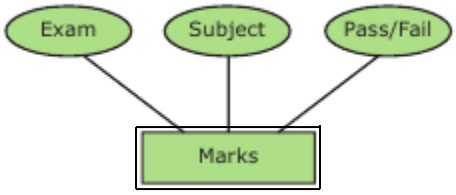
Types of Entity:

➢ **Strong Entity:**

- A Strong entity is the one which doesn't depend on any other entity on the database with a primary key
- It is represented by one rectangle.

➢ **Weak Entity:**

- A weak entity is dependent on other entities and it doesn't have any primary key.
- It is represented by double rectangle.



➢ **Entity Instance:**

- Instances are the **values** for the entity
- Entity Instance denotes the category values for the given entity.
- If we consider animals as the entity their instances will be dog, cat, cow… Etc

Entity Instances	
Entity	**Instances**
Human	Male , Female
Animals	Dog, cats, lion
Jobs	Engineer, Doctor, Lawyer

Attributes

- An attribute is the information about that entity and it will describe, quantify, qualify, classify, and specify an entity.

Types of attributes:

1. Key Attribute - Unique characteristic of an entity.
2. Simple Attributes - Cannot be separated
3. Composite Attributes - Can be subdivided into simple attributes
4. Single Valued Attribute - Contains only one value
5. Multi Valued Attribute - Has more than one value

Relationship:

- In Entity Relationship Model, relationship exists between two entities.
- Three types of relationships are,
    - One-to-One relationship
    - One-to-Many relationship
    - Many-to-Many relationship

3. Discuss in detail on various types of attributes in DBMS.

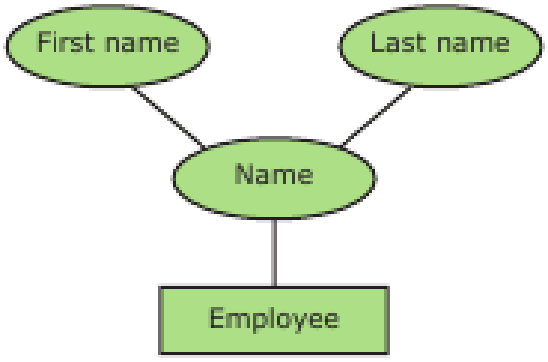
Attributes

- An attribute is the information about that entity and it will describe, quantify, qualify, classify, and specify an entity.
- An attribute will always have a single value, that value can be a number or character or string.

Types of attributes:

1. Key Attribute
2. Simple Attributes
3. Composite Attributes
4. Single Valued Attribute
5. Multi Valued Attribute

- **Key Attribute**
    - A key attribute describes a unique characteristic of an entity.
- **Simple Attribute**
    - The simple attributes cannot be separated it will be having a single value for their entity.



    - **Example:** Name is the attribute for the entity employee and here the value for that attribute is a single value.
- **Composite Attributes**
    - The composite attributes can be subdivided into simple attributes without change in the meaning of that attribute.

- **Example:** In the above diagram the employee is the entity with the composite attribute Name which are sub-divided into two simple attributes first and last name.

➢ **Single Valued Attributes:**

- A single valued attribute contains only one value for the attribute and they don't have multiple numbers of values.

Single Valued Attributes	
Attribute	**Values**
Age	3
Roll no	85

- **Example: Age-** It is a single value for a person as we cannot give n number of ages for a single person

➢ **Multi Valued Attributes:**

- A multi valued attribute has more than one value for that particular attribute.
- **Example: Degree -** A person can hold n number of degrees so it is a multi-valued attribute.

Attributes and Values	
Attribute	**Values**
Degree	B.Tech, MBA
Bank_Account	SBI, HDFC

4. Write a note on open source software tools available in MySQL Administration.

MYSQL Administration open source software tools

- Many open source tools are available in the market to design the database in a better and efficient manner.
- PhpMyAdmin is most popular for Web Administration.
- The popular Desktop Application tools are MySQL Workbench and HeidiSQL.

PHPMYADMIN (Web Admin)

- This administrative tool of MySQL is a web application written in PHP.
- They are used predominantly in web hosting.
- The main feature is providing web interface, importing data from CSV and exporting data to various formats.
- It generates live charts for monitoring MySQL server activities like connections, processes and memory usage.
- It also helps in making the complex queries easier.

MySQL Workbench (Desktop Application)

- It is a database tool used by developers and DBA's mainly for visualization.
- This tool helps in data modeling, development of SQL, server configuration and backup for MySQL in a better way.

- Its basic release version is 5.0 and is now in 8.0 supporting all Operating Systems.
- The SQL editor of this tool is very flexible and comfortable in dealing multiple results set.

HeidiSQL (Desktop Application)

- This tools helps in the administration of better database systems.
- It supports GUI (Graphical User Interface) features for monitoring server host, server connection, Databases, Tables, Views, Triggers and Events.

5. Explain the DDL command of their functions in SQL.

Data Definition Language (DDL)

- The DDL commands are used to define database schema (Structure). Also to create and modify the structure of the database object in the database.
- CREATE, ALTER, DROP,RENAME and TRUNCATE commands belongs to this category.

SQL DDL COMMANDS List		
Commands	**Description**	**Example**
CREATE	Used to create database or tables	CREATE database studentDB;
ALTER	Modifies the existing structure of database or table	ALTER TABLE student ADD Email varchar(255);
DROP	Deletes a database or table.	DROP database studentDB;
RENAME	used to rename an existing object in the database	RENAME TABLE student to stud;
TRUNCATE	Used to delete all table records	TRUNCATE TABLE student;

4. INTRODUCTION TO HYPERTEXT PRE-PROCESSOR

Section – A

Choose the best answer **(1 Mark)**

1. What does PHP stand for?
   a) Personal Home Page **b) Hypertext Preprocessor**
   c) Pretext Hypertext Processor d) Pre-processor Home Page
2. What does PHP files have a default file extension?
   a) .html b) .xml **c) .php** d) .ph
3. A PHP script should start with ___and end with ___:
   a) <php> b) < ? php ?> c) < ? ? > **d) <?php ?>**
4. Which of the following must be installed on your computer so as to run PHP script?
   a) Adobe b) windows **c) Apache** d) IIS
5. We can use ___ to comment a single line?
   i) /? ii) // iii) # iv) /* */
   a) Only (ii) b) (i), (iii) and (iv) c) (ii), (iii) and (iv) **d) Both (ii) and (iii)**
6. Which of the following PHP statement/statements will store 41 in variable num?
   (i) $num = 41 (ii) num = 41 (iii) echcho num (iv) echo 41
   a) Both (i) and (ii) b) All of the mentioned. c) Only (iii) **d) Only (i)**
7. What will be the output of the following PHP code?

```
<?php
$num = 1;
$num1 = 2;
print $num . "+". $num1 ;
?>
```

   a) 3 **b) 1+2** c) 1.+.2 d) Error
8. Which of the following PHP statements will output Hello World on the screen?
   a) echo ("Hello World"); b) print ("Hello World");
   c) printf ("Hello World"); d) sprintf ("Hello World");
9. Which statement will output $x on the screen?
   a) echo "\$x"; b) echo "$$x"; c) echo "/$x"; d) echo "$x;
10. Which of the below symbols is a newline character?
    a) \r **b) \n** c)/n d)/r

Section-B

Answer the following questions **(2 Mark)**

1. What are the common usages of PHP?

- It is very simple and lightweight open source server side scripting language.
- It can easily embed with HTML and other client side scripting languages like CSS (Cascading Style Sheets) and Java script.
- It also creates dynamic and interactive Webpages in the real time Web development projects.

2. What is Webserver?

- Webserver is software which is running in server hardware.
- It takes the responsibilities for compilation and execution of server side scripting languages.
- **Example:** Apache Tomcat, Microsoft IIS

3. What are the types scripting language?

- Web scripting languages are classified into two types,
  - Client side scripting language
  - Server side scripting language.

4. Difference between Client and Server?

CLIENT	SERVER
The client is a separate hardware machine which is connected with server in the network.	The server is a high performance hardware machine it could run more than one application concurrently.
Client is a service requester	Server is a service provider
Example: CSS (Cascading Style Sheets) and Java script	**Example:** PHP (Hypertext Preprocessor), ASP (Active Server Page) and JSP (Java Server page)

5. Give few examples of Web Browser?

- Google Chrome
- Mozilla Firefox
- Opera
- Safari
- Internet Explorer
- Netscape Navigator

6. What is URL?

- URL means Uniform Resource Locator.
- It is the address of a resource on the internet.
- It indicates the location of a resource and the protocol used to access it.
- **Example**: https://www.google.com/

7. Is PHP a case sensitive language?

- Yes, PHP is a case sensitive language both upper and lower case are treated differently.
- **Example:** $x and $X are different variable names.

8. How to declare variables in PHP?

- The variable in PHP begins with a **dollar ($)** symbol.
- The assignment activity implemented using **"="** operator.
- Finally the statement ends with semi colon **";"**, it indicates the end of statement.
- **Example:** $x=5;

9. Define Client Server Architecture.

- A server is a computer or a device that provides functionality for other programs or devices, called "clients".
- This architecture is called the client server model.
- A single overall computation is distributed across multiple processes or devices.

10. Define Web server.

- A Web server is a Software that uses HTTP (Hypertext Transfer Protocol) to serve the files that form Web pages to users.

Section-C

Answer the following questions **(3 Mark)**

1. Write the features of server side scripting language.

1. Server-side scripting prevents increasing of the load as it **does not require browser scripting technology.**
2. It is used to create and run **dynamic** pages.
3. It does not depends on **browser** for processing .
4. As the scripting is done on the server so it **prevents from hacking vulnerabilities**.
5. **Loading time** of the web pages is often **reduced** with Server-side scripting.
6. **Security** is ensured for user privacy.

2. Write the purpose of Web servers?

- Web server software that runs on server hardware, governs the server side scripting compilation into an intermediate byte-code that is then interpreted by the runtime engine.
- **Example:** Tomcat Apache, Nginx etc.

3. Differentiate Server side and Client Side Scripting language.

Server Side Scripting Language	Client Side Scripting Language
• Works on the server machine which could not be visible at the client end.	• Works at the client machine and script are visible among the users.
• Requires server interaction.	• Does not need server interaction.
• Relatively secure	• Insecure
• PHP, ASP.net, Ruby, etc.	• HTML, CSS, JavaScript, etc.

4. In how many ways you can embed PHP code in an HTML page?

- PHP is designed to interact with HTML and PHP scripts.
- In an HTML page, PHP code is enclosed within special PHP tags in two ways,
  - PHP in HTML using a **PHP script tags** → **<?php ?>**
  - PHP in HTML using **Short_tags** → **<? ?>**

Example:

```
<html>
<body >
 <?php
$a=5;
$b=2;
$c=$a+$b;
echo $c
?>
</body>
</html>
```

```
<html>
<body >
 <?
$a=5;
$b=2;
$c=$a+$b;
echo $c
?>
</body>
</html>
```

5. Write short notes on PHP operator.

- Operator is a symbol which is used to perform mathematical and logical operations in the programing languages.
- **TYPES OF OPERATOR**:
  1. Arithmetic operators
  2. Assignment operators
  3. Comparison operators
  4. Increment/Decrement operators
  5. Logical operators
  6. String operators

Section - D

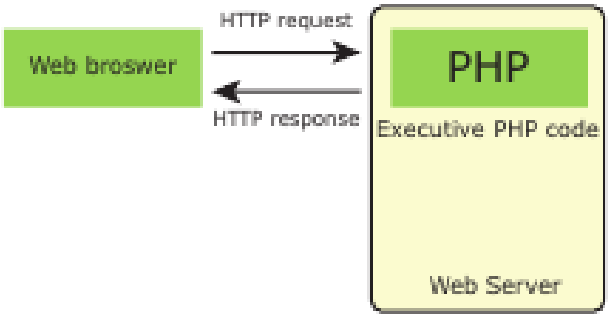
Answer the following questions: **(5 Mark)**

1. Explain client side and server side scripting language.

Web scripting languages are classified into two types, client side and server side scripting language .

Server Side Scripting Language:

- PHP **(Hypertext Pre-processor)** is a Server Side Scripting Language used in a server machine invented by Rasmus Lerdorf in 1994.
- It is very simple and lightweight open source server side scripting language.
- It can easily embed with HTML and other client side scripting languages like CSS and Java script.
- It also creates dynamic and interactive Webpages in the real time projects.
- It is a competitor for other server side scripting languages like Microsoft ASP and JSP.
- PHP scripting language can be executed via an interpreter which is installed in the Webservers or CGI (Common Gateway Interface).
- The most of the Webservers supports the PHP interpreter module.
- The PHP code entirely executes on Webserver which is installed in the remote machine and it is generating HTML code which is sent to the user.
- The user receives the HTML code and sees the Website contents via Internet browser in their machine.
- PHP also supports OOPs concepts.



Client Side Scripting Language:

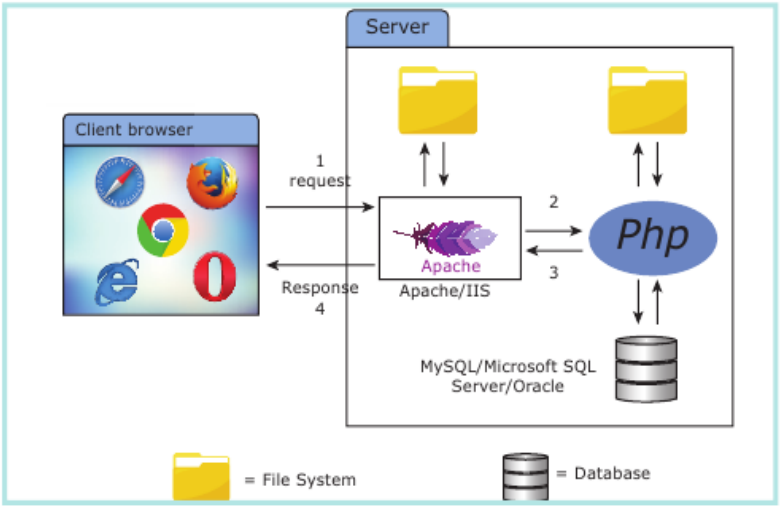
- Using HTML we can develop a static web pages.
- To develop a interactive pages (Dynamic Web page) we need a scripting language.
- JavaScript is a Client Side Scripting Language used in a client machine.
- JavaScript programming language is embed into the html.
- User entered data in the Dynamic Web page can be validated before sending it to the server.
- This saves server traffic, which means less load on your server.
- JavaScript includes such items as Textboxes, Buttons, drag-and-drop components and sliders to give a Rich Interface to site visitors.

2. Discuss in detail about Website development activities.

- The process of Web Development also includes Web content generation, Web page designing, Website security and so on.

PHP Script used in Web Development:

- Website or Web page is developed by the programmer using PHP script.
- Finally the entire Website codes are moved to Web server path in a remote server machine.
- From client side, the end user opens a browser, types the URL of the Website or Webpage and initiates the request to remote server machine over the network.
- After receiving the request from client machine the Web server tries to compile and interpret the PHP code which is available in remote machine.
- Next a response will be generated and sent back to the client machine over the network from Webserver.
- Finally the browser which is installed in the client machine receives the response and displays the output to user, as shown in Figure given below.



3. Explain the process of Webserver installation.

- Web server software such as Tomcat Apache, Nginx are available as open source or licensed version in the market.

Steps to install and configure Apache Httpd Webserver and PHP module in windows server machine.

Step 1:

- Go to Apache foundation Website and download the Httpd Webserver Software.

https://httpd.apache.org/download.cgi

Step2:

- After downloading .
- MSI file from Apache foundation Website, user launches the .MSI file and clicks next and next button to finish the installation on server machine.
- The software takes default port number 130 or 130130.
- Once the user finished, the Web server software is installed and configured on server hardware machine as a service.

Step 3:

- To test the installation of Apache Httpd Webserver, enter the following URL from your Web browser which is installed in your client machine.

https://localhost:130/ or https://localhost:130130

The output page that says "Its works"

Step 4:

- Administrator user can start, stop and restart the Web server service at any time via windows Control panel.
- Once the services stops, the client machine will not receive the response message from server machine.

Step 5:

- Webserver's configuration setting file "httpd.conf " is located in the **conf** directory under the apache installation directory.
- Edit this file and enable the PHP module to run PHP scripting language.

4. Discuss in detail about PHP data types.

- PHP scripting language supports 13 primitive data types.
- PHP supports the following data types.
  1. String
  2. Integer
  3. Float
  4. Boolean
  5. Array
  6. Object
  7. NULL
  8. Resource

1. String:

- String is a collection of characters within the double or single quotes like "Computer Application" or
- 'Computer Application'. Space is also considered as a character.

Example:

$x = "Computer Application!";
$y = 'Computer Application';

2. Integer:

- Integer is a data type which contains non decimal numbers.

Example:

$x = 5;

3. Float:

- Float is a data type which contains decimal numbers.

Example:

$x = 19.15;

4. Boolean:

- Boolean is a data type which denotes the possible two states, TRUE or FALSE.

Example:

$x = true;

5. Array:

- Array is a data type which has multiple values in single variable.

Example:

$cars = array("Swift","Kwid","Alto");
var_dump($cars);

- **Var_dump:**
  - The var_dump() function is used to dump information about a variable.
  - This function displays structured information such as type and value of the given variable.

7. Object:

- PHP object is a data type which contains information about data and function inside the class.

8. NULL:

Null is a special data type which contains no value.

Example:

$x = null;

9. Resources

- Resource is a specific variable, it has a reference to an external resource.
- These variables hold specific handlers to handle files and database connections in respective PHP program.

5. Explain operators in PHP with example.

- Operator is a symbol which is used to perform mathematical and logical operations in the programing languages.
- Different types of operator in PHP are:

1. Arithmetic operators,
2. Assignment operators,
3. Comparison operators,
4. Increment/Decrement operators,
5. Logical operators, and
6. String operators.

Arithmetic operators

- The arithmetic operators in PHP perform general arithmetical operations, such as addition, subtraction, multiplication and division etc.

PHP Arithmetic operators		
Symbol	**Operator Name**	**Purpose**
+	Addition	This operator performs the process of adding numbers
-	Subtraction	This operator performs the process of subtracting numbers
*	Multiplication	This operator performs the process of multiplying numbers
/	Division	This operator performs the process of dividing numbers
%	Modulus	This operator performs the process of finding remainder in division operation of two numbers

Assignment Operators:

- Assignment operators are performed with numeric values to store a value to a variable.
- The default assignment operator is "=".
- This operator sets the left side operant value of expression to right side variable.

PHP Assignment operators		
Assignment	**Similar to**	**Description**
x = y	x = y	This operator sets the left side operant value of expression to right side variable
x += y	x = x + y	Addition
x -= y	x = x - y	Subtraction
x *= y	x = x * y	Multiplication
x /= y	x = x / y	Division
x %= y	x = x % y	Modulus

Comparison Operators:

- Comparison operators perform an action to compare two values.
- These values may contain integer or string data types (Number or Strings).

PHP Comparison operators			
Symbol	**Operator Name**	**Symbol**	**Operator Name**
= =	Equal	>	Greater than

= = =	Identical	<	Less than
!=	Not equal	>=	Greater than or equal to
< >	Not equal	<=	Less than or equal to
!= =	Not identical		

Increment and Decrement Operators:

- Increment and decrement operators are used to perform the task of increasing or decreasing variable's value.
- This operator is mostly used during iterations in the program logics.

PHP Increment and Decrement operators

Operator	Name	Description
++$x	Pre-increment	Increments $x value by one, then returns $x
$x++	Post-increment	Returns $x, then increments $x by one
--$x	Pre-decrement	Decrements $x by one, then returns $x
$x--	Post-decrement	Returns $x, then decrements $x by one

Logical Operators:

- Logical Operators are used to combine conditional statements.

PHP Logical operators

Symbol	Operator Name	Example	Result
&&	And	$x && $y	True if both $x and $y are true
||	Or	$x || $y	True if either $x or $y is true
!	Not	!$x	True if $x is not true
xor	Xor	$x xor $y	True if either $x or $y is true, but not both

String Operators:

- Two operators are used to perform string related operations such as Concatenation and Concatenation assignment (Appends).

PHP String operators

Operator	Name	Example	Result
.	Concatenation	$text1 . $ text2	Concatenation of $txt1 and $txt2
. =	Concatenation assignment	$text1 .= $ text2	Appends $txt2 to $txt1

5. PHP FUNCTION AND ARRAY

Section – A

Choose the best answer **(1 Mark)**

1. Which one of the following is the right way of defining a function in PHP?
   a) function { function body }
   b) data type functionName(parameters) { function body }
   c) functionName(parameters) { function body }
   d) function functionName(parameters) { function body }
2. A function in PHP starts with __.
   a) function b) __ def c) def d) function name
3. PHP's numerically indexed array begin with position _____
   a) 1 b) 2 **c) 0** d) -1
4. Identify the parameter in the function
   <? php
   Function abc ($x)
   {$y=10;}
   Abc (5);
   ?>
   a) $x b) $y c) 10 d) 5
5. _____ stores more than one value of same data type in single array variable.
   a) Array b) Function c) Indexed array d) Multidimensional array
6. Associative arrays are a _____ pair data structure.
   a) Single value **b) Key value** c) Double value d) String value
7. In parameterized, the parameters are like _____
   a) Variables b) Constants c) String d) Null value
8. In PHP array are of _____ types
   a) 1 b) 2 **c) 3** d) 4
9. $stud = array("Roll" => 12501, "Name" => "Hari"); Identify the type of array.
   a) Indexed array **b) Associative array** c) Vector array d) Multidimensional array
10. Array more than _____ levels deeps are hard to manage
    a) 1 b) 2 **c) 3** d) Multiple

Section-B

Answer the following questions **(2 Mark)**

1. Define Function in PHP.

- A function is a block of segment in a program that performs a specific operation or tasks.
- It is a type of sub routine or procedure in a program.
- Functions are reusable; i.e a task can be executed any number of times.

2. Define User defined Function.

- **User Defined Function (UDF)** in PHP allows user to write own specific operation inside of existing program module.

- **SYNTAX:**

function *functionName*()
{
Custom Logic code to be executed;
}

3. What is parameterized Function.

- PHP Parameterized functions are the functions with parameters or arguments.
- **Values can be passed from one function to another function through parameters.**
- Required information can be shared between function declaration and function calling part inside the program.
- The arguments are mentioned after the function name and inside of the parenthesis.
- There is no limit for sending arguments, just separate them with a comma notation.

4. Name any two predefined function.

PRE-DEFINED OR SYSTEM OR BUILT IN FUNCTION:

- PHP has a wide collection of built-in functions that can be called directly from system within a script, to perform a specific task.
- **Catagories:**

PHP string function	-	strlen(), strcmp()
PHP array function	-	array(), key()
PHP math function	-	abs(), cos()
PHP MySQLi function	-	Mysqli_connect(), Mysqli_close()
PHP file system function	-	fopen(), fwrite()

5. Write Syntax of define Function in PHP.

- **SYNTAX:**

function *functionName*()
{
Custom Logic code to be executed;
}

6. Define Array in PHP.

- An Array is a special variable that stores **more than one value of same data type** (homogeneous) in single array variable.
- They are 3 types of array concepts in PHP.
  - Indexed Arrays,
  - Associative Array and
  - Multi-Dimensional Array.

7. What is function call?

- Once a function is defined it is executed by a function call.
- The programmer has to give functions Call inside the respective program.

SYNTAX OF FUNCTION CALL:

function name();

8. List out the types of array in PHP.

Associative Array ⟹ Associative arrays are a key-value pair data structure.

Indexed Arrays ⟹ An array is defined using the keyword "array".

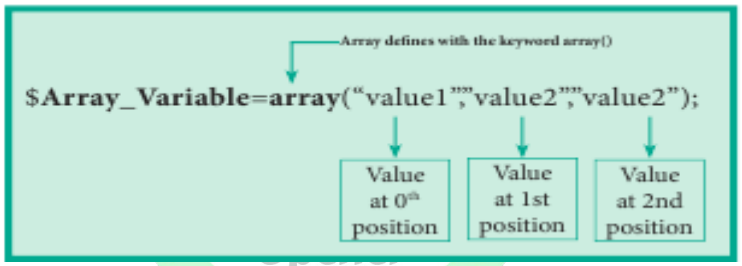
Multi-Dimensional Array ⟹ A multidimensional array is an array containing one or more arrays.

9. Define associative array.

- **Associative arrays are a key-value pair data structure.**
- **Instead of storing data in a linear array, with associative arrays you can store your data in a collection and assign it a unique key which you may use for referencing your data.**
- **Associative Arrays Syntax**
  array(*key*=>*value*,*key*=>*value*,*key*=>*value*,*etc.*);
  key = Specifies the key (numeric or string)
  value = Specifies the value

10. What are indexed array.

- An array is defined using the keyword "array".
- Each element of line array is assigned on index values which commences from **0** and ends with **n-1**.
- The user can access the array element using the array name followed by index value.



Section-C

Answer the following questions **(3 Mark)**

1. Write the features Built-in Functions.

Features of built-in functions are as mentioned below:

- Converting a string
- Displaying and using the date and time
- Initializing and closing a database connection
- Declaring and using an array
- Handling files
- Accessing data in forms
- File system Functions
- Function to open FTP connections
- Email related functions
- Mathematical Functions
- MySQL specific functions
- URL Functions
- Image functions

2. Write the purpose of parameterized Function.

- PHP Parameterized functions are the functions with parameters or arguments.
- **Values can be passed from one function to another function through parameters.**
- The parameter is also called as arguments, it is like variables.
- The arguments are mentioned after the function name and inside of the parenthesis.
- There is no limit for sending arguments, just separate them with a comma notation.

3. Differentiate user define and system define Functions.

User Define Function	System Define Functions
User can write their own specific operation (function) inside of existing program module.	System or Built-in functions can be called directly from system within a script, to perform a specific task.
They are provided by user from an external library.	They are embedded in language and are provided by compiler.
Example: area(), display()	**Example:** round(), sin(), date()

4. Write Short notes on Array.

- An Array is a special variable that **stores more than one value of same data type** (homogeneous) in single array variable.
- They are 3 types of array concepts in PHP.
- **Associative Array** ⟹ Associative arrays are a key-value pair data structure.
- **Indexed Arrays** ⟹ An array is defined using the keyword "array".
- **Multi-Dimensional Array** ⟹ A multidimensional array is an array containing one or more arrays.

5. Write short note on Pre-Defined or System or Built In Function.

PRE-DEFINED OR SYSTEM OR BUILT IN FUNCTION:

- PHP has a wide collection of built-in functions that can be called directly from system within a script, to perform a specific task.
- **These built in function makes PHP a very efficient and productive scripting language.**
- **In Scripting language no installation is required to use these functions.**
- **Catagories:**

PHP string function - strlen(), strcmp()
PHP array function - array(), key()
PHP math function - abs(), cos()
PHP MySQLi function - Mysqli_connect(), Mysqli_close()
PHP file system function - fopen(), fwrite()

Section - D

Answer the following questions: **(5 Mark)**

1. Explain Function concepts in PHP.

- A function is a block of segment in a program that performs a specific operation or tasks.
- It is a type of sub routine or procedure in a program.
- Functions are reusable; i.e a task can be executed any number of times.
- A Function will be executed by a call to the Function and the Function returns any data type values or NULL value to called Function in the part of respective program.
- The Function can be divided in to three types as follows
  - User defined Function,
  - Pre-defined or System or built-in Function, and
  - Parameterized Function

a) User Defined Function:

- **User Defined Function (UDF)** in PHP allows user to write own specific operation inside of existing program module.
- A user-defined Function declaration begins with the keyword "function" followed by a user defined function name and any custom logic inside the function block.
- **SYNTAX:**

  function *functionName*()
  {
  Custom Logic code to be executed;
  }

  - **Function Calling:**
    - Once a function is defined it is executed by a function call.
    - The programmer has to give functions Call inside the respective program.
    - **SYNTAX OF FUNCTION CALL:**

      function name();

- **Example:**

```
<?php
function insertMsg()
{
echo "Student Details Inserted Successfully!";
}
insertMsg();
?>
```

b) Pre-Defined Or System Or Built In Function:

- PHP has a wide collection of built-in functions that can be called directly from system within a script, to perform a specific task.
- These built in function makes PHP a very efficient and productive scripting language.
- In Scripting language no installation is required to use these functions.

Catagories:

- PHP string function - strlen(), strcmp()
- PHP array function - array(), key()
- PHP math function - abs(), cos()
- PHP MySQLi function - Mysqli_connect(), Mysqli_close()
- PHP file system function - fopen(), fwrite()

c) Parameterized Defined Function:

- PHP Parameterized functions are the functions with parameters or arguments.
- Values can be passed from one function to another function through parameters.
- The parameter is also called as arguments, it is like variables.
- The arguments are mentioned after the function name and inside of the parenthesis.
- There is no limit for sending arguments, just separate them with a comma notation.
- **Example:**

```
<?php
function sum($x, $y) {
$z = $x + $y;
return $z;
}
echo "5 + 10 =" . sum(5, 10) . "<br>";
echo "7 + 13 =" . sum(7, 13) . "<br>";
echo "2 + 4 =". sum(2, 4);
?>
```

2. Discuss in detail about User define Functions with a suitable example.

Function:

- A function is a block of segment in a program that performs a specific operation or tasks.
- It is a type of sub routine or procedure in a program.
- Functions are reusable; i.e a task can be executed any number of times.

User Defined Function:

- User Defined Function (UDF) in PHP allows user to write own specific operation inside of existing program module.
- A user-defined Function declaration begins with the keyword "function" followed by a user defined function name and any custom logic inside the function block.
- **SYNTAX:**

function *functionName*()
{
Custom Logic code to be executed;
}

- **Function Calling:**
  - Once a function is defined it is executed by a function call.
  - The programmer has to give functions Call inside the respective program.

- **SYNTAX OF FUNCTION CALL:**

function name();

- **Example:**

```
<?php
function insertMsg()
{
echo “Student Details Inserted Successfully!”;
}
insertMsg();
?>
```

3. Explain the Multidimensional Array.

- A multidimensional array is an array containing one or more arrays.
- PHP understands multidimensional arrays that are two, three, four, five, or more levels deep.

- However, arrays more than three levels deep are hard to manage for most people.
- Each array within the multidimensional array can be either indexed array or associative array.
- We can use for looping through indexed array and foreach for looping through associative array.

Example:

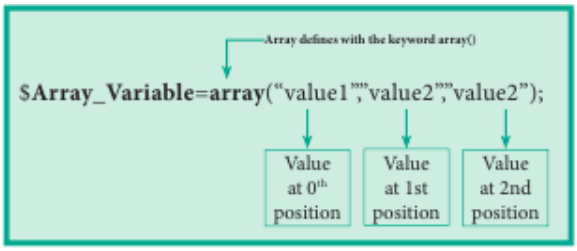
```
<?php
$student=array
(
array(“Iniyan”,100,96),
array(“Kavin”,60,59),
array(“Nilani”,1313,139)
);
echo $$student[0][0].”: Tamil Mark: “.$student [0][1].”. English mark: “.$student [0][2].”<br>”;
echo $$student[1][0].”: Tamil Mark: “.$student [1][1].”. English mark: “.$student [1][2].”<br>”;
echo $$student[2][0].”: Tamil Mark: “.$student [2][1].”. English mark: “.$student [2][2].”<br>”;
?>
```

4. Explain Array concepts and their types.

- An Array is a special variable that stores more than one value of same data type (homogeneous) in single array variable.
- They are 3 types of array concepts in PHP.
  - Associative Array ⟹ Associative arrays are a key-value pair data structure.
  - Indexed Arrays ⟹ An array is defined using the keyword “array”.
  - Multi-Dimensional Array ⟹ A multidimensional array is an array containing one or more arrays.
- A useful aspect of using arrays in PHP is when combined with the foreach statement.
- This allows you to quickly loop though an array with very little code.
- Array defines with the keyword **array().**

a) Indexed Arrays

- An array is defined using the keyword "array".
- Each element of line array is assigned on index values which commences from 0 and ends with n-1.
- The user can access the array element using the array name followed by index value.



Example:

```
<?php
$teacher_name=array("Iniyan", "Kavin", "Nilani");
echo "The students name are " . $teacher_name[0] . ", " . $$teacher_name[1] . " and " .
$teacher_name[2] . ".";
?>
```

b) Associative Arrays

- Associative arrays are a key-value pair data structure.
- Instead of having storing data in a linear array, with associative arrays you can store your data in a collection and assign it a unique key which you may use for referencing your data.

Associative Array Syntax

array(*key=>value,key=>value,key=>value,etc.*);

key = Specifies the key (numeric or string)

value = Specifies the value

Example:

```
<?php
$teacher_name=array("Iniyan", "Kavin", "Nilani");
echo "The students name are " . $teacher_name[0] . ", " . $$teacher_name[1] . " and " .
$teacher_name[2] . ".";
?>
```

c)Multidimensional Arrays

- A multidimensional array is an array containing one or more arrays.
- PHP understands multidimensional arrays that are two, three, four, five, or more levels deep.
- However, arrays more than three levels deep are hard to manage for most people.

Example:

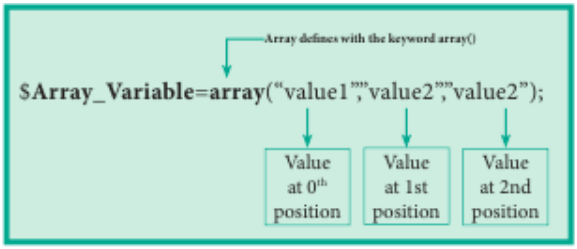
```
<?php
$student=array
(
array("Iniyan",100,96),
array("Kavin",60,59),
array("Nilani",1313,139)
```

```
);
echo $$student[0][0].": Tamil Mark: ".$student [0][1].". English mark: ".$student [0][2]."<br>";
echo $$student[1][0].": Tamil Mark: ".$student [1][1].". English mark: ".$student [1][2]."<br>";
echo $$student[2][0].": Tamil Mark: ".$student [2][1].". English mark: ".$student [2][2]."<br>";
?>
```

5. Explain Indexed array and Associative array in PHP.

a) Indexed Arrays

- An array is defined using the keyword "array".
- Each element of line array is assigned on index values which commences from 0 and ends with n-1.
- The user can access the array element using the array name followed by index value.



Example:

```
<?php
$teacher_name=array("Iniyan", "Kavin", "Nilani");
echo "The students name are " . $teacher_name[0] . ", " . $$teacher_name[1] . " and " .
$teacher_name[2] . ".";
?>
```

b) Associative Arrays

- Associative arrays are a key-value pair data structure.
- Instead of having storing data in a linear array, with associative arrays you can store your data in a collection and assign it a unique key which you may use for referencing your data.

Associative Arrays Syntax

array(*key=>value,key=>value,key=>value*,*etc.*);

key = Specifies the key (numeric or string)

value = Specifies the value

Example:

```
<?php
$teacher_name=array("Iniyan", "Kavin", "Nilani");
echo "The students name are " . $teacher_name[0] . ", " . $$teacher_name[1] . " and " .
$teacher_name[2] . ".";
?>
```

6. PHP CONDITIONAL STATEMENTS

Section – A

Choose the best answer **(1 Mark)**

1. What will be the output of the following PHP code?

```
<?php
$x;
if ($x)
print "hi";
else
print "how are u";
?>
```

a) how are u b) hi c) error d) no output

2. What will be the output of the following PHP code?

```
<?php
$x = 0;
if ($x++)
print "hi";
else
print "how are u";
?>
```

a) hi b) no output c) error **d) how are u**

3. What will be the output of the following PHP code?

```
<?php
$x;
if ($x == 0)
print "hi";
else
print "how are u";
print "hello";
?>
```

a) how are u hello **b) hihello** c) hi d) no output

4. Statement which is used to make choice between two options and only option is to be performed is written as

a. if statement **b. if else statement** c. then else statement d. else one statement

5. What will be the output of the following PHP code?

```
<?php
$a = "";
if ($a)
print "all";
if _____
```

```
else
print "some";
?>
```

Parse error: syntax error, unexpected '_____' (T_STRING), expecting '(' in **C:\xampp\htdocs\test\all.php** on line **5**

a) all b) some **c) error** d) no output

6. What will be the output of the following PHP code ?

```
<?php
$a = " ";
if ($a)
print "all";
else
print "some";
?>
```

a) all b) some c) error d) no output

7. What will be the output of the following PHP code ?

```
<?php
$x = 10;
$y = 20;
if ($x > $y + $y != 3)
print "hi" ;
else
print "how are u";
?>
```

a) how are u **b) hi** c) error d) no output

8. What will be the output of the following PHP code ?

```
<?php
$x = 10;
$y = 20;
if ($x > $y && 1||1)
print "hi";
else
print "how are u";
?>
```

a) how are u **b) hi** c) error d) no output

9. What will be the output of the following PHP code ?

```
<?php
if (-100)
print "hi";
else
print "how are u";
?>
```

a) how are u **b) hi** c) error d) no output

Section-B

Answer the following questions **(2 Mark)**

1. Define Conditional Statements in PHP

- Conditional Statements performs different actions for different decisions in in different business logic.

Types of Conditional Statements:

- if Statement
- if...else Statement
- if...elseif....else Statement
- switch Statement

2. Define if statement in PHP.

- **If statement** executes a statement or a group of statements if a specific condition is satisfied as per the user expectation.

SYNTAX:

```
if (condition)
{
Statement(s);
}
```

3. What is if else statement in PHP?

- If statement evaluates a condition and executes a set of code if the condition is true and another set of code if the condition is false.

SYNTAX:

```
if (condition)
{
Statement(s) if condition is true;
}
else
{
Statement(s) if condition is false;
}
```

4. List out Conditional Statements in PHP.

Types of Conditional Statements:

- if Statement
- if...else Statement
- if...elseif....else Statement
- switch Statement

5. Write Syntax of the If else statement in PHP.

SYNTAX:

```
if (condition)
{
Statement(s) if condition is true;
}
else
{
Statement(s) if condition is false;
}
```

6. Define if...elseif....else Statement in PHP.

- If-elseif-else statement is a combination of if-else statement.
- Here multiple conditions can be checked and action is based on the result of the condition
- The if.. elseif.. else is also known as if.. else ladder.

SYNTAX:

```
if (Condition 1)
{
Statement(s) if condition 1 is true;
}
elseif(Condition 2)
{
Statement(s) if condition 2 is true;
}
else
{
Statement(s) if both conditions are false;
}
```


7. Usage of Switch Statement in PHP.

- The switch statement is used to perform different actions based on different conditions.
- Switch statements work the same as if statements but they can check for multiple values at a time.
- The switch case is an alternative to the if.. elseif..else statement which executes a block of code corresponding to the match.

8. Write Syntax of Switch statement.

SYNTAX:

```
switch (n) {
case label1:
code to be executed if n=label1;
break;
case label2:
code to be executed if n=label2;
break;
```

```
case label3:
code to be executed if n=label3;
break;
...
default:
code to be executed if n is different from all labels;
}
```

9. Compare if and if else statement.

If	If else
If statement executes a statement or a group of statements if a specific condition is satisfied as per the user expectation.	If statement evaluates a condition and executes a set of code if the condition is true and another set of code if the condition is false.

SYNTAX:
if (condition)
{
Statement(s);
}
	SYNTAX:
	if (condition)
	{
	Statement(s) if condition is true;
	}
	else
	{
	Statement(s) if condition is false;
	}

Section-C

Answer the following questions **(3 Mark)**

1. Write the features of Conditional Statements in PHP.

- Conditional statements can create test conditions in the form of expressions that evaluates to either true or false and based on these results you can perform certain actions.
- Conditional statements are used to perform different actions for different decisions in different business logic.
- They are implemented by the following types:
  - if Statement
  - if...else Statement
  - if...elseif....else Statement
  - switch Statement

2. Write the purpose of if elseif else statement.

- If-elseif-else statement is a combination of if-else statement.
- More than one statement can execute the condition based on user needs.
- The **if..elseif..else** is also known as **if..else ladder** as if lets us chain together multiple if...else statements allowing the programmer to define actions for more than just two possible outcomes.

3. Differentiate Switch and if else statement.

Switch	If else
Switch statement uses single expression for multiple choices.	If-else statement uses multiple statement for multiple choices.
It test only for equality.	It test for equality as well as for logical expression.
It evaluates only character or integer value.	Evaluates any type
If switch statements does not match any cases, the default statements is executed.	If the condition fails, then by default the else statement is executed.

4. Write Short notes on Switch statement.

- **The switch case is an alternative to the if.. elseif..else statement which executes a block of code corresponding to the match.**
- Switch statement uses single expression for multiple choices.
- It test only for equality and evaluates only character or integer value.
- If switch statements does not match any cases, the default statements is executed.
- **SYNTAX:**

```
switch (n) {
case label1:
code to be executed if n=label1;
break;
case label2:
code to be executed if n=label2;
break;
...
default:
code to be executed if n is different from all labels;
}
```


5. Differentiate if statement and if elseif else statement.

if statement	if elseif else statement
If statement executes a statement or a group of statements if a specific condition is satisfied as per the user expectation.	**If-elseif-else statement** is a combination of if-else statement. Here multiple conditions can be checked and action is based on the result of the condition.

Syntax:
if (condition)
{
Statement(s);
}
	Syntax:
	if (Condition 1)
	{
	Statement(s) if condition 1 is true;
	}
	elseif(Condition 2)
	{

	Statement(s) if condition 2 is true;
	}
	else
	{
	Statement(s) if both conditions are false;
	}

Section - D

Answer the following questions: **(5 Mark)**

1. Explain Function of Conditional Statements in PHP.

PHP Conditional Statements:

- Conditional statements can create test conditions in the form of expressions that evaluates to either true or false and based on these results you can perform certain actions.
- Conditional statements are used to perform different actions for different decisions in different business logic.
- They are implemented by the following types:
  - if Statement
  - if...else Statement
  - if...elseif....else Statement
  - switch Statement
- **If statement in PHP:**
- **If statement** executes a statement or a group of statements if a specific condition is satisfied as per the user expectation
- **Syntax:**

```
if (condition)
{
Statement(s);
}
```

- **If else statement in PHP:**
- If statement evaluates a condition and executes a set of code if the condition is true and another set of code if the condition is false.
- **Syntax:**

```
if (condition)
{
Statement(s) if condition is true;
}
else
{
Statement(s) if condition is false;
}
```

- **If elseif else statement in PHP:**
- If-elseif-else statement is a combination of if-else statement.
- More than one statement can execute the condition based on user needs.
- The if..elseif..else is also known as if..else ladder as if lets us chain together multiple if...else statements allowing the programmer to define actions for more than just two possible outcomes.

Syntax:

```
if (Condition 1)
{
Statement(s) if condition 1 is true;
}
elseif(Condition 2)
{
Statement(s) if condition 2 is true;
}
else
{
Statement(s) if both conditions are false;
}
```

- **Switch Case:**
- The switch case is an alternative to the if.. elseif..else statement which executes a block of code corresponding to the match.
- Switch statement uses single expression for multiple choices.
- It test only for equality and evaluates only character or integer value.
- If switch statements does not match any cases, the default statements is executed.
- **Syntax:**

```
switch (n)
{
case label1:
code to be executed if n=label1;
break;
case label2:
code to be executed if n=label2;
break;
case label3:
code to be executed if n=label3;
break;
...
default:
code to be executed if n is different from all labels;
}
```

2. Discuss in detail about Switch statement with an example.

- **Switch Case:**

- The switch case is an alternative to the if.. elseif..else statement which executes a block of code corresponding to the match.
- Switch statement uses single expression for multiple choices.
- It test only for equality.
- It evaluates only character or integer value.
- Use break to prevent the code from running into the next case automatically.
- The default statement is used if no match is found.

- **Syntax:**

```
switch (n)
{
case label1:
code to be executed if n=label1;
break;
case label2:
code to be executed if n=label2;
break;
case label3:

code to be executed if n=label3;
break;
...
default:
code to be executed if n is different from all labels;
}
```


➢ **Example:**

```
<?php
$favcolor = “red”;
switch ($favcolor) {
case “red”:
echo “Your favorite color is red!”;
break;
case “blue”:
echo “Your favorite color is blue!”;
break;
case “green”:
echo “Your favorite color is green!”;
break;
default:
echo “Your favorite color is neither red, blue, nor green!”;
}
```

```
?>
```

➢ **Output:**

Your favorite color is red

➢ **Workingof the Program:**

- First we have a single expression favcolor (a variable), that is evaluated once.
- The value of the expression is then compared with the values for each case in the structure.
- If there is a match, the block of code associated with that case is executed.

3. Explain the working of Conditional Statements in PHP?

PHP Conditional Statements:

- Conditional statements can create test conditions in the form of expressions that evaluates to either true or false and based on these results you can perform certain actions.
- Conditional statements are used to perform different actions for different decisions in different business logic.
- They are implemented by the following types:
  - ➢ if Statement
  - ➢ if...else Statement
  - ➢ if...elseif....else Statement
  - ➢ switch Statement

➢ **If statement in PHP:**

- If statement executes a statement or a group of statements if a specific condition is satisfied as per the user expectation

➢ **Syntax:**

```
if (condition)
{
Statement(s);
 }
```


➢ **If else statement in PHP:**

- If statement evaluates a condition and executes a set of code if the condition is true and another set of code if the condition is false.

➢ **Syntax:**

```
if (condition)
{
Statement(s) if condition is true;
}
else
{
Statement(s) if condition is false;
}
```

➢ **If elseif else statement in PHP:**

- If-elseif-else statement is a combination of if-else statement.
- More than one statement can execute the condition based on user needs.

- The if..elseif..else is also known as if..else ladder as if lets us chain together multiple if...else statements allowing the programmer to define actions for more than just two possible outcomes.

➢ **Syntax:**

```
if (Condition 1)
{
Statement(s) if condition 1 is true;
}
elseif(Condition 2)
{
Statement(s) if condition 2 is true;
}
else
{
Statement(s) if both conditions are false;
}
```

➢ **Switch Case:**

- The switch case is an alternative to the if.. elseif..else statement which executes a block of code corresponding to the match.
- Switch statement uses single expression for multiple choices.
- It test only for equality and evaluates only character or integer value.
- If switch statements does not match any cases, the default statements is executed.

➢ **Syntax:**

```
switch (n)
{
case label1:
code to be executed if n=label1;
break;
case label2:
code to be executed if n=label2;
break;
case label3:
code to be executed if n=label3;
break;
...
default:
code to be executed if n is different from all labels;
}
```


4. Explain the if elseif else statement with suitable example.

- **If elseif else statement in PHP:**
  - If-elseif-else statement is a combination of if-else statement.
  - The multiple conditions can be checked and action is based on the result of the condition.

- The if.. elseif.. else is also known as if.. else ledder as if lets us chain together multiple if... else statements allowing the programmer to define actions for more than just two possible outcomes.

- **Syntax:**

```
if (Condition 1)
{
Statement(s) if condition 1 is true;
}
elseif(Condition 2)
{
Statement(s) if condition 2 is true;
}
else
{
Statement(s) if both conditions are false;
}
```

Example:

```
<?php
$d = date("D");
if($d == "Fri"){
        echo "Have a nice weekend!";
}elseif($d == "Sun"){
        echo "Have a nice Sunday!";
}else{
        echo "Have a nice day!";
} ?>
```


Explanation and output of the program:

The above example will output,

- "Have a nice weekend!" if the current day is Friday.
- "Have a nice Sunday!" if the current day is Sunday.
- Otherwise it will output "Have a nice day!".

5. Explain if else statement in PHP with an example.

- **If else statement in PHP:**
- If statement evaluates a condition and executes a set of code if the condition is true and another set of code if the condition is false.
- **Syntax:**

```
if (condition)
{
Statement(s) if condition is true;
}
else
{
```

Statement(s) if condition is false;
}

- **Example:**

```
<?php
$num=12;
if($num%2==0)
{
echo "$num is even number";
}
else
{
echo "$num is odd number";
}
 ?>
```

Output:

12 is even number

- **Working of the Program:**
  - The variable $num is assigned to 12.
  - The condition has been checked with the variable $num.
  - If the condition is true, the true block will be executed.
  - If it is false else block will be executed.

7. LOOPING STRUCTURE

Section – A

Choose the best answer **(1 Mark)**

1. The loop exclusively used for arrays is _____

a) While b) Do While c) For **d) Foreach**

2. Loops that iterate for fixed number of times is called

a) Unbounded loops **b) Bounded loops** c) While loops d) For loops

3. Which loop evaluates condition expression as Boolean, if it is true,it executes statements and when it is false it will terminate?

a) For loop b) For each loop c) While loop **d) All of them**

4.
```
<?php
for ($x=0; $x<5; $x++)
echo "Hai";
?>
```

The above loop executes how many no of times?

a) 5 b) 4 c) 3 d) 2

5. What will be displayed in a browser when the following PHP code is executed:

```
<?php
for ($counter = 20; $counter < 10;$counter++){
echo "Welcome to Tamilnadu";
}
echo "Counter is:" . $counter;
?>
```

a) Welcome to Tamilnadu

b) Counter is: 20

c) Welcome to Tamilnadu Counteris: 22

d) Welcome to Tamilnadu Welcome to Tamilnadu Counter is: 22

6. What will be displayed in a browser when the following PHP code is executed:

```
<?php
for ($counter = 10; $counter < 10;
$counter = $counter + 5){
echo “Hello”;
}
?>
```

a) Hello Hello Hello Hello Hello b) Hello Hello Hello

c) Hello **d) None of the above**

7. PHP supports four types of looping techniques;

a) for loop b) while loop c) foreach loop **d) all the above**

8. Consider the following code

```
<? php
$count=12;
do{
printf("%d squared=%d<br/>",
$count, pow($count,2));
} while($count<4);
?>
```

What will be the output of the code?

a) 12 squared 141 **b) 12 squared=144** c) "12 squared=141" d) Execution error

9. What will be the output of the following PHP code?

```
<?php
for ($x = 1; $x < 10;++$x)
{
print "*\t";
}
?>
```

a) ********** **b) *********** c) ********** d) Infinite loop

10. What will be the output of the following PHP code ?

```
<?php
for ($x = -1; $x < 10;--$x)
{
print $x;
}
?>
```

a) 123456713910412 b) 123456713910 c) 1234567139104 **d) Infinite loop**

Section-B

Answer the following questions **(2 Mark)**

1. Define Looping Structure in PHP.

- Loop structures in PHP is an iterative control structures that involves executing the same block of code for a specified number of times.
- Loops that iterate for fixed no of times is also called as Bounded loops.
- PHP supports four types of loops..
  - for Loop
  - Foreach Loop
  - While Loop
  - Do While Loop

2. Define for loop in PHP.

- The for loop is used when you know how many times you want to execute a statement or block of statements.

- **Syntax:**

```
for (init counter; test counter; increment counter){
code to be executed;
}
```

3. What is Foreach loop in PHP?

- **Foreach** loop is used for looping through the values of an array.
- The loop iteration depends on each KEY Value pair in the Array.
- Foreach loop iterates the value of the current array element and assigned to **$value variable** and the **array pointer** is advanced by one, until it reaches the end of the array element.

4. List out Looping Structure in PHP.

- PHP supports four types of loops..
  - For Loop
  - Foreach Loop
  - While Loop
  - Do While Loop

5. Write Syntax of For loop in PHP.

Syntax:

```
for (init counter; test counter; increment counter){
code to be executed;
}
```

6. Write Syntax of Foreach loop in PHP.

Syntax:

```
foreach ($array as $value){
code to be executed;
}
```


7. Write Syntax of while loop in PHP.

Syntax:

```
while (condition is true) {
code to be executed;
}
```

8. Write Syntax of Do while loop in PHP.

Syntax:

```
do {
code to be executed;
} while (condition is true);
```

9. Compare For loop and for each loop.

For loop	For each loop
• The **for loop** is used when you know how many times you want to execute a statement or block of statements.	• The **foreach loop** is used for looping through the values of an array.

• It is used when you know in advance how many times the script should run.	• The loop iteration depends on each KEY Value pair in the Array.

• **Syntax:**
for (init counter; test counter; increment counter){
code to be executed;
}
	• **Syntax:**
	foreach ($array as $value){
	code to be executed;
	}

10. Explain the use of for each loop in PHP.

- **Foreach** loop is used for looping through the values of an array.
- It provides an easy way to iterate over arrays.
- Foreach works only on arrays and objects, and will issue an error when you try to use it on a variable with a different data type or an uninitialized variable.

Section-C

Answer the following questions **(3 Mark)**

1. Write the features Looping Structure.

- Loop structures in PHP is an iterative control structures that involves executive the same block of code a specified number of times.
- Loops that iterate for fixed no of times is also called as Bounded loops.
- PHP supports four types of loops..
  - for Loop
  - Foreach Loop
  - While Loop
  - Do While Loop

2. Write the purpose of Looping Structure in PHP.

- Looping statements is used to repeat the same block of code for a given number of times, or until a certain condition is met.
- It is useful for writing iteration logics.
- It helps the user to save both time and effort of writing the same code multiple times.

3. Differentiate Foreach and While loop.

For each loop	While loop
• Foreach loop is used for looping through the values of an array.	• The while loop executes a block of code as long as the condition specified in the while statement evaluates to true.
• The loop iteration depends on each KEY Value pair in the Array.	• It executes the loop if specified condition is true.

• **Syntax:**
for each ($array as $value){
code to be executed;
}
	• **Syntax:**
	while (condition is true) {
	code to be executed;
	}

4. Write short notes on Do while Loop.

- The **do.. while loop** is always very similar to the while loop but executes the block of code at least once before evaluating the condition.
- Here the condition is evaluated only at the time of exit of each iteration.
- **Syntax:**

```
do {
code to be executed;
} while (condition is true);
```

5. Differentiate While and Do while loops.

While loop	Do while Loop
• The while loop executes a block of code as long as the condition specified in the while statement evaluates to true.	• The do.. while loop is always very similar to the while loop but executes the block of code at least once before evaluating the condition.
• It executes the loop if specified condition is true.	• The condition is evaluated only at the time of exit of each iteration.

• **Syntax:**
while (condition is true) {
code to be executed;
}
	• **Syntax:**
	do {
	code to be executed;
	} while (condition is true);

Section - D

Answer the following questions: **(5 Mark)**

1. Explain Looping Structure in PHP.

Looping Structure:

- Loop structures in PHP is an iterative control structures that involves executive the same block of code a specified number of times.
- Loops that iterate for fixed no of times is also called as Bounded loops.
- It is useful for writing iteration logics.
- It helps the user to save both time and effort of writing the same code multiple times.
- PHP supports four types of loops..
  - for Loop
  - Foreach Loop
  - While Loop
  - Do While Loop

For Loop:

- The **for loop** is used when you know how many times you want to execute a statement or block of statements.
- **Syntax:**

```
for (init counter; test counter; increment counter){
code to be executed;
}
```

For each Loop:

- The **foreach** loop is exclusively available in PHP and is mainly used for looping through the values of an array.
- The loop iteration deepens on each KEY Value pair in the Array.
- **Syntax:**

```
for each ($array as $value) {
code to be executed;
}
```

While Loop:

- The while loop executes a block of code as long as the condition specified in the while statement evaluates to true.
- It executes the loop if specified condition is true.
- **Syntax:**

```
while (condition is true) {
 code to be executed;
 }
```

Do while Loop:

- The do.. while loop is always very similar to the while loop but executes the block of code at least once before evaluating the condition.
- The condition is evaluated only at the time of exit of each iteration
- **Syntax:**

```
do {
code to be executed;
} while (condition is true);
```


2. Discuss in detail about Foreach loop.

Foreach Loop:

- **Foreach** loop is used for looping through the values of an array.
- The loop iteration depends on each KEY Value pair in the Array.
- **Foreach** loop iterates the value of the current array element and assigned to $value variable and the array pointer is advanced by one, until it reaches the end of the array element.
- **Syntax:**

```
foreach ($array as $value) {
code to be executed;
}
```

Example:

```
<?php
$Student_name = array(“Magilan”, “Iniyan”,
“Nilani”, “Sibi”, “Shini”);
foreach ($Student_name as $value) {
echo “$value <br>”;
}
```

```
?>
```

Output:

"Magilan"
Iniyan"
"Nilani"
"Sibi"
"Shini"

- Here in this example value of the array **$student_name** is read one by one using foreach loop and displayed the value.

3. Explain the process Do while loop.

Do while Loop:

- **The do.. while loop is always very similar to the while loop but executes the block of code at least once before evaluating the condition.**
- **The condition is evaluated only at the time of exit of each iteration**
- **Syntax:**

```
do {
code to be executed;
} while (condition is true);
```

Example:

```
<?php
$Student_count = 5;
$student_number = 1;
do{
echo "The student number is:". $student_number . "<br>";
$student_number++;
}
while($student_number <= $Student_count);
?>
```

Output:

The student number is:1
The student number is:2
The student number is:3
The student number is:4
The student number is:5

➢ Here in this example, the condition becomes true until ($student_number <= $Student_count), the loop executes for 5 times and display the result.

4. Explain concepts of for loop with example.

For Loop:

- The for loop is used when you know how many times you want to execute a statement or block of statements.

Syntax:

```
for(init counter; test counter; increment counter){
code to be executed;
}
```

Parameters:

- **init counter:** Initialize the loop initial counter value
- **Test counter:**
  - Evaluated for every iteration of the loop.
  - If it evaluates to TRUE, the loop continues.
  - If it evaluates to FALSE, the loop ends.
- **Increment counter**: Increases the loop counter value.

Example:

```
<?php
for ($i = 0; $i<= 5; $i++) {
echo "The number is:" . $i . "<br>";
}
?>
```

Output:

```
The student number is:1
The student number is:2
The student number is:3
The student number is:4
The student number is:5
```


➢ Here in this example, the condition becomes true until ($student_number <= $Student_count), the loop executes for 5 times and display the result.

5. Explain working of loops in array.

For each Loop:

- Foreach loop is used for looping through the values of an array.
- The loop iteration depends on each KEY Value pair in the Array.
- Foreach loop iterates the value of the current array element and assigned to $value variable and the array pointer is advanced by one, until it reaches the end of the array element.
- Foreach works only on arrays and objects, and will issue an error when you try to use it on a variable with a different data type or an uninitialized variable.
- **Syntax:**

```
foreach ($array as $value) {
code to be executed;
}
```

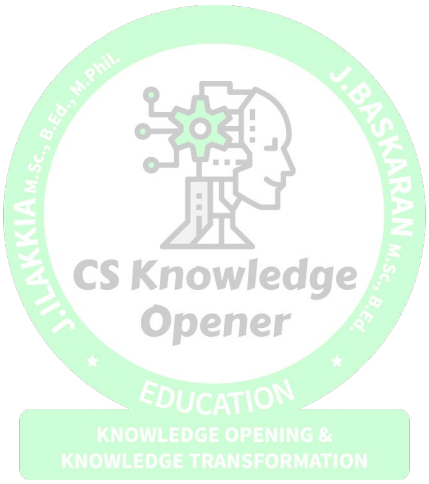
- **Example:**

```
<?php
$Student_name = array(“Magilan”, “Iniyan”,
“Nilani”, “Sibi”, “Shini”);
foreach ($Student_name as $value) {
echo “$value <br>”;
}
?>
```

Output:

“Magilan”
Iniyan”
“Nilani”
“Sibi”
“Shini”

- Here in this example value of the array **$student_name** is read one by one using foreach loop and displayed the value.



8. FORMS AND FILES

Section – A

Choose the best answer **(1 Mark)**

1. When you use the $_GET variable to collect data, the data is visible to..
   a) none b) only you **c) everyone** d) selected few
2. _____ method stores the input data in the request body of the clients HTTP request.
   a) POST b) GET c) form d) HTML
3. In which input field only one option can be selected?
   a) Text box b) Check box **c) Radio button** d) Drop Down Menu
4. In HTML form <input type="text"> is used to
   a) process text **b) input text** c) Validate text d) Output text
5. Which attribute of form tag helps in client side validation?
   a) Submit b) Check c) Validate **d) Required**
6. The no. of parameters used by fclose() function.
   a) 1 b) 2 c) 3 d) 4
7. PHP is a _____ programming language.
   a) Client side **b) Server side** c) Object side d) file side
8. What does fopen() function do in PHP?
   a) It used to open files in PHP b) It used to open Remote Server
   c) It used to open folders in PHP d) It used to open Remote Computer
9. How PHP files can be accessed?
   a) Through Web Browser b) Through HTML files
   c) Through Web Server **d) All of Above**
10. Identify which is not a server side application language
    a) PHP **b) HTML** c) ASP d) JSP

Section-B

Answer the following questions **(2 Mark)**

1. Define HTML form controls.

- Main objective of PHP and HTML form controls are to **collect data from users**.
- The following control types in HTML are used to collect data from client machine via HTML form controls and feed it to server.
  - Text inputs
  - Buttons
  - Checkbox
  - Radio box
  - File Select
  - Form Tag

2. Define Form Handling method in PHP.

- Form tag is used to mention a method (POST or GET) and control the entire form controls in the HTML document.
- **Post Method:** The input data sent to the server with POST method is stored in the request body of the client's HTTP request.

❖ **Get Method:** The input data sent to the server with POST method via URL address is known as query string. All input data are visible by user after they clicks the submit button.

3. What is Form Validation in PHP?

❖ Validation is a process of checking the input data submitted by the user from client machine.

❖ There are two types of validation available in PHP. They are,

- ❖ **Client-Side Validation**
- ❖ **Server Side Validation**

4. List out HTML control to support PHP language.

❖ **HTML form controls:**

- Text inputs
- Buttons
- Checkbox
- Radio box
- File Select
- Form Tag

5. Write Syntax of Text box in HTML.

Syntax:

<input type="text" name="name">

6. Define File handling in PHP.

❖ File handling is an important activity of all web application development process.

❖ Files are processed for different tasks using the following events:

- PHP Open a File
- PHP Read a File
- PHP Close a File
- PHP Write a File

7. What is a HTML form?

- A HTML form will take input from the site visitor and then will post it to a back-end application such as CGI, ASP Script or PHP script etc.
- The back-end application will perform required processing on the passed data based on defined business logic inside the application.

8. Write any Two rules for input HTML.

- Name (Text Input) : Must contain letters and white-spaces
- Email (Text Input) : Must contain @ and .strings

9. Differentiate Check box and Radio box

Check box	Radio box
• Checkbox is a important feature which selects more than one value from the HTML form.	• Radio box is similar to checkbox but only one value can be chosen at a time.

10. Write syntax of File open function.

Syntax:

$file_Object= fopen("FileName", "Read/WriteMode") or die("Error Message!");

Section-C

Answer the following questions **(3 Mark)**

1. Write the features Form Handling.

- A HTML form will take input from the site visitor and then will post it to a back-end application such as CGI, ASP Script or PHP script etc.
- All input values are synchronized and sent to the server via POST method or GET method.
- Method is an attribute form tag in HTML.
- Once the data reaches the server, two PHP variables such as $_POST and $_GET collects the data and prepares the response accordingly.

2. Write the purpose Get method and Post method.

- Form tag is used to mention a method (POST or GET) and control the entire form controls in the HTML document.
- All input values are synchronized and sent to the server via POST method or GET method.
- **Post Method:** The input data sent to the server with POST method is stored in the request body of the client's HTTP request.
- **Get Method:** The input data sent to the server with POST method via URL address is known as query string. All input data are visible by user after they clicks the submit button.

3. Differentiate Get and Post Method.

Get Method	Post Method
❖ Get method passes the request parameter in the URL String.	❖ POST method passes request parameter in request body.
❖ GET requests can be cached	❖ POST requests are never cached
❖ GET requests remain in the browser history	❖ POST requests do not remain in the browser history
❖ GET requests have length restrictions	❖ POST requests have no restrictions on data length

4. Write short notes on File handling.

- File handling is an important activity of all web application development process.
- Files are processed for different tasks using the following events:
  - PHP Open a File
  - PHP Read a File
  - PHP Close a File
  - PHP Write a File

5. Write short notes on File handling functions.

- File handling is an important activity of all web application development process.
- Files are processed for different tasks using the following functions:
  - PHP Open a File:

    The **fopen()** is a system function which helps to open a file in the server.

- PHP Read a File:
  The **fread()** function reads from an open file.
- PHP Close a File:
  The **fclose()** function is used to close an opened file.
- PHP Write a File:
  The **fwrite()** function is used to write to a file.

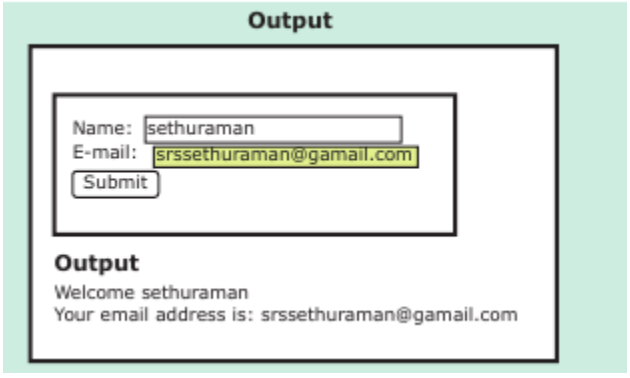
Section - D

Answer the following questions: **(5 Mark)**

1. Explain Form Handling methods.

- Form tag is used to mention a method (POST or GET) and control the entire form controls in the HTML document.
- When the user keying the input data in HTML controls and clicks the submit button the request will be generated and reaches a PHP file which is mentioned in the FORM tag under the Action attribute.
- All input values are synchronized and sent to the server via POST method or GET method.
- Method is an attribute form tag in HTML.
- Once the data reaches the server, two PHP variables such as $_POST and $_GET collects the data and prepares the response accordingly.
- **Post Method:**
  - The input data sent to the server with POST method is stored in the request body of the client's HTTP request.
- **Get Method:**
  - The input data sent to the server with POST method via URL address is known as query string.
  - All input data are visible by user after they clicks the submit button.

Example for Form:



Explanation:

- In the above given example, HTML File contains two Text Box (Name and Email), One Button and one form tag.
- The remote server PHP file (welcome.php) is mentioned in form tag under the Action Attribute.
- In "Welcome.Php" file, PHP variables such as $_POST and $_GET collects the data and prepares the response accordingly.
- Eventually the user will receive the output response in the client machine's browser screen.

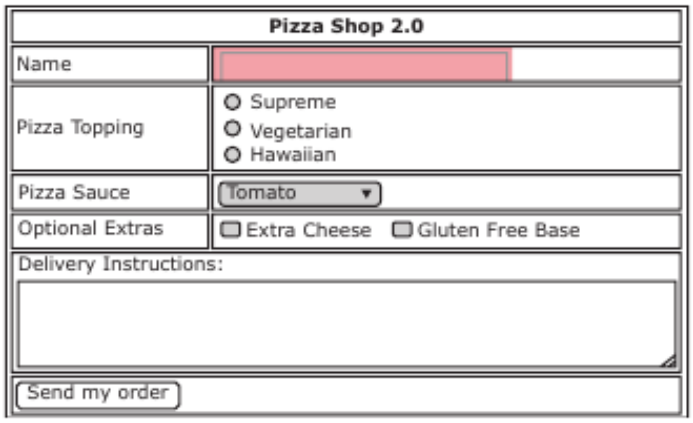
2. Discuss in detail about HTML form controls.

- Main objective of PHP and HTML form controls are to **collect data from users**.
- The following control types are available in HTML form controlling:
  - Text inputs
  - Buttons
  - Checkbox
  - Radio box
  - File Select
  - Form Tag

Html Form Controls:

- **Text inputs** contain textbox and text area controls.
- **Buttons** may contain Submit button, Reset button and Cancel Button.
- **Checkbox** is the important feature which selects more than one value from the HTML form.
- **Radio box** is similar to checkbox but one value can be chosen at a time.
- **File select** is the best feature to select one file from the local machine to server machine at a time.
- **Form tag** is used to mention a method (POST or GET) and control the entire form controls in the HTML document.

Example:



3. Explain the process File handling.

- File handling is an important activity of all web application development process.
- Files are processed for different tasks using the following events:
  - PHP Open a File,
  - PHP Read a File,
  - PHP Close a File,
  - PHP Write a File,

1) PHP Open a File

- fopen() is a system function helps to open a file in the server.
- It contains two parameters one for the file and the other one specifies in which mode the file should be opened (Read/Write).

Syntax:

$file_Object= fopen("FileName", "Read/WriteMode") or die("Error Message!");

2) PHP Read a File:

- The fread() function reads from an open file. The file object comes from fopen function.

Syntax:

fread($file_Object,filesize("FileName"));

3) PHP Close a File:

- The fclose() function is used to close an opened file.
- The file object comes from fopen function.

Syntax:

fclose($file_Object);

4) PHP write a File:

- The fwrite() function is used to write to a file.

Syntax:

fwrite($myfile, $txt);

4. Explain in detail of File handling functions .

- File handling is an important activity of all web application development process.
- Files are processed for different tasks using the following events:
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  - PHP Read a File,
  - PHP Close a File,
  - PHP Write a File,

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Syntax:

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4) PHP write a File:

- The fwrite() function is used to write to a file.

Syntax:

fwrite($myfile, $txt);

9. CONNECTING PHP AND MYSQL

Section – A

Choose the best answer **(1 Mark)**

1. Which is the correct function to execute the SQL queries in PHP?
   - **a) mysqli_query("Connection Object","SQL Query")**
   - b) query("Connection Object","SQL Query")
   - c) mysql_query("Connection Object","SQL Query")
   - d) mysql_query("SQL Query")
2. Which is the correct function Closing Connection in PHP ?
   - **a) mysqli_close("Connection Object");**
   - b) close("Connection Object");
   - c) mysql_close("Connection Object");
   - d) mysqli_close("Database Object");
3. Which is the correct function to establish Connection in PHP ?
   - **a) mysqli_connect("Server Name ","User Name","Password","DB Name");**
   - b) connect("Server Name ","User Name","Password","DB Name");
   - c) mysql_connect("Server Name ","User Name","Password","DB Name");
   - d) mysqli_connect ("Database Object");
4. Which is the not a correct MySQL Function in PHP ?
   - a) Mysqli_connect() Function
   - b) Mysqli_close() Function
   - **c) mysqli_select_data() Function**
   - d) mysqli_affected_rows() Function
5. How many parameter are required for MYSQLi connect function in PHP ?
   - a) 2
   - b) 3
   - **c) 4**
   - d) 5
6. How many parameter are required for MYSQLi query function in PHP ?
   - **a) 2**
   - b) 3
   - c) 4
   - d) 5
7. How many parameter are required for MYSQLi Close function in PHP ?
   - **a) 1**
   - b) 2
   - c) 3
   - d) 5
8. Which version of PHP supports MySQLi fuctions ?
   - a) Version 2.0
   - b) Version 3.0
   - c) Version 4.0
   - **d) Version 5.0**

Section-B

Answer the following questions **(2 Mark)**

1. What are the MySQLi function available PHP?

- Mysqli_connect() Function
- Mysqli_close() Function
- Mysqli_query()Function

2. What is MySQLi function?

- MySQLi is extension in PHP scripting language which gives access to the MYSQL database.
- Functions are available for MySQL Database connectivity and executing SQL queries.

3. What are the types MySQLi function available PHP?

- Database Connections
- Managing Database Connections

- Performing Queries
- Closing Connection

4. Difference between Connection and Close function?

Connection	Close function
Connect to Database Server machine via PHP scripting language using Mysqli_connect() Function.	Mysqli_close() Function is used to close an existing opened database connection between PHP scripting and MySQL Database Server.
Syntax: mysqli_connect("Server Name ","User Name","Password","DB Name");	**Syntax:** mysqli_close("Connection Object");

5. Give few examples of MySQLi Queries.

EXAMPLES:

- $con=mysqli_connect("localhost","my_user","my_password","Student_DB ");
- $sql="SELECT student_name,student_age FROM student";
  mysqli_query($con,$sql);

6. What is Connection string?

- The mysqli_connect function uses these variables and connect Database server from PHP scripting.
- If connection gets fail, output will be printed with MySQL error code.
- Otherwise connection is success.
- The variables used to connect to the Database server are
  - $servername -> Database Server Server IP address
  - $username -> Database Server User Name
  - $password -> Database Server Password
  - $DB_Name -> Database Name

Section-C

Answer the following questions **(3 Mark)**

1. Write the Syntax for MySQLi Queries.

- "mysqli_query" is a function, helps to execute the SQL query statements in PHP scripting language.

Syntax:

mysqli_query("Connection Object","SQL Query")

2. Write is the purpose of MySQLi function available.

- In PHP Scripting language many functions are available for MySQL Database connectivity, executing SQL queries, and management.
  - Mysqli_connect() Function
  - Mysqli_close() Function
  - Mysqli_query()Function

3. Write MySQLi Connection Syntax with example.

- Before accessing MySQL Database, connect to Database Server machine via PHP scripting language using Mysqli_connect() Function.

Syntax:

mysqli_connect("Server Name ","User Name","Password","DB Name");

Example:

$conn = mysqli_connect($servername, $username, $password,$DB_name);

Section - D

Answer the following questions: **(5 Mark)**

1. Discuss in detail about MySQLi functions with example .

- In PHP Scripting language many functions are available for MySQL Databaseconnectivity and executing SQL queries.
  - Mysqli_connect() Function
  - Mysqli_close() Function
  - **Mysqli_query()Function**

i) Mysqli_connect() Function:

- Before accessing MySQL Database, connect to Database Server machine via PHP scripting language using **Mysqli_connect() Function**.

Syntax:

mysqli_connect("Server Name ","User Name","Password","DB Name");

- This function requires four parameters to connect to database server.
- Database Server name, Database username, password and Database Name.

ii) Mysqli_close() Function:

- **mysqli_close()** Function is used to close an existing opened database connection between PHP scripting and MySQL Database Server.
- **Example:**

```
<?php
$con=mysqli_connect("localhost","$user","$password","SCHOOL_DB");
mysqli_close($con);
?>
```

Syntax:

mysqli_close("Connection Object");

iii) Mysqli_query()Function

- Before accessing MySQL Database, connect to Database Server machine via PHP scripting language using Mysqli_connect() Function.

Syntax:

mysqli_connect("Server Name ","User Name","Password","DB Name");

Example:

$conn = mysqli_connect($servername, $username, $password,$DB_name);

2. Explain in details types of MySQLi connection method in PHP.

Database Connections:

- Before accessing MySQL Database, connect to Database Server machine via PHP scripting language using Mysqli_connect() Function.

Syntax:

mysqli_connect("Server Name ","User Name","Password","DB Name");

- This function requires four parameters to connect to database server.
- Database Server name, Database username, password and Database Name.

Managing Database Connections

The below code snippet describes managing database connection methods and features.

```
<?php
$servername = "localhost";
$username = "username";
$password = "password";
$DB_name = "School_DB";
$conn = mysqli_connect($servername, $username, $password,$DB_name);
if (!$conn) {
die("Connection failed: " . mysqli_connect_error());
}
echo "Connected successfully";
?>
```

- In the above code snippet, three variables are used to connect to the Database server. They are,
  - $servername -> Database Server Server IP address
  - $username -> Database Server User Name
  - $password -> Database Server Password
  - $DB_Name -> Database Name
- The mysqli_connect function uses these variables and connect Database server from PHP scripting.
- If connection gets fail, output will be printed with MySQL error code.
- Otherwise connection is success.

3. Explain MySQLi Queries with examples.

- The main goal of MySQL and PHP connectivity is to retrieve and manipulate the data from MySQL database server.
- The SQL query statements are helping with PHP MySQL extension to achieve the objective of MySQL and PHP connection.
- "mysqli_query" is a function, helps to execute the SQL query statements in PHP scripting language.

Syntax:

mysqli_query("Connection Object","SQL Query")

Example:

```
$con=mysqli_connect("localhost","my_user","my_password","Student_DB ");
$sql="SELECT student_name,student_age FROM student";
mysqli_query($con,$sql);
```

10. INTRODUCTION TO COMPUTER NETWORKS

Section – A

Choose the best answer **(1 Mark)**

1. A set of computers connecting together is called as ----------

a) Network b) Server c) Hub d) Node

2. Computer network devices that originates route and terminate the data were called as

a) Hub b) Resource **c) Node** d) Cable

3. Match the period and methods available on history of computer networking in the Internet

a) 1950 - X.25 TCP/IP
b) 1966 - SAGE
c) 1976 - WAN
d) 1972 - ARCNET

a 4321 b 3421 c 1234 **d 2341**

4. Western Electric introduced the first widely used ---------- that implemented true computer control.

a) Packet switch b) Arpanet c) Host **d) Telephone switch**

5. Wi-Fi is short name for

a) Wireless Fidelity b) Wired fidelity c) Wired fiber optic d) Wireless fiber optic

6. In which one of the following periods, the speed capacity supported towards gigabit on computer network?

a) SABRE b) SAGE **c) NEW FIBRE OPTICS** d) ARCNET

7. Which among them was challenging to the business people on computer networking?

a) Hacking b) Viruses **c) Both a & b** d) none of this above

8. ---------- able to predict, manage, and protect the computer network at Internet

a) Artificial intelligence b) Broadband provider c) Cloud computing d) Transceivers

9. ----------use less power comparing with single transmitter or satellite often cell towers nearer

a) Mobile devices b) Transistors c) WIFI d) Communication

10. People now a days getting relaxed via

a) Business b) Corporate company c) News papers **d) Social media**

11. Which one of the following is not the social media

a) Gmail b) Facebook c) twitter d) Linkedin

12. Facebook was created at ----------year

a) 2002 **b) 2004** c) 2013 d) 2010

13. In mobile network, land areas for network coverage was distributed as

a) Firmware **b) cells** c) Range d) Service

14. Which one of the following are harmful to computer?

a) Bloggers b) Browser **c) Hackers** d) twitter

15. Which innovation made the people to use Internet?

a) Social web b) Mobile technology c) Mobile App **d) Both a & b**

Section-B

Answer the following questions **(2 Mark)**

1. Define Computer Network.

- A set of computers connected together for the purpose of sharing resources is called as computer network.
- **Internet is the most common resource shared on today.**

2. Define Internet.

- Internet stands for **INTERnational NETwork** .
- The Internet is a network of global connections – comprising private, public, business, academic and government networks – linked by guided, wireless and fiber-optic technologies.

3. What are the common uses of computer network?

The common uses of computer network are

- Communication
- Resource sharing
- Data (or) software sharing
- Money saving

4. List out some features of mobile network.

- Less consumption of power is used by mobile devices
- Huge capacity than a large transmitter, at single frequency.
- The mobile network traffic is fully busy because of large mobile communication.

5. Difference between wired and wireless networks.

Wired networks	Wireless networks
A Wired network system connected with network cable .	A Wireless network is connecting devices like tablets(tab), indoor cameras and E-readers, etc., without cables (WiFi).
Example: Speakers, CCTV, Printers, etc	**Example:** Tablets, Indoor Cameras, E-Readers etc

Section-C

Answer the following questions **(3 Mark)**

1. Define ARPANET.

- The Advanced Research Projects Agency Network (**ARPANET**) was an early packet-switching network and the first network to implement the TCP/IP protocol suite.
- Both technologies became the technical foundation of the Internet.
- First In 1969, four nodes of ARPANET were connected between four universities using the 50 Kbit/s circuits.

2. Write the disadvantages of Internet.

- Wastage of time on Internet by surfing, searching unwanted things.
- Unnecessary information are sometimes posted by some people on their web pages, blog etc.
- Different types of thefts can take place through Internet as hackers and viruses are always active around.

3. What is meant by artificial Intelligence?

- **Artificial intelligence** (AI) is the ability of a computer program or a machine to think and learn.
- Artificial intelligence able to be a better predict traffic as it collects and analyzes data in real time.
- Artificial intelligence will help to maintain, manage, and protect it.

4. List out some benefits of social networks.

- Group information sharing over long distances.
- Broadcast announcements.
- Fostering diversity of thought.

5. How computer networks saves the money saving?

- Computer networking is also money saving as it reduces paper work, manpower, resources sharing, software sharing and also time saving.

Section - D

Answer the following questions: **(5 Mark)**

1. Define computer networking and Internet. Explain different developments on computer network and Internet.

Computer Networking:

- Computer networking is a technique of digital telecommunication network that permits nodes to share its resources with one another.
- Computer networking exchanges the data as a main element.
- These link were transferred over cable media like optic cables or wire or wireless media such as Bluetooth and WIFI

Internet:

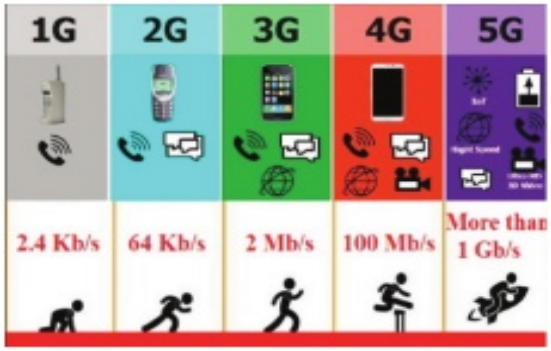
- Internet stands for **INTERnational NETwork**.
- The Internet is a network of global connections – comprising private, public, business, academic and government networks – linked by guided, wireless and fiber-optic technologies.

S. No	Period	Method	History
1	Late 1950	SAGE (Semi – Automatic Ground Environment)	It was used at U.S Military Radar system.
2	1960	Packet switching	**Packet switching** was developed to **transfer the information** between computers and network
3	1963	Intergalactic Computer network	Intergalactic Computer network was engaged to **access communication** with users of computers.
4	1965	Telephone switch	At first widely used Telephone switch was introduced by **Western Electric** which implemented true computer control.
5	1966	WAN (Wide Area Network)	WAN (Wide Area Network) has been published in the **area of time sharing.**

6	1969-1970	ARPANET (Advanced Research Projects Agency Network)	The **ARPANET** was an early **packet-switching network** and the **first network** to implement the **TCP/IP** protocol suite
7	1972	X.25 TCP/IP	Using X.25 as commercial services were deployed then was using an infrastructure for **expanding TCP/IP networks.**
8	1973	Hosts	**Hosts** is responsible for **reliable delivery of data**
9	1973-1979	Ethernet	"**Ethernet**: **Distributed Packet Switching** for Local Computer Networks"
10	1976	ARCNET	Data point corporation in which **token-passing network** was used first to **share the storage device** in 1976.
11	1995	NEW FIBRE OPTIC CABLES	Ethernet has ability of a quick compatible to support new fiber optic cable **speed**.

2. Explain the growth of the computer networking.

- The Internet is a global network of computers linked by high-speed data lines and wireless systems.
- It is estimated that the Internet links 50 million users in more than 80 countries worldwide.
- This may increase to around 300 million in next five years.
- Lot of difficulties were faced by the service providers in expanding their residential fiber optic cables Internet service due to increased competition and installation cost from other broadband providers.
- Even though 4G LTE mobile network was not reached to many parts of world, the industry of telecommunication has been working hard on the development of their next generation "5G" cellular communication Technology.
- This 5G intense to boost up the speed the mobile connections dramatically. When 4G was initially being developed, companies did not wait to advertise about the 5G efforts.



- **Artificial intelligence** (AI) is the ability of a computer program or a machine to think and learn.
- Artificial intelligence able to be a better predict traffic as it collects and analyzes data in real time.
- Artificial intelligence will help to maintain, manage, and protect it.

3. Mention some uses of network at business, home, mobile, social application.

Networks in Business:

- Communication is very important factor for **successful business operations.**
- The growth of computer network and speedy Internet services, business also developed drastically.
- The development of cloud computing, global access and security issues were restricted.
- Internet conversation made conversation faster, quick decision making and money saving **e-banking** paved way for easy transactions.
- Business large or small scale **B2C, B2B, B2G,C2B, C2C, C2G, G2B,G2C, G2G** or commercial that transfer information across the Internet can be done.
- Government subsidies were available for their business to promote their business by digitization.

Networks at Home:

- Network at home is a **group of devices** such as computers, mobile, speakers, camera, game system, and printer that connect via network device(router/data card) with each other.
- A **Wired network** system connected with network cable.
- **Example:** Speakers, CCTV, Printers, etc
- A **Wireless network** is connecting devices like tablets(tab), indoor cameras and E-readers, etc., without cables (WiFi).
- **Example:** Tablets, Indoor, Cameras, etc.
- Network at home plays main role to access all such as e-banking, e-learning, e-governance, etc.,

Mobile Networks:

- Mobile network is the network connecting devices **without cable (wireless).**
- Mobile computers, such as laptop, tablet, and hand held computers, were fastest growing segments.

➢ **Features of Mobile Networks:**

- Less consumption of power
- Huge capacity than a large transmitter, at single frequency.
- As mobile phones are now heavily used for data communication, the mobile network traffic is fully busy.

Social Application:

- To get connected to with people around the world through social network media, applications like Whatsapp, Facebook, Twitter, Blogs, Pinterest, Classmate and so on are in full fledge use.

➢ **These social networks share several attributes in common**

- Membership, Content contribution , Frequent return visits. , Human relationship building.

❖ **Usefulness of Social Networks:**

❖ Group information sharing over long distances.

❖ Broadcast announcements

❖ Fostering diversity of thought.

11. NETWORK EXAMPLES AND PROTOCOLS

Section – A

Choose the best answer **(1 Mark)**

1. Which one of the following will be easy the way to uses Internet technology and the public telecommunication system to securely share business's information with suppliers, vendors, partners and customers.

a) Extranet b) Intranet c) arpanet d) arcnet

2. Match the following and choose the correct answer

i. HTTP -The core protocol of the World Wide Web.
ii. FTP - enables a client to send and receive complete files from a server.
iii. SMTP - Provide e-mail services.
iv. DNS - Refer to other host computers by using names rather than numbers.

a) i, ii, iii, iv b) ii, iii, iv, i c) iii, iv, i, ii d) iv, iii, ii, i

3. Communication over ----------is be made up of voice, data, images and text messages.

a) Social media **b) mobile network** c) whatsapp d) software

4. Wi-Fi stands for----------

a) Wireless Fidelity b) wired fidelity c) wired optic fibre d) wireless optic fibre

5. A TCP/IP network with access restricted to members of an organization

a) LAN b) MAN c) WAN **d) Intranet**

6. RFID stands for ----------

a) Radio Free identification b) real Frequency identity
c) Radio Frequency indicators **d) Radio Frequency Identification.**

7. It guarantees the sending of data is successful and which checks error on operation at OSI layer is-------

a) Application layer b) Network layer **c) Transport Layer** d) Physical layer

8. Which one of the following will secure data on transmissions?

a) HTTPS b) HTTP c) FTP d) SMTP

9. ---------- provides e-mail service

a) DNS b) TCP c) FTP **d) SMTP**

10. ---------- refer to other host computers by using names rather than numbers.

a) DNS b) TCP c) FTP d) SMTP

Section-B

Answer the following questions **(2 Mark)**

1. Define Intranet.

- It is a private network using Internet technology to share part of business information with supplier's partners and customers.
- It may consist of many interlinked local area networks.

2. What is the uses of mobile networks?

- Mobile networking assign to the technology that can **support data / voice,** network connectivity using via radio transmission solution, wireless.
- Wireless communications use both data and voices are being transmitted over both circuit via switched networks and packet-switched networks.

3. List out the benefits of WiFi.

- Mobility.
- Connection to Internet.
- Flexibility of LAN.
- Ensures connectivity.
- It allows places that are remote to benefit from connectivity.
- Low cost, high benefits.

4. How many types of RFID system available and what are they?

➢ Two types of RFID systems.

- **Active RFID system:** The tag has its own power source.
- **Passive RFID system:** The tag gets power from a reader antenna to the tag antenna.

5. Expand HTTP, HTTPS, FTP.

HTTP : Hypertext Transfer Protocol
HTTPS : Hyper Text Transfer Protocol Secure
FTP : File Transfer Protocol

Section-C

Answer the following questions **(3 Mark)**

1. Compare Internet, Intranet and Extranet.

Type	Definition
Internet	The Internet is a network of global connections – comprising private, public, business, academic and government networks.
Intranet	It is a private network within an enterprise to share company data and computing resources between the employees.
Extranet	It is a private network that uses Internet technology and the public telecommunication system to securely share business's information with suppliers, vendors, partners.

2. List out the components of a RFID enabled system.

- **A RFID tag** has silicon microchip attached to a small antenna and mounted on a substrate.
- **A Reader** has a scanner with antennas to transmit and receive signals, used for communication.
- **A Controller** is the host computer with a Microprocessor which receives the reader input and process the data.
- Two types of RFID systems are **Active RFID system and Passive RFID system.**

3. Write short notes on HTTP, HTTPS, FTP.

HTTP :

➢ A protocol used between a web client and a web server protects non *secure* data transmissions.
➢ The core protocol of the World Wide Web.

HTTPS:

➢ A protocol used between a web client and a web server permits *secure* data transmissions.

FTP :

➢ Used between computers for sending and receiving data.
➢ Enables a client to send and receive complete files from a server.

4. What are the layers available in TCP/IP Reference Model?

- **Network Access Layer** - Concerned with building packets.
- **Internet Layer** - Describes how packets are to be delivered.
- **Transport Layer** - Ensure the proper transmission of data.
- **Application Layer** - Application network processes.

5. Expand ARP, ICMP, SMTP and DNS.

ARP : Address Resolution Protocol
ICMP : Internet Control Message Protocol
SMTP : Simple Mail Transfer Protocol
DNS : Domain Name System

Section - D

Answer the following questions: **(5 Mark)**

1. Explain about Internet, Intranet and Extranet.

INTERNET:

- The **Internet**, "the Net," is a worldwide system of computer networks.
- A global network, public TCP/IP network used by over a billion people all over the world.
- A network of networks where the users at any one computer can, if they have permission, get information from any other computer.
- The Internet is a network of global connections – comprising private, public, business, academic and government networks – linked by guided, wireless and fiber-optic technologies.
- It was perceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969 and was first recognized as the ARPANet.
- **Example:** Sending email to a friend ,Download programs and files, Social media, E-Mail

INTRANET:

- It is a private network within an enterprise to share company data and computing resources between the employees.
- It may consist of many interlinked local area networks.
- It includes connections through one or more gateway (connects two networks using different protocols together known as protocol convertor) computers to outside Internet.
- **Example:** Sharing of company policies/rules and regulations, Access employee database, Distribution of circulars/Office Orders

EXTRANET:

- It is a private network that uses Internet technology and the public telecommunication system to securely share business's information with suppliers, vendors, partners, customers, or other businesses.
- **Example:** Customer communications, Online education/ training, Account status enquiry.

2. Discuss about OSI model with its layers.

- Open System Interconnection (OSI) model describes the standards for the inter-computer communication.
- OSI model enables network protocols along with software and systems to be developed based on general set of guidelines.

OSI Layers:

1. Physical Layer:

- This is the 1st layer, it defines the electrical and physical specifications for devices.

2. Data Link Layer:

- It is the 2nd layer and it guarantees that the data transmitted are free of errors.
- This layer has simple protocols like "802.3 for Ethernet" and "802.11 for Wi-Fi".

3. Network Layer:

- It is the 3rd layer determining the path of the data packets.
- At this layer, routing of data packets is found using **IP Addressing**.

4. Transport Layer:

- It is the 4th layer that guarantees the transportation/sending of data is successful.
- It includes the error checking operation.

5. Session Layer:

- It is the 5th layer, identifies the established system session between different network entities.
- It controls dialogues between computers .
- While accessing a system remotely, session is created between your computer and the remote system.

6. Presentation Layer:

- It is the 6th layer that does the translation of data to the next layer (Prepare the data to the Application Layer).
- Encryption and decryption protocols occur in this layer such as, Secure Socket Layer (SSL).

7. Application Layer:

- It is the 7th layer, which acts as the user interface platform comprising of software within the system.

3. Difference between TCP/IP and OSI Reference Model.

Sl.No	OSI Reference Model	TCP/IP Model
1.	**Open System Interconnection (OSI)**	**Transmission Control Protocol (TCP/IP)**
2.	**OSI** describes the standards for the inter-computer communication.	**TCP/IP** is a set of protocols which governs communications among all computers on the Internet.
3.	OSI has **Seven layers**	TCP/IP has **Four layers**
4.	It is a theoretical model which is used for computing system.	It is a client server model used for transmission of data over the internet.
5.	Developed by ISO**(International Standard Organization)**	Developed by **(Department of Defense)**
6.	OSI follows a **vertical approach**.	TCP/IP follow a **horizontal approach**.
7.	OSI is **protocol independent.**	TCP/IP is **protocol dependent.**

4. Explain about the development, merits and demerits in Mobile networks.

Development of Mobile Networks:

The generations of mobile networks are as follows.

- First Generation(1G) 1981- NMT launch
- Second Generation(2G) 1991-GSM Launch
- Second to Third Generation Bridge (2.5)2000 – GPRS launch
- Third Generation(3G) 2003- UK 3G launch
- Fourth Generation (4 G) 2007
- Fifth Generation (5G) 2019+

Merits of Mobile Networks:

- It provides both voice/data services.
- It connects both fixed and wireless telephone users.
- It is used in areas where cables cannot be laid out due to its wireless nature.
- It is easy to maintain.
- It is easy to upgrade the equipments.
- The mobile and fixed subscribers are connected immediately with cellular network as soon as mobile phones are switched on.
- All the handshake signals between mobile and base station are automatically exchanged.

Demerits of Mobile Networks:

- Cost
- Vulnerable to Security risks
- Additional training is needed to use new technology.
- Cyber Crime.

12. DNS (DOMAIN NAME SYSTEM)

Section – A

Choose the best answer **(1 Mark)**

1. Which of the following is used to maintain all the directory of domain names?

a) Domain Name System b) Domain name space
c) Name space d) IP address

2. Which of the following notation is used to denote IPv4 addresses?

a) Binary b) Dotted-decimal c) Hexadecimal **d) a and b**

3. How many bits are used in the IPv6 addresses?

a) 32 b) 64 **c) 128** d) 16

4. Expansion of URL is

a) Uniform Resource Location b) Universal Resource Location
c) Uniform Resource Locator d) Universal Resource Locator

5. How many types are available in Relative URL?

a) 2 b) 3 c) 4 d) 5

6. Maximum characters used in the label of a node?

a) 255 b) 128 **c) 63** d) 32

7. In domain name, sequence of labels are separated by

a) ; **b) .(dot)** c) : d) NULL

8. Pick the odd one out from the following.

a) node b) label c) domain **d) server**

9. Which of the following initiates the mapping of domain name to IP address?

a) Zone b) Domain c) Resolver **d)Name servers**

10. Which is the contiguous area up to which the server has access?

a) Zone b) Domain c) Resolver d) Name servers

11. ISP stands for

a) International Service provider **b) Internet Service Provider**
c) Internet service Protocol d) Index service provider

12. TLD stands for

a) Top Level Data b) Top Logical Domain c) Term Level Data **d) Top Level Domain**

13. Which of the following statements are true?

i) Domains name is a part of URL. **ii)** URL made up of four parts
iii) The relative URL is a part of Absolute URL **iv)** URL doesn't contain any protocol

a) i & ii b) ii **c) i, ii & iii** d) i, ii & iv

14. Assertion (A) : The number of addresses used in IPv6 addressing method is 128 .
Reason (R) : IPv6 address is a 128 bit unique address.

a) A is true and R is false.
b) A is false and R is true.
c) Both A and R are correct and R is the correct explanation of A.
d) Both A and R are correct and R is not the correct explanation of A.

15. Match the following

a. domain	-	1. Progress that initiates translation
b. zone	-	2. contains database of domain names
c. name server	-	3. single node
d. resolver	-	4. contiguous nodes

a. 1432 **b.3421** c. 3214 d. 3412

Section-B

Answer the following questions **(2 Mark)**

1. List any four domain names.

Domain Name	Meaning
com	Commercial Organisation
edu	Educational Institutions
gov	Government (US)
mil	Military groups

2. What is an IP address?

- Internet Protocol (IP) address is simply the logical address in the network layer.
- IP address is also used to uniquely identify a computer over the network.
- No two systems can have same IP address.

3. What are the types of IP address?

- There are two types of **IP addresses**:
- IPv4 - IPv4 address is a 32-bit unique address given to a computer system.
- IPv6 - IPv6 address is a 128-bit unique address given to a computer system.

4. What is an URL?

- URL **(Uniform Resource Locator)** is the address of a document on the Internet.
- URL is made up of four parts- protocols, hostname, folder name and file name.
- Each part has its own specific functions.

5. List out four URLs you know.

- https://www.google.com/
- https://www.yahoo.com/
- https://www.rediff.com/
- https://www.facebook.com/

6. What are the types of URL?

- URL is divided into two types:
- **Absolute URL** - Absolute URL is the complete address of a document on the Internet.
- **Relative URL** - Relative URL is the partial address of a document on the Internet.

7. What is a domain?

- **Domain** is a sub tree in domain name space tree structure.
- The domain can be further divided into **sub domains.**

8. What is a zone?

- **Zone** is the contiguous part up to which the server has access.
- The domain assigned for the server does not divide into further sub domains then zone is same as domain.

9. What is a resolver?

- The **resolver** is a program which is responsible for initiating the translation of a domain name into an IP address.
- A resolver is stored in the host.
- There is no need of any protocol to form a connection between the resolver and the user program.

10. What are the categories available in domain name space?

- The DNS hierarchy is comprised of the following elements:
  1) Root Level
  2) Top Level Domains
  3) Second Level Domains
  4) Sub-Domain
  5) Host

11. Write any four generic Top Level Domain.

Domain Name	Purpose
com	Commercial Organisation
edu	Educational Institutions
gov	Government (US)
mil	Military groups

Section-C

Answer the following questions **(3 Mark)**

1. Write a note on DNS.

- Domain Name System (DNS) maintains all the directory of domain names and help us to access the websites using the domain names.
- It translates the domain name into IP address.
- The three important components of the Domain Name System are Namespace, Name server and Zone.

2. Differentiate IPv4 and IPv6.

IPv4	IPv6
IPv4 address is a **32-bit** unique address given to a computer system.	IPv6 address is a **128-bit** unique address given to a computer system.
The number of addresses that can be formed in IPv4 is 2^{32}.	The number of addresses that can be formed in IPv6 is 2^{128}.
IP address represented by, ● Binary notation ● Dotted-decimal notation	IP address represented by, 4-digit Hexadecimal numbers separated by colon symbols.

3. Differentiate Domain name and URL.

Domain Name	URL
Domain Name is a symbolic name associated with an IP address	URL (Uniform Resource Locator) is the address of a document on the Internet.
Domain name is the sequence of labels separated by dot (.).	URL is made up four parts–protocols, hostname, folder name and file name.
Example: challenger.atc.fhda.edu.	**Example:** http://quora.com/answer

4. What are the differences between Absolute URL and Relative URL?

Absolute URL	Relative URL
Absolute URL is the complete address of a document on the Internet.	Relative URL is the partial address of a document on the Internet.
Absolute URL contains all the information that are required to find the files on the Internet.	Relative URL contains only file name or file name with folder name.
All the four parts is very important in absolute URL.	Relative URL is used when the file is on the same server related to original document.

5. Write a note on domain name.

- Domain name is the sequence of labels, which are separated by dot (.).
- The domain name is always read from the lower level to higher level i.e., from the leaf node to root node.
- Since the root node always represent NULL string, all the domain name ending with dot.

6. Differentiate web address and URL

WEB ADDRESS	URL
Web Address more commonly defines a unique name that helps people remember a URL.	URL (Uniform Resource Locator) is the address of a document on the Internet.
It is a unique string of letters or characters that identify your specific place on the internet.	URL is made up four parts–protocols, hostname, folder name and file name.

Section - D

Answer the following questions: **(5 Mark)**

1. Explain briefly the components of DNS.

- Domain Name System (DNS) maintains all the directory of domain names and help us to access the websites using the domain names.
- It translates the domain name into IP address.

DNS Components:

- There are three important components in the Domain Name System.
- They are,
  - Namespace

- Name server
- Zone

1) NAME SPACE:

- The domain names must be very unique and appropriate.
- The names should be selected from a namespace.
- The name space can be organized in two ways
  - Flat name space
  - Hierarchical name space

a) FLAT NAME SPACE:

- Flat name space is where the name is assigned to the IP address.
- They do not have any specific structure and they cannot be used in large system.

b) HIERARCHICAL NAME SPACE:

- Hierarchical name space is where the name is made up of several parts.
  - The first part may represent the nature of organization.
  - The second part may represent the name of organization.
  - The third part may represent the department of the organization and so on.
  - **In this way the power to control the name space can be decentralized.**

2) NAME SERVER:

- Name Server is a main part in the Domain Name System (DNS).
- It translates the domain names to IP addresses.
- Name server contains the DNS database which consists of domain names and their corresponding IP Addresses.
- Large number of domain names are saved on servers and used in the hierarchical manner.
- Name servers do the important task of searching the domain names.
- **Types of Name Servers:**

1. Root Name Server - Contains entire DNS tree
2. Primary/Master Name Server - Contains a zone resource records.
3. Secondary/Slave Name Server - Contains a copy of primary server files.

3) ZONE:

- The entire name space is divided into many different zones.
- It is the area up to which the server has access.
- Zone is defined as a group of contiguous domains and sub domains.
- If the zone has a single domain, then zone and domain are the same.

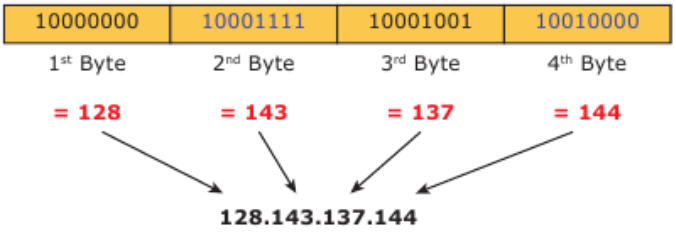
- Every zone has the server which contains a database called zone file.
- There are two copies of zone files available, Master file and slave file.

2. Classify and Explain the IP address.

- Internet Protocol (IP) address is simply the logical address in the network layer.
- IP address is also used to uniquely identify a computer over the network.
- Due to increase in the number of system in a network there is a need of more addresses which lead to two addressing methods i.e., IPv4 and IPv6.

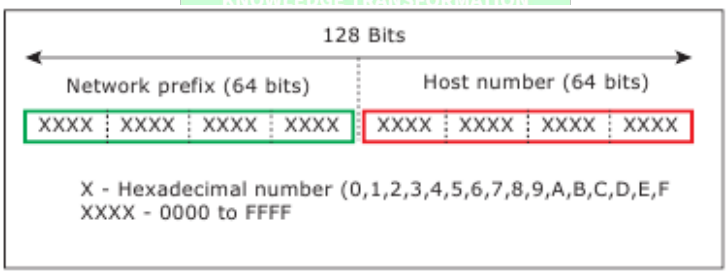
IPv4 Address:

- IPv4 address is a 32-bit unique address given to a computer system.
- No two systems can have same IP address.
- If the network has p connections then ' p' addresses should be there.
- An address space is the total number of addresses that can be made by that protocol.
- It is determined by the number of bits that the protocol use.
- If the protocol uses 'n' bits then the address space of that protocol would be '2^n ,addresses can be
- formed.
- So, the number of addresses that can be formed in IPv4 is 2^{32}.
- There are two ways to represent the IP address,
- **Binary notation:** In binary notation the address is expressed as 32-bit binary values.
- **Dotted-decimal notation:** In dotted-decimal notation the address is written in decimal format separated by dots(.).



IPv6 Address:

- IPv6 address is a 128-bit unique address given to a computer system.
- The number of addresses that can be formed in IPv6 is 2128.
- In IPv6 address, the 128 bits are divided into eight 16-bits blocks.
- Each block is then changed into 4-digit Hexadecimal numbers separated by colon symbols.
- E.g. 2001:0000:32313:DFE1:0063:0000:0000: FEFB.



3. Explain about the name server?

NAME SERVERS:

- The information which needs to be stored in **Domain name space** is quite large.
- Single system would be unreliable and inaccessible of any failure, inefficient and insufficient to store such a huge amount of requests from all over the world.
- The best way to do that is to **divide the entire space into many domains and sub domains** among many computers.
- DNS also allows domains to be further divided into sub domains and hierarchy of servers is also maintained.

- **Name servers** store the data and provide it to clients when queried by them.
- **Name Servers** are programs that run on a physical system and store all the zone data.
- **Inverse Name Server** in the Domain Name System (DNS) translates the domain names to IP addresses.
- Name server contains the DNS database which consists of domain names and their corresponding IP addresses.
- There is a need to store large number of domain names, so plenty of servers are used in the hierarchical manner.
- Name servers do the important task of searching the domain names.
- While searching, Local Name server (provided by ISP) ask the different name servers until one of them find out your answer.
- At last it returns IP address for that domain name.
- Your computer can now connect to the requested webpage stored on the web server.

TYPES OF NAME SERVERS:

There are three types of Name Servers which control the entire Domain Name System:

1. Root Name Server:

- Top level server which contains entire DNS tree, maintained by ICANN. There are 13 servers.

2. Primary/Master Name Server:

- Contains a zone resource records.
- These records are updatable by domain name holders such as organizations.

3. Secondary/Slave Name Server:

- Contains a copy of primary server files.
- This server has no authority to update, but reduce the workload of master server by sharing the queries.

4. What is domain name space? Explain.

DOMAIN NAME SPACE:

- **Domain name space** was designed to achieve **hierarchical name space.**
- In this, the names are represented as a tree like structure with **root element on the top** and this tree can have a maximum of **128 levels** starting from root element taking the **level 0 to level 127**.

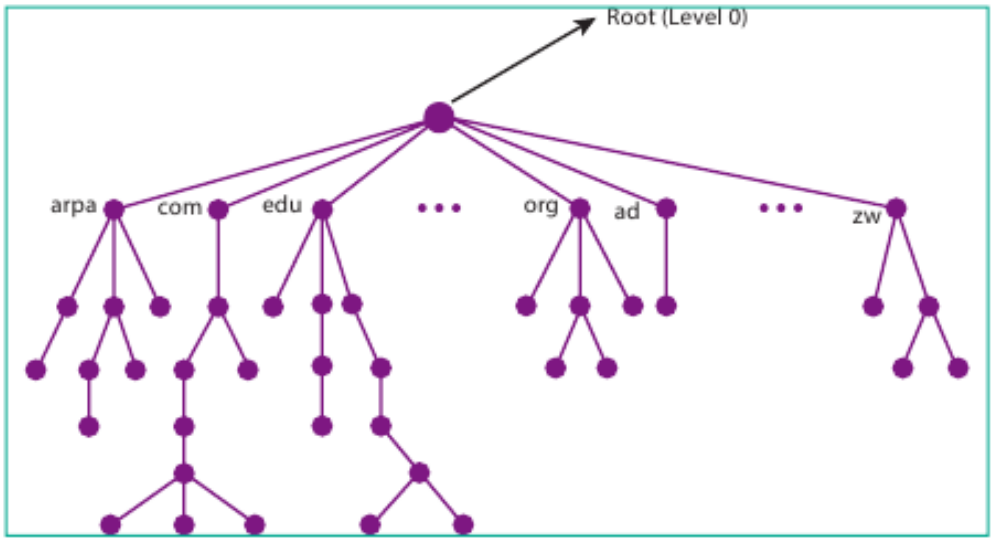


Figure 12.5 Domain Name Space

- The domain name space where the root element is present at the top most level i.e., level 0.
- The root element always represents the NULL string (empty string).
- The next level to the root element is node (children of root element).
- Each node in the tree has a **label** and a **domain name**.

Label:

- Labels are the names given to domains.
- It is a string which can have maximum of 63 characters.
- Each node in that level should have different labels thereby assuring the individuality of the domain name.
- **Domain** is a sub tree in domain name space tree structure.
- The domain can be further divided into **sub domains.**
- **challenger.atc.fhda.edu.** is the domain name which is obtained by reading the labels from bottom to top, separating each label by dot (.)

Domain Name:

- It is the sequence of labels.
- In domain name the sequence of labels are separated by dot (.).
- The domain name is always read from the **lower level to higher level** i.e., from the leaf node to root node.
- Since the root node always represent **NULL string**, all the domain name ending with **dot.**

Basic rules of Domain Names:

- Domain can consists of Alphabets a through z, and the digits 0 through 9.
- Hyphens are allowed, but hyphens cannot be used as first character of a domain name.
- Spaces are not allowed.
- Special symbols (such as !, $, &, _ and so on) are not permitted.
- Domain names have the minimum length of 2, and the maximum length of 63 characters.
- The entire name may be at most 253 characters long.
- Domain names are not case-sensitive.

Generic Top-Level Domain names

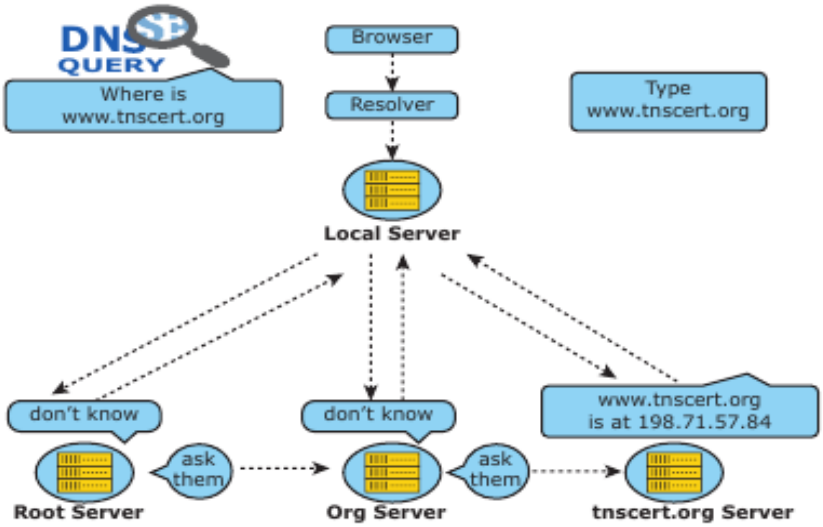
Domain Name	Purpose
com	Commercial Organisation
edu	Educational Institutions

Country top-level domain names

Domain Name	Meaning
in	India
us	United States

5. Explain how the DNS is working.

- When the user enters the URL in the browser, the system first checks its DNS cache for the corresponding IP address.



Workflow of DNS

- If the IP address is found in the cache then the information is retrieved from cache.
- If not, then the system needs to perform DNS query i.e., the system needs to query the resolver about the IP address from Internet Service Provider (ISP).
- Each resolver has its own cache and if it is found in that then that information is retrieved.
- If not, then the query is passed to next domain server i.e., TLD (Top Level Domain) which reviews the request and direct the query to name servers associated with that specific domain.
- Until the query is solved it is passed to next level domains.
- At last the mapping and the record are returned to the resolver who checks whether the returned value is a record or an error.
- Then the resolver returns the record back to the computer browser which is then viewed by the user.

13. NETWORK CABLING

Section – A

Choose the best answer **(1 Mark)**

1. ARPANET stands for
   a) American Research Project Agency Network
   b) Advanced Research Project AreaNetwork
   c) Advanced Research ProjectAgency Network
   d) American Research Programs And Network
2. WWW was invented by
   a) Tim Berners Lee b) Charles Babbage c) Blaise Pascal d) John Napier
3. Which cable is used in cable TV to connect with setup box?
   a) UTP cable b) Fibre optics **c) Coaxial cable** d) USB cable
4. Expansion of UTP is
   a) Uninterrupted Twisted Pair b) Uninterrupted Twisted Protocol
   c) Unshielded Twisted Pair d) Universal Twisted Protocol
5. Which medium is used in the optical fibre cables to transmit data?
   a) Microwave b) infrared **c) light** d) sound
6. Which of the following is a small peripheral device with a sim slot to connect the computers to Internet?
   a) USB **b) Dongles** c) Memory card d) Mobiles
7. Which connector is used in the Ethernet cables?
   a) RJ11 b) RJ21 c) RJ61 **d) RJ45**
8. Which of the following connector is called as champ connector?
   a) RJ11 **b) RJ21** c) RJ61 d) RJ45
9. How many pins are used in RJ45 cables?
   a) 8 b) 6 c) 50 d) 25
10. Which wiring standard is used for connecting two computers directly?
    a) straight Through wiring **b) Cross Over wiring**
    c) Rollover wiring d) None
11. Pick the odd one out from the following cables
    a) roll over b) cross over **c) null modem** d) straight through
12. Match the following:

1. Ethernet	-	Port
2. RJ45 connector	-	Ethernet
3. RJ45 jack	-	Plug
4. RJ45 cable	-	802.3

a.1, 2, 4, 3 b. 4, 1, 3, 2 **c. 4, 3, 1, 2** d. 4, 2, 1, 3

Section-B

Answer the following questions **(2 Mark)**

1. Write a note on twisted pair cable.

- **Twisted Pair Cable** is type of cable with two or more insulated wires twisted together.

- It has 8 wires which are twisted to ignore electromagnetic interference.
- It started with the speed of 10 mbps and improved the speed to 100 mbps.
- There are two types of twisted pair cables,
  - Unshielded Twisted Pair (UTP)
  - Shielded Twisted pair (STP).

2. What are the uses of USB cables?

- The Universal Serial Bus are used to connect keyboard, mouse and other peripheral devices.
- Micro USB is a miniaturized version of the USB used for connecting mobile devices.

3. Write a note on the types of RJ45 connector.

- The RJ45 connector is a small plastic cup which will be used to connect the wire inside the connector and ready to connect the Internet.
- Wiring schemes specifies how the wires to be connected with RJ45 connector.
- There are two wiring schemes available to terminate the twisted-pair cable on each end, which are T-568A and T-568B.

4. What is an Ethernet port?

- The Ethernet port is the jack where the Ethernet cable is to be connected.
- This port will be there in both the computers and the LAN port.

5. What is the use of Crimping tool?

- The crimping tool is a physical tool which is used to connect the patch wire and the Ethernet connector.
- The crimping tool looks like a small cutting handle with two mold of Ethernet port.
- The tool will puncture the connector and makes the wire set in the connector.

6. What are the types of twisted pair cables?

- There are two types of twisted pair cables,
  - Unshielded Twisted Pair (UTP)
  - Shielded Twisted pair (STP).

7. What is meant by champ connector?

- The RJ-21 connector has 50 pins with 25 pins at one end and 25 pins at the other end.
- RJ-21connector is also called as champ connector or Amphenol connector.
- The RJ-21 interface is typically used for data communication trucking applications.

Section-C

Answer the following questions **(3 Mark)**

1. Write a note on crossover cables.

- Crossover cable is used to connect two computers or Ethernet devices directly together without a hub.
- The pairs**(Tx and Rx lines)** will be crossed which means pin 1 & 2 of the plug on one end are connected with pin 3 & 6 of the plug on other end, and vice versa (3 & 6 to pin 1 & 2).
- The Null modem Cables are the example of the crossover cables.

2. Write a short note on RJ45 connector.

- The RJ45 Ethernet connector is a small plastic cup which will be used to connect the wire inside the connector and ready to use to connect the Internet.
- In RJ45 the "RJ" stands for the Registered Jack and the "45" simply refers to the number of interface standard in the cable.

- It has eight small pins inside to connect eight small wires in the patch cable.
- The eight cables has eight different colours.

3. What are the differences between serial and parallel ports?

Serial Ports	Parallel Ports
• The serial port will send 1 bit at one time.	• The parallel port will send 8 bit at one time.
• Use 9 pins and 2 wires	• Use 25 pins and 8 wires
• Data transmission is slower than parallel port.	• Data transmission is faster than serial port.
• It is used by flat screen monitors, GPS receivers, bar code scanners and satellite phones or modems.	• Devices that communicate with a parallel port are zip drives, scanners, joysticks, external hard drives and webcams.

4. What is meant by null modem cable?

- The Null modem Cables are the example of the crossover cables.
- This cable is used to join two PCs or two network devices of the same type.
- This cable works at a speed of 10 gbps and more.
- The Ethernet crossover cable is identical on both the ends.

5. What are the components involved in Ethernet cabling?

The main components are used in the Ethernet cabling are,

1. Patch Cable (Twisted pair)
2. RJ45 Connector
3. Ethernet Ports
4. Crimping Tool

6. What are the types of Fibre optic cables?

- There are two types of fibre optic cables are available are,
  1. Single-mode (100BaseBx)
  2. Multimode (100BaseSX).
- **Single-mode cables** are used for long distance transmission and at a high cost.
- **Multimode cables** are used for short distance transmission at a very low cost.

Section - D

Answer the following questions: **(5 Mark)**

1. What is meant by Registered Jack? Explain briefly the types of Jacks.

Registered Jacks:

- A Registered Jack commonly known as RJ is a **network interface** used for network cabling, wiring and jack construction.
- The primary function of the registered jack is to **connect** different data equipment and telecommunication devices.
- The registered jack refers to the **male physical connector (Plug)**, a **female physical connector (Jack)** and it's wiring.

Types of Registered Jacks:

1. RJ-11:

- It is the most popular modern form of registered jack found in home and office.
- This registered jack is mainly used in telephone and landlines.
- When we look the pin details of the RJ-11, there are **6 pin** where,
  - The two pins give the **transmission configuration**,
  - The two pins give the **receiver configuration** and
  - The other two pins will be kept for reserved.
- The two pin will have the **positive terminal** and the **negative terminal**.

2. RJ-14 and RJ-61:

- The **RJ-14 is the same as RJ-11** which will be used for telephone lines where same it as 6 pins.
- The **RJ-61** will have **8 pins** and use the twisted pair cable with a modular 8 connection.

3. RJ-21:

- The RJ-21 connector has **50 pins** with 25 pins at one end and 25 pins at the other end.
- It is also called as **champ connector or Amphenol connector**.
- The Amphenol is a connector manufacturer.
- The RJ-21 interface is typically used for data communication trucking applications.

2. Explain wiring techniques used in Ethernet cabling.

- There are three types of wiring techniques to construct the Ethernet cable.
- It is also known as color coding techniques.
- They are,
  1. Straight-Through Wiring
  2. Cross-over Wiring
  3. Roll-over Wiring

1. Straight-Through Wiring:

- In general, the Ethernet cables used for Ethernet connections are **"Straight-Through Cables".**
- These cable wires are in the **same sequence at both ends** of the cable, which means that pin 1 of the plug on one end is connected to pin 1 of the plug on the other end.
- The straight through wiring cables are mostly used for connecting **PC / NIC card to a hub**.
- This is a simple physical connection **used in printers, computers and other network interfaces**.

2. Cross-over Wiring:

- Crossover cable is used to connect two computers or Ethernet devices directly together without a hub. The pairs**(Tx and Rx lines)** will be crossed which means pin 1 & 2 of the plug on one end are connected with pin 3 & 6 of the plug on other end, and vice versa (3 & 6 to pin 1 & 2).
- The Null modem Cables are the example of the crossover cables.

3. Roll-over Wiring:

- Rollover cable is a type of **null-modem cable** used to connect a device console port to make programming changes to the device.
- The roll over wiring have opposite pin arrangements, all the cables are rolled over to different arrangements.
- In the rollover cable, The coloured wires are reversed on other end.

- The pins on one end are connected with other end in **reverse order**.
- Rollover cable is also known as **Yost cable or Console cable**.
- It is typically **flat (and light blue color)** to distinguish it from other types of network cabling.

3. Explain about RJ45 connector.

RJ45 CONNECTOR:

- The RJ45 connector is a small plastic cup which will be used to connect the wire inside the connector and ready to connect the Internet.
- The Ethernet cables are sometime called as **RJ45 cables**.
- In RJ45 the **"RJ"** stands for the **"Registered Jack"** and the **"45"** simply refers to the **number of interface** standard in the cable.
- Each RJ45 connector has **eight pins** and connected to each end of the Ethernet cable.
- Since it has 8-position, 8-contact (8P8C) modular plug.
- It is also known as **8P8C connector**.
- These plugs (connector) are then inserted into Ethernet port of the network card.

WIRING SCHEMES AND COLOUR CODES OF THE CONNECTOR

- The RJ45 connector has **eight small jack inside to connect eight small wires** of the patch cable.
- The eight cables are in **eight different colors**.
- Wiring schemes specifies how the wires to be connected with RJ45 connector.
- There are **two wiring schemes** available to terminate the twisted-pair cable on each end, which are **T-568A and T-568B**.
- Although four pairs of wires are available in the cable,
  - Ethernet uses only two pairs: Orange and Green.
  - The other two colors (blue and brown) can be used ISDN or phone connections.

4. Explain the components used in Ethernet cabling.

- Ethernet cabling is the process of connecting the computers with other devices using Ethernet cables.
- The three main components are used in the Ethernet cabling components are
  - Patch Cable (Twisted pair)
  - RJ45 Connector
  - Ethernet Ports
  - Crimping Tool

1) PATCH CABLE (TWISTED PAIR):

- These Cables are generally made up of 8 wires in different colors.
- Four of them are solid colours, and the others are striped.
- The eight colors are white green, green, white orange, blue, white blue, orange, white brown and brown.

2) RJ45 CONNECTOR:

- The **RJ45 connector** is a small plastic cup which will be used to connect the wire inside the connector and ready to connect the Internet.
- The Ethernet cables are sometime called as **RJ45 cables**.
- In RJ45 the **"RJ"** stands for the **"Registered Jack"** and the **"45"** simply refers to the **number of interface** standard in the cable.

- Each RJ45 connector has **eight pins** and connected to each end of the Ethernet cable.
- Since it has 8-position, 8-contact (8P8C) modular plug.
- It is also known as **8P8C connector**.
- These plugs (connector) are then inserted into Ethernet port of the network card.

3) ETHERNET CARD AND PORT:

- **Ethernet card** is a Network Interface Card (NIC) that allows computers to connect and transmit data to the devices on the network.
- **Ethernet port** is an opening which is a part of an Ethernet card.
- It accepts RJ45 connector with Ethernet cable.
- It is also called as **RJ45 jack**.
- It connects Ethernet cable with Ethernet card mounted on motherboard.
- It is found on personal computers, laptops, routers, switches, hubs and modems.

4) CRIMPING TOOL:

- **Crimping** is the process of joining two or more pieces of metal or wire by deforming one or both of them to hold each other.
- The crimping tool is a physical tool which is used to connect the patch wire and the Ethernet connector.
- The crimping tool looks like a small cutting handle with two mold of Ethernet port.
- The tool will puncture the connector and makes the wire set in the connector.

5. Explain the types of network cables

TYPES OF NETWORK CABLES

1. Coaxial Cables:

- **Coaxial Cables** is used to connect the television sets to home antennas.
- This cable is used to transfer the information in 10 mbps.
- The cable is divided into thinnet and thicknet cables.
- These cables have a copper wire inside and insulation is covered on the top of the copper wire to provide protection to the cable.
- These cables are very difficult to install and maintain, because they are too big to carry and replace.
- The coaxial cable got its name by the word “coax”.
- Some of the cable names are Media Bridge 50-feet Coaxial cable, Amazon basics CL2-Rated Coaxial cables etc.

2. Twisted Pair Cables:

- **Twisted Pair Cable** is type of cable with two or more insulated wires twisted together.
- It has 8 wires which are twisted to ignore electromagnetic interference.
- It started with the speed of 10 mbps (10BASE-T cable is used) and improved the speed to 100 mbps (100BASE-TX) and finally the cable improved more made to 10 gbps (10GBASE-T).
- There are two types of twisted pair cables,
  - Unshielded Twisted Pair (UTP)
  - Shielded Twisted pair (STP).
- The UTP is used as modern cables for Internet and they are lower in cost and installation and maintenance is easy compared to the coaxial cables.

- STP is similar to UTP, but it is covered by an additional jackets to protect the wires from External interference.

3. Fiber Optics:

- **Fibre Optic Cable** is strands of glass and pulse of light is used to send the information.
- The optic cable uses light to transmit the information from one place to another.
- These cables are placed in deep underground to avoid any damage to the cables.
- They are mainly used in Wide Area Network (WAN).
- There are two types of fibre optic cables are available are
    - Single-mode (100BaseBx)
    - Multimode (100BaseSX)
- **Single-mode cables** are used for long distance transmission and at a high cost.
- **Multimode cables** are used for short distance transmission at a very low cost.
- The optic cables are easy to maintain and install.

4. USB Cables:

- The **Universal Serial Bus** are used to connect keyboard, mouse and other peripheral devices.
- Micro USB is a miniaturized version of the USB used for connecting mobile devices.

5. Serial and Parallel cables:

- The **Serial and Parallel interface cables** are used to connect the Internet to the system.
- The system will have both serial port and parallel port.
- The serial port will send 1 bit at one time whereas the parallel port will send 8 bit at one time.

6. Ethernet Cables:

- **Ethernet cable** is the most common type of network cable mainly used for connecting the computers or devices at home or office.
- This cable connects wired devices within the local area network (LAN) for sharing the resources and
- accessing Internet.
- The Crossover Ethernet cable is an example of the Null modem Cables.

14. OPEN SOURCE CONCEPTS

Section – A

Choose the best answer **(1 Mark)**

1. If the source code of a software is freely accessible by the public, then it is known as

a) Freeware b) Firmware **c) Open source** d) Public source

2. Which of the following is a software program that replicates the functioning of a computer network?

a) Network software **b) Network simulation** c) Network testing d) Network calculator

3. Which of the following can document every incident that happened in the simulation and are used for examination?

a) Net Exam b) Network hardware **c) Trace file** d) Net document

4. Which is an example of network simulator?

a) simulator b) TCL **c) Ns2** d) C++

5. Fill in the blanks : NS2 comprises of_____key languages?

a) 13 b) 3 **c) 2** d) 4

6. Choose the Correct Pair from the following to build NS2

a) UNIX & TCL b) UNIX & a. C++ **c) C++ & OTcl** d) C++ & NS2

7. Which of the following is not a network simulation software?

a) Ns2 b) OPNET c) SSFNet **d) C++**

8. Which of the following is a open source network monitoring software?

a) C++ b) OPNET **c) Open NMS** d) OMNet++

9. Open NMS was released in……

a) 1999 b) 2000 c) 2003 d) 2004

10. OpenNMS Group was created by……

a) Balog b) Matt Brozowski c) David Hustace **d) All of them**

Section-B

Answer the following questions **(2 Mark)**

1. Explain the History of open source software.

- In 1984 Richard Stallman formed **Free Software Foundation (FSF).**
- In 1991 Linus Torvalds developed **Linux**.
- In 1994 **Red Hat** (Commercial Linux) company founded.
- In 1998 **open Source initiative (OSI)** was formed.
- 73% of free software register under GPL Licence.

2. What is meant by network simulator?

- A **network** simulator is a software program that replicates the functioning of a **computer network**.
- In simulators, the computer network is typically demonstrated with devices, traffic etc. and the performance are evaluated.

3. What is trace file?

- A significant output of simulation is the trace files.
- Trace files can document every incident that happened in the simulation and are used for examination.

4. Write short notes on NS2.

- NS2 is the abbreviation of NETWORK SIMULATOR version 2.

- It was considered explicitly for exploration in network communication and event driven open-source simulator in computer.
- OTCL and c++ used to create and run NS2

5. Explain NRCFOSS.

- National Resource Centre for Free and Open Source Software an Institution of Government of India.
- To help in development of FOSS in India.

6. Write short note on Open NMS?

- Open NMS (Network Management System) is a free and open-source initiative grade network monitoring and network management platform.
- It is established and maintained by a community of users ,developers and by the Open NMS Group, it offering services, training and support.

Section-C

Answer the following questions **(3 Mark)**

1. What are the uses of Open source Network Software?

- We can select and use any Open Source Software that suits our needs.
- The complete options of the software can be used without any cost and restrictions.
- We can share our ideas with the team, write the required code and share it with many.
- We can learn many ideas and make our program writing skills more efficient.
- We can add the most required features in the software by making changes
- Many open source software are very user friendly.

2. Explain Free software.

- Freeware usually refers to proprietary software that users can download at no cost, but whose source code cannot be changed.
- It enhances the ability of users to use and enjoy software as they see fit.

3. List out the Popular open source software.

- NS2
- OPEN NMS
- Ubuntu
- MySQL
- PDF Creator
- Open Office
- 7zip GNUCASH
- GIMP
- BLENDER
- AUDACITY
- VLC
- MOZILA FIREFOX
- MAGENTO
- ANDROID
- PHP.

4. Write note on open source hardware.

- The computers used by individuals or business organisations may have spy hardwares of rivals.
- Open source hardware technology helps in such threats.
- In this technique we get the components of the hardware and its circuit diagram, so that we can remove suspicious spyware if found.

Open Source Hardware:

- Remix
- Remake
- Remanufacture
- Redistribute
- Resell
- Study and Learn

5. What are the main functional areas of Open NMS?

Open NMS has three main functional areas:

- Service monitoring, where a number of monitor modules can govern if network-based services (ICMP, HTTP, DNS, etc.) are accessible.
- Data Gathering by using SNMP and JMX.
- Event management and notifications, which comprises of alarm reduction and a robust announcement system with accelerations and duty schedules.

6. Explain Types of Organisations related to Open Source.

Organizations related to Open Source:

- Apache Software Foundation
- The Document Foundation
- The Eclipse Foundation
- Free Software Foundation
- Linux Foundation
- Open Course Ware Consortium
- Open Source Initiative

Section - D

Answer the following questions: **(5 Mark)**

1. Differentiate Proprietary and open source software.

Open Source Software	Proprietary software
• It refers to the software that is developed and tested through open collaboration.	• It refers to the software that is solelyowned by the individual or the organization that developed it.
• Anyone with the academic knowledge can access, inspect, modify and redistribute the source code.	• Only the owner or publisher who holds the legal property rights of the source code can access it.
• The project is managed by an open source community of developers and programmers.	• The project is managed by a closed group of individuals or team that developed it.

• They are not aimed at unskilled users outside of the programming community.	• They are focused on a limited market of both skilled and unskilled end users.
• It provides better flexibility which means more freedom which encourages innovation.	• There is a very limited scope of innovation with the restrictions and all.
• **Examples:** Android, Firefox, LibreOffice, Ubuntu, Free BSD, Drupal,GNOME, etc.	• **Examples:** Windows, macOS, iTunes, Google earth, adobe Flash Player, etc.

2. List out the Benefits of Open Source Software

Benefits of Open Source software:

- We can select and use any software that suits our needs.
- The softwares can be used without any cost and restrictions.
- We can share our ideas with the team, write the required code and share it with many.
- We can learn many ideas and make our program writing skills more efficient.
- The coding in open source softwares are being groomed by many enthusiastical members of the group.
- Problems in the programs are quickly mended by the group's effort.
- We can add the most required features in the software by making changes to the open source softwares.
- Many open source software are very user friendly.

3. Explain various Open Source License.

- An open-source licensing allows the source code of a project to be open or transparent, utilized by third parties, or changed or manipulated by members of a developer community.

Types of open source license:

Apache License 2.0:

- The 2.0 version of the Apache License, provides a reliable and long-lived software products through collaborative open source software development.

BSD 3-Clause "New" or "Revised" license

- The **BSD license** is a simple **license** that merely requires that all code retain the **BSD license** notice if redistributed in source code format, or reproduce the notice if redistributed in binary format.

BSD 2-Clause "Simplified" or "FreeBSD" license

- A permissive non-copyleft free software license, compatible with the GNU GPL.
- This is the original BSD license with the advertising clause and another clause removed.
- Sometimes called **"FreeBSD license".**

GNU General Public License (GPL)

- **GNU** is a Unix-compatible operating system developed by the GNU project, which was started in 1983 by Richard Stallman with the goal of producing nonproprietary software.
- As such, users may download, modify and redistribute GNU software.
- GNU is a recursive acronym for GNU's Not Unix!

GNU Library or "Lesser" General Public License (LGPL)

- A **Lesser General Public License** (**LGPL**) is a **license** for open-source software that allows for provisions for including elements of free software in either free or proprietary software.

MIT license

- The Massachusetts Institute of Technology (**MIT**) **license** permits reuse within proprietary software provided that all copies of the **licensed** software include a copy of the **MIT License** terms and the copyright notice.

Mozilla Public License 2.0

- MPL is a copyleft **license** that is easy to comply with.
- Version **2.0** is, by default, compatible with LGPL and GPL version 2 or greater.

Common Development and Distribution License

- The **Common Development and Distribution License** (**CDDL**) is a free and open-source software **license**, produced by Sun Microsystems, based on the Mozilla Public **License** (MPL).
- Files **licensed** under the **CDDL** can be combined with files **licensed** under other **licenses**, whether open source or proprietary.

Eclipse Public License

- The **Eclipse Public License** (EPL) is an open source software **license** used by the **Eclipse** Foundation for its software.
- The **Eclipse Public License** is designed to be a business-friendly free software **license**.

15. E-COMMERCE

Section – A

Choose the best answer **(1 Mark)**

1. A company can be called E-Business if
   a) it has many branches across the world.
   b) it conduct business electronically over the Internet.
   c) it sells commodities to a foreign country.
   d) it has many employees.
2. Which of the following is not a tangible goods?
   a) Mobile **b) Mobile Apps** c) Medicine d) Flower bouquet
3. SME stands for
   a) Small and medium sized enterprises b) Simple and medium enterprises
   c) Sound messaging enterprises d) Short messaging enterprises
4. The dotcom phenomenon deals with_____
   a) Textile industries b) Mobile phone companies
   c) Internet based companies d) All the above
5. Which of the following is not correctly matched
   a) The First Wave of Electronic Commerce: 1985 -1990
   b) The Second Wave of Electronic Commerce: 2004 – 2009
   c) The Third Wave of Electronic Commerce: 2010 – Present
   d) Dotcom burst: 2000 – 2002
6. Assertion (A): The websites of first wave dotcom companies were only in English
   Reason (R): The dotcom companies of first wave are mostly American companies.
   a) Both (A) and (R) are correct and (R) is the correct explanation of (A)
   b) Both (A) and (R) are correct, but (R) is not the correct explanation of (A)
   c) (A) is true and (R) is false d) (A) is false and (R) is true
7. Off-shoring means
   a) Work outsourced to a branch of its own company
   b) Work outsourced to new employees
   c) Work outsourced to a third party locally
   d) Work outsourced to a third party outside its own country
8. G2G systems are classified into
   a) Internal facing and external facing b) Internet facing and Extranet facing
   c) Internal flag and external flag d) Internet flag and Extranet flag
9. ____ host the e-books on their websites.
   a) Bulk-buying sites b) Community sites **c) Digital publishing sites** d) Licensing sites
10. Which of the following is not a characteristics of E-Commerce
    a) Products cannot be inspected physically before purchase.
    b) Goods are delivered instantly.
    c) Resource focus supply side
    d) Scope of business is global.

Section-B

Answer the following questions **(2 Mark)**

1. Define E-Commerce.

- E-Commerce can be described as the process of buying or selling products, services or information via Internet.
- E-Commerce is currently one of the most important aspects of Internet era.
- E-stands for electronic.

2. Distinguish between E-Business and E-Commerce.

E-Business	E-Commerce
• E-Business entirely depends on the Internet for its every intra-company and inter-company activities.	• E-Commerce is commercial transaction through Internet.
• E-Business is grounded on technologies such as Network Infrastructures, Messaging & information distribution infrastructures and other Common business service infrastructures.	• E-Commerce is limited with monetary transactions using Internet.
• E-Business is a superset of E-Commerce.	• E-Commerce is a subset of E-Business.

3. Differentiate tangible goods and electronic goods with example of your own.

Tangible form	Electronic form
• Tangible form – e.g. a digital camera purchased by a consumer from an online shopping website which might be delivered at the requested address.	• Electronic form – e.g. a music album or software downloaded from a site which might be delivered in electronic form.

4. What is dotcom bubble and dotcom burst?

Dotcom Bubble:

- The Dotcom Bubble was a historic excessive growth (excessive assumption) of economy that occurred roughly between 1995 and 2000.
- It was also a period of extreme growth in the usage and adaptation of the Internet as well.

Dotcom Burst:

- The Nasdaq-Composite stock market index, fell from 5046.86 to 1114.11.
- This is infamously, known as the Dotcom Crash or Dotcom Burst.
- This began on March 11, 2000 and lasted until October 9, 2002.

5. Write a short note on out-sourcing.

- Out-Sourcing is hiring third party service providers to handle business on behalf.
- If a company's work is hired to another company, it would be termed as out-sourcing.

Section-C

Answer the following questions **(3 Mark)**

1. Describe how E-Commerce is related to socio-technological changes.

- Growth of E-Commerce is also related to the socio-technological changes.
- The more, the medium becomes deep rooted, the more, are the users drawn towards it.
- Increase of users, increases the markets.
- As the markets expand, more business organizations are attracted.
- The more businesses accumulate it create competition.
- The competition leads to innovation; innovation in turn drives the development of technology; technology facilitates E-Commerce's growth.

2. Write a short note on the third wave of E-Commerce.

- The third wave is brought on by the mobile technologies.
- It connects users via mobile devices for real-time and on-demand transactions.
- Not only the information is filtered by time, but also the geographic coordinates are used to screen the specific location-tailored information properly.
- The term Web 3.0, summarize the various characteristics of the future Internet which include Artificial Intelligence, Semantic Web, Generic Database etc.

3. Explain B2B module in E-Commerce.

- In B2B E-Commerce, commercial transactions take place between **different business organizations**, through the Internet.
- **Example:**
- A cycle company may buy tyres from another company for their cycles.
- When compared to other models, the value per transaction in B2B transaction is high, because of bulk purchases.
- The company also might get the advantage of discounts on bulk purchases.

4. Write a note on name-your-price websites.

- Name-your-price sites are just like normal retail sites.
- In contrast, the buyer negotiates with the retailer for a particular product or service.
- **Example:** https://in.hotels.com/ .

5. Write a note on physical product dispute of E-Commerce.

- Physical product disputes are a major disadvantage in E-Commerce.
- E-Commerce purchases are often made on trust because, we do not have physical access to the product.
- Though Internet is an effective channel for visual and auditory information but not senses.
- We can see pictures of the perfumes, but could not smell their fragrance.
- If we want to inspect something, we choose what we look at and how we look at it.
- But in online shopping, we would see only the pictures the seller had chosen for us.
- People are often much more comfortable in buying the generic goods rather than unique or complex things via the Internet.

Section - D

Answer the following questions: **(5 Mark)**

1. Write about the development and growth of Electronic Commerce.

- Electronic commerce and the information revolution brought about by the Internet likely go through a series of waves.

The First Wave of Electronic Commerce: 1995 -2003

- The Dotcom bubble had attracted huge investments to first wave companies.
- As the Internet was mere read-only web (web 1.0) and network technology was in its beginning stage, the bandwidth and network security was very low.
- Only EDI and unstructured E-mail remained as a mode of information exchange between businesses.
- But the first wave companies enjoyed the first-move advantage and customers had left with no options.

The Second Wave of Electronic Commerce: 2004 – 2009

- The second wave is the rebirth of E-Commerce after the dotcom burst.
- The second wave is considered as the global wave, with sellers doing business in many countries and in many languages.
- Language translation and currency conversion were focused in the second wave websites.
- The second wave companies used their own internal funds and gradually expanded their E-Commerce opportunities.
- As a result E-Commerce grows more steadily, though more slowly.
- The rapid development of network technologies and interactive web 2.0 offered the consumers more choices of buying.
- The increased web users nourished E-Commerce companies (mostly B2C companies) during the second wave.

The Third Wave of Electronic Commerce: 2010 – Present

- The third wave is brought on by the mobile technologies.
- It connects users via mobile devices for real-time and on-demand transactions.
- Not only the information is filtered by time, but also the geographic coordinates are used to screen the specific location-tailored information properly.
- The term Web 3.0, summarize the various characteristics of the future Internet which include Artificial Intelligence, Semantic Web, Generic Database etc.

2. List all the E-Commerce business models and explain any four briefly.

E-COMMERCE BUSINESS MODELS

1. Business to Business (B2B)
2. Business to Consumer (B2C)
3. Business to Government (B2G)
4. Consumer to Business (C2B)
5. Consumer to Consumer (C2C)
6. Consumer to Government (C2G)
7. Government to Business (G2B)
8. Government to Consumer (G2C)

9. Government to Government (G2G)

Business to Business (B2B)

- In B2B E-Commerce, commercial transactions take place between different business organizations, through the Internet.
- For example, a cycle company may buy tyres from another company for their cycles.
- When compared to other models, the value per transaction in B2B transaction is high, because of bulk purchases.

Business to Consumer (B2C)

- In B2C E-Commerce, commercial transactions take place between business firms and their consumers.
- It is the direct trade between companies and end-consumers via the Internet.
- An example of B2C transaction is a book company selling books to customers.
- This mode is intended to benefit the consumer and can say B2C .
- E-Commerce works as 'retail store' over Internet.

Consumer to Government (C2G)

- Citizens as Consumers and Government engage in C2G E-Commerce.
- Here an individual consumer interacts with the Government.
- C2G models usually include income tax or house tax payments, fees for issuance of certificates or other documents.
- People paying for renewal of license online may also fall under this category.

Government to Business (G2B)

- G2B is closely related to B2G.
- G2B in E-Commerce refers to a business model where Government providing services or information to business organization.
- It may be a formal offer such as a takeover bid for a road project.

3. Explain any five E-Commerce revenue models.

E-Commerce Revenue Models:

1. AUCTION SITE

- It is a kind of website, that auctions items on the Internet and levies some commission from the sales.
- **Example:** https://www.ebay.com/

2. BANNER ADVERTISEMENT SITE

- It displays advertisements of other companies in its websites and thereby earns revenue.

3. BULK-BUYING SITES

- It collects a number of users together all of who want to buy similar items; the site negotiates a discount with the supplier and takes a commission.
- **Example:** https://www.alibaba.com/

4. DIGITAL PUBLISHING SITES

- It effectively host the e-books or magazines on the web.
- They make profits in a number of ways such as advertising, selling etc., **https://wordpress.org/**

5. LICENSING SITES

- It allows other websites to make use of their software.

6. NAME-YOUR-PRICE SITES

- They are just like normal retail sites.
- In contrast, the buyer negotiates with the retailer for a particular product or service.
- **Example:** https://in.hotels.com/

4. How would you differentiate a traditional commerce and E-Commerce?

Traditional Commerce	E-Commerce
• Traditional commerce is buying or selling of products and services physically.	• E-Commerce carries out commercial transactions electronically on the Internet.
• Customer can easily identify, authenticate and talk to the merchant.	• Neither customer nor merchant see the other.
• Physical stores are not feasible to be open all the time.	• It is always available on all time and all days of the year.
• Products can be inspected physically before purchase.	• Products can't be inspected physically before purchase.
• Scope of business is limited to particular area.	• Scope of business is global. Vendors can expand their business Worldwide.
• Resource focus Supply side.	• Resource focus Demand side.
• Business Relationship is Linear.	• Business Relationship is End-to-end.
• Marketing is one way marketing.	• One-to-one marketing.
• Payment is made by cash, cheque, cards etc.	• Payment system is mostly credit card and through fund transfer.
• Most goods are delivered instantly.	• It takes time to transport goods.

5. What are the advantages and disadvantages of E-Commerce to a consumer?

Advantages of E-Commerce

- E-Commerce system is operated on all days and all the day i.e conduct business 24 x 7.
- Advanced Electronic communications systems allow messages to reach across the world instantaneously
- The Internet is too easy to 'shop around' and provides an opportunity to buy at reduced costs.
- Customers can have wide choice by comparing and evaluating the same product at different websites before making a purchase decision.
- Customers can shop from home or anywhere at their convenience.
- Payments can also be made through online.

Disadvantages of E-Commerce

- In E-Commerce we should wait between placing the order and having the product in hand.
- Returning goods through online is believed to be an area of difficulty because of time, refunds, exchange and postage.
- Privacy issues are serious in E-Commerce.
- Physical product disputes are a major disadvantage in E-Commerce.
- The goods bought and sold via the Internet need to survive the trip from the supplier to the consumer.

16. ELECTRONIC PAYMENT SYSTEMS

Section – A

Choose the best answer **(1 Mark)**

1. Based on the monetary value e payment system can be classified into
   a) Mirco and Macro b) Micro and Nano
   c) Maximum and Minimum d) Maximum and Macro
2. Which of the following is not a category of micropayment?
   a) Buying a movie ticket b) Subscription to e journals
   c) Buying a laptop d) Paying for smartphone app
3. Assertion (A): Micro electronic payment systems support higher value payments.
   Reason (R): Expensive cryptographic operations are included in macro payments
   a) Both (A) and (R) are correct and (R) is the correct explanation of (A)
   b) Both (A) and (R) are correct, but (R) is not the correct explanation of (A)
   c) (A) is true and (R) is false
   d) (A) is false and (R) is true
4. Which of the following is correctly matched
   a) Credit Cards - pay before **b) Debit Cards - pay now**
   c) Stored Value Card - pay later d) Smart card – pay anytime
5. ECS stands for
   a) Electronic Clearing Services b) Electronic Cloning Services
   c) Electronic Clearing Station d) Electronic Cloning Station
6. Which of the following is a online payment system for small payments?
   a) Card based payment **b) Micro electronic payment**
   c) Macro electronic payment d) Credit card payment
7. Which of the following is true about Virtual payment address (VPA)
   a) Customers can use their e-mail id as VPA b) VPA does not includes numbers
   c) VPA is a unique ID d) Multiple bank accounts cannot have single VPA
8. Pick the odd one in the credit card transaction
   a) card holder b) merchant **c) marketing manager** d) acquirer
9. Which of the following is true about debit card
   i. debit cards cannot be used in ATMs
   ii. debit cards cannot be used in online transactions
   iii. debit cards do not need bank accounts
   iv. debit cards and credit cards are identical in physical properties
   a) i, ii, iii b) ii, iii, iv c) iii alone **d) iv alone**
10. Match the following

List A	List B
A1) First Digit	B1) Account number
A2) 9th to 15th Digit	B2) MII Code
A3) First 6 Digits	B3) BIN Code
A4) Last Digit	B4) Check digit

A1	A2	A3	A4
a) B4 B3 B2 B1	**b) B2 B1 B3 B4**	c) B2 B3 B4 B1	d) B2 B4 B3 B1

Section-B

Answer the following questions **(2 Mark)**

1. Define electronic payment system

- An Electronic payment system is a financial arrangement that consists an intermediator to facilitate transfer of money-substitute between a payer and a receiver.

2. Distinguish micro electronic payment and macro electronic payment

MICRO ELECTRONIC PAYMENT	MACRO ELECTRONIC PAYMENT
• Online payment system designed to allow efficient and frequent payments of small amounts.	• Macro electronic payment systems support payments of higher value.
• The communication and computational costs are minimized here to keep transaction costs very low.	• The security requirements are more rigorous because of huge money transactions.

3. List the types of micro electronic payments based on its algorithm

- Hash chain based micro electronic payment systems.
- Hash collisions and hash sequences based micro electronic payment systems.
- Shared secrete keys based micro electronic payment systems.
- Probability based micro electronic payment systems.

4. Explain the concept of e-wallet

- Electronic wallets (e-wallets) or electronic purses allow users to make electronic transactions quickly and securely over the Internet through smartphones or computers.

5. What is credit card network?

- Credit card network acts as the intermediate between the banks.
- The Company responsible for communicating the transaction between the acquirer and the credit card issuer.
- These entities operate the networks that process credit card payments worldwide and levy interchange fees.
- Example: Visa, MasterCard, Rupay

Section-C

Answer the following questions **(3 Mark)**

1. Define micro electronic payment and its role in E-Commerce.

- Micro Electronic Payment is an on-line payment system designed to allow efficient and frequent payments of small amounts.

Role in E-Commerce:

- An e-commerce payment system facilitates the acceptance of electronic payment for online transaction.
- E-commerce payment systems have become increasingly popular due to the widespread use of internet-based shopping and banking.

2. Compare and contrast the credit card and debit card.

CREDIT CARD	DEBIT CARD
• Pay Later System	• Pay Now System
• The credit card issuer lends money to customer with an agreed interest.	• The debit card deducts the amount directly from customer's bank account.
• The bank account is not prerequisite for issuing a credit card.	• The bank account is must for issuing a debit card.

3. Explain briefly Anatomy of a credit card.

- All Payment cards are usually plastic cards of size **85.60 mm width × 53.98 mm height**, rounded corners with a radius of **2.88 mm to 3.48 mm** and thickness of **0.76 mm**.
- These standards dimensions are maintained universally in accordance with ISO/IEC 7810#ID-1.

4. Briefly explain the stored value card and its types.

- Stored value card is a type of debit card that is pre-loaded with certain amount(value), with which a payment is made.

TYPES OF STORED VALUE CARD:

1) Closed loop (single purpose)

- Money is metaphorically stored on the card in the form of binary-coded data.

2) Open loop (multipurpose)

- Open loop cards can be used to make debit transaction at variety of retailers.

5. What is electronic fund transfer?

- Electronic Funds Transfer (EFT) is the "electronic transfer" of money over an online network.
- The amount sent from the sender's bank branch is credited to the receiver's bank branch on the same day in batches.
- EFT saves the effort of sending a demand draft through post and the inherent delay in reaching the money to the receiver.

Section - D

Answer the following questions: **(5 Mark)**

1. What is credit card? Explain the key players of a credit card payment system and bring out the merits of it.

- Credit card is an electronic payment system enables the bearer to buy goods or services from a vendor, based on the cardholder's promise to the card issuer to payback the value later with an agreed interest.

Advantages Of Credit Card

- It is not necessary to pay physical money at the time of purchase.
- Depending on the card, there is no need to pay annuity.
- Allows purchases over the Internet in installments

Key Players In Operations Of Credit Card

1. Bearer:

- The holder of the credit card account who is responsible for payment of invoices in full (transactor) or a portion of the balance (revolver) the rest accrues interest and carried forward.

2. Merchant:

- Storekeeper or vendor who sell or providing service, receiving payment made by its customers through the credit card.

3. Acquirer:

- Merchant's bank that is responsible for receiving payment on behalf of merchant send authorization requests to the issuing bank through the appropriate channels.

4. Credit Card Network:

- It acts as the intermediate between the banks.
- The Company responsible for communicating the transaction between the acquirer and the credit card issuer.
- These entities operate the networks that process credit card payments worldwide and levy interchange fees.
- E.g. Visa, MasterCard, Rupay

5. Issuer:

- Bearer's bank, that issue the credit card, set limit of purchases, decides the approval of transactions, issue invoices for payment, charges the holders in case of default and offer card-linked products such as insurance, additional cards and rewards plan.

2. Briefly explain Electronic Account transfer and its types.

- With the advent of computers, network technologies and electronic communications a large number of alternative electronic payment systems have emerged.
- These include ECS (Electronic Clearing Services), EFT (Electronic funds transfers), Real Time Gross Settlement system (RTGS) etc.

ECS (Electronic Clearing Services)

- Electronic Clearing Service can be defined as repeated transfer of funds from one bank account to multiple bank accounts or vice versa using computer and Internet technology.
- Advantages of this system are bulk payments, guaranteed payments and no need to remember payment dates.
- ECS credit is used for making bulk payment of amounts.
- ECS debit is used for bulk collection of amounts.

EFT (Electronic funds transfers)

- Electronic Funds Transfer (EFT) is the "electronic transfer" of money over an online network.
- The amount sent from the sender's bank branch is credited to the receiver's bank branch on the same day in batches.
- EFT is a widely used method for moving funds from one account to another in B2B business models.

Real Time Gross Settlement system (RTGS)

- Real Time Gross Settlement system (RTGS) is a payment system particularly used for the settlement of transactions between financial institutions, especially banks.

- As name indicates, RTGS transactions are processed at the real time.
- RTGS payments are also called as push payments that are initiated ("triggered") by the payer.
- RTGS payments are generally large-value payments, i.e. high-volume transactions.
- Real-time gross settlement transactions are Unconditional and Irrevocable.

3. Write a note on a. Internet banking b. Mobile banking

a) Internet banking

- Internet banking is a collective term for E-banking, online banking, virtual banking, direct banks,web banking and remote banking.
- Internet banking allows customers of a financial institution to conduct various financial transactions on a secure website operated by the banking institutions.
- This is a very fast and convenient way of performing any banking transactions.
- It enables customers of a bank to conduct a wide range of financial transactions through its website.
- In fact, it is like a branch exclusively operating of an individual customer.
- The online banking system will typically connect to the core banking system operated by customers themselves (Self-service banking).

Advantages:

- Account holder are secured by user name and password while doing payments.
- Accounts can be accessed with Internet anywhere at any time.
- Any standard browser (e.g. Google Chrome) is adequate.
- Internet banking does not need installing any additional software.

b) Mobile banking

- Mobile banking is another form of net banking.
- The term mobile banking (also called m-banking) refers to the services provided by the bank to the customer to conduct banking transactions with the aid of mobile phones.
- These transactions include balance checking, account transfers, payments, purchases, etc.
- Transactions can be done at anytime and anywhere.
- The WAP protocol installed on a mobile phone helps the user have a permanent control over the account and remote management of his own finances.

Mobile Banking operations can be implemented in the following ways:

- Contacting the call center.
- Automatic IVR telephone service.
- Using a mobile phone via SMS.
- WAP technology.
- Using smartphone applications.

4. Write about smart card and type.

- The modern version of card based payment is **smart cards**.
- Smart cards along with the regular features of any card based payment system holds a **EMV chip.**
- This chip is similar to well-known **sim card** in appearance but differ in its functionalities.
- Smart cards can be classified into **Contact smart cards** and **Contactless smart cards.**

Advantage of Smart Cards:

- Identification

- Authentication
- Data storage

Contact smart cards

- Contact smart cards have a contact area of approximately 1 square centimeter, comprising several gold-plated contact pads.
- These pads provide electrical connectivity only when inserted into a reader
- It is also used as a communications medium between the smart card and a host.
- **Example**: A Point Of Sale Terminal (POS).

Contactless smart cards

- Contactless smart card is empowered by RF induction technology.
- Unlike contact smart cards, these cards require only near proximity to an antenna to communicate.
- Smart cards, whether they are contact or contactless cards do not have an internal power source.
- Instead, they use an inductor to capture some of the interrupting radio-frequency signal.

5. Explain in detail : Unified payments interface

- **Unified Payments Interface (UPI)** is a real-time payment system developed by National Payments Corporation of India (NCPI) to facilitate inter-bank transactions.
- It is simple, secure and instant payment facility.
- This interface is regulated by the Reserve Bank of India and used for transferring funds instantly between two bank accounts through mobile (platform) devices. http://www.npci.org.in/
- UPI withdraws and deposits funds directly from the bank account whenever a transaction is requested.
- It also provides the "peer to peer" collect request which can be scheduled and paid as per requirement and convenience.
- UPI is developed on the basis of Immediate Payment Service (IMPS).
- To initiate a transaction, UPI applications use two types of address - global and local.
- **Global address** includes bank account numbers and IFSC.
- **Local address** is a virtual payment address.
- Virtual payment address (VPA) also called as UPI-ID, is a unique ID enable us to send and receive money from multiple banks and prepaid payment issuers.
- Bank or the financial institution allows the customer to generate VPA using phone number associated with Aadhaar number and bank account number.
- VPA replaces bank account details thereby completely hides critical information.
- The MPIN (Mobile banking Personal Identification number) is required to confirm each payment.
- UPI allows operating multiple bank accounts in a single mobile application.

Advantages

- Immediate money transfers through mobile device round the clock 24 x 7.
- Can use single mobile application for accessing multiple bank accounts.
- Single Click Authentication for transferring of fund.
- It is not required to enter the details such as Card no, Account number, IFSC etc. for every transaction.
- Electronic payments will become much easier without requiring a digital wallet or credit or debit card.

17. E-COMMERCE SECURITY SYSTEMS

Section – A

Choose the best answer **(1 Mark)**

1. In E-Commerce, when a stolen credit card is used to make a purchase it is termed as
   a) Friendly fraud **b) Clean fraud** c) Triangulation fraud d) Cyber squatting
2. Which of the following is not a security element involved in E-Commerce?
   a) Authenticity b) Confidentiality **c) Fishing** d) Privacy
3. Asymmetric encryption is also called as
   a) Secure Electronic Transaction b) Certification Authority
   c) RSA algorithm d) Payment Information
4. The security authentication technology does not include
   i) Digital Signatures ii) Digital Time Stamps
   iii) Digital Technology iv) Digital Certificates
   a) i, ii & iv **b) ii & iii** c) i, ii & iii d) all the above
5. PGP stands for
   a) Pretty Good Privacy b) Pretty Good Person
   c) Private Good Privacy d) Private Good Person
6. _____ protocol is used for securing credit cards transactions via the Internet
   a) Secure Electronic Transaction (SET) b) Credit Card Verification
   c) Symmetric Key Encryption d) Public Key Encryption
7. Secure Electronic Transaction (SET) was developed in
   a) 1999 **b) 1996** c) 1969 d) 1997
8. The websites secured by Secure Socket Layer protocols can be identified using
   a) html:// b) http:// c) htmls:// **d) https://**
9. 3-D Secure, a protocol was developed by
   a) Visa b) Master c) Rupay d) PayTM
10. Which of the following is true about Ransomware
    a) Ransomware is not a subset of malware b) Ransomware deletes the file instantly
    c) Typopiracy is a form of ransomware **d) Hackers demand ransom from the victim**

Section-B

Answer the following questions **(2 Mark)**

1. Write about information leakage in E-Commerce.

- The leakage of trade secrets in E-Commerce mainly includes two aspects:

(a) The content of the transaction between the vendor and customer is **stolen** by the third party;
(b) The documents provided by the merchant to the customer or vice versa are **illegally used** by others.

- This intercepting and stealing of online documents is called **information leakage.**

2. Write a short note on Typopiracy.

- Typopiracy is a variant of Cyber Squatting.
- Some fake websites try to take advantage of users' common typographical errors in typing a website address and direct users to a different website.
- Such people try to take advantage of some popular websites to generate accidental traffic for their websites.

- **Example:** www.goggle.com, www.faceblook.com

3. Define non-repudiation.

- Non-repudiation ensures that the signer who digitally signed the document cannot deny having signed it.
- It prevents against violation agreement after the deal.

4. List the different types of security technologies in E-Commerce

The security technologies in E-Commerce transactions are classified into

- Encryption technology
- Authentication technology
- Authentication protocols

5. Write about digital signature.

- A digital signature is a mechanism that is used to verify that a particular digital document, message or transaction is authentic.

Section-C

Answer the following questions **(3 Mark)**

1. Write a note on certification authorities (CA)

- Digital certificates are issued by recognized Certification Authorities (CA).
- When someone requests a digital certificate, the authority verifies the identity of the requester, and if the requester fulfills all requirements, the authority issues it.

2. List some E-Commerce Security Threats?

- Information leakage
- Tampering
- Payment frauds
- Malicious code threats
- Distributed Denial of Service (DDoS) Attacks
- Cyber Squatting
- Typopiracy

3. Differentiate asymmetric and symmetric algorithms.

Symmetric Key Encryption	Asymmetric Key Encryption
• Same key is used for both encryption and decryption	• Different keys are used for encryption and decryption
• Speed of encryption or decryption is very fast	• Speed of encryption or decryption is comparatively slow
• Plain text and cipher text are of same size	• The size of cipher text is always greater than plain text.
• Algorithms like DES, AES, RC4 uses symmetric key encryption	• Algorithms like RSA, ECC, DSA use asymmetric key encryption
• Provides confidentiality	• Provides confidentiality, authenticity and non-repudiation

• The number of key used grows exponentially with the number of users.	• The number of key used grows linearly with the number of users.

4. Write a note on PGP.

- **Pretty Good Privacy (PGP)** is a decentralized encryption program that provides cryptographic privacy and authentication for data communication.
- PGP encryption uses a serial combination of hashing, data compression, symmetric-key cryptography and asymmetric-key cryptography and works on the concept of "web of trust".

5. Explain 3D secure payment protocols

- 3-D Secure is a secure payment protocol on the Internet, developed by Visa and adapted by MasterCard.
- It gives a better authentication of the holder of the payment card, during purchases made on websites.
- This protocol is used to link the financial authorization process with an online authentication system.
- Authentication model comprise 3 domains:
    1. The Acquirer Domain
    2. The Issuer Domain
    3. The interoperability Domain

Section - D

Answer the following questions: **(5 Mark)**

1. Write about dimensions of E-Commerce Security.

- **Authenticity:** Conforming genuineness of data shared.
- **Availability:** Prevention against data delay or removal.
- **Completeness:** Unification of all business information.
- **Confidentiality:** Protecting data against unauthorized disclosure.
- **Effectiveness:** Effective handling of hardware, software and data.
- **Integrity:** Prevention of the data being unaltered or modified.
- **Non-repudiation:** Prevention against violation agreement after the deal.
- **Privacy:** Prevention of customers' personal data being used by others.
- **Reliability:** Providing a reliable identification of the individuals or businesses.
- **Review Ability:** Capability of monitoring activities to audit and track the operations.

2. Explain encryption technology.

- Encryption technology is an effective information security protection.
- It is defined as converting a Plaintext into meaningless Ciphertext using encryption algorithm thus ensuring the confidentiality of the data.
- The encryption or decryption process use a key to encrypt or decrypt the data.

Types of Encryption Technologies:

- Symmetric Key Encryption System
- Asymmetric Key Encryption System.

1) Symmetric Key Encryption:

- The Data Encryption Standard (DES) is a Symmetric key data encryption method.

- DES is the typical block algorithm that takes a string of bits of clear text (plain text) with a fixed length and transforms it into encrypted text of the same length.
- DES also uses a key because the algorithm can only be deciphered by people who know the exact key that has been used for encryption.
- The DES key is apparently 64 bits, but in fact the algorithm uses only 56.
- The other eight bits are only used to verify the parity and then it is discarded.
- DES is not safe for many applications, because of its relatively smaller key size (56-bit).
- So the key length can be easily increased by multiple use of the DES, described as Triple-DES, also known as TDES, 3DES or DESede.

2) Asymmetric Or Public Key Encryption:

- Asymmetric encryption also called as RSA (Rivest-Shamir-Adleman) algorithm.
- It uses public-key authentication and digital signatures.
- Symmetric Cryptosystems raises the problem of key exchange and key management.
- Unlike a symmetric encryption, the communicating parties need not know other's private key in asymmetric encryption.
- Each user generates their own key pair, which consists of a private key and a public key.
- A public-key encryption method is a method for converting a plaintext with a public key into a cipher text from which the plaintext can be retrieved with a private key.

3. Differentiate digital signatures and digital certificates.

Digital Signature	Digital Certificate
• A digital signature is a mechanism that is used to verify that a particular digital document, message or transaction is authentic.	• A digital certificate is a computer file which officially approves the relation between the holder of the certificate and a particular public key.
• Digital signatures are used to verify the trustworthiness of the data being sent.	• Digital certificates are used to verify the trustworthiness of the sender.
• Digital signature is to ensure that a data remain secure from the point it was issued and it was not modified by a third party.	• Digital certificate binds a digital signature to an Entity.
• It provides authentication, non-repudiation and integrity	• It provides authentication and security.
• A digital signature is created using a Digital Signature Standard (DSS). It uses a SHA-1 or SHA-2 algorithm for encrypting and decrypting the Message.	• A digital certificate works on the principles of public key cryptography standards (PKCS). It creates certificate in the X.509 or PGP format.
• The document is encrypted at the sending end and decrypted at the receiving end using asymmetric keys.	• A digital certificate consist of certificate's owner name and public key, expiration date, a Certificate Authority 's name , a Certificate Authority's digital signature

4. Define Secure Electronic Transaction (SET) and its features.

- Secure Electronic Transaction (SET) is a security protocol for electronic payments with credit cards by VISA and MasterCard.
- SET implementation is based on the use of digital signatures and encrypted data with asymmetric and symmetric algorithms.
- SET also use dual signatures to ensure the privacy.
- The SET purchase involves three major participants:
  - The Customer,
  - The Seller
  - The Payment Gateway.
- Here the customer shares the order information with the seller and the payment information only with the payment gateway but not with the others.
- So, with the SET, the credit card number cannot be stored in seller's files also could not be recovered by a hacker.
- The SET protocol guarantees the security of online shopping using credit cards on the open network.

ADVANTAGES:

- Ensures the integrity and the non-repudiation of transaction data.
- Internationally recognized standard for credit card online transaction.

KEY FEATURES:

- Using public key encryption and private key encryption ensure data confidentiality.
- Use information digest technology to ensure the integrity of information.
- Dual signature technology to ensure the identity of both parties in the transaction

5. Briefly explain SSL.

- Secure Sockets Layers (SSL) is a common Cryptographic protocol.
- SSL is a hybrid encryption protocol for securing transactions over the Internet developed by Netscape.
- It is based on a public key cryptography process to ensure the security of data transmission over the internet.
- Its principle is to establish a secure communication channel (encrypted) between a client and a server after an authentication step.
- The SSL system ensures the security of data, located between the application layer and the transport layer in TCP.
- For example, a user using an internet browser to connect to an SSL secured E-Commerce site will send encrypted data without any more necessary manipulations.
- Today, all browsers in the market support SSL, and most of the secure communications are proceeded through this protocol.
- SSL works completely hidden for the user, who does not have to intervene in the protocol.
- The user has to make sure the URL starts with **https:// instead of http://** where the "s" obviously means secured and also preceded by a green padlock.

18. ELECTRONIC DATA INTERCHANGE- EDI

Section – A

Choose the best answer **(1 Mark)**

1. EDI stands for
   a) Electronic Details Information b) Electronic Data Information
   c) Electronic Data Interchange d) Electronic Details Interchange
2. Which of the following is an internationally recognized standard format for trade, transportation, insurance, banking and customs?
   a) TSLFACT b) SETFACT c) FTPFACT **d) EDIFACT**
3. Which is the first industry-specific EDI standard?
   a) TDCC b) VISA c) Master d) ANSI
4. UNSM stands for?
   a) Universal Natural Standard message b) Universal Notations for Simple message
   c) United Nations Standard message d) United Nations Service message
5. Which of the following is a type of EDI?
   a) Direct EDI b) Indirect EDI c) Collective EDI d) Unique EDI
6. Who is called as the father of EDI?
   a) Charles Babbage **b) Ed Guilbert** c) Pascal d) None of the above
7. EDI interchanges starts with ____ and ends with ____
   a) UNA, UNZ **b) UNB, UNZ** c) UNA, UNT d) UNB, UNT
8. EDIFACT stands for
   a) EDI for Admissible Commercial Transport
   b) EDI for Advisory Committee and Transport
   c) EDI for Administration, Commerce and Transport
   d) EDI for Admissible Commerce and Trade
9. The versions of EDIFACT are also called as
   a) Message types b) Subsets **c) Directories** d) Folders
10. Number of characters in an single EDIFACT messages
    a) 5 **b) 6** c) 4 d) 3

Section-B

Answer the following questions **(2 Mark)**

1. Define EDI.

- The Electronic Data Interchange (EDI) is the exchange of business documents between one trade partner and another electronically.
- It is transferred through a dedicated channel or through the Internet in a predefined format without much human intervention.

2. List few types of business documents that are transmitted through EDI.

- Delivery Notes
- Invoices
- Purchase
- Orders

- Advance Ship Notice
- Functional Acknowledgements

3. What are the 4 major components of EDI?

- Standard document forma
- Translator and Mapper
- Communication software
- Communication network

4. What is meant by directories in EDIFACT?

- The versions of EDIFACT are also called as directories.
- These EDIFACT directories will be revised twice a year to include new or update existing EDIFACT messages.
- EDIFACT directories have names like D.18B

5. Write a note on EDIFACT subsets.

- Due to the complexity, branch-specific subsets of EDIFACT have developed.
- These subsets of EDIFACT include only the functions relevant to specific user groups.
- **Example:**
  - EDIFURN - furniture industry
  - EDIGAS - gas business

Section-C

Answer the following questions **(3 Mark)**

1. Write a short note on EDI.

- The Electronic Data Interchange (EDI) is the exchange of business documents such as delivery notes, invoices etc., between one trade partner and another electronically.
- It is transferred through a dedicated channel or through the Internet in a predefined format without much human intervention.

2. List the various layers of EDI.

- Electronic data interchange architecture specifies four different layers namely,
  - Semantic layer
  - Standards translation layer
  - Transport layer
  - Physical layer

3. Write a note on UN/EDIFACT.

- United Nations / Electronic Data Interchange for Administration, Commerce and Transport (UN / EDIFACT) is an international EDI - standard developed under the supervision of the United Nations.
- In 1987, the UN / EDIFACT syntax rules were approved as ISO: ISO9735 standard by the International Organization for Standardization.
- EDIFACT includes a set of internationally agreed standards, catalogs and guidelines for electronic exchange of structured data between independent computer systems.

4. Write a note on EDIFACT message.

- The basic standardization concept of EDIFACT is that there are uniform message types called United Nations Standard Message (UNSM).

- In so-called subsets, the message types can be specified deeper in their characteristics depending on the sector.
- The message types, all of which always have exactly one nickname consisting of six uppercase English alphabets.
- The message begins with UNH and ends with UNT

5. Write about EDIFACT separators.

EDIFACT has the following punctuation marks that are used as standard separators.

Character	Uses
Apostrophe ’	Segment terminator
Plus sign +	Segment tag and data element separator
Colon :	Component data element separator
Question mark ?	Release character
Period .	Decimal point

Section - D

Answer the following questions: **(5 Mark)**

1. Briefly explain various types of EDI.

The types of EDI were constructed based on how EDI communication connections and the conversion were organized.

EDI Types:

- Direct EDI
- EDI via VAN
- EDI via FTP/VPN, SFTP, FTPS
- Web EDI
- Mobile EDI

Direct EDI/Point-to-Point:

- It is also called as Point-to-Point EDI.
- It establishes a direct connection between various business stakeholders and partners individually.
- This type of EDI suits to larger businesses with a lot of day to day business transactions.

EDI via VAN:

- EDI via VAN (Value Added Network) is where EDI documents are transferred with the support of third party network service providers.
- Many businesses prefer this network model to protect them from the updating ongoing complexities of
- network technologies.

EDI via FTP/VPN, SFTP, FTPS:

- When protocols like FTP/VPN, SFTP and FTPS are used for exchange of EDI based documents through the Internet or Intranet it is called as EDI via FTP/VPN, SFTP, FTPS.

- Web EDI Web based EDI conducts EDI using an web browser via the Internet.
- Here the businesses are allowed to use any browser to transfer data to their business partners.
- Web based EDI is easy and convenient for small and medium organizations.

Web EDI

- Web based EDI conducts EDI using an web browser via the Internet.
- The businesses are allowed to use any browser to transfer data to their business partners.
- Web based EDI is easy and convenient for small and medium organizations.

Mobile EDI

- When smartphones or other such handheld devices are used to transfer EDI documents it is called as mobile EDI.
- Mobile EDI applications considerably increase the speed of EDI transactions.

2. What are the advantages of EDI?

- EDI was developed to solve the problems inherent in paper-based transaction processing and in other forms of electronic communication.
- Implementing EDI system offers a company greater control over its supply chain and allow it to trade more effectively.
- It also increases productivity and promotes operational efficiency.
- The following are the other advantages of EDI.
  - Improving service to end users
  - Increasing productivity
  - Minimizing errors
  - Slashing response times
  - Automation of operations
  - Cutting costs
  - Integrating all business and trading partners
  - Providing information on process status
  - Optimizing financial ratios

3. Write about structure of EDIFACT.

- EDIFACT is a hierarchical structure where the top level is referred to as an interchange, and lower levels contain multiple messages.
- The messages consist of segments, which in turn consist of composites.
- The final iteration is a data element.

Segment Tables:

- Segment table lists the message tags.
- It contains the tags, tag names, requirements designator and repetitation field.
- The requirement designator may be mandatory (M) or conditional (C).
- The (M) denotes that the segment must appear atleast once.
- The (C) denotes that the segment may be used if needed.
- **Example:** C10 indicates repetitions of a segment or group between 0 and 10.

EDI Interchange:

- Interchange is also called as envelope.
- The top level of EDIFACT structure is Interchange.
- An interchange may contain multiple messages.
- It starts with UNB and ends with UNZ.

EDIFACT message:

- The basic standardization concept of EDIFACT is that there are uniform message types called United Nations Standard Message (UNSM).
- In so-called subsets, the message types can be specified deeper in their characteristics depending on the sector.
- The message types, all of which always have exactly one nickname consisting of six uppercase English alphabets.
- The message begins with UNH and ends with UNT.

Service Messages: To confirm / reject a message, CONTRL and APERAK messages are sent.

Data exchange: **CREMUL, DELFOR, IFTMBC**

EDIFACT Segment:

- It is the subset of message.
- A segment is a three-character alphanumeric code.
- These segments are listed in segment tables.
- Segments may contain one, or several related user data elements.

EDIFACT Elements:

- The elements are the piece of actual data.
- These data elements may be either simple or composite.

EDI Separators:

- EDIFACT punctuation marks that are used as standard separators.

***

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