ATOMIC ENERGY EDUCATION SOCIETY

CLASS - 8

COMPUTER STUDY MATERIAL

ATOMIC ENERGY EDUCATION SOCIETY

COMPUTER SYLLABUS OF CLASS VIII

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Split-up of Syllabus

Quarter	Period	Units
I	April to June	1 and 2
II	July to September	3 and 4
III	October to December	5 and 6
IV	January to March	7, 8, 9, 10 and 11

UNIT 1

ALGORITHM

1.1 Use of algorithm in programming Developing algorithm to solve a particular problem

An Algorithm is a step by step procedure for solving a problem. Algorithm is an important part of analysis, control, and evaluation.

Characteristics of algorithm

- In the algorithm each and every instruction should be precise and unambiguous.

- The instructions in an algorithm should not be repeated.

- Ensure that the algorithm will ultimately terminated.

- The algorithm should be written in sequence.

- It looks like normal English.

Algorithm development process consists of five major steps.

Step 1: Obtain a description of the problem.

Step 2: Analyze the Problem.

Step 3: Develop a high-level algorithm.

Step 4: Refine the algorithm by adding more details.

Step 5: Review the algorithm.

Use of Algorithm

- Used to identify the process.

- Used to identify the necessary variables to solve the problem.

- Used to identify the major decision points.

- Used to make the process more efficient and more consistent.

Types of Algorithm

The algorithm and flowchart are classified into three types of control structures.

1. **Sequence:** Statements are placed one after the other and the execution takes place starting from up to down. (Examples: 1, 2 and 3 given below)

2. **Selection:** There is a condition. If the condition is TRUE, one of the two branches will be executed; if the condition is FALSE, the other alternative will be executed. (Examples: 4, 5 and 6 given below)

3. **Iteration:** There is a condition, Until the condition is TRUE the branch will be executed repeatedly. If the condition is FALSE the other branch given for the FALSE statement will be executed. (Example: 7 given below)

Some of the example algorithms are given below

Example 1 : Algorithm to Add two numbers.

Step 1: Start the program.

Step 2: Get the values of a and b from user.

Step 3: Add the value of A and B and assign to the variable C.

Step 4: Print the value of C

Step 5: End the program.

Example 2: Algorithm to find the area of a square

Step 1: Start the program.

Step 2: Get the value of S from the user.

Step 3: Calculate A =S x S.

Step 4: Print the value of A.

Step 5 : End the program.

Example 3: Algorihm to find the Area of a circle.

Step 1: Start the program.

Step 2: Assign the value of π as 3.14.

Step 3 : Get the value of R.

Step 4 : Calculate A= π * R*R

Step 5: Print the value of A.

Step 6: Stop the program.

Example 4: Algorihm to find the Eligibility for voting.

Step 1: Start the program.

Step 2: Get the age from the user.

Step 3: If age > = 18, Go to Step 4, else go to step 5.

Step 4: Print "Eligible for voting".

Step 5: Print "Not eligible for voting".

Step 6: Stop the program.

Example 5: Algorihm to Print Odd numbers upto 20

Step 1: Start the program.

Step 2: Assign the value of N as 1.

Step 3 : If N< 20 repeat Step 4 and 5 else go to step 6.

Step 4: Print the value of N.

Step 5 : Increment the value of N by 2

Step 6 : Stop the program.

Example 6: Algorithm to print even numbers up to 50

Step 1: Start the program.

Step 2: Assign the value of N as 2.

Step 3: If N < 50 repeat the step 4 and 5 else goto setp 6.

Step 4: Print the value of N.

Step 5: Increment the value of N by 2.

Step 6 : End the program.

Example 7: Algorithm to find greater number among 2 numbers

Step 1: Start the program.

Step 2 : Get the value of A and B.

Step 3 : Compare the value of A and B.

Step 4 : If A > B goto step 5 and skip step 6 else skip step 5 and goto Step 6.

Step 5 : Print "A is greater than B".

Step 6 : Print "B is greater than A".

Step 7 : End the program.

EXERCISES

1. Define Algorithm.

2. Write the advantages of Algorithm.

3. Write the types of Algorithm.

4. Write an algorithm to check the eligibility for Pass.

5. Write an algorithm whether Number N is Even or Odd.

6. Write an Algorithm to find the simple interest.

7. Write an algorithm to find factorial of any number.

UNIT II
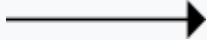
FLOW CHART

2.1 About Flowchart

Flow chart is a diagrammatical representation of Algorithm.

Use of Flowchart

- Quite helpful in understanding the logic of complicated and lengthy problems.
- Once the flowchart is drawn, it becomes easy to write the program in any high level language.
- A flowchart is a must for the better documentation of a complex program.

2.2 Various types of box used in flow chart and their use (terminal box, input/output box, processing box, decision box)

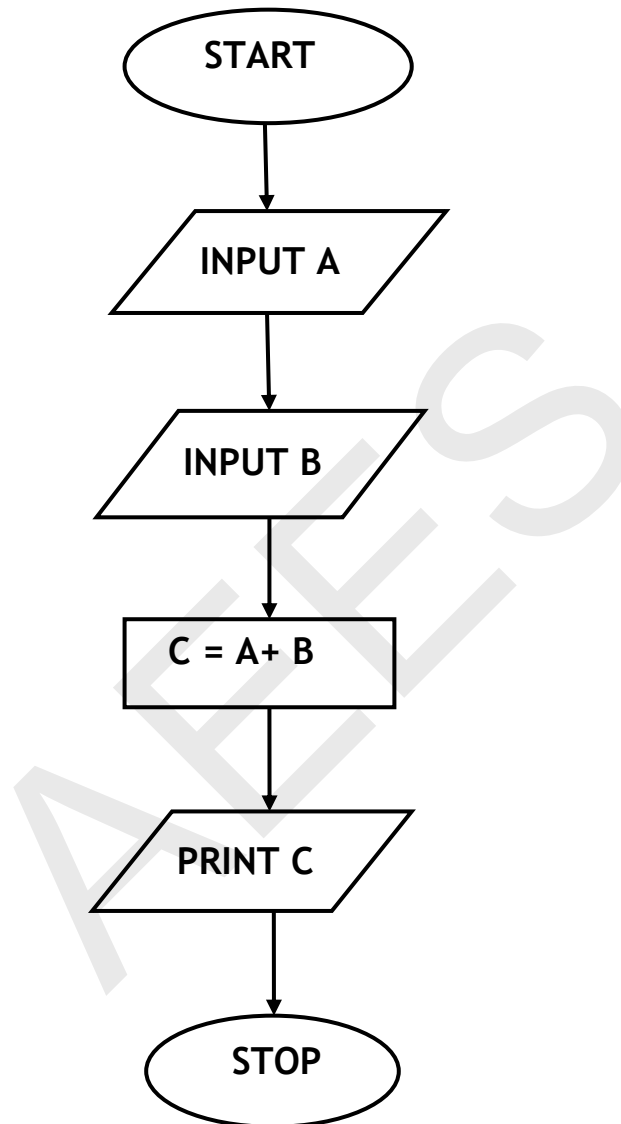| Shape	Name of the Symbol	Used to represent	Description
⟶	(Arrowhead	Flowline	A line coming from one symbol and pointing at another which shows the process's order of operation.
(oval)	Oval or rounded rectangle	Terminal	Indicates the beginning and ending of a program. They usually contain the word "Start" or "End".
(rectangle)	(Rectangle)	Process	Represents a set of operations (process) that changes value, location of data.

	Diamond (Rhombus)	Decision	Shows a conditional operation that determines which one of the two paths the program will take. The conditional operation is commonly a yes/no question or true/false test.
	Parallelogram	Input/Output	Indicates the process of inputting and outputting data.
	Annotation (An open rectangle with a dashed or solid line connecting it to the corresponding symbol in the flowchart.)	Comment	Indicating additional information about a step the program.
	Rectangle with double-struck vertical edges.	Predefined Process	Shows named process which is defined elsewhere.
	A small circle with a letter inside.	On-page Connector	Usually used within more complex charts, this symbol connects separate elements across one page.

Table 2.1 : Various types of box used in flow chart and their use

2.3 Question based on sequence, selection and iteration

Q1. Draw a flow chart to Add two numbers. (Sequence Algorithm)

```
        ( START )
            |
            v
       /  INPUT A  /
            |
            v
       /  INPUT B  /
            |
            v
       [ C = A+ B ]
            |
            v
       /  PRINT C  /
            |
            v
        ( STOP )
```

Q2. Draw a flow chart to find the area of a square . (Sequence Algorithm)

START

↓

INPUT S

↓

$$A = S * S$$

↓

PRINT A

↓

STOP
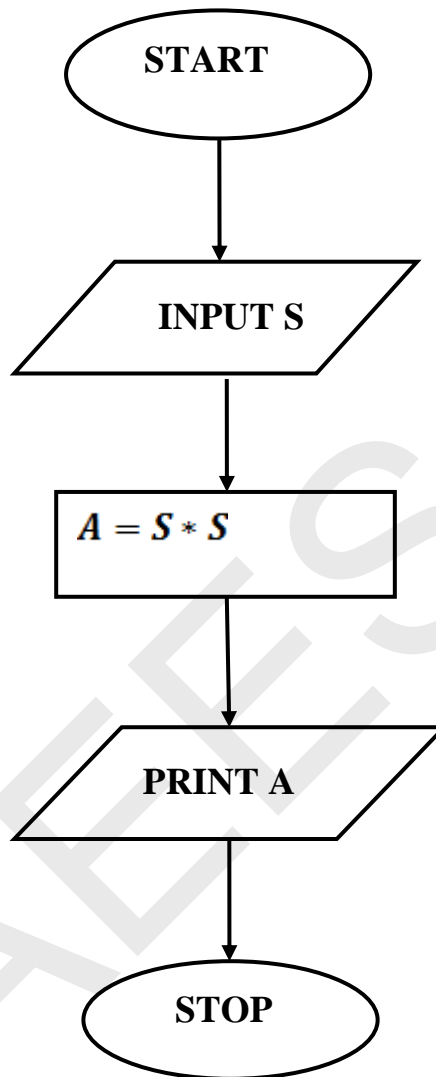
Q3. Draw a flow chart to find the Area of a circle. (Sequence Algorithm)

```
              ┌─────────────┐
              │    START    │
              └─────────────┘
                     │
                     ▼
              ┌─────────────┐
              │   π = 3.14  │
              └─────────────┘
                     │
                     ▼
             ╱───────────────╲
            ╱    INPUT R       ╲
            ╲───────────────────╱
                     │
                     ▼
              ┌─────────────────┐
              │  A = π * R * R  │
              └─────────────────┘
                     │
                     ▼
             ╱───────────────╲
            ╱   PRINT  A       ╲
            ╲───────────────────╱
                     │
                     ▼
              ┌─────────────┐
              │    STOP     │
              └─────────────┘
```
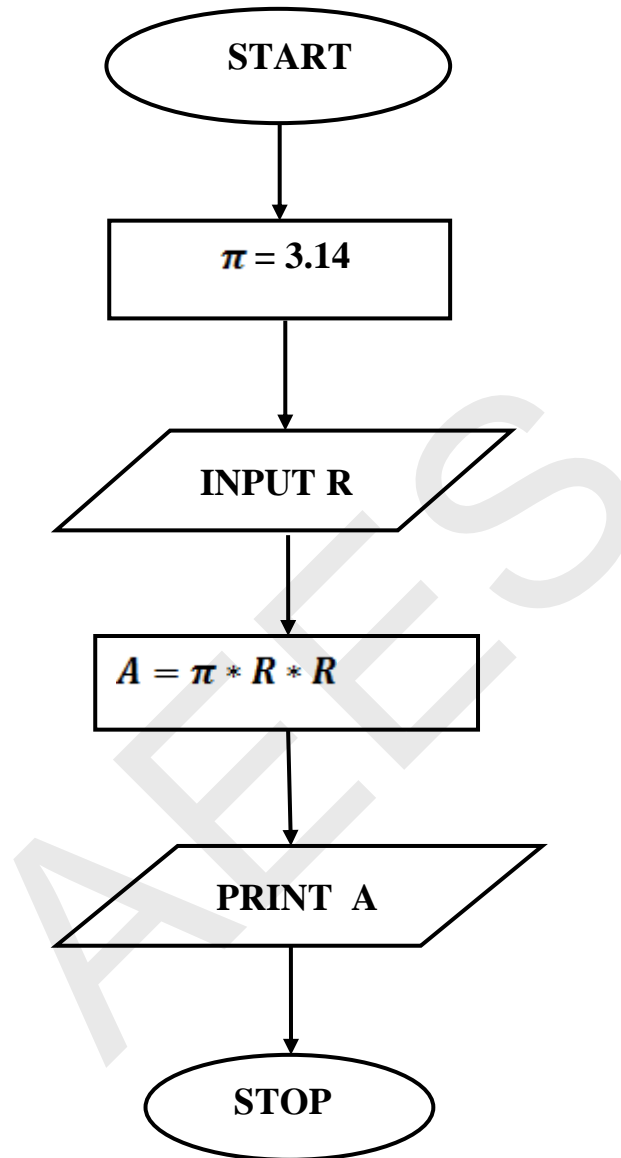
Q4. Draw a flow chart to find the Eligibility for voting. (Selection Flowchart)

START

INPUT

IF

AGE >=18

FALSE

TRUE

PRINT "ELIGIBLE FOR VOTING"

PRINT "NOT ELIGIBLE FOR VOTING"

STOP
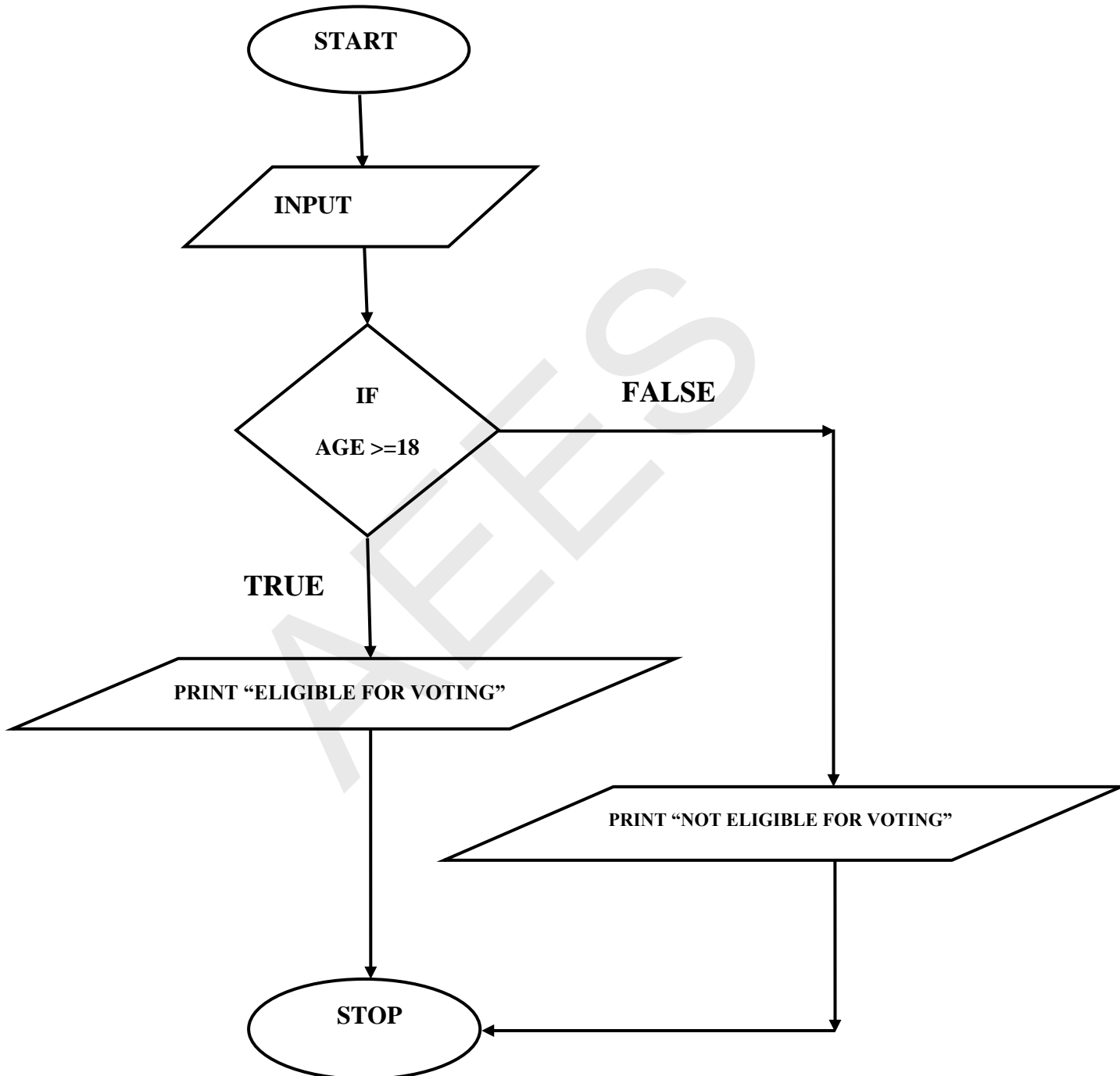
Q5. Draw a flowchart to Print Odd numbers upto 20.
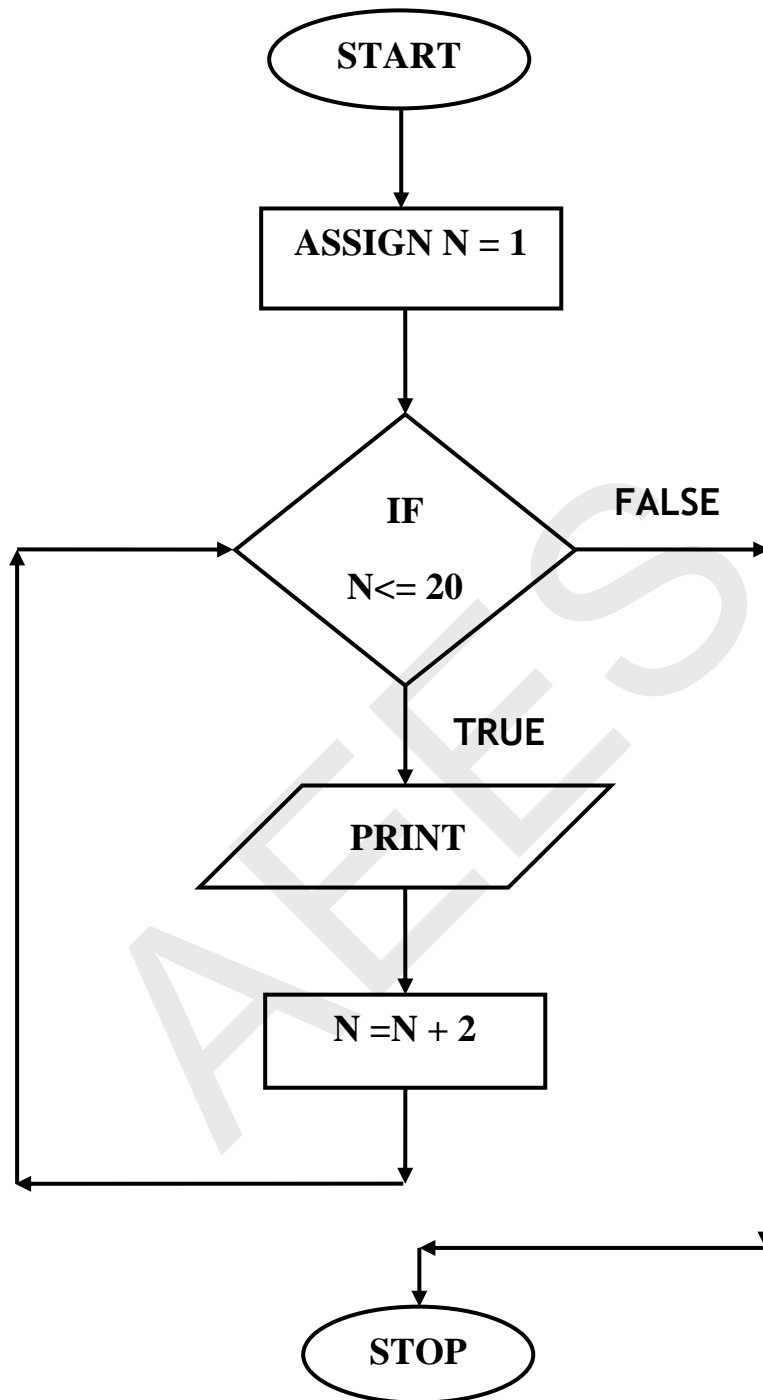
Q6. Draw a flowchart to Print even numbers upto 50.

```
                    ┌─────────┐
                    │  START  │
                    └────┬────┘
                         │
                    ┌────▼────────┐
                    │ ASSIGN N=2  │
                    └────┬────────┘
                         │
                    ┌────▼────┐
              ┌─────◄   IF    ►─────┐
              │     │ N < = 50│     │
              │     └────┬────┘     │
              │          │          │
              │     ┌────▼────┐     │
              │     │ PRINT N │     │
              │     └────┬────┘     │
              │          │          │
              │     ┌────▼────┐     │
              │     │ N = N+ 2│     │
              │     └────┬────┘     │
              └──────────┘          │
                                    │
                               ┌────▼────┐
                               │  STOP   │
                               └─────────┘
```

START

ASSIGN N=2

IF
N < = 50

PRINT N

N = N+ 2

STOP
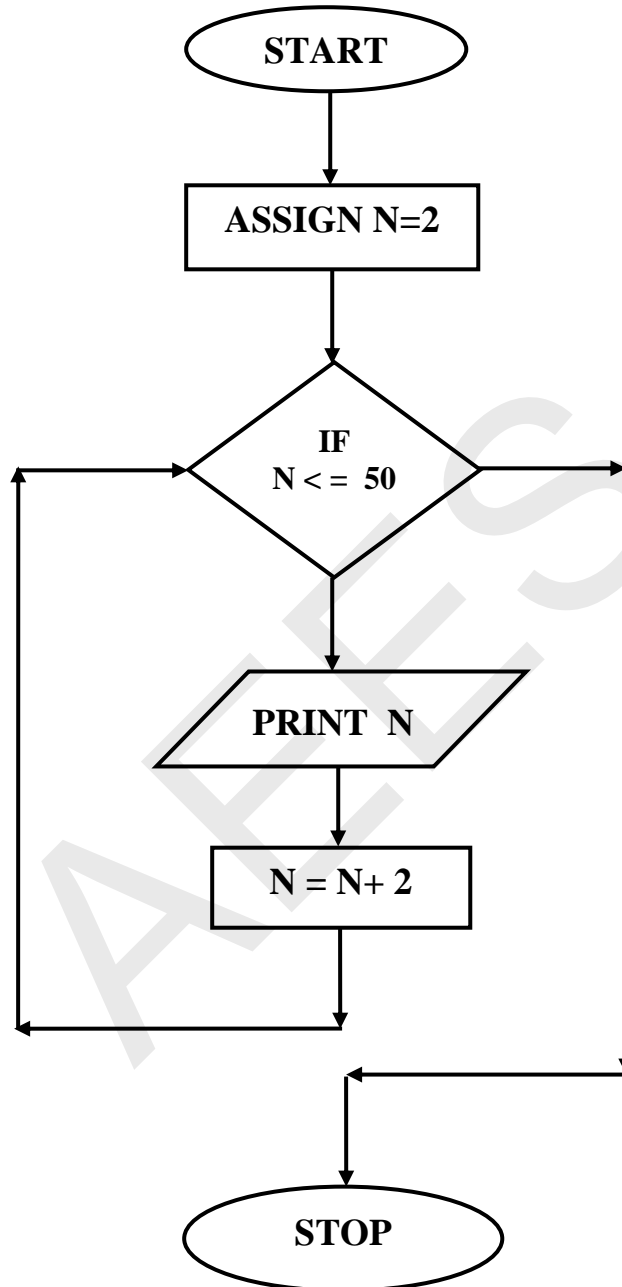
Q 7: Draw a flowchart to find greater number among 2 numbers

```
                    ┌─────────────┐
                    │    START    │
                    └─────────────┘
                           │
                           ▼
                    ╱─────────────╱
                   ╱   INPUT A   ╱
                  ╱─────────────╱
                           │
                           ▼
                    ╱─────────────╱
                   ╱   INPUT B   ╱
                  ╱─────────────╱
                           │
                           ▼
                        ◇ IF ◇           FALSE
                        ◇ A>B ◇ ─────────────────────┐
                           │                          │
                         TRUE                         │
                           │                          ▼
              ╱──────────────────────╱      ╱──────────────────────╱
             ╱  PRINT "A IS          ╱     ╱  PRINT "B IS          ╱
            ╱   GREATER THAN B"      ╱     ╱   GREATER THAN A"      ╱
           ╱──────────────────────╱      ╱──────────────────────╱
                           │                          │
                           ▼                          │
                    ┌─────────────┐                   │
                    │    STOP     │◄──────────────────┘
                    └─────────────┘
```
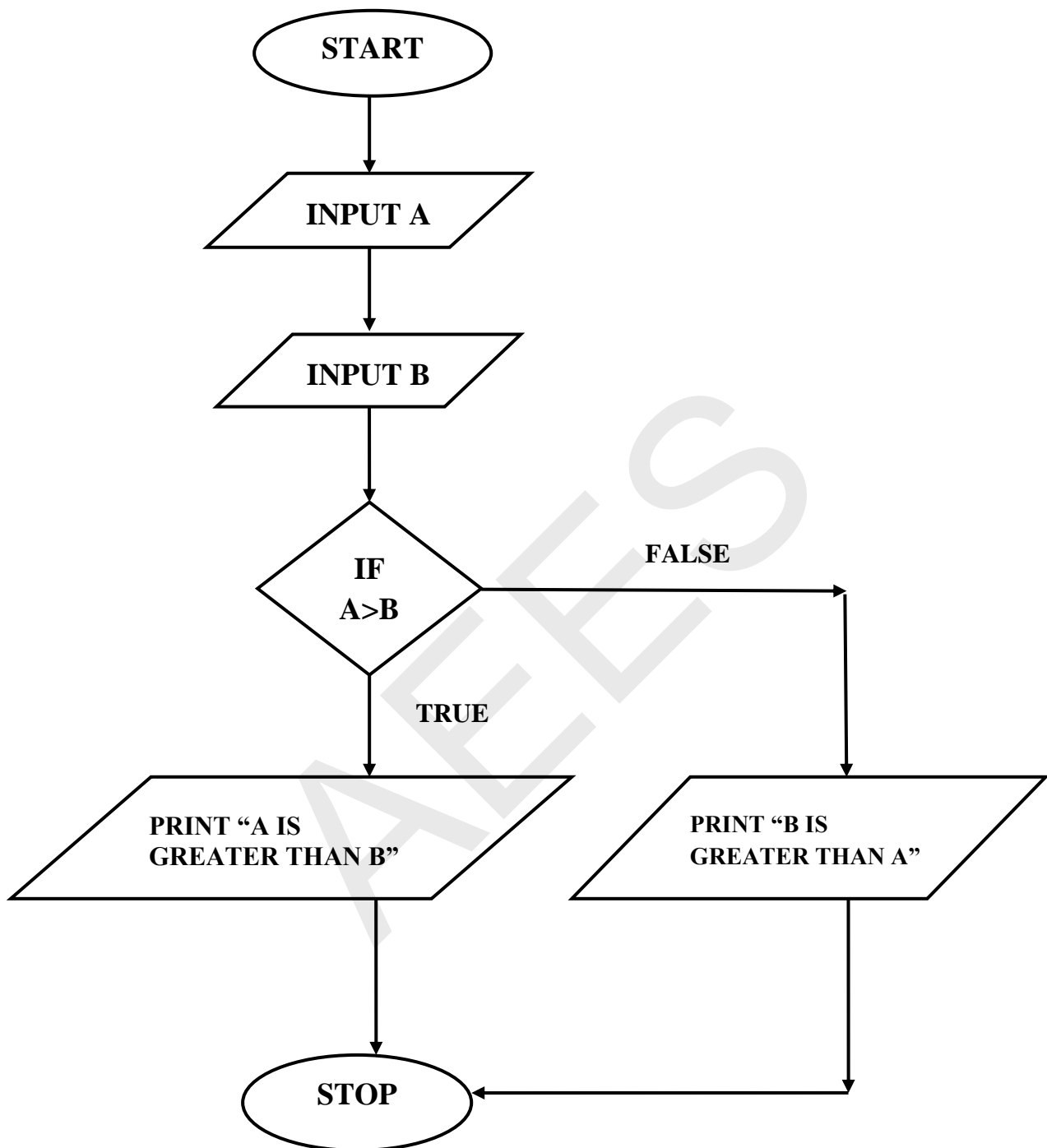
EXERCISE

I. Answer the following

1. Define Flow Chart.

2. Write the advantages of Flowchart.

3. Draw a Flowchart to check the eligibility for Pass.

4. Draw a Flowchart to find whether a Number N is Even or Odd.

5. Draw a flowchart to find the simple interest.

6. Draw a Flowchart to find factorial of any number.

UNIT-III

PHOTOSHOP REVIEW

An image editing software developed and manufactured by Adobe Systems Inc. Photoshop is considered one of the leaders in photo editing software. The software allows users to manipulate, crop, resize and correct color on digital photos.
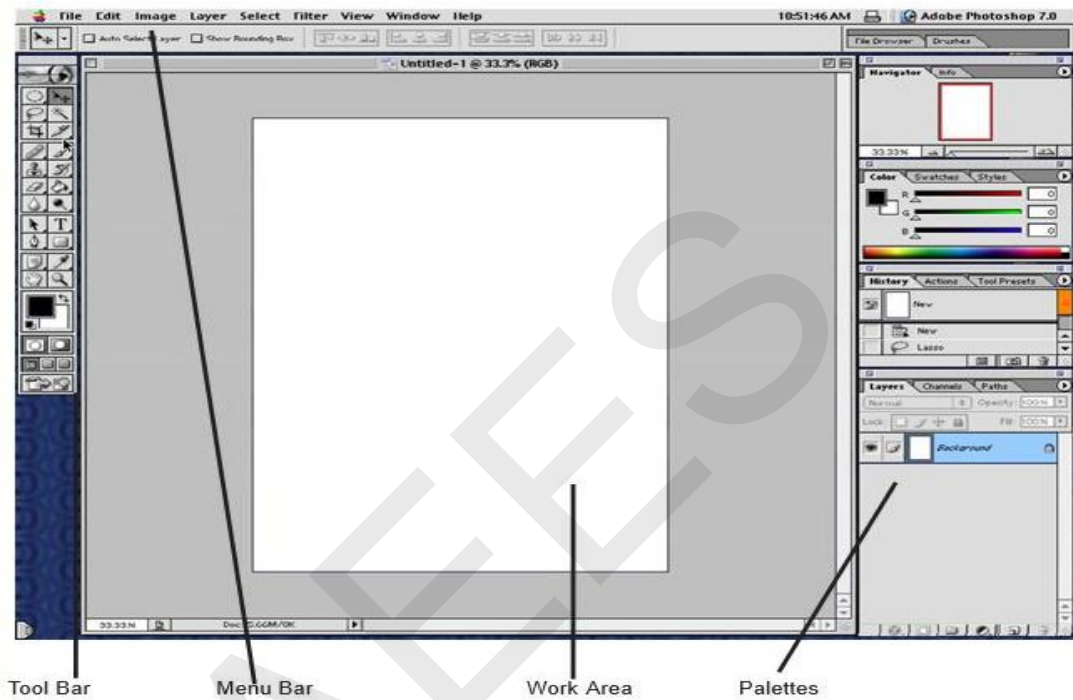
Figure 3.1 : Photoshop window
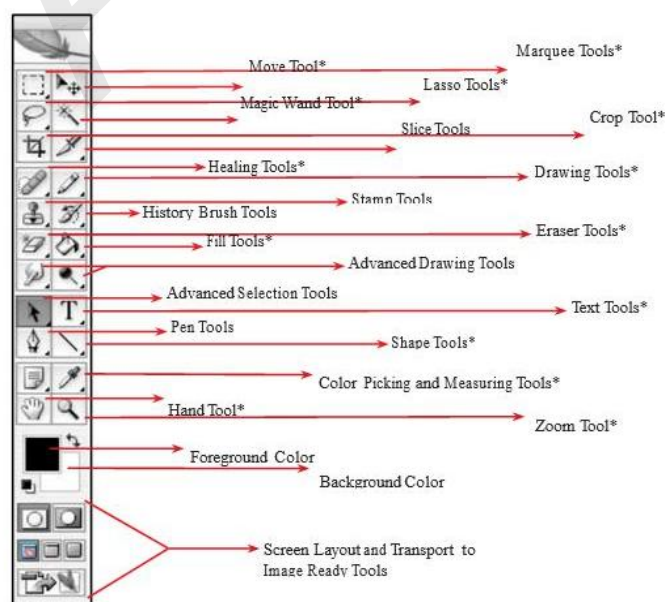
Figure 3.2 : Photoshop Tools

Marquee Tools: The Marquee tool selects a section of the document based on the shape of the chosen tool.

Move tool: The move tool moves the items in the document, such as selection, layer and guides.

Lasso Tools: The Lasso tools allow you to select a section of the document either by freehand, polygonal, or magnetic selections.

- The Lasso tool will close the selection automatically when the mouse is unclicked.

- The Polygonal Lasso tool and Magnetic Lasso tool need the ends of the selection to be joined for the section to become selected.

Magic Wand Tool: The Magic Wand tool selects areas of similar colors.

Crop Tool: The Crop tool trims images.

Healing Tools: The Healing tools fix up issues in the document such as blemishes and red eye.

- The Spot Healing Brush removes blemishes and objects.

- The Red Eye tool removes the red reflection caused by a flash.
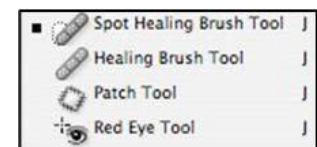
Drawing Tools: The Drawing tools let you draw in the document.

- The Brush tool paints brush strokes.

- The Pencil tool paints hard-edged strokes.

- The Color Replacement tool replaces a selected color with a new color.

Eraser Tools: The Eraser tools erases pixels in the document.

- The Eraser tool will restore parts of an image to a previously saved state or will display the background color.

- The Background Eraser tool will turn the erased areas into a transparency.
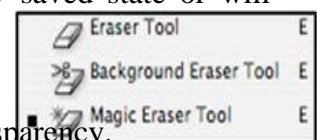
- The Magic Eraser tool will erase everything of the same color into a transparency.

Fill Tools: The Fill tools fill color into areas of the document.

- The Paint Bucket tool fills in areas of similar color with the foreground color.

- The Gradient Tool creates a smooth straight-line change from the foreground color to the background color.

Text Tools: The Type tools add text to a document.

- The type tools is used to type text on top of an image.

- The type mask tools make a selection of the document in the shape of type.
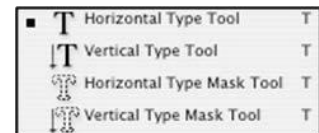
Shape Tools: The Shape tools draw shapes and lines in a normal layer or a shape layer.

- The Shape tools will create a solid color shape of their type.

- The Line tool will create a solid color line.

- The Custom Shape tool makes customized shapes selected from a custom shape list.
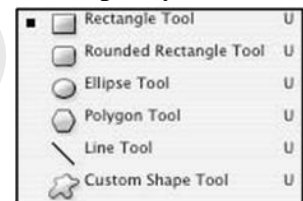
Color Picking and Measuring Tools: The Color Picking and Measuring tools do not actually change the document in any way.

- The Eyedropper tool changes the foreground color to the color that is clicked on.

- The Color Sampler tool is an advanced tool.

- The Measure tool measures the distance, location and angle between to points in the document.
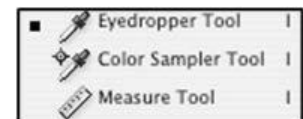
Hand Tool: The Hand tool moves an image within its window.

Zool Tool: The Zoom tool magnifies and reduces the view of an image.

EXERCISES

I. FILL IN THE BLANKS.

1. _____ is the software used to manipulate, crop, resize and correct color on digital photos.

2. _____ tool is used to trim an image.

3. _____ tool is used to move an image within its window.

4. _____tool is used to find the distance between two points.

5. _____ tool is used to select the areas of similar color.

II. MATCH THE FOLLOWING.

i.   Drawing tool   - a. Used to fix up blemishes

ii. Healing tool   - b.Used to magnify and reduce the image view.

iii. Spot Healing tool   - c. Used to erase everything of the same color.

iv. Magic Eraser tool   - d. Used to remove blemishes.

v.   Zoom tool   - e. Used to Draw.

III. ANSWER THE FOLLOWING.

1. Name any 4 components of Photoshop window.

2. Name any 4 tools used frequently in Photoshop.