Roll No. | | | | | | | | |

KONGU ENGINEERING COLLEGE, PERUNDURAI 638 060

EVEN SEMESTER 2018-2019

CONTINUOUS ASSESSMENT TEST II – APRIL 2019

(Regulations 2014)

Programme : BE Branch : CSE Semester : VI	Date : 13.04.2019 Time : 02.30 pm – 04.00 pm
Course Code : 14CSC61 Course Name : Graphics and Multimedia	Duration : 1 ½ Hours Max. Marks : 50

PART - A (10 × 2 = 20 Marks)

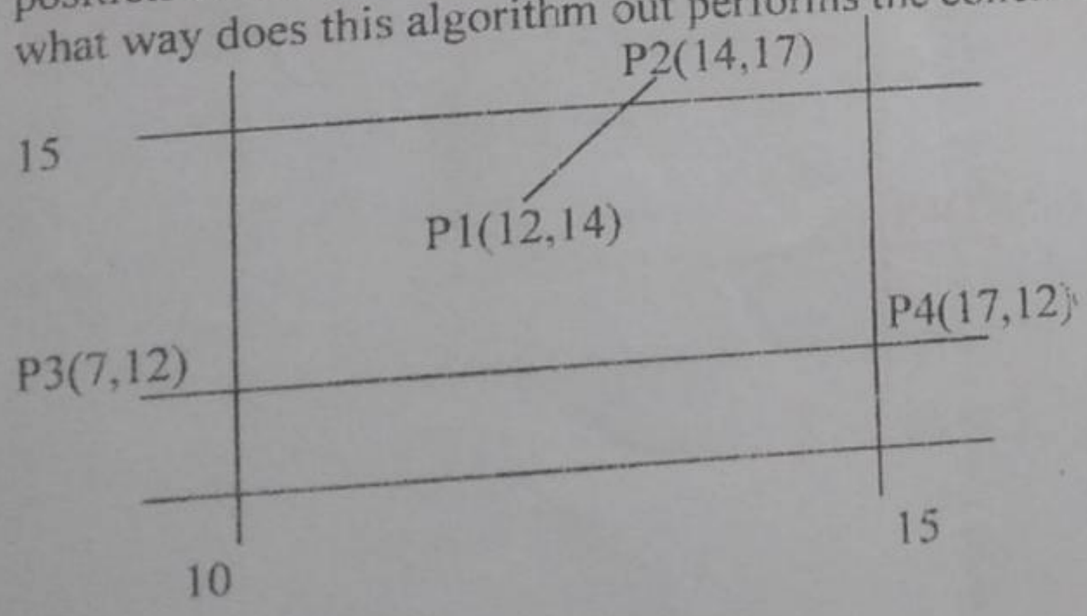
ANSWER ALL THE QUESTIONS

1.	Check whether the given point P (20, 30) lies inside the window boundary or not. Given Xwmin = 15 Xwmax = 50 Ywmin = 20 Ywmax = 50	CO2	K3
2.	In what way polygon clipping is performed using weiler Atherton clipping method	CO2	K2
3.	In YIQ color model one of the three components stores luminance. What is the use of YIQ standard and why having a luminance channel is useful?	CO3	K2
4.	List any two drawbacks of z- buffer.	CO3	K1
5.	What is hypermedia?	CO4	K1
6.	Identify the technologies that constitute a 'delivery system' for multimedia.	CO4	K2
7.	Mention any four components of Multimedia.	CO4	K1
8.	Compare text and digital images.	CO4	K2
9.	Specify any two guidelines for using text in multimedia project.	CO5	K1
10.	Differentiate between motion cycling and masking in animation.	CO5	K2

Part – B (3× 10 = 30 Marks)

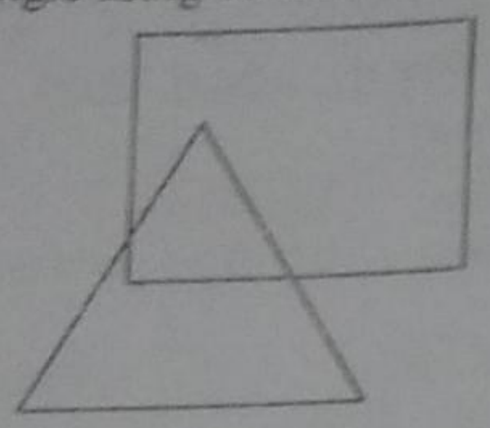
ANSWER ALL QUESTIONS

11.	a,	Apply Liang – Barsky line clipping algorithm for the given scenario to determine the position of the line that is to be displayed within the clipping window. Also analyze in what way does this algorithm out performs the coher- Sutherland clipping algorithm.	(10)	CO3 K3



(OR)

11 b (i) Clip the triangle using Sutharland – hodgeman polygon clipping method. (6) CO3 K3



(ii) Explain Basic 3D transformations in detail which translations in detail. Which transformation method is suitable for rotating the object 180^0? Justify your answer. (4) CO3 K3

12. (a) Classify the models for visible surfaces detection in 3D images with suitable example. (10) CO3 K2

(OR)

13 (a) Design the process of creating motion tweening and shape tweening during a button process event with suitable example. (10) CO5 K3

(OR)

(b) Design a animation for " moving vehicle ' using different animation technique and justify which technique is more useful for the application. (10) CO5 K3

Bloom's Taxonomy Level	Remembering (K1)	Understanding (K2)	Applying (K3)	Analysing (K4)	Evaluating (K5)	Creating (K6)
Percentage	16	40	44	-	-	-

14CSC61 GRAPHICS AND MULTIMEDIA
CONTINUOUS ASSESMENT II-APRIL 2019
ANSWER KEY
PART – A
ANSWER THE FOLLOWING

1. Point lies inside the boundary
2. If the edge enters the clip polygon, record the intersection point and continue to trace the subject polygon. If the edge leaves the clip polygon, record the intersection point and make a right turn to follow the clip polygon in the same manner
3. Y contains the luminance information, allowing backwards-compatibility with black-and-white colourTv's, which display only this axis of the colour space.
4. May paint the same pixel several times and computing the color of a pixel may be expensive. Large memory requirements.
5. *Hypermedia*, an extension of the term hypertext, is a nonlinear medium of information that includes graphics, audio, video, plain text and hyperlinks.
6. *RTP, UDP, HTTP,TCP*
7. *Text, graphic, audio, video*
8. Text is an important component used in many multimedia applications.They are characters that are used to create words, sentences and paragraphs.Text alone provide just one source of information.A digital image is a numeric representation, normally binary, of a two-dimensional image. Depending on whether the image resolution is fixed, it may be of vector or raster type. By itself, the term "digital image" usually refers to raster images or bitmapped images
9. Be concise
   a. Use appropriate fonts
   b. Make it readable
   c. Consider type style and colors
   d. Use restraint and be consistent
10. *Motion Cycling* Human *motion* such as walking, running and flying *is* a repetitive action that *is* best represented by a *cycle*. *Masking* A *mask in a* computer program *is in a* sense a model *of* the plastic *masks* – it protects part *of* a frame from effects *of* other editing tools

PART B
ANSWER THE FOLLOWING

11. A) Points to be displayed with in the window port
    P1(12,14) p2(14,15)
    P3(10,12) p4(15,12)

Liang-Barsky Algorithm

This algorithm is more efficient than Cohen–Sutherland line clipping algorithm and can be extended to 3-Dimensional clipping. This algorithm is considered to be the faster parametric line-clipping algorithm. The following concepts are used in this clipping:

1. The parametric equation of the line.
2. The inequalities describing the range of the clipping window which is used to determine the intersections between the line and the clip window.

The parametric equation of a line can be given by,

$X = x_1 + t(x_2-x_1)$

$Y = y_1 + t(y_2-y_1)$

Where, t is between 0 and 1.

Then, writing the point-clipping conditions in the parametric form:

$xw_{min} <= x_1 + t(x_2-x_1) <= xw_{max}$

$yw_{min} <= y_1 + t(y_2-y_1) <= yw_{max}$

When the line is parallel to a view window boundary, the p value for that boundary is zero.

When $p_k < 0$, as t increase line goes from the outside to inside (entering).

When $p_k > 0$, line goes from inside to outside (exiting).

When $p_k = 0$ and $q_k < 0$ then line is trivially invisible because it is outside view window.

When $p_k = 0$ and $q_k > 0$ then the line is inside the corresponding window boundary.

Using the following conditions, the position of line can be determined:

Condition	Position of line
$p_k = 0$	parallel to the clipping boundaries
$p_k = 0$ and $q_k < 0$	completely outside the boundary

Condition	Position of line
$p_k = 0$ and $q_k >= 0$	inside the parallel clipping boundary
$p_k < 0$	line proceeds from outside to inside
$p_k > 0$	line proceeds from inside to outside

11.B)

There are four possible cases for any given edge of given polygon against current clipping edge e.

1. **Both vertices are inside :** Only the second vertex is added to the output list
2. **First vertex is outside while second one is inside :** Both the point of intersection of the edge with the clip boundary and the second vertex are added to the output list
3. **First vertex is inside while second one is outside :** Only the point of intersection of the edge with the clip boundary is added to the output list
4. **Both vertices are outside :** No vertices are added to the output list

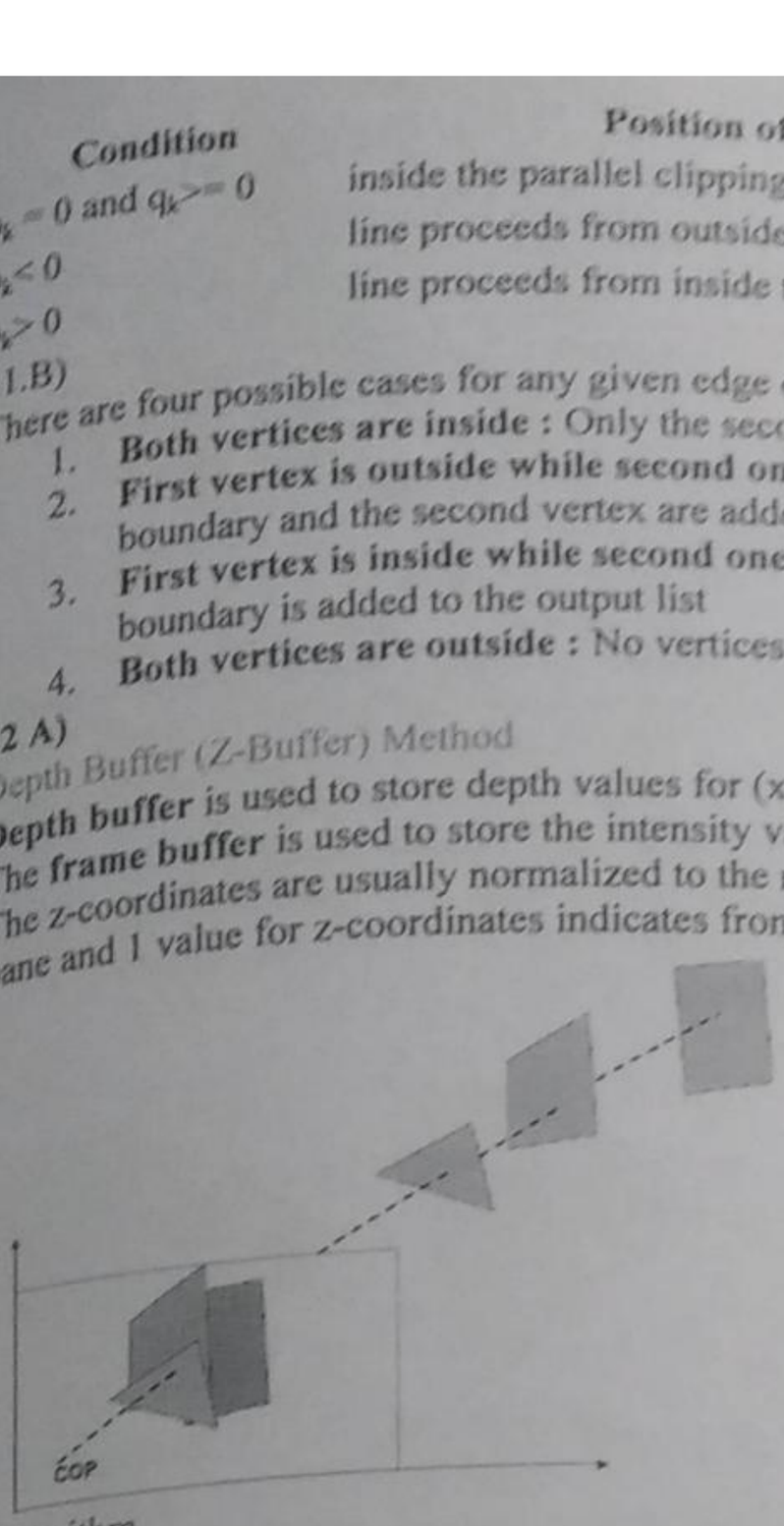
12 A)

Depth Buffer (Z-Buffer) Method

Depth buffer is used to store depth values for (x, y) position, as surfaces are processed ($0 \leq$ depth ≤ 1).

The **frame buffer** is used to store the intensity value of color value at each position (x, y).

The z-coordinates are usually normalized to the range [0, 1]. The 0 value for z-coordinate indicates back clipping pane and 1 value for z-coordinates indicates front clipping pane.



Algorithm

Step-1 – Set the buffer values –

Depthbuffer (x, y) = 0

Framebuffer (x, y) = background color

Step-2 – Process each polygon (One at a time)

For each projected (x, y) pixel position of a polygon, calculate depth z.

If Z >depthbuffer (x, y)

Compute surface color,

setdepthbuffer (x, y) = z,

framebuffer (x, y) = surfacecolor (x, y)

Advantages

- It is easy to implement.
- It reduces the speed problem if implemented in hardware.
- It processes one object at a time.

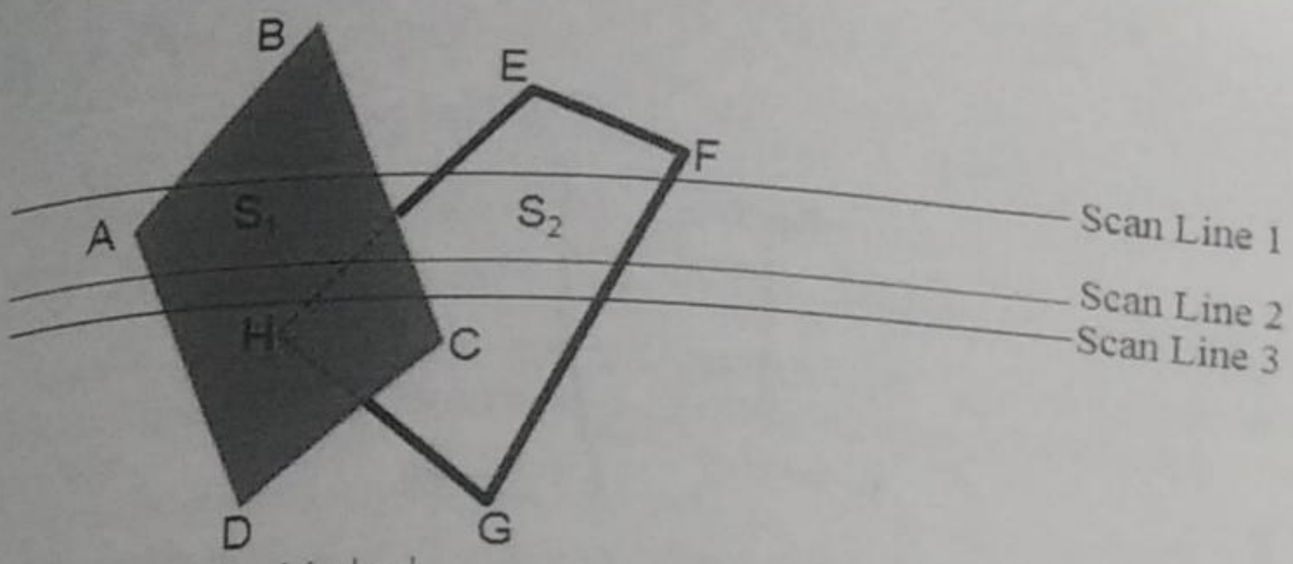
Disadvantages

- It requires large memory.
- It is time consuming process.

Scan-Line Method

The Edge Table – It contains coordinate endpoints of each line in the scene, the inverse slope of each line, and pointers into the polygon table to connect edges to surfaces.

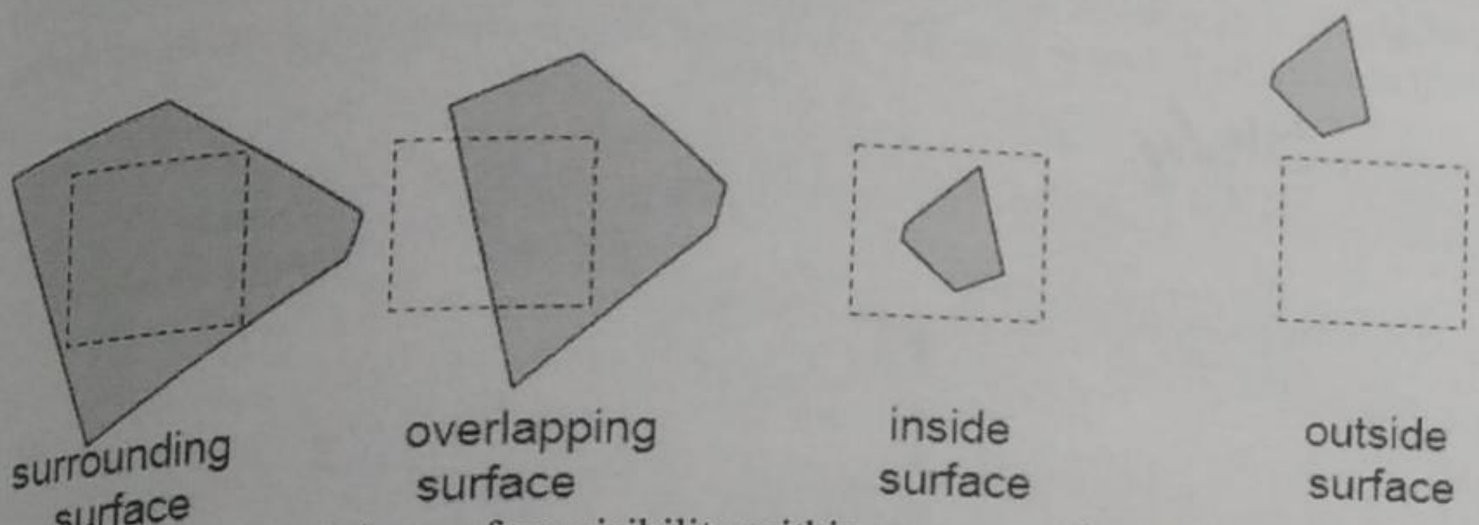
The Polygon Table – It contains the plane coefficients, surface material properties, other surface data, and may be pointers to the edge table.



Area-Subdivision Method

The area-subdivision method takes advantage by locating those view areas that represent part of a single surface. Divide the total viewing area into smaller and smaller rectangles until each small area is the projection of part of a single visible surface or no surface at all.

- **Surrounding surface** − One that completely encloses the area.
- **Overlapping surface** − One that is partly inside and partly outside the area.
- **Inside surface** − One that is completely inside the area.
- **Outside surface** − One that is completely outside the area.



The tests for determining surface visibility within an area can be stated in terms of these four classifications. No further subdivisions of a specified area are needed if one of the following conditions is true −

- All surfaces are outside surfaces with respect to the area.
- Only one inside, overlapping or surrounding surface is in the area.
- A surrounding surface obscures all other surfaces within the area boundaries.

Back-Face Detection

A fast and simple object-space method for identifying the back faces of a polyhedron is based on the "inside-outside" tests. A point (x, y, z) is "inside" a polygon surface with plane parameters A, B, C, and D if When an inside point is along the line of sight to the surface, the polygon must be a back face (we are inside that face and cannot see the front of it from our viewing position).

In general, if V is a vector in the viewing direction from the eye (or "camera") position, then this polygon is a back face if

$$\mathbf{V.N > 0}$$

Furthermore, if object descriptions are converted to projection coordinates and your viewing direction is parallel to the viewing z-axis, then −

$$V = (0, 0, V_z) \text{ and } V.N = V_Z C$$

In a right-handed viewing system with viewing direction along the negative *ZV* axis, the polygon is a back face if $C < 0$. in general, we can label any polygon as a back face if its normal vector has a z component value −

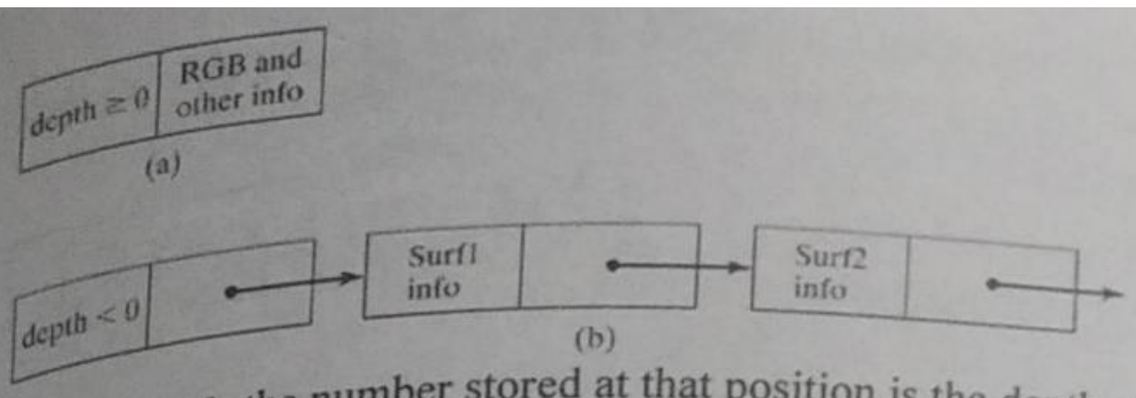
$$\mathbf{C <= 0}$$

A-Buffer Method

The A-buffer method is an extension of the depth-buffer method. The A-buffer method is a visibility detection method developed at Lucas film Studios for the rendering system Renders Everything You Ever Saw (REYES).

Each position in the A-buffer has two fields −

- **Depth field** − It stores a positive or negative real number
- **Intensity field** − It stores surface-intensity information or a pointer value



If depth >= 0, the number stored at that position is the depth of a single surface overlapping the corresponding pixel area. The intensity field then stores the RGB components of the surface color at that point and the percent of pixel coverage.

Depth Sorting Method

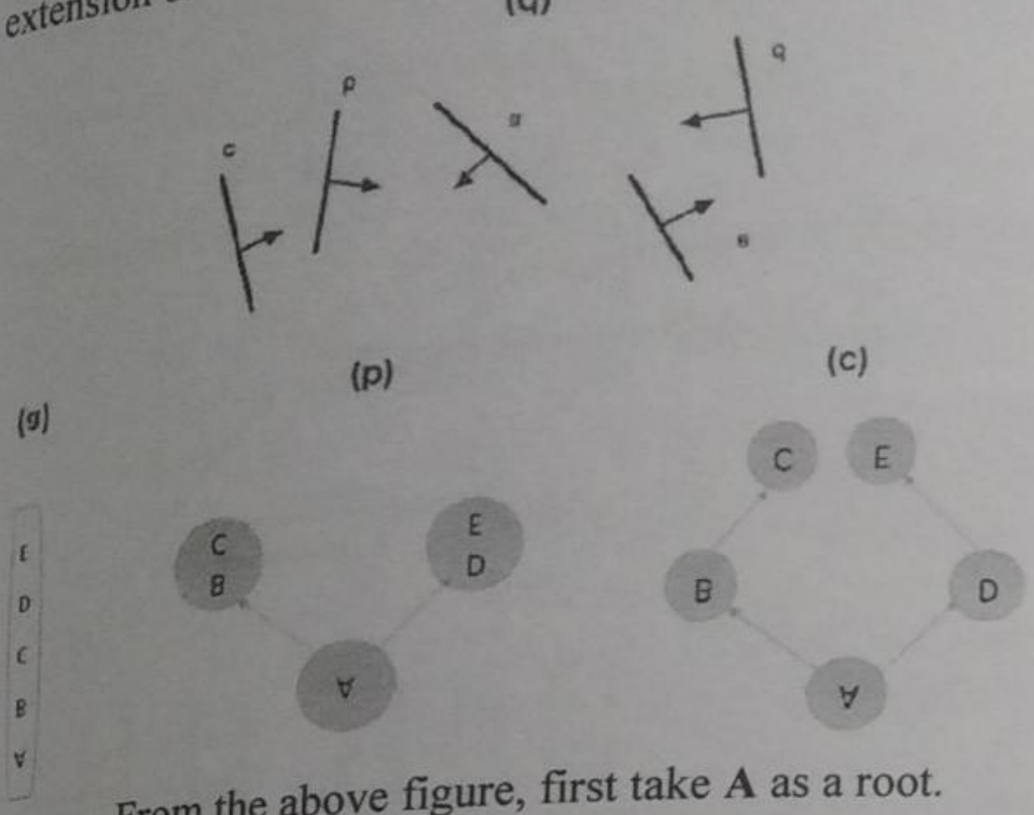
Depth sorting method uses both image space and object-space operations. The depth-sorting method performs two basic functions –

- First, the surfaces are sorted in order of decreasing depth.
- Second, the surfaces are scan-converted in order, starting with the surface of greatest depth.

The scan conversion of the polygon surfaces is performed in image space. This method for solving the hidden-surface problem is often referred to as the **painter's algorithm**.

Binary Space Partition (BSP) Trees

Binary space partitioning is used to calculate visibility. To build the BSP trees, one should start with polygons and label all the edges. Dealing with only one edge at a time, extend each edge so that it splits the plane in two. Place the first edge in the tree as root. Add subsequent edges based on whether they are inside or outside. Edges that span the extension of an edge that is already in the tree are split into two and both are added to the tree.



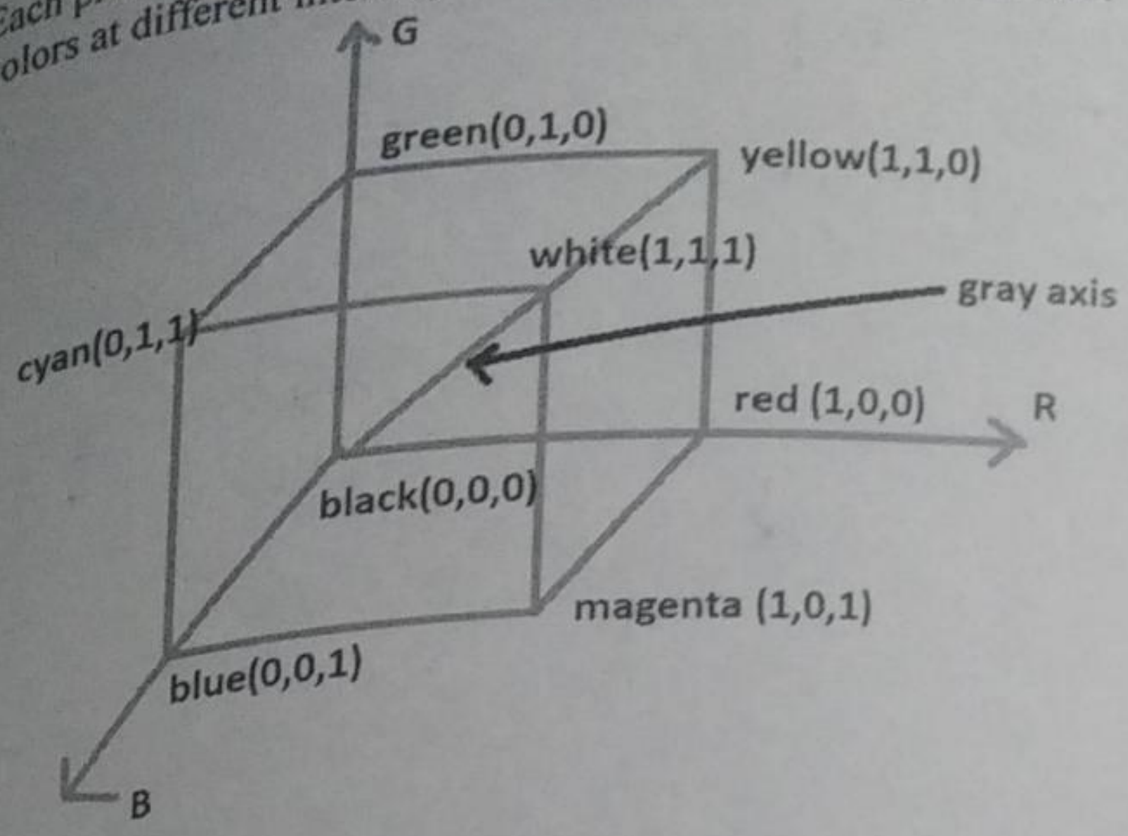
- From the above figure, first take **A** as a root.
- Make a list of all nodes in figure (a).
- Put all the nodes that are in front of root **A** to the left side of node **A** and put all those nodes that are behind the root **A** to the right side as shown in figure (b).
- Process all the front nodes first and then the nodes at the back.
- As shown in figure (c), we will first process the node **B**. As there is nothing in front of the node **B**, we have put NIL. However, we have node **C** at back of node **B**, so node **C** will go to the right side of node **B**.
- Repeat the same process for the node **D**.

12.B

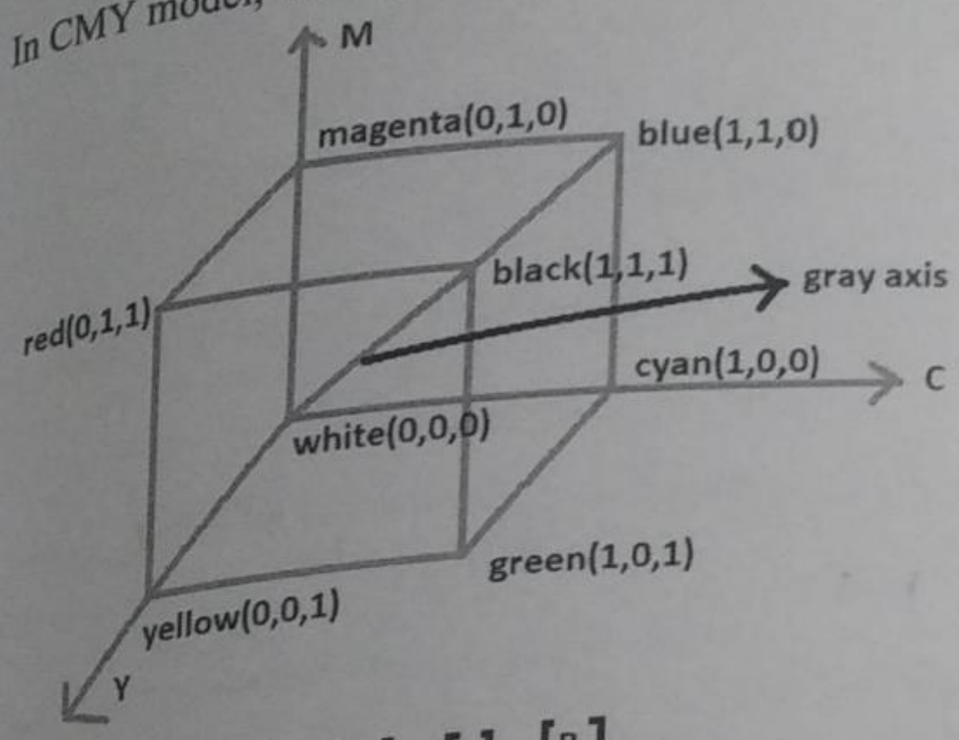
Computer Graphics | The RGB color model

It use a color coordinate system with three primary colors:R(red), G(green), B(blue)

Each primary color can take an intensity value ranging from 0(lowest) to 1(highest). Mixing these three primary colors at different intensity levels produces a variety of colors.



In CMY model, we begin with white and take away the appropriate primary components to yield a desired color.



$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} - \begin{bmatrix} C \\ M \\ Y \end{bmatrix} \qquad \begin{bmatrix} C \\ M \\ Y \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} - \begin{bmatrix} R \\ G \\ B \end{bmatrix}$$

13 a)

Follow these steps to create a shape tween:

1. Create a new Flash document. At the bottom of the workspace, click the Timeline panel's tab to bring it forward.
2. On an empty layer, draw a shape (for example, a star or polygon with the Polystar tool) on Frame 1. You can include a stroke and a fill, because the shape tween can handle both.
3. Click on Frame 25 and choose Insert→Timeline→BlankKeyframe. Rather than choose the motion tween, we choose a blank keyframe because we don't want a copy of the shape drawn on Frame 1 to be carried over to the new keyframe.
4. Draw a distinctively different shape on the new, blank keyframe on Frame 25.
5. Select Frame 1 and choose Insert→Shape Tween. You see an arrow and a green shaded area appear between the starting and ending keyframes, indicating that you've successfully created a shape tween.
6. Turn on the Onion Skin Outlines option below the Timeline to see the frames that Flash has created for you.
7. If necessary, use the sliders that appear on the timeline ruler to show Onion Skin Outlines across the entire range of frames from beginning to end.
8. Press Enter or Return to play back your animation. The original shape transforms into the final shape.

Motion tween

Steps to follow:

- Open a new flash file (Ctrl+N).
- New Document window will appear
- Select General panel and choose Type: Flash Document . Press OK.
- If your timeline window is not open, press (Ctrl+Alt+T).
- Now you can see a single Layer called "Layer1" in your timeline Window.
- Select the first frame. Import your image onto stage, upon which you would want to implement motion tween.
- File>Import>Import to Stage, or just press (Ctrl+R).
- Or you can even draw your own object, you can either choose Rectangular tool or Oval tool from the tool box and draw your desired shape.
- Now select your object on the stage and press F8 to convert this image to a Symbol. Convert to Symbol window will pop-up.
- Name your Symbol what ever you like.
- Select Graphic behavior and press OK.

Note: You can create motion tween only on symbols. So any object upon which you would want to implement motion tween, First convert the object to a Symbol.

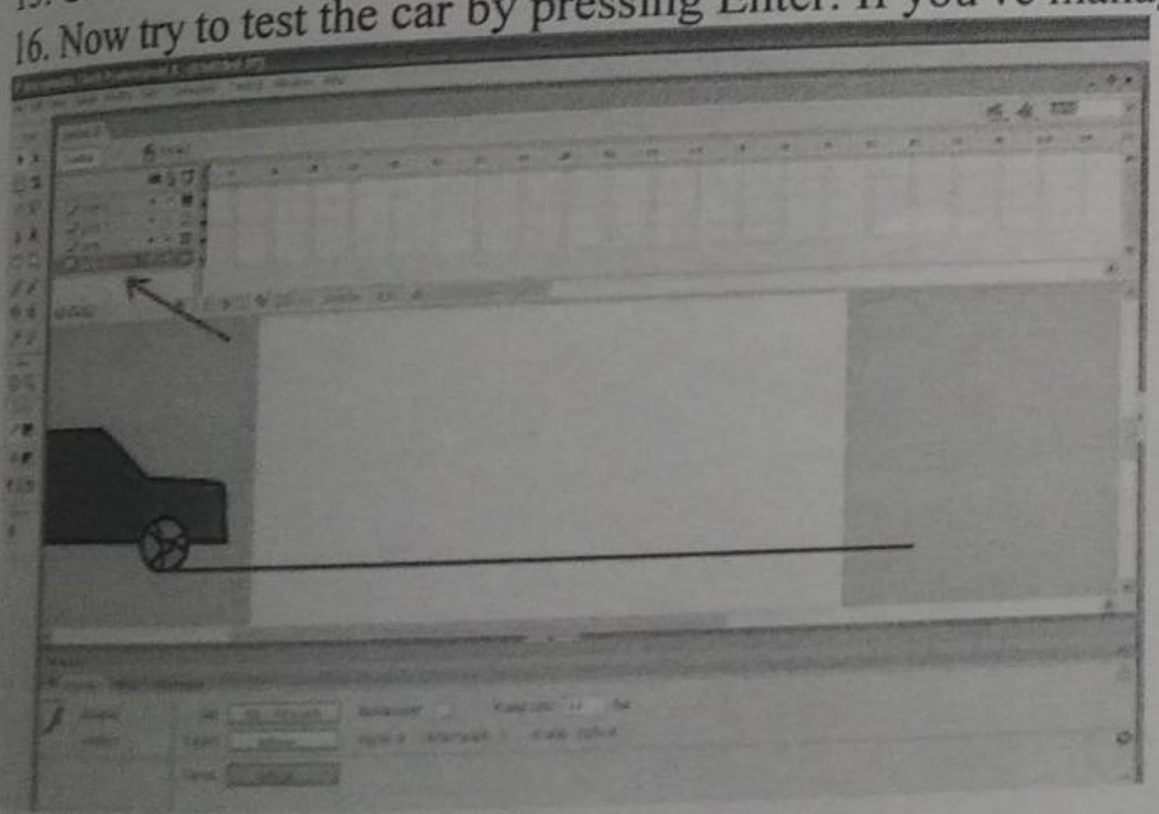
- Right now your Symbol is in frame1 of Layer1. Select frame 20 and press F6 to insert a new keyframe.
- Still keeping playhead on frame 20, move your Symbol to any other position other than the present one.
- Select any frame between, 2 to 19 and select Motion from the tween pop-up menu in the Property inspector. Now your Layer will look something like the one shown below.
- Now press (Ctrl+Enter) to view your motion tween.

13.B)

1. Open Macromedia Flash 8, select Flash Document. Will open a new sheet, the sheet is called Layer 1.
2. Now I will make an animated car running means necessary to make two pieces of the picture are Cars and Front Wheel.
3. Create an image of a car using a tool that is at the left, after the completion of the car means that the image will automatically be on layer 1.
4. Then add a layer 2 to make the front wheels by the way, click Insert Layer and then create an image front wheels.
5. If so, attach the Front Wheel by dragging it to the bottom of the car and paint the car with the Paint Bucket Tool (K) which is located on the left side bar.
6. On the layer 2 then press F8 box appears Conver to Symbol press Ok.
7. Repeat step 6 number one again. If you have, now make car wheels can rotate by means of double click on Wheels Home, and then drag the point under number one to number 20.
8. Right-click the area that was blocked earlier, select Insert Keyframe.

* Set the Properties box (see the settings in the image below).
* If you've been back to Scene 1.

9. The next step add a layer 3 for Rear wheel, click INSER Layer.
10. Copy Front Wheel by clicking the layer 2 and layer 3 Click to paste Rear wheel.
11. Furthermore, the fox is also a car into a Movie Clip in a way, the layer 1 press F8 and then Ok.
12. Now we will make a way. First slide the car left, then add Layer 4 by clicking the Insert Layer. Create a path using the Line Tool (N). If you've put the position of layer 4 at the bottom.
13. Next, create a keyframe to draw all the points under number 1 to number 80.
14. Right-click the blog select Insert Keyframe. Now off the block layer 4. Drag the car to the left.
15. Click on the area in the block, select Create Motion Tweem.
16. Now try to test the car by pressing Enter. If you've managed to stay in Save.



Kongu Engineering College

School of Communication and Computer Science

DEPT. OF COMPUTER SCIENCE & ENGG.
KONGU ENGINEERING COLLEGE,
THOPPUPALAYAM (PO)
PERUNDURAI (TK), ERODE - 638 060

N. Kalyanasundaram	26/4/19
Name and signature of Hall Supdt. with Date	

KONGU ENGINEERING COLLEGE

PERUNDURAI ERODE - 638 060.

(Autonomous)

Estd : 1984

Name of the Student	R. SHRIHARI	Register No.	1	6	C	S	R	1	8	8
Programme	BE	Branch & Semester	CSE & VI							
Course Code and Name	14CSC61 - GRAPHICS AND MULTIMEDIA	Date	26.04.19		No.of Pages Used	14				

MARKS TO BE FILLED IN BY THE EXAMINER

PART - A		PART - B			Grand Total Max. Marks : 50
Question No.	Max Marks : 2	Question No.		Max Marks : 10	
1	2	11	i)	9	
2	-		ii)		
3	2	12	i)	9	
4	-		ii)		
5	2	13	i)	9	
6	1		ii)		
7	2	14	i)		
8	2		ii)		
9	1				
10	-				
TOTAL	12	TOTAL		27	

39/50

78%

Total marks in words : Seven Eight

INSTRUCTION TO THE CANDIDATE

1. Check the Question Paper, Programme, Course Code, Branch Name etc., before answering the questions.
2. Use both sides of the paper for answering questions.
3. POSSESSION OF ANY INCRIMINATING MATERIAL AND MALPRACTICE OF ANY NATURE IS PUNISHABLE AS PER RULES.

Signature of the Examiner with Date

P. Nanjundeswaran

Name of the Examiner

PART - A.

1. Given point is (20, 30).

$x_{wmin} = 15$ $x_{wmax} = 50$ $y_{wmin} = 20$ $y_{wmax} = 50$.

$15 \leq 20 \leq 30$ → x coordinate lies inside the window boundary

$20 \leq 30 \leq 50$ → y coordinate also lies inside the window boundary.

∴ The given point lies inside the window boundary.

3. YIQ standard:

The YIQ standard is used for conversion the RGB colour signals into composite television video signals.

In YIQ color model, the component 'Y' represent (luminance).

Luminance channel is useful for getting the brightness value for a given color.

5. Hypermedia:

Hypermedia is any kind of media contains link to other files, images or any other media.

For example, hyperlink is an example for hyper

6. Technologies constituting a delivery system:

* Input technologies
* Output technologies
* Storage technologies
* Processing technologies
* Communication (or) transmission technologies.

7. Four components of multimedia:

* Text and graphics
* Images
* Audio
* Video
* Animation.

8. Text:

Text is an important aspect in multimedia. It is a symbolic representation of oral communication. There are two aspects of text:

* Formatting aspects
* Signifying aspects

Digital images:

Digital images are also important part of multimedia. It is made up of pixels in binary bits (0 or 1) and is used to represent real-time pictures.

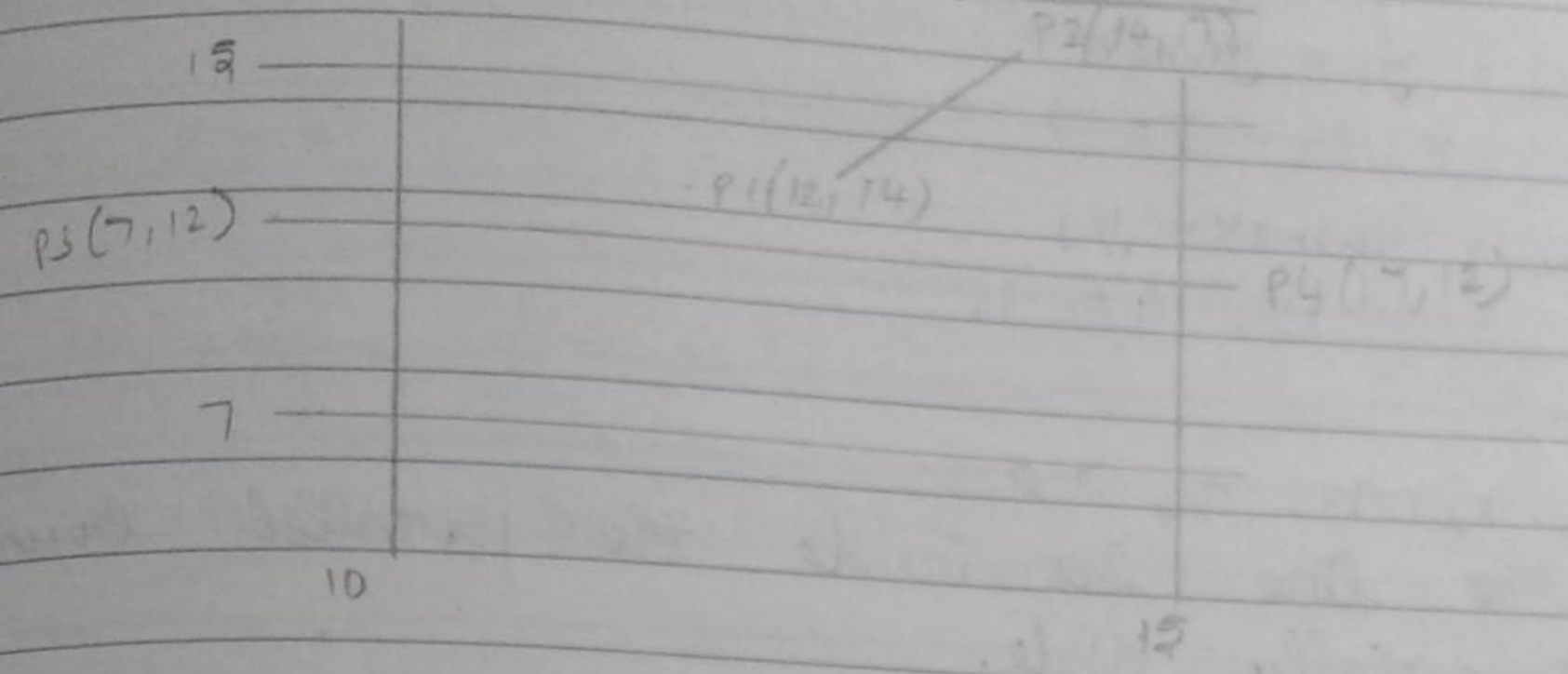
9. Guidelines for using text in multimedia project:

* The text should support smooth perception, reading and a clear understanding of the written text.

* The written text should clearly represent the real object that it points to.

PART - B

11. a. Liang-Barsky line clipping algorithm:



Given,

$x_{wmin} = 10$

$x_{wmax} = 15$

$y_{wmin} = 7$

$y_{wmax} = 15.$

Initially, $u_1 = 0$ and $u_2 = 1.$

Calculate the parameters p and q for the line P_1P_2.

x_1 y_1 x_2 y_2

$P1(12, 14)$ $P_2(14, 17)$

$p_1 = -\Delta x = -(x_2 - x_1) = -(14-12) = -2.$

$p_2 = \Delta x = x_2 - x_1 = 14 - 12 = 2$

$p_3 = -\Delta y = -(y_2 - y_1) = -(17-14) = -3$

$p_4 = \Delta y = y_2 - y_1 = 17-14 = 3.$

$q_1 = x_1 - x_{wmin}$

$= 12 - 10 = 2.$

$q_2 = x_{wmax} - x_1$

$= 15 - 12 = 3.$

$q_3 = y_1 - y_{wmin}$

$= 14 - 7 = 7$

$q_4 = y_{wmax} - y_1$

$= 15 - 14 = 1.$

$q_1, q_2, q_3, q_4 > 0.$

∴ The line lies inside the parallel boundaries. ie is partially inside.

$p_1 = -2 < 0.$

Now, $r_1 = \frac{q_1}{p_1}$

$= \frac{2}{-2}$

$r_1 = -1$

$u_1 = max(0, r_1) = max(0, -1) = 0.$

$p_2 = 2 > 0.$

$r_2 = \frac{q_2}{p_2} = \frac{3}{2} = 1.5.$

$u_2 = min(u_2, r_2) = min(1, 1.5) = 1.$

$p_3 = -3 < 0$

$r_3 = \frac{q_3}{p_3} = \frac{7}{-3} = -2.34$

$u_1 = \max(u_1, r_3) = \max(0, -2.34) = 0.$

$p_4 = 3 > 0$

$r_4 = \frac{q_4}{p_4} = \frac{1}{3} = 0.33$

$u_2 = \min(u_2, r_4) = \min(1, 0.33) = 0.33.$

$\therefore u_1 = 0, \quad u_2 = 0.33.$

Now, the new coordinates P_1' and P_2' are.

$x_1' = x_1 + u_1 \Delta x$

$= 12 + (0)(2)$

$x_1' = 12.$

$y_1' = y_1 + u_1 \Delta y$

$= 14 + (0)(3)$

$y_1' = 14$

$x_2' = x_1 + u_2 \Delta x$

$= 12 + (0.33)(2)$

$= 12 + 0.66$

$x_2' = 12.66$

$y_2' = y_1 + u_2 \Delta y$

$= 14 + (0.33)(3)$

$= 14 + 0.99$

$y_2' = 14.99 \simeq 15$

$\therefore$ The new coordinates are (12.66, 15)

$\therefore$ The line clipped is from (12, 14) to (12.66, 15)

now calculate p and q parameters for line P_3P_4

$P_3(\overset{x_1}{7}, \overset{y_1}{12})$ and $P_4(\overset{x_2}{17}, \overset{y_2}{12})$ and $u_1 = 0$ & $u_2 = 1$.

$p_1 = -\Delta x = -(x_2 - x_1) = -(17-7) = -10.$

$p_2 = \Delta x = x_2 - x_1 = 17 - 7 = 10$

$p_3 = -\Delta y = -(y_2 - y_1) = -(12-12) = 0.$

$p_4 = \Delta y = y_2 - y_1 = 12 - 12 = 0.$

$\therefore p_3 \& p_4 = 0$ which means the clipped line is parallel to one of the boundaries.

$q_1 = x_1 - x_{wmin} = 7 - 10 = -3.$

$q_2 = x_{wmax} - x_1 = 15 - 7 = 8.$

$q_3 = y_1 - y_{wmin} = 12 - 7 = 5$

$q_4 = y_{wmax} - y_1 = 15 - 12 = 3.$

$p_1 = -10 < 0$

$r_1 = \frac{q_1}{p_1} = \frac{-3}{-10} = \frac{3}{10} = 0.3.$

$u_1 = max(u_1, r_1) = max(0, 0.3) = (0.3)$

$p_2 = 10 > 0$

$r_2 = \frac{q_2}{p_2} = \frac{8}{10} = 0.8.$

$u_2 = min(u_2, r_2) = min(1, 0.8) = 0.8.$

$P_3 = 0$ & $P_4 = 0$.

$\therefore u_1 = 0.3$ and $u_2 = 0.8$.

The new coordinates P_3' and P_4' are

$x_1' = x_1 + u_1 \Delta x$
$= 7 + (0.3)(10)$
$= 7 + 3$
$x_1' = 10.$

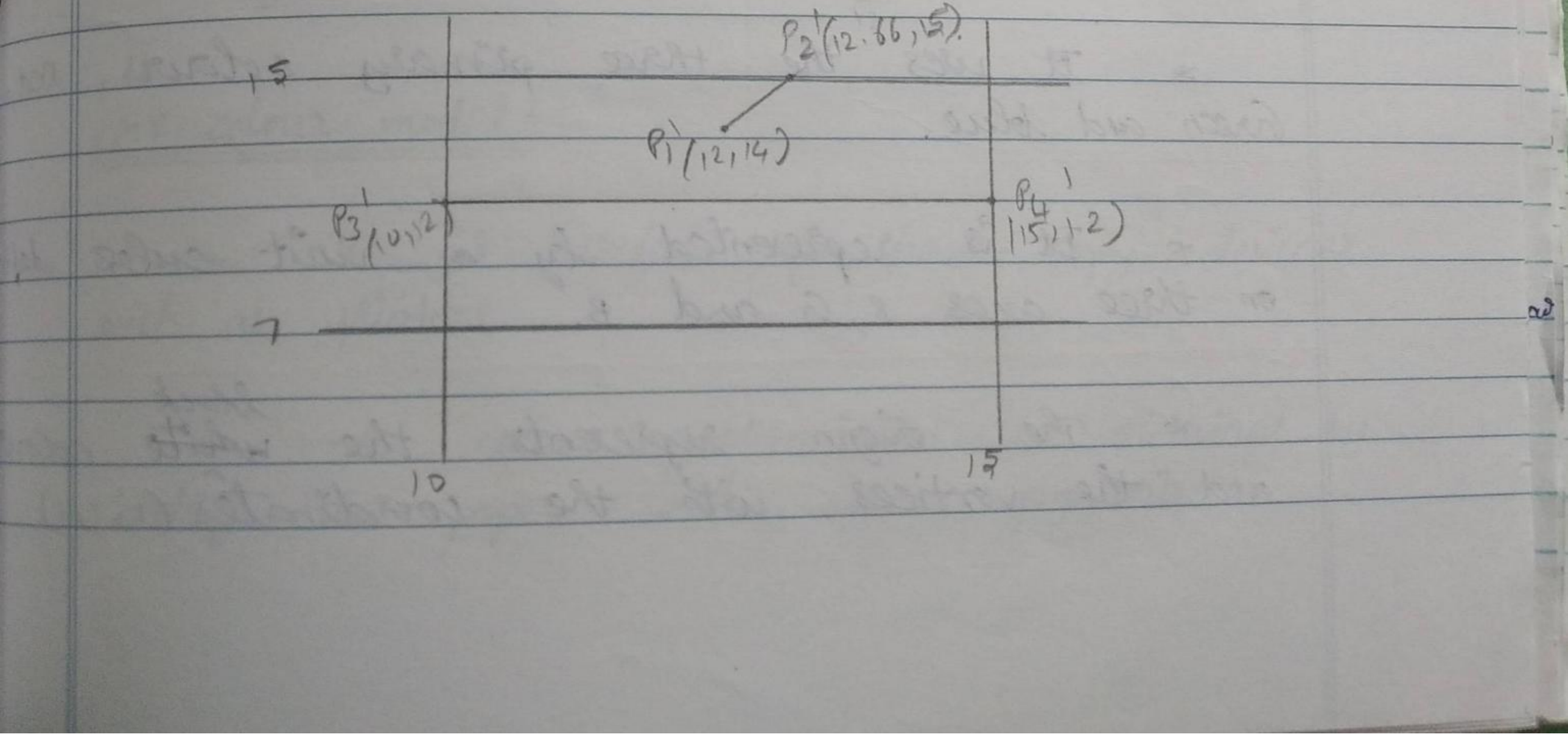
$y_1' = y_1 + u_1 \Delta y$
$= 12 + (0.3)(0)$
$= 12 + 0$
$y_1' = 12$

$x_2' = x_1 + u_2 \Delta x$
$= 7 + (0.8)(10)$
$= 7 + 8$
$x_2' = 15$

$y_2' = y_1 + u_2 \Delta y$
$= 12 + (0.8)(0)$
$= 12 + 0$
$y_2' = 12$

$\therefore$ The clipped line is from (10, 12) to (15, 12).

The ~~clipp~~ window after clipping is



* In Cohen-Sutherland clipping algorithm, if the line endpoints are outside the window, the system can completely outside or it may intersect the window boundaries at two points.

* During the second case, it will reject the line but in case of Liang-Barsky clipping, it will accept the line as partially inside and calculate the intersection points.

12.

b) Colour models RGB and CMY:

RGB colour model:

* This colour model is displayed based on the theory of vision.

* It is an additive model

* It uses the three primary colours, Green and blue.

* It is represented by a unit cube on three axes R, G and B.

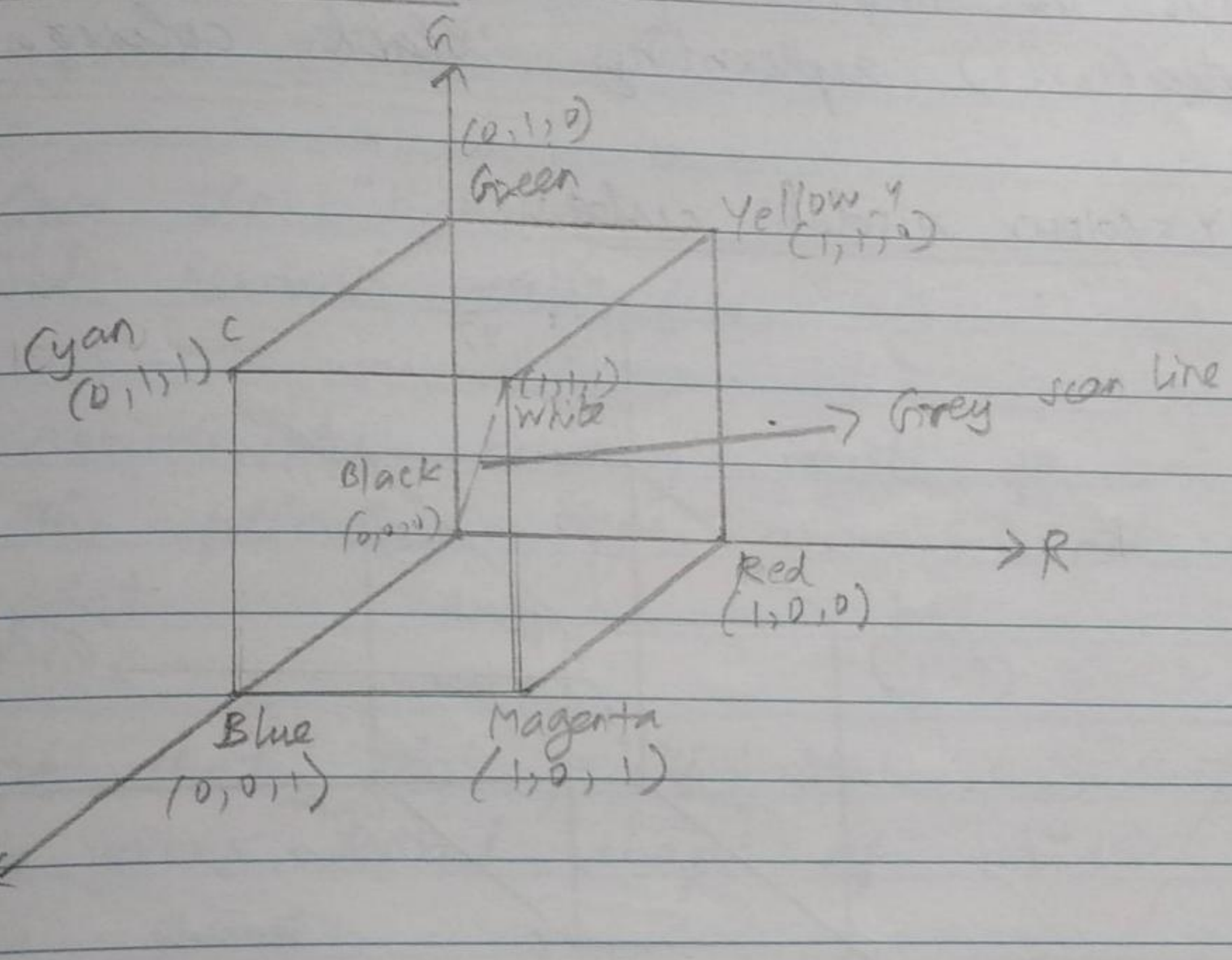
* The origin represents the ~~white~~ black and the vertices with the coordinates (w

represents the white colour.

* Any colour C) can be represented in RGB color model by the equation

$$C) = RR + GG + BB$$

RGB color model cube:



CMY colour model:

* It is useful for hard-copy devices such as printers.

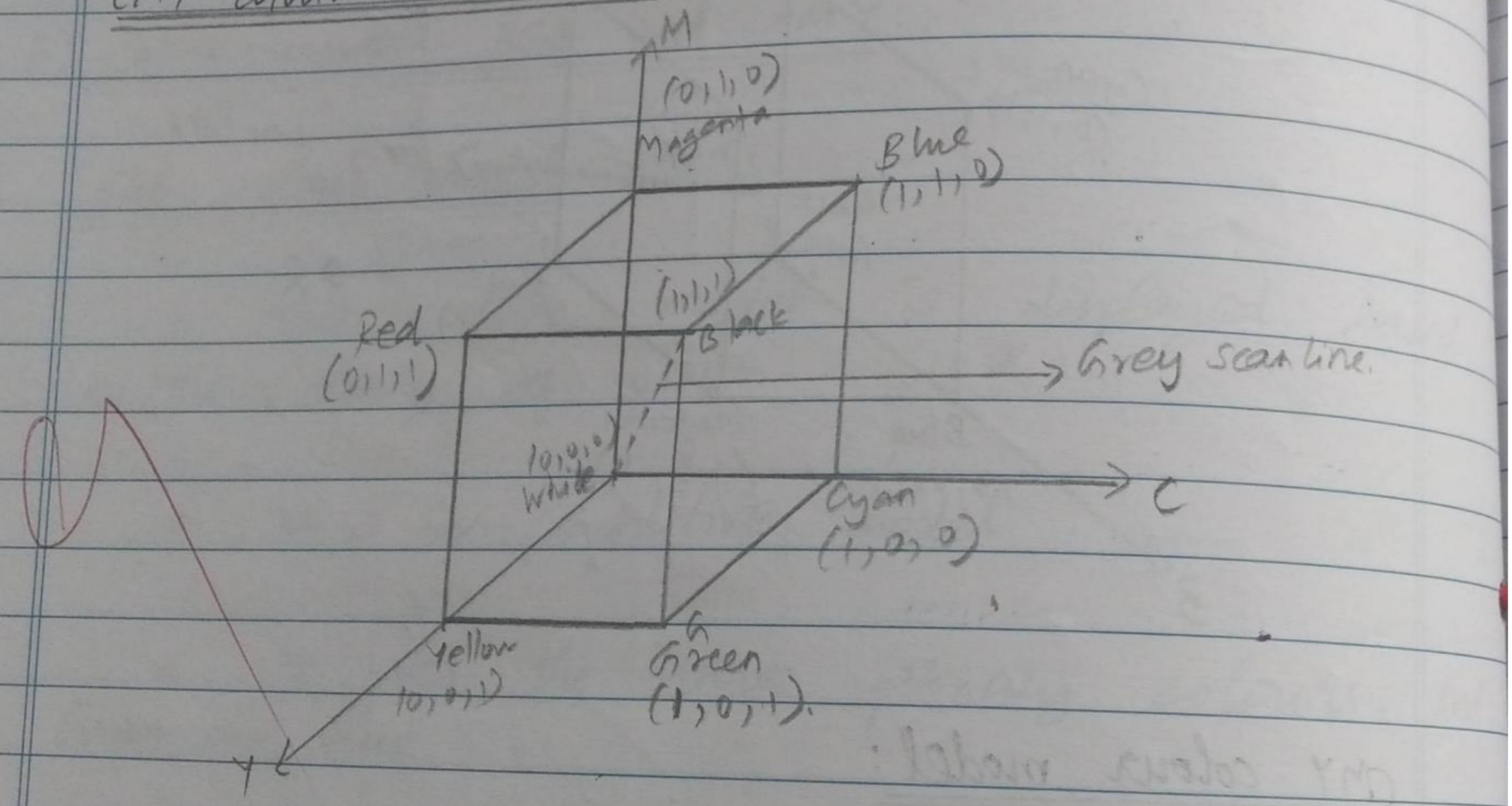
* The colour pattern can be obtained by coating the paper with colour pigments.

* The colour patterns are obtained by reflected light which is a subtractive process.

* A subtractive model can be created by using the three primary colours, cyan, magenta and yellow.

* It is the just opposite of RGB colour model with the origin representing white colour and vertex (1,1,1) representing black colour.

CMY colour model cube:



12. (b) Different animation techniques:

There are two types of animation techniques. They are:

* Frame-by-frame animation
* Tween based animation.

Frame-by-frame animation:

* Open the "BasicShape" file or select File→Save as option and rename the file.

* Obtain the starting point for animating the vehicle. The following steps are involved in obtaining starting point.

i) Ensure that the pencil tool is selected and draw your desired shape of vehicle on the stage. ~~Select~~

ii) Select the next frame and press F6. This will create a new keyframe which is copied from the previous keyframe. Select the drawn vehicle in frame 2.

iii) Press Shift+ right arrow key two times and you will see the vehicle moving towards right 10

pixels each time.

iv) Repeat until you reach the frame 12.

* Now select the stage and press Ctrl+Enter and you will see Flash animating the vehicle.

Tween - based animation:

* Open a new file in Flash or press Ctrl+N.

* Select the first frame. Import the image onto the stage upon which you want to create the motion tween. Select File → Import to Stage or simply press Ctrl+R.

or you can simply draw your vehicle using the Rectangular tool available in tool

* Creating individual frames with. sepa instances of the vehicle involves the following steps:

i) Select the frame 20 and press F6 to create a new keyframe.

ii) Still keeping playhead on frame 40, the vehicle towards right and place it in diff

positions for individual frames.

iii) Select any frame between 2 to 39 and select motion tween from Tween pop-up menu in the Property inspector or select Insert → Timeline → Create Motion Tween.

* Select the stage and press Ctrl + Enter to view the motion tween of your vehicle.

Justification:

* Frame-based ~~application~~ animation is more useful for this application.

* The reason is that in frame-based animation, we can animate the vehicle simply by pressing shift + right arrow two times which automatically moves the vehicle towards right.

* But in motion tween based animation, we should move the vehicle for each frame in which we may make any mistake during movement of the vehicle.

School of Communication and Computer Sciences

DEPT. OF COMPUTER SCIENCE & ENGG.
KONGU ENGINEERING COLLEGE,
THOPPUPALAYAM (PO)
PERUNDURAI (TK), ERODE - 638 060

N. Kuppusamy	26/4/19
Name and signature of Hall Supdt. with Date	

KONGU ENGINEERING COLLEGE

PERUNDURAI ERODE - 638 060.

(Autonomous)

Estd : 1984

Name of the Student	V. Shrinidhi	Register No.	1	6	C	S	R	1	8	9
Programme	BE	Branch & Semester	CSE & VI							
Course Code and Name	14CSC61 Graphics and multimedia.	Date	26.4.19		No. of Pages Used	10.				

MARKS TO BE FILLED IN BY THE EXAMINER

PART - A		PART - B			Grand Total Max. Marks : 50
Question No.	Max Marks : 2	Question No.		Max Marks : 10	
1	1	11	i)	4	
2	-		ii)		
3	2	12	i)	6	
4	2		ii)		
5	2	13	i)	3	26/50
6	-		ii)		52%
7	2	14	i)		Shrinidhi
8	2		ii)		
9	1				
10	1				
TOTAL	13	TOTAL		13	

Total marks in words : Five Two

INSTRUCTION TO THE CANDIDATE

1. Check the Question Paper, Programme, Course Code, Branch Name etc., before answering the questions.
2. Use both sides of the paper for answering questions.
3. POSSESSION OF ANY INCRIMINATING MATERIAL AND MALPRACTICE OF ANY NATURE IS PUNISHABLE AS PER RULES.

R. Manjula [signature]
Name of the Examiner

[signature] 26/4/19
Signature of the Examiner with Date

Part - A

1. The NTSC colour model for composing video signal is called as YIQ colour model.
- Y is the channel for luminace.
- All the black and white televisions use only Y-luminance.

4. Drawbacks of Z-buffer:
- It detects and process the transparent space.
- It process only single scale line.

5. eg: Tamilnadu is a State
In the above example, TamilNadu is a subject, which user may need further browsing. Hypermedia provides the link to a new media, to be viewed.

7. Four components of Multimedia are:
- Text
- Image
- Sound
- Video

8. Text:
The text in sequence form the paragraph or sentence that can be incorporated into a document.

Digital Image:
It is a picture that can be used in multimedia. It is formed by Transmitted light.

9. Guidelines for using text in multimedia Proj
* Choose the proper font and Text ~~Sty~~ Style.
* Aligne the text properly.

10. Masking:
Masking is a method, which is used to change the shape of the Object in subsequent frames.

Motion cycling:

7. Technologies that constitute a delivery sy for multimedia are:
* Virtual reality
* Monitors
* Projectors
* Television.

Part - B

12. a. Models for visible surface detection are:

* Back face model
* Depth buffer model
* A - buffer model
* Depth sorting model
* BSP tree model
* Octree model
* Area division model
* ray emission model
* [redacted]
* Line scale model

Back face model:

The surface area that are visible to the viewer is called as front face.

The surface that is opposite to view is called as backface.

The surface is backface when

$V \cdot N > 0$

V is the vector in direction of view

N is the normal vector to the surface of the polygon

If V_{iew} is in positive z-axis then $(0,0,V_z) \cdot (A,B,C) > 0$, if $C > 0$ where $V = (0,0,V_z)$ $N = (A,B,C)$

If V_{iew} is in negative z-axis then $(0,0,V_z) \cdot (A,B,C) > 0$ if $C < 0$.

Depth buffer method:

- In this method, the depth of each is measured.
- It is also called as z-buffer because direction of view is along z-axis.
- In this method, two buffers are namely.
  * depth buffer
  * ~~Intensity~~ buffer. Frame/refresh buffers

Depth buffer contains the depth at point frame buffer contains the intensity of that to be displayed.

A-buffer method:

This method is the extention of depth buffer, which overcomes the dis of depth buffer, which is the detection & pr of transparencies.

It has two fields namely depth and intensity field.

Depth field consists of real numbers.
Intensity field contains intensities or
If Depth is >=0, then the surface is not
The intensity field has rgb value
surface

If depth < 0, then multipe surface contribute to the intensity. The intensity field contains pointers to the rgb value & other properties of the surfaces.

11. b. ii. Basic 3D transformations:

The basic 3D transformations are
* Translation
* Rotation
* Scaling.

Translation:

Let $P=(x, y, z)$ be the original co-ordinates $T=(tx, ty, tz)$ be the translation vector. The coordinates $P'=(x', y', z')$ is desired as

$$\begin{bmatrix} x' \\ y' \\ z' \\ 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & tx \\ 0 & 1 & 0 & ty \\ 0 & 0 & 1 & tz \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \\ 1 \end{bmatrix}$$

$$P' = T \cdot P$$

$\therefore x' = x + tx \quad y' = y + ty \quad z' = z + tz.$

Rotation:

The rotation is done about the angle θ.

For rotation about z-axis.

$$x' = x\cos\theta - y\sin\theta$$
$$y' = x\sin\theta + y\cos\theta$$
$$z' = z$$

For rotation about x-axis,

$$x' = x$$
$$y' = y\cos\theta - z\sin\theta$$
$$z' = y\sin\theta + y\cos\theta$$

for rotation about y-axis

$y' = y$

$x' = x\sin\theta + z\cos\theta$

$z' = x\cos\theta - z\sin\theta$.

Scaling:

Let P is the original co-ordinates (x, y, z) & P' be the final coordinate (x', y', z') with scaling vectors (S_x, S_y, S_z).

$$P' = S \cdot P$$

$$\begin{bmatrix} x' \\ y' \\ z' \\ 1 \end{bmatrix} = \begin{bmatrix} Sx & 0 & 0 & 0 \\ 0 & Sy & 0 & 0 \\ 0 & 0 & Sz & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \\ 1 \end{bmatrix}$$

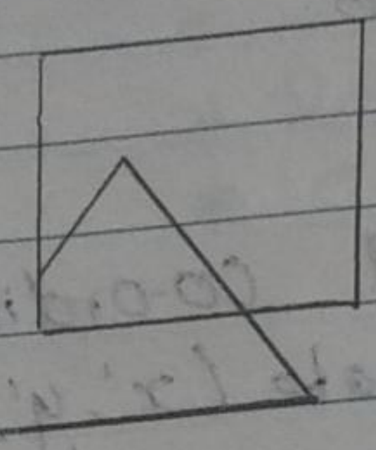
$x' = x \cdot Sx \quad y' = y \cdot Sy \quad z' = z \cdot Sz$.

Transformation method for 180° rotation:

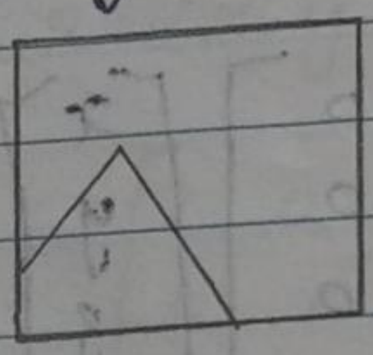
The suitable transformation method for 180° rotation is reflection method, because it is the exact copy of the object with opposite right and left sides.

11. b. i. Sutherland - hodgeman polygon clipping method:

left clipping.



Bottom clipping:



13.

a. Motion tweening:

In motion tweening, the objects motion
produce. It is done by the following ste
The object is developed at the frame
It can be either drawn or created by
shapes such as oval, or rectangle.
Now click at frame 20 and insert a
frame. Now click and select the object a
move it to a certain distance and select
motion tween option. If you click enter, now
can been the motion of the object. Fo

in frame 1 to the position in frame 20.

Shape tweening:

In Shape tweening, you can seen the shape of the object changes along with the motion.

First create a object circle at frame 1.

Now at frame to 20, create a rectangle. and inset it as a keyframe. and set Shape tween.

Now if you enter, you can see the shape changes from circle to rectangle.

School of Communication and Computer Science

DEPT. OF COMPUTER SCIENCE & ENGG.
KONGU ENGINEERING COLLEGE,
THOPPUPALAYAM (PO)
PERUNDURAI (TK), ERODE - 638 060

S.V. KOGILAVANI	26/4
Name and signature of Hall Supdt. with Date	

KONGU ENGINEERING COLLEGE

PERUNDURAI ERODE - 638 060.
(Autonomous)

Estd : 1984

Name of the Student	A. Velliyangiri	Register No.	1	6	C	S	R	2	2	1
Programme	B. E.	Branch & Semester	CSE & VI							
Course Code and Name	14CSG61 Graphics and Multimedia.	Date	13-04-19.		No.of Pages Used	10				

MARKS TO BE FILLED IN BY THE EXAMINER

PART - A		PART - B			Grand Total Max. Marks : 50
Question No.	Max Marks : 2	Question No.		Max Marks : 10	
1	2	11	i)	8	22
2	-		ii)		
3	-	12	i)		
4	-		ii)	4	
5	-	13	i)		
6	1		ii)		
7	-	14	i)		
8	1		ii)	5	
9	1				
10	-				
TOTAL	5	TOTAL		17	

22/50

AHY

Total marks in words : Four Four

INSTRUCTION TO THE CANDIDATE

1. Check the Question Paper, Programme, Course Code, Branch Name etc., before answering the questions.
2. Use both sides of the paper for answering questions.
3. POSSESSION OF ANY INCRIMINATING MATERIAL AND MALPRACTICE OF ANY NATURE IS PUNISHABLE AS PER RULES.

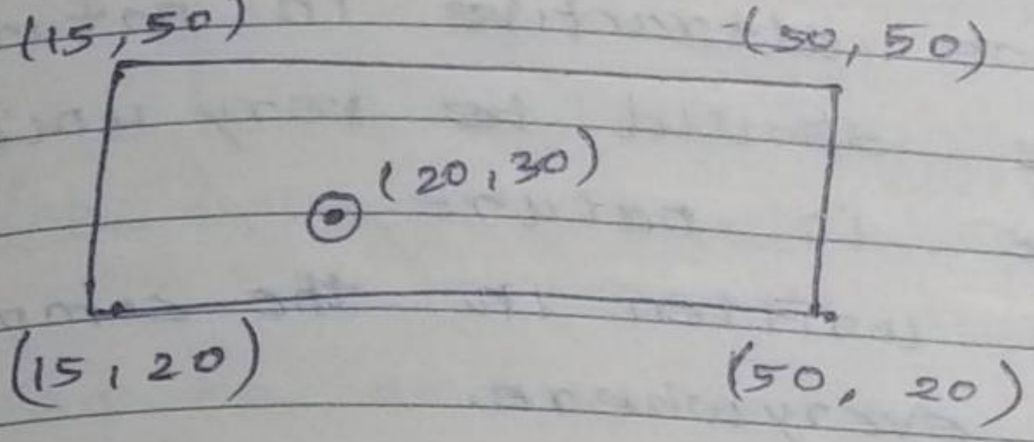
R. Manjula Devi
Name of the Examiner

26/4/19
Signature of the Examiner with Date

1) Point P(20,30)

$X_{wmax} = 50$ $X_{wmin} = 15$.

$Y_{wmin} = 20$ $Y_{wmax} = 50$



Then the point should be lies inside the window boundary.

7. Four multimedia components:
   Adobe Flash
   Maya Software
   After Effects.

8 Text and digital images:
   Texts are the normal characters or numbers that are written in the form and apply style of fonts in different manner.
   Digital images are contains colorings and texts to show responsively.

5. Any two guidelines for using text in multimedia project:

In text we are using multimedia font style should be very unique and more attractive in nature.

Texts are written in the common language to understand everywhere.

Size of the text should be in window boundary.

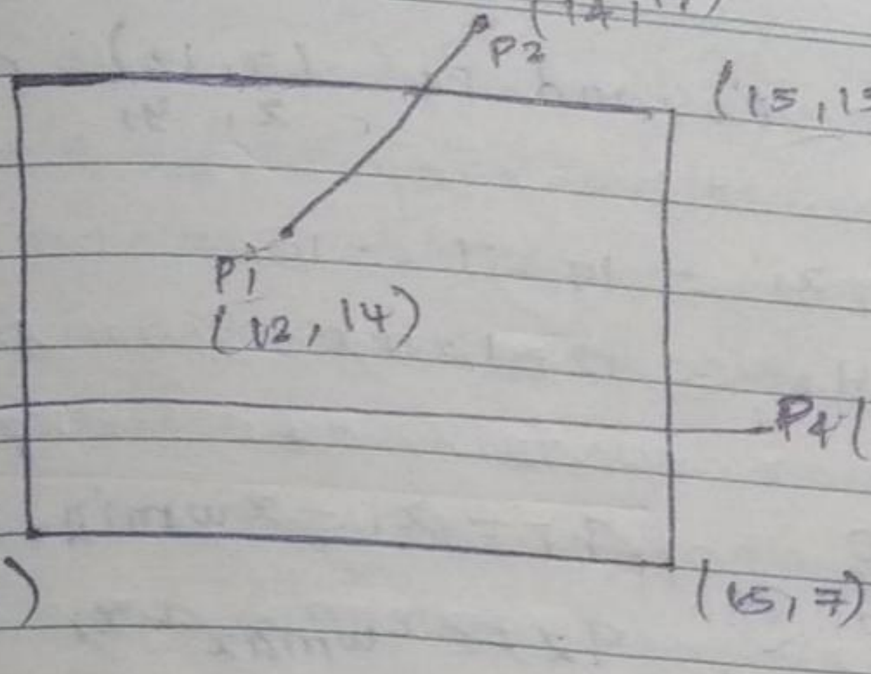
6. 'delivery system' for multimedia:

In multimedia project we can deliver any ideas through a video, we can analyse more to deliver this.

Every video should have a content that should be reachable more based on content.

We can deliver our project in a correct time to reach people. So Delivery system should be important for multimedia.

Part – B.



P_1 and P_2 and P_3 and P_4 are partially inside.

lets take.

P_1 and P_2

(12, 14) (14, 17)

x_1 y_1 x_2 y_2.

$\Delta x = x_2 - x_1 = 14 - 12 = 2.$

$\Delta y = y_2 - y_1 = 17 - 14 = 3.$

$p_1 = -\Delta x = +2$ $q_1 = x_1 - x_{wmin} = 12 - 10 = 2$

$p_2 = -\Delta x = -2$ $q_2 = x_{wmax} - x_1 = 15 - 12 = 3$

$p_3 = \Delta y = 3$ $q_3 = y_1 - y_{wmin} = 14 - 7 = 7$

$\Delta_4 = -\Delta y = -3$ $q_4 = y_{win\ max} - y_1 = 17 - 14 = 3.$

$p_k = 0$ $q_k > 0$ line is outside.

$p_k = 0$ $q_k < 0$ line is partially inside.

$u_1 = \min(u_k, r_k)$ $u_2 = \min(u_k, r_k)$

$r_k = \frac{p_k}{q_k}$ $r_k = \frac{p_k}{q_k}.$

Then the line is partially inside.

Lets take P3 and P4. $(7, 12)$ and $(17, 12)$
$x_1\ y_1$ $x_2\ y_2$

$\Delta x = x_2 - x_1 = 17 - 7 = 10$

$\Delta y = y_2 - y_1 = 12 - 12 = 0.$

$p_1 = \Delta x = 10$ $\quad q_1 = x_1 - x_{wmin} = 7 - 10 = -3$

$p_2 = -\Delta x = -10$ $\quad q_2 = x_{wmax} - x_1 = 15 - 7 = 8$

$p_3 = \Delta y = 0$ $\quad q_3 = y_1 - y_{wmin} = 12 - 7 = 5$

$p_4 = -\Delta y = 0$ $\quad q_4 = y_{wmax} - y_1 = 15 - 7 = 8$

The P3 and P4 is also partially inside outside.

12.

b) Color Models : RGB and CMY.

RGB = Red, Green, Blue

CMY = Cyanide, Magenda, Yellow

In RGB is mainly and mostly used colour models in graphics.

In RGB is used for webdesigning to set a responsive web design.

RGB can change the color in many forms like black, pink, etc.

In multimedia flash rgb is used to set the colour.

RGB contains arguments to set the color for the particular region.

We can create all the colours using rgb value.

In CMY is also a famous for colour models.

Cryon, magenda and yelow is used for design the colour.

It is also used for webdesigning, multimedia and adobe flash to design a video using colors.

It is a important color model.

CMY is also used to colour the texts in multimedia.

It contains all the colors using corresponding colors.

RGB can be used to fill or paint a particular object.

RGB color models can be convert on mix to produce many forms.

CMY color models are used to coloring the object.

In Graphics rgb and cmy is mostly used to coloring the object.

Rgb has the value of 3 arguments.

Rgb contains two colors to mix seperate color.

cmy is mostly used in texts, content writing, poster designing, etc.

Rgb is mostly used in texts, web page, video makings, multimedia, adobe flash, etc.

Before coloring an object must selecting an coloring model to colored effectively.

13.
b) Animation for moving vehicle.

In animation is used to narrate the story along the people.

Animation is used for making video effectively that should be send the people.

First thing we can draw an image for the concept of making animation.

Draw all the images through on your kit.

Animation is mostly movable object. When an object should be move some action should be occur.

We can make object in a correct manner to create a video.

Most of the time animation should explore their concept very well.

In animation all obects are movable.

In this animation moving vechicle We can draw an image on vehicle.

An the vehicle should be passed on the road.

So the moment will be occur by use of animation.

In animation we can drag and drop the image or draw the image at the particular position.

Flash is used to create an animation.

After effects is also a animation tool.
In moving vehicle we can draw an image effectively.
Animation can be done by different different approaches to create effectively.
Animation should be a consequective order to telling some awareness about the people.
Walt Disney is the first animation company in the world.
In nowadays all the mobiles and laptops are contains animation.
In future each and every activity should be animated and show their effects.
Animation should be most important to show the concepts.