<table>
<tr><th>Q. No</th><th>IVP set 1 Sept 20</th><th>Marks</th></tr>
<tr><td>1</td><td>For the 8-level image given below, find the digital negative
<table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td></tr><tr><td>2</td><td>1</td><td>3</td></tr></table>
(a)
<table><tr><td>6</td><td>5</td><td>4</td></tr><tr><td>3</td><td>2</td><td>1</td></tr><tr><td>5</td><td>6</td><td>4</td></tr></table>
(b)
<table><tr><td>6</td><td>5</td><td>4</td></tr><tr><td>3</td><td>12</td><td>1</td></tr><tr><td>5</td><td>6</td><td>4</td></tr></table>
(c)
<table><tr><td>6</td><td>5</td><td>4</td></tr><tr><td>3</td><td>2</td><td>1</td></tr><tr><td>5</td><td>6</td><td>14</td></tr></table>(d)
<table><tr><td>6</td><td>5</td><td>4</td></tr><tr><td>13</td><td>2</td><td>1</td></tr><tr><td>5</td><td>6</td><td>4</td></tr></table></td><td>2</td></tr>
<tr><td>2</td><td>For the 8-level image given below, find the LSB bit plane
<table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td></tr><tr><td>2</td><td>1</td><td>3</td></tr></table>
(a)
<table><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr></table>
(b)
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(c)
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(d)
<table><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td></tr></table></td><td>2</td></tr>
</table>

	0 1 1	
3	Which of the following is the averaging mask? (a) 1 1 1 1 1 1 1 1 1 (b) -1 -1 -1 -1 -1 -1 -1 -1 -1 **(c)** 1/9 1/9 1/9 1/9 1/9 1/9 1/9 1/9 1/9 (d) 1 1 1 0 0 0 1 1 1	2
4	The mask used for the line detection is given below, -1 -1 -1 2 2 2 -1 -1 -1 if it is rotated by +45 degrees what will it look like (a) -1 -1 -1 2 2 2 -1 -1 -1 **(b)** -1 -1 2 -1 2 -1 2 -1 -1 (c) -1 -1 -1 -2 -2 -2 -1 -1 -1 (d) -1 -1 -1 2 2 2 1 1 1	2

5	What is pixel? **elements of a digital image** elements of an analog image cluster of a digital image cluster of an analog image	1
6	The range of values spanned by the gray scale is called: **Dynamic range** Band range Peak range Resolution range	1
7	The edges in gray-level of an image are associated with_____ **High frequency components** Low frequency components DC component No component	1
8	10. What is the relation of the frequencies to a circle of radius D_0, where D_0 is the cut off distance measured from origin of frequency rectangle, for an Ideal High pass filter? **HPF sets all frequencies inside circle to zero** HPF sets all frequencies inside circle to one HPF sets all frequencies to zero HPF sets all frequencies to one	1
9	The absence of receptors is in the retinal area called _____ Lens Ciliary body **Blind spot** Fovea	1
10	In 4-neighbours of a pixel p, how far are each of the neighbours located from p? **one pixel apart** two pixels apart four pixels apart three pixels apart	1
11	The distance between pixels p and q, the pixels have a distance less than or equal to some value of radius r, form a diamond centred at (x,y) is called : Euclidean distance Chessboard distance **City-Block distance** Village distance	1
12	Which of the following is NOT is not a type of Adjacency? 4-Adjacency 8-Adjacency m-Adjacency **100-Adjacency**	1
13	For the given image 1 2 3 0 2 4 6 7	2

5	2	4	3
3	2	6	1

Perform Thresholding with T = 4

(a)

0	0	0	0
0	7	7	7
7	0	7	0
0	0	7	0

(b)

0	0	0	0
0	7	7	7
7	7	7	7
0	0	7	0

(c)

0	0	0	0
0	7	7	7
7	0	7	0
7	7	7	7

(d)

7	7	7	7
0	7	7	7
7	0	7	0
0	0	7	0

14	For the given image		2

1	2	3	0
2	4	6	7
5	2	4	3
3	2	6	1

Perform intensity slicing with background with r1 =2 and r2 =5

(a)

1	7	7	0
7	7	6	7
7	7	7	7
7	7	6	1

(b)

1	2	3	0
2	4	6	7
5	2	4	3

3	2	6	1

(c)

1	7	7	6
7	7	6	7
7	7	7	7
7	7	6	6

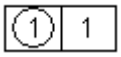
(d)

1	7	7	7
7	7	7	7
7	7	7	7
7	7	7	7

15 Consider the image:- 2

A =

0	1	0	0
0	1	0	0
0	1	1	0
1	0	0	0

Let the structuring element B = 

Perform Erosion

(a)

0	0	0	0
0	0	0	0
0	1	0	0
0	0	0	0

(b)

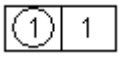
1	1	1	1
0	0	0	0
0	1	0	0
0	0	0	0

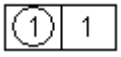
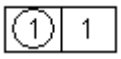
(c)

0	0	0	0
1	1	1	1
0	1	0	0
0	0	0	0

(d)

0	0	0	1
0	0	0	1
0	1	0	1

	0 0 0 1	
16	Consider the image:- A = 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0 Let the structuring element B =  Perform Dilation **(a)** 1 1 0 0 1 1 0 0 1 1 1 0 1 0 0 0 (b) 1 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 (c) 0 0 0 0 1 1 1 1 0 1 0 0 0 0 0 0 (d) 0 0 0 1 0 0 0 1 0 1 0 1 0 0 0 1	2
17	Consider the image:- A = 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0	2

	Let the structuring element B =  Perform Opening **(a)** 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 (b) 1 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 (c) 0 0 0 0 1 1 1 1 0 1 0 0 0 0 0 0 (d) 0 0 0 1 0 0 0 1 0 1 0 1 0 0 0 1	
18	Consider the image:- A = 0 1 0 0 0 1 0 0 0 1 1 0 1 0 0 0 Let the structuring element B =  Perform closing **(a)** 1 0 0 0 1 0 0 0 1 1 0 0 0 0 0 0 (b) 1 1 1 1 0 0 0 0	2

	0 1 0 0 0 0 0 0 (c) 0 0 0 0 1 1 1 1 0 1 0 0 0 0 0 0 (d) 0 0 0 1 0 0 0 1 0 1 0 1 0 0 0 1	
19	Consider the digital image. 0 1 0 6 7 2 0 1 6 5 1 1 7 5 6 1 0 6 6 5 2 5 6 7 6 Calculate the value at point g(2,2)=7 for Median filter (3x3 window) **5** 0 1 6	2
20	Consider the digital image. 0 1 0 6 7 2 0 1 6 5 1 1 7 5 6 1 0 6 6 5 2 5 6 7 6 Calculate the value at point g(2,2)=7 for Min filter (3x3 window) 5 **0** 1 6	2
21	Consider the digital image.	2

	<table><tr><td>0</td><td>1</td><td>0</td><td>6</td><td>7</td></tr><tr><td>2</td><td>0</td><td>1</td><td>6</td><td>5</td></tr><tr><td>1</td><td>1</td><td>7</td><td>5</td><td>6</td></tr><tr><td>1</td><td>0</td><td>6</td><td>6</td><td>5</td></tr><tr><td>2</td><td>5</td><td>6</td><td>7</td><td>6</td></tr></table> Calculate the value at point g(2,2)=7 for Max filter (3x3 window) 5 **7** 1 6	
22	Consider the digital image. <table><tr><td>0</td><td>1</td><td>0</td><td>6</td><td>7</td></tr><tr><td>2</td><td>0</td><td>1</td><td>6</td><td>5</td></tr><tr><td>1</td><td>1</td><td>7</td><td>5</td><td>6</td></tr><tr><td>1</td><td>0</td><td>6</td><td>6</td><td>5</td></tr><tr><td>2</td><td>5</td><td>6</td><td>7</td><td>6</td></tr></table> Calculate the value at point g(2,2)=7 for Average filter (3x3 window) **32/9** 31/9 30/9 35/9	2
23	p has coordinates (10,1) and q has coordinates (2,8). Find Eucledian distance between p and q. **10.95** 11 12 13	2
24	p has coordinates (10,1) and q has coordinates (2,8). Find City block distance between p and q. **15** 11 12 13	2
25	p has coordinates (10,1) and q has coordinates (2,8). Find Chess-board distance between p and q. **8** 11 12 13	2
26	For the given image	2

1	2	3	0
2	4	6	7
5	2	4	3
3	2	6	1

Perform intensity slicing without background with r1 =2 and r2 =5

(a)

1	7	7	0
7	7	0	7
7	7	7	7
7	7	0	0

(b)

1	2	3	0
2	4	6	7
5	2	4	3
3	2	6	1

(c)

1	7	7	6
7	7	6	7
7	7	7	7
7	7	6	6

(d)

1	7	7	7
7	7	7	7
7	7	7	7
7	7	7	7

27 For the 8-level image given below, if the median filter is applied, the result will be

1	2	3
4	50	6
2	1	3

(a)

1	2	3
4	3	6
2	1	3

(b)

6	5	4
3	12	1
5	6	4

(c)

6	5	4

	3 2 1 5 6 14 (d) 6 5 4 13 2 1 5 6 4	
28	For the 8-level image given below, if the average filter is applied, the result will be 1 2 3 4 50 6 2 1 3 **(a)** 1 2 3 4 3 6 2 1 3 (b) 6 5 4 3 12 1 5 6 4 (c) 6 5 4 3 2 1 5 6 14 (d) 6 5 4 13 2 1 5 6 4	
29	For the 8-level image given below, if the min filter is applied, the result will be 1 2 3 4 50 6 2 1 3 **(a)** 1 2 3 4 1 6 2 1 3 (b) 6 5 4 3 12 1 5 6 4 (c) 6 5 4 3 2 1 5 6 14	

	(d) 6 5 4 13 2 1	