Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, July 2020

Course: B.Tech CSE+BAO Semester: VI **Program: Digital Image Processing** Time : 02 hrs. Max. Marks: 60

Course Code: CSEG3001

Instructions:

SECTION A

Each question carry one marks for correct answer.

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$\begin{vmatrix} \cdot \\ \mathbf{r} \end{vmatrix}$	1	r
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digital image (v.v.) are		c
proportional to: Position t Brightness Contrast	Noise	t
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	C District	
is fast, precise and flexible. Optical t Electronic t hic i	Digital	i
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An image is considered to be a	- -	e
An image is considered to be a function of a(x,y), where a Height of Width of c Amplitude	Resolution	c
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					r		r		r		e
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					e		e	ation and	e	Morpholo	t
			What is the next step in image		С	Segmentat	С	descriptio	С	gical	
			processing after compression?	Wavelets	t	ion	t	n .	t	processing	
	6	M			С		i		i		i
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			What is the step that is		е	Wavelets	r		r		r
			performed before color image	Image	C	and multi	e	Image	e	Image	e
			processing in image	restoratio	t	resolution	c	enhancem	c	acquisitio	c
			processing?	n		processing	t	ent	t	n	t
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					r		r	Both	е	Neither	r
			To convert a continuous		r		r	Sampling	С	Sampling	r
			sensed data into Digital form,		е	Ouantizati	е	and	t	nor	е
			which of the following is required?	Sampling	c t	Quantizati on	t	Quantizati on		Quantizati on	c t
\vdash	8	N	requireu:	Samping	i	OII	i	OII	c	None of	i
	٥	C			n		n		0	the	n
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			To convert a continuous		r		r		c		r
			image f(x, y) to digital form,		е		e c	All of the	t		e
			we have to sample the	Coordinat	С	Amplitude	t	mentione			t
L			function in	es	t	•	Ĺ	d			
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		C			0		n		n		n
				Digitizing	r r	Digitizing	c o		c o	None of	c o
			For a continuous image f(x, y),	the	e	the	r	All of the	r	the	$\begin{vmatrix} \mathbf{r} \end{vmatrix}$
			how could be Sampling	coordinat	c	amplitude	r	mentione	r	mentione	r
			defined?	e values	t	values	e	d	e	d	e

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			Digitizing	r	Digitizing	С		r	None of	r
			the	е	the	t	All of the	е	the	е
		For a continuous image $f(x, y)$,	coordinat	С	amplitude		mentione	С	mentione	С
		Quantization is defined as	e values	t	values		d	t	d	t
1	Ν			С		i		i		i
1	С			0		n		n		n
		Assume that an image f(x, y) is		r		С		С		С
		sampled so that the result has		r		0		0		0
		M rows and N columns. If the		е		r		r	Second	r
		values of the coordinates at	Second	С	_	r	First .	r	sample	r
		the origin are $(x, y) = (0, 0)$,	sample	t	image	е	sample	е	along	е
		then the notation (0, 1) is	along first		enhancem	C	along first	C	second	C
_	L	used to signify:	row		ent	t	row	t	row	t
1			(x, y) are	i	(x, y) are	С	(x, y) are	İ	(x, y) are	i
2	C		integers	n	integers	0	integers	n	integers	n
		1.1.7	from Z2	С	from Z2	r	from R2	С	from R2	С
		Let Z be the set of real	and f is a	0	and f is a	r	and f is a	0	and f is a	0
		integers and R the set of real	function that	r	function that	е	function	r	function	r
		numbers. The sampling		r		c t	that	r	that	r
		process may be viewed as partitioning the x-y plane into	assigns a gray-level	e	assigns a gray-level	١	assigns a gray-level	e	assigns a	e
		a grid, with the central	value	c t	value		value	C t	gray-level value	c t
		coordinates of each grid being	(from Z) to	ı	(from R)		(from R)	ı	(from Z) to	·
		from the Cartesian product	each		to each		to each		each	
		Z2, that is a set of all ordered	distinct		distinct		distinct		distinct	
		pairs (zi, zj), with zi and zj	pair of		pair of		pair of		pair of	
		being integers from Z. Then,	coordinat		coordinat		coordinat		coordinat	
		f(x, y) is said a digital image if:	es (x, y)		es (x, y)		es (x, y)		es (x, y)	
1	Ν	Let Z be the set of real	(, //	i	(, , ,	С	(, //	i	None of	i
3		integers and R the set of real	The Digital	n	The Digital	0		n	the	n
		numbers. The sampling	image	С	image	r		С	mentione	С
		process may be viewed as	then	О	then	r		О	d	О
		partitioning the x-y plane into	becomes a	r	becomes a	е		r		r
		a grid, with the central	1-D	r	2-D	С		r		r
		coordinates of each grid being	function	е	function	t		е		е
		from the Cartesian product	whose	С	whose			С		С
		Z2, that is a set of all ordered	coordinat	t	coordinat			t		t
		pairs (zi, zj), with zi and zj	es and		es and		The gray			
		being integers from Z. Then,	amplitude		amplitude		level can			
		f(x, y) is a digital image if (x, y)	values are		values are		never be			
		are integers from Z2 and f is a	integers		integers		integer			

	function that assigns a gray- level value (that is, a real number from the set R) to each distinct coordinate pair (x, y). What happens to the digital image if the gray levels also are integers?								
1 4	The digitization process i.e. the digital image has M rows and N columns, requires decisions about values for M, N, and for the number, L, of max gray levels. There are no requirements on M and N, other than that M and N have to be positive integer. However, the number of gray levels typically is	Two times the integer value i.e. L = 2k	i n c o r r e c t	A Real power of 2 i.e. L = 2k	i n c o r r e c t	An integer power of 2 i.e. L = 2k	c o r r e c t	None of the mentione d	i n c o r r e c t
5	After digitization process a	b=L*N*k	i n c o r r e c t	b=M*L*k	i n c o r r e c t	b=M*N*L	i n c o r r e c t	b=M*N*k	c o r r e c t
16	In digital image of M rows and N columns and L discrete gray levels, calculate the bits required to store a digitized image for M=N=32 and L=16.	4096	c o r r e c t	16384	i n c o r r e c	8192	i n c o r r e c t	512	i n c o r r e c
1 7	What is the tool used in tasks	4096	i n c o r e	16384	c o r r e c	8192	i n c o r r e	None of the mentione d	i n c o r r
	such as zooming, shrinking, rotating, etc.?	Sampling	c t	Interpolati on		Filters	c t		c t

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				0		0		0		r
		The type of Interpolation		r		r		r		е
		where for each new location		r		r		r	nearest	С
		the intensity of the immediate	bicubic	е	cubic	е	bilinear	е	neighbour	t
		pixel is assigned is	interpolati	С	interpolati	С	interpolati	С	interpolati	
			on	t	on	t	on	t	on	
1	Ν			Ξ.		i		C		i
9	С			n		n		0		n
				С		С		r		С
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		The type of Interpolation		r		r		е		r
		where the intensity of the		r	nearest	r		С		r
		FOUR neighbouring pixels is	cubic	e	neighbour	e	bilinear	t	bicubic	e
		used to obtain intensity a new	interpolati	С	interpolati		interpolati	ľ	interpolati	С
		•	•		•	C	•		•	
_		location is called	on	t	on	t	on		on Name of	t
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				r		е		r		r
				r		С		r		r
		The most familiar single		е		t		е		е
		sensor used for Image	Microdens	С	Photodiod			С		С
		Acquisition is	itometer	t	е		CMOS	t		t
2	Ν	·	Noise	i	Saturation	i	Contrast	С	Brightness	i
1				n		n		o	G	n
				С		С		r		С
				0		0		r		0
				r		r		e		r
		The difference is intensity		r		r r		С		. r
		between the highest and the		_		١.		t		
		lowest intensity levels in an		e		e		L		e
				C		C				C
_		image is		t		t				t
2				С		i		i		i
2	С			0		n		n		n
				r		С		С		С
				r		0		0		0
		is the effect		е		r		r		r
		caused by the use of an		С		r		r		r
		insufficient number of	False	t		е		е		е
		intensity levels in smooth	Contourin		Gaussian	С	Contourin	С	Interpolati	С
	Ì	areas of a digital image.	g		smooth	t	g	t	on	t
			•							
2	N	The procedure done on a	J	i	Image	i		i	Single	С
		The procedure done on a		i n	_	i n	Geometric	i n	Single Pixel	c o
3		The procedure done on a	Neighbour hood		Image Registratio n			i n c	_	

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			Operation	0		0	Transform	0		r
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				r		r		r		С
				е		е		е		t
				С		С		С		
				t		t		t		
2	Ν			i		С		i		i
4	С			n		0		n		n
				С		r		С		С
				0		r		0		0
				r		е		r		r
				r		С		r		r
				е		t		е		е
		Of the following,		С	Gamma		Microwav	С	Radio	С
		has the maximum frequency.	UV Rays	t	Rays		es	t	Waves	t
2	Ν			С		i		i		i
5	С			О		n		n		n
				r		С		С		С
				r		О		О		О
				е		r		r		r
				С		r		r		r
				t		е		е		e
		Which of the following is				С		С	Luminanc	С
		impractical to measure?	Brightness		Frequency	t	Radiance	t	е	t
2	N	,	Gama rays	i	.,	С	Radio	i	Infrared	i
6			, , , , ,	n		0	Waves	n	Rays	n
				С		r		С	,	С
				0		r		0		0
				r		е		r		r
				r		С		r		r
				e		t		e		e
		Which of the following is used		С	Soft X-			С		c
		for chest and dental scans?		t	Rays			t		t
2	N		L	С	,-	i		i	None of	i
7				0		n .		n .	the	n
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			Mask	С		r r		r		
			mode	t		e		e		e
		A commercial use of Image	radiograp	١		C		С		С
		Subtraction is	hy		MRI scan	t	CT scan	t		t
2	N.		119		IVIINI SCALI	i	CI SCAII	i	None of	i
8				С		-			the	
ď	С			0		n		n		n
		Degion of Interest (DOI)		r		С		С	mentione	С
		Region of Interest (ROI)		r	ا المما	0		0	d	0
		operations is commonly called	0.4	е	Shading	r	Dilati	r		r
Ì		as	Masking		correction	r	Dilation	r		r

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9	С			n		n		n		0
				С		С		С		r
				0		0		0		r
				r		r		r		e
		If every element of a set A is		r		r		r		С
		also an element of a set B,		е		е		е		t
		then A is said to be a	Disjoint	С	Complem	С		С		
		of set B.	set	t	ent set	t	Union	t	Subset	
3	Ν		XOR	i	NOT	i	OR	С	AND	i
0				n		n		0		n
				С		С		r		С
		Consider two regions A and B		0		0		r		0
		composed of foreground		r		r		e		r
		pixels. The of these		ľ		r		С		r
		two sets is the set of elements				e		t		_
				e				١,		e
		belonging to set A or set B or both.		C		C				C
<u> </u>		both.		t		t			Nama	t :
3				i		С		i	None of	i
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				0		r		0	d	0
				r		е		r		r
		Image processing approaches		r		С		r		r
		operating directly on pixels of		е		t	Inverse	е		е
		input image work directly in	Transform	С	Spatial		transform	С		С
			domain	t	domain		ation	t		t
3				i		i		i		С
2	С			n		n		n		0
				С		С		С		r
				0		0		О		r
				r		r		r		е
				r		r		r		С
			Linear	е	Frequency	е		е		t
		Median filter belongs to which	spatial	С	domain	С	Sharpenin	С	Order	
		category of filters?	filter	t	filter	t	g filter	t	static filter	
3	Ν			С		i		i		i
3				О		n		n		n
				r		С		С		С
				r		О		0		0
				e		r		r		r
				С		r		r		r
		Which of the following		t		e .		e	g(x-	e
		expression is used to denote	g(x,y)=T[f(`	f(x+y)=T[g(С	g(xy)=T[f(x	С	y)=T[f(x-	С
		spatial domain process?	x,y)]		x+y)]	t		t		t
	<u> </u>	spatial dollialli process:	^, 7 /]	Щ	V. A11		ווא ו		נוען	·

A C	3	lv			Ιi		С		l i l		l i l
Which of the following shows three basic types of functions or used frequently for image enhancement?									_		n
Which of the following shows three basic types of functions used frequently for image enhancement? Iaw	'										
Which of the following shows three basic types of functions used frequently for image enhancement? 3 Note that is the general form of representation of log transformation? 3 Note that is the general form of representation of power transformation? 3 Note that is the general form of representation of power transformation? 3 Note that is the general form of representation of power transformation? 3 Note that is the general form of representation of power transformation? 3 Note that is the general form of representation of power transformation? 3 Note that is the general form of representation of power transformation? 4 Note that is the general form of representation of power transformation? 5 Coordinate the cand inverse cand inver						Power					
Which of the following shows used frequently for image unhancement? Note of the following shows three basic types of functions used frequently for image enhancement? Inverse that the first order derivative of a one dimensional function, f(x) is: Which of the following shows three basic types of functions used frequently for image inverse that the general form of two variables, then the first order derivative of a one dimensional function, f(x) is: Which of the following shows three basic types of functions to and the cand to cand to the cand to cand to cand to the cand to cand to cand to cand to cand to the cand to cand to inverse that to inverse that the cand to cand to inverse that the cand to ca				Linear					_	Linear	
three basic types of functions used frequently for image inverse enhancement? a			Which of the following shows			•		Linear			-
Used frequently for image enhancement? Inverse enhancement. In			_			_		-		-	
enhancement? law t i i w i i c c c c c c c c c c c c c c c			* *					_			
3 N S C C N N N N N N N N			, ,						_		_
S C	2			Idvv		law	<u> </u>	poweriaw	_	law	
Which expression is obtained by performing the negative transformation on the negative transformation on the negative transformation on the negative transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r i									_		
Which expression is obtained by performing the negative transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r t i i c c c c c c c c									_		
Which expression is obtained by performing the negative transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r t S=L+1+r t S=L-1-r S=L-1+r t S=L-1-r S=L-1+r t S=L-1-r S=L-1+r T S=L-1-r S=L-							_		_		
by performing the negative transformation on the negative of an image with gray levels in the range[O,L-1]?			Which expression is obtained				_				
Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? S=L+1-r Transformation on the negative of an image with gray levels in the range[0,L-1]? Transformation on the negative of an image with gray levels in the range[0,L-1]? Transformation on the negative of an image with gray levels in the range[0,L-1]? Transformation on the negative of an image function of the negative o			-				•		_		
negative of an image with gray levels in the range[0,L-1]?									_		
levels in the range[0,L-1]?									ι		
3 N				c-l ⊥1 r		c-1 ±1±r		c-1 1 r		c-1 1±r	
S C	_			5-L+1-I		5-L+1+I		2-L-1-I	-	2-L-1+1	
What is the general form of representation of log transformation? C C C C C C C C C							-				
What is the general form of representation of log transformation? Section 1 C C C C C C C C C	0										
What is the general form of representation of log transformation? S=clog10(1/r) C C C C C C C C C									_		
What is the general form of representation of log transformation? S=clog₁₀(1/r) C C C C C C C C C							_		_		-
What is the general form of representation of log transformation? c c c c c c c c c											
representation of log transformation? Text			What is the second forms of				•		_		
transformation? r) t r) t *r) t +r)			_					/1		11	τ
3 N 7 C i n n n n n n n n n n n n n n n n n<			-								
O				r)		r)		*r)		+r)	
What is the general form of representation of power transformation? Secry Country											
What is the general form of representation of power transformation? S=cr ^V C c r r r r r r r r r r r r r r r r r r	′										
What is the general form of representation of power transformation? S=cr ^y C c s=r ^y C c s=r ^y T r r r r r r r r r r r r r r r r r r							_		_		
What is the general form of representation of power transformation? S=cr ^y C c s=r ^y C c i S=rc S=rc T e C c c c C s=rc T i If f(x,y) is an image function of two variables, then the first order derivative of a one dimensional function, f(x) is: S=cr ^y C c s=r ^y C c i I i O n O c C c O c O c F c F c C c f(x-1)- C c C f(x-1)- C c C f(x+1) t I i I Differentia O Differentia O Differentia									_		
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representation of power transformation? s=cr\(^{\frac{1}{3}}\) N S C C C S C C C C C C C C C C C C C C					-		l •		-		r
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3 M C i i i i i 8 C 0 n n n n n 0 0 n c c c c c r 0 0 0 0 0 0 e r r r r r r If f(x,y) is an image function of two variables, then the first order derivative of a one dimensional function, f(x) is: t e e e e e e e e e e e e e e e c f(x-1)- c c c f(x)-f(x+1) t f(x)+f(x-1) t f(x)+f(x-1) t f(x)+f(x-1) t i n Differentia o				.,		.,				.,	
8 C	_	L		s=cr ^v		c=sr ^v		s=rc		s=rc ^v	
r c c c c o o o o o o o o o o o o o o o					С		i		İ		İ
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	8	C			0		n		n		n
lf f(x,y) is an image function of two variables, then the first order derivative of a one dimensional function, f(x) is: S N					r		С		С		С
If f(x,y) is an image function of two variables, then the first order derivative of a one dimensional function, f(x) is: Solution If f(x,y) is an image function of two variables, then the first order derivative of a one dimensional function, f(x) is: Solution If f(x,y) is an image function of two variables, then the first order order derivative of a one order derivative orde					r		0		0		0
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$									r		r
order derivative of a one dimensional function, f(x) is: State							r		r		r
dimensional function, $f(x)$ is: $f(x+1)-f(x)$ $f(x)-f(x+1)$ $f(x+1)$ $f(x+1)$ $f(x)+f(x-1)$ $f(x)+f(x)+f(x-1)$ $f(x)+f(x)+f(x)+f(x)+f(x)+f(x)+f(x)+f(x)+$			· ·		t		е		е		е
3 M i i i c C 9 C In spatial domain, which of Integratio n n Differentia o										·	
9 C In spatial domain, which of Integratio n n Differentia o	_			f(x+1)-f(x)		f(x)-f(x+1)	-	f(x+1)		f(x)+f(x-1)	-
					i		i		i		С
the following operation is n c Average c Median c tion r	9	C		Integratio	n		n		n		0
			the following operation is	n	С	Average	С	Median	С	tion	r

1		done on the pixels in		О		О		О		r
		sharpening the image?		r		r		r		e
				r		r		r		С
				е		е		е		t
				С		С		С		
				t		t		t		
4	Ν			i		С	All of the	i	None of	i
0	С			n		О	mentione	n	the	n
				С		r	d	С	mentione	С
				О		r	depending	0	d	О
				r		е	upon the	r		r
				r		С	time when	r		r
		The derivative of digital		е		t	partial	е		e
		function is defined in terms of		С			derivative	С		С
		difference. Then, which of the		t			will be	t		t
		following defines the second					dealt			
		order derivative $\partial^2 f/\partial x^2 =$					along two			
		of a one-			f(x+1)+		spatial			
		dimensional function f(x)?	f(x+1)-f(x)		f(x-1)-2f(x)		axes			
4	Ν			i		С		i		i
1	С			n		0		n		n
			Image is	С	Image is	r	Image is	С	Image is	С
			pre-	О	pre-	r	pre-	0	pre-	0
			rotated by	r	rotated by	е	rotated by	r	rotated by	r
			180	r	180	С	90 degree	r	90 degree	r
		What is the difference	degree for	е	degree for	t	for	е	for	е
		between Convolution and	Correlatio	С	Convoluti		Correlatio	С	Convoluti	С
		Correlation?	n	t	on		n	t	on	t
4				i		i		С	None of	i
2	С			n		n		0	the	n
				С		С		r	mentione	С
				0		0		r	d	0
				r		r		е		r
				r		r		С		r
		The function that contains a		е		е	Discrete	t		е
		single 1 with the rest being 0s	Identity	C	Inverse	C	unit			C
_		is called	function	t	function	t	impulse		- () :	t
4			T(r) is	i	T(r) is	i	T(r) is	i	T(r) is	С
3	С		double-	n	double-	n	single-	n	single-	0
			valued	С	valued	С	valued	С	valued	r
			and	0	and	0	and	0	and	r
			monotoni	r	monotoni	r	monotoni	r	monotoni	e
			cally	r	cally	r	cally	r	cally	C
		Which of the following	decreasing in the	e	increasing in the	e	decreasing in the	e	increasing in the	t
		Which of the following conditions does the threshold	in the interval	c t	in the interval	C +	in the interval	C +	in the interval	
		T(r) must satisfy?		ľ		t		t		
		r(i) must satisty?	0≤r≤1; and		0≤r≤1; and		0≤r≤1; and		0≤r≤1; and	

			0≤T(r)≤1 for 0≤r≤1		0≤T(r)≤1 for 0≤r≤1		0≤T(r)≤1 for 0≤r≤1		0≤T(r)≤1 for 0≤r≤1	
4	Ν			i		С		i		i
4	С			n		О		n		n
				С		r		С		С
				0		r		0		0
		I Participant of the Participant	. ⊏ k a	r	- - k 0	е	- - k 0	r	- k	r
		Histogram equalization or Histogram linearization is	$s_k = \sum_{j=1}^k s_j = 1$ n_i/n	r	$s_k = \sum_{j=0}^k s_j = 0$	c t	$s_k = \sum_{j=0}^k s_j = 0$	r	$s_k = \sum_{j=1}^k s_j = n$ n_i/n	r
		represented by of the	n _i /n k=0,1,2,	e c	n _j /n k=0,1,2,	ľ	k=0,1,2,	e c		e c
		following equation:	,L-1	t	,L-1		,L-1	t		t
4	Ν	Tonowing Equation.	20	С	15	i	100	i	25	i
5				0		n		n		n
		While performing the median		r		С		С		С
		filtering, suppose a 3*3		r		О		О		О
		neighborhood has value (10,		е		r		r		r
		20, 20, 20, 15, 20, 20, 25,		С		r		r		r
		100), then what is the median		t		е		е		е
		value to be given to the pixel				С		С		С
<u> </u>		under filter?				t		t ·		t
4				i		i		i		С
٥	С			n		n c		n c		0
				С		0		0		r
		In linear spatial filtering, what		r		r		r		e
		is the pixel of the image under		r		r		r		С
		mask corresponding to the		е		е		е		t
		mask coefficient w (1, -1),		С		С		С	f (x + 1, y -	
		assuming a 3*3 mask?	f (x, -y)	t	f(x + 1, y)	t	f(x, y - 1)	t	1)	
4				i		i		i	All of the	С
7	С			n		n		n	mentione	0
				С		С		С	d	r
				0		0		0		r
				r		r		r		е
		Which of the following is/are		r e		r e		r e		c t
		considered as type(s) of		С	Butterwor	С		С		(
		lowpass filters?	Ideal	t	th	t	Gaussian	t		
4	Μ	If, $F_{hp}(u, v) = F(u, v) - F_{lp}(u, v)$		i		i		i		С
8				n		n		n		0
		where F(u, v) is the image in		С		С		С		r
		frequency domain with $F_{hp}(u,$		О		О		0		r
		v) its highpass filtered version,		r		r		r		е
		F _{lp} (u, v) its lowpass filtered		r		r		r		С
		component and $H_{lp}(u, v)$ the		е		е		е		t
		transfer function of a lowpass	ш. /о. о. —	C	$H_{hp}(u, v) =$	C	Ш. <i>[</i> 111 12) —	C	$H_{hp}(u, v) =$	
		filter. Then, unsharp masking can be implemented directly	$H_{hp}(u, v) =$	t	1 + H _{lp} (u, v)	t	H _{hp} (u, v) = – H _{lp} (u, v)	t	1 – H _{Ip} (u,	
		can be implemented directly	$H_{lp}(u, v)$		v)		— п _{ір} (u, v)	<u> </u>	v)	Ш

			in frequency domain by using a filter. Which of the following is the required filter?								
		Ν		Radius	i	Eccentricit	С	Perimeter	i	Area	i
!	Э	C			n	У	0		n		n
					С		r		С		С
			Which of the following is the		0		r		0		0
			useful descriptor of a boundary, whose value is		r		e		r		r
			given by the ratio of length of		r e		c t		r e		r e
			the major axis to the minor		C		ľ		С		С
			axis?		t				t		t
	5	Ν	ano.	Shape	С	Chain	i	Difference	i	Difference	i
		С		Number	0	Number	n		n	Number	n
					r		С		С		С
					r		0		0		0
					е		r		r		r
			Based on the 4-directional		С		r		r		r
			code, the first difference of		t		е		е		е
			smallest magnitude is called				С		С		С
			as:				t		t		t
		M			i		i		i		С
-	1	C		(4)	n	(x+1, y+1),	n	` ' ' ' ' ' '	n		0
				(x+1, y),	С	(x+1, y-1),	С	, ,	С		r
				(x-1, y), (x,		(x-1, y+1),		y+2), (x, y-	0		r
				y+1), (x, y- 1), (x+2,	r r	(x-1, y-1), (x+2, y+2),	r r	,, ,	r r	None of	e
			What is the set of pixels of 8-	y), (x+2, y), (x-2, y),	e	(x+2, y+2), (x+2, y-2),	e		e	the	t
			neighbors of pixel p at	(x, y+2),	С	(x-2, y-2), $(x-2, y+2),$	С		С	mentione	
			coordinates (x, y)?	(x, y · 2), (x, y-2)	t	(x 2, y 2), (x-2, y-2)	t		t	d	
	5	Μ	Opening morphological	Sharps	i	Shrinks	i	Smooths	С	Deletes	i
		С	operators with rolling		n		n		О		n
			structuring element (SE)		С		С		r		С
					О		О		r		О
					r		r		е		r
					r		r		С		r
					е		е		t		е
					С		С				С
L	_		110		t	data e	t			1 12	t
	-	M	Hit-or-miss transformation is	removal	i	detection	С	compressi	i	padding	i
-	3	С	used for shape		n		0	on	n		n
					С		r		С		С
					0 r		r		o r		0
					r r		e c		r		r
					e		t		e		e
					C		١		С		С
					t				t		t

5	N	(AoB)oB is equal to	A.B	i	A+B	i	АоВ	С	AxB	i
4	C			n		n		О		n
				С		С		r		С
				О		О		r		О
				r		r		е		r
				r		r		С		r
				е		е		t		е
				С		С				С
				t		t				t
5	N	Best removal of lines from	5 x 5	С	1 x 1	i	2 x 2	i	3 x 3	i
5	C	image will be produced by the		О		n		n		n
		structuring element (SE) of		r		С		С		С
		size		r		О		0		О
				е		r		r		r
				С		r		r		r
				t		e		е		е
						С		С		С
						t		t		t
	δ N	The reflection of set B is the	{w w = -(-	i	$\{w = -b\}$	i	$\{w \mid w = b\}$	i	{w w = -	С
ϵ	C		b)}	n		n		n	b}	О
				С		С		С		r
				О		О		О		r
				r		r		r		е
				r		r		r		С
				е		е		е		t
				С		С		С		
				t		t		t		
	N			_:		i				С
7	' C			n		n		n		О
				С		С		С		r
				О		О		О		r
				r		r		r	Probability	е
			Probabilit	r		r		r	distributio	С
			У	е		е		е	ns for	t
		What is meant by probability	distributio	С	Continuou	С	Discrete	С	Continuou	
		density function?	ns	t	s variable	t	variable	t	s variables	
5				С		i		i		i
8	C			0		n		n		n
				r		С		С		С
				r		О		0		0
				е		r		r		r
				С		r		r		r
				t	Unsupervi	е		е	Reinforce	е
		Automated vehicle is an	Supervise		sed	С	Active	С	ment	С
		example of	d learning		learning	t	learnin	t	learning	t
5				С	Chain	i	Difference	i	Difference	i
9	C		Shape	0	number	n		n	Number	n
		code, the first difference of	number	r		С		С		С

		smallest magnitude is called		r		О		О		О
		as:		е		r		r		r
				С		r		r		r
				t		е		е		е
						С		С		С
						t		t		t
6	N			i		С		i	Curvature	i
() C			n		0		n		n
				С		r		С		С
				0		r		0		0
		Which of the following		r		е		r		r
		techniques of boundary		r		С		r		r
		descriptions have the physical		е		t		е		е
		interpretation of boundary	Fourier	С	Statistical		Laplace	С		С
		shape?	transform	t	moments		transform	t		t