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Solution:-

Q.P. codes- 50130

solution key

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Q. No.	Marks
a)	
1) Huffman coding → lossless, coding redundancy	05M
2) RLE → lossless, interpixel redundancy	
3) JAS coding, lossy, Psychovisual redundancy	
b) spatial Resolution explanation	02 1/2 M.
urey level Resolution explanation	02 1/2 M.
c) boundry detection → formula & explanation	05 M
d) Histogram stretching → formula & explanation	05 M

Q.2(a)

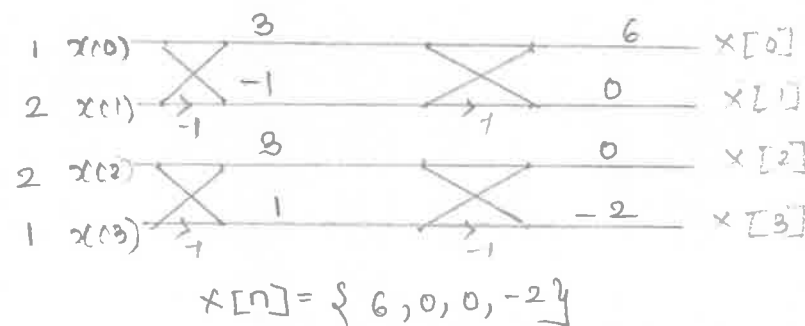
Symbol	Probabilities
A1	0.05
A2	0.008
A3	0.022
A4	0.06
A5	0.18
A6	0.13
A7	0.07
A8	0.48

0.48 → 0
 0.18 → 111
 0.13 → 101
 0.07 → 1101
 0.06 → 1100
 0.05 → 1001
 0.022 → 10001
 0.008 → 10000

Q. No.	Marks
Q2b) Region Growing → explanation with example	05 M
Region split & merge → explanation with example	05 M
Q3a) Point Processing meaning	01 M
Thresholding → explanation	03 M
Contrast stretching → explanation	03 M
Bit plane slicing → explanation	08 M
Q3b) 1) prewitts operator → explanation	05 M
2) laplacian operator → explanation	05 M
Q4 (a) Histogram Equalisation	10 M

Grey level	NO of Pixels	Pd f	cdf	L-1 x cdf	Round off	New Grey level
0	220	0.224	0.224	1.568	2	2 → 220
1	140	0.142	0.366	2.562	3	3 → 250
2	50	0.0510	0.417	2.919	3	
3	60	0.0612	0.478	3.346	3	
4	70	0.0714	0.549	3.843	4	4 → 70
5	170	0.173	0.722	5.054	5	5 → 170
6	180	0.182	0.854	5.978	6	6 → 180
7	160	0.163	1.012	7	7	7 → 160
	980					

Q. No.	Marks
Q4b) 1) Hit / Miss transformation → explanation with eg 2) Thinning / Thickening transformation → explanation	5M 5M
Q5(a) → Ideal Low pass filter explanation → blurring and ringing effects → explain how to avoid blurring & ringing effects	04M 02M 04M
Q5(b) → Hadamard transformation Matrix → to check if H(4) is orthogonal Fast Hadamard transform $x(m) = \{1, 2, 2, 1\}$	02+2M 02+2M 05M



Q6) a) chain codes → explanation	05M
b) RLE explanation	05M
c) High pass filter → Mask + explanation	05M
d) line detection → Mask + explanation	05M
e) Image types (black & white, grayscale, colour)	05M