

**SANT GADGE BABA AMRVATI UNIVERSITY, AMRAVATI**  
**Summer Examination 2020**  
**HVPM's College of Engineering and Technology, Amravati**  
**Department of Electronics & Tele communication Engineering**  
**Bachelor of Engineering Sem. :- VII**

**Subject :- DIGITAL IMAGE PROCESSING**

**Code :- 7ET2**

**Instructions:-**

- 1) Solve any two questions**
- 2) All question carry equal marks**

<b>Que. 1</b>																											
a	Consider an observer looking at a lamp-post which is at a distance of 50m. If the height of the lamp-post is 10m find the size of image formed in the retina.	2 credit point																									
b	Compute the Hadamard transform of the data sequence {1,2,0,3}.	2 credit point																									
c	Explain spatial domain processing	2 credit point																									
d	Explain the Degradation model in detail.	2 credit point																									
e	What do you understand by redundancy in digital images?	1 credit point																									
f	Explain segmentation based on discontinuities and similarities.	1 credit point																									
<b>Que. 2</b>																											
a	What do you mean by digital image processing?	1 credit point																									
b	Given a image calculate the slant transform  $F = \begin{bmatrix} 2 & 2 & 2 & 2 \\ 2 & 4 & 4 & 2 \\ 2 & 4 & 4 & 2 \\ 2 & 2 & 2 & 2 \end{bmatrix}$	2 credit point																									
c	Explain the holomorphic filter	2 credit point																									
d	Compare Image Enhancement and Image Restoration.	2 credit point																									
e	Is the Huffman code optimal ? Prove with an example.	2 credit point																									
f	Explain the technique of thresholding for segmentation.	1 credit point																									
<b>Que. 3</b>																											
a	Explain fundamental steps in digital image processing with block diagram.	2 credit point																									
b	State and explain the difference between DFT and DCT	2 credit point																									
c	Obtain the digital negative of the following 8 bit per pixel BPP image. <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>121</td> <td>205</td> <td>217</td> <td>156</td> <td>151</td> </tr> <tr> <td>139</td> <td>127</td> <td>157</td> <td>117</td> <td>125</td> </tr> <tr> <td>252</td> <td>117</td> <td>236</td> <td>138</td> <td>142</td> </tr> <tr> <td>227</td> <td>182</td> <td>178</td> <td>197</td> <td>242</td> </tr> <tr> <td>201</td> <td>106</td> <td>119</td> <td>251</td> <td>240</td> </tr> </tbody> </table>	121	205	217	156	151	139	127	157	117	125	252	117	236	138	142	227	182	178	197	242	201	106	119	251	240	2 credit point
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d	Explain dilation and erosion of binary image.	2 credit point																									
e	Construct a Hamming code for the given data ( 0 1 1 0 ). Use even parity	1 credit point																									
f	Explain the term Image Segmentation.	1 credit point																									

Que. 4		
a	Explain Euclidean distance with example .	1 credit point
b	What is unitary transform?	1 credit point
c	State the different properties of Fourier transform. Explain any one in detail.	2 credit point
d	Explain in brief Hit-or-MISS Transformation .	2 credit point
e	Draw & explain Image Compression model.	2 credit point
f	Define edge in an image. Give different edge detection mask.	2 credit point

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