Reginc: $\square$

## Question Paper Code: 31331

B.E./B.Tech. DEGREE EXAMINATIGN, NOVEMBER/DECEMBER 2013.

## Seventh Semester

Electronics and Communication Engineering EC 2029IEC 708 - DIGITAL IMAGE PROCESSING
(Regriation 2008)
Time : Three hours
Maximum : 100 marles
Answer ALL questions.
PART A - ( $10 \times 2=20$ marks $)$

1. Mention the difference beween a monowhome and a grayscale image.
2. State two impurgat groperties of unitary transforms.
3. What is a bit plane?
4. State how contrate adiustment can be done in an image:
5. List any two properties of a median filter.
6. Mention the crapbacis of inverse fillering.
7. Mention two applications of image segmentation techniques.
8. Write the importance of Edge detection.
9. Distinguish betoseen scalar and vector quantization.
10. Mention the irmitations of Hutman coding.

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\begin{equation*}
\text { PARTB-(6xic }=80 \text { marks }) \tag{16}
\end{equation*}
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11. (a) State and prove convolution property of 2D-FFT.

Or
(b) Determine the DCr azatris fre $\mathrm{N}=$ t.
12. (a) Illustrate the steps in histogram equalization of the image.
$\left[\begin{array}{lllll}4 & 4 & 4 & 4 & 4 \\ 3 & 4 & 5 & 4 & 3 \\ 3 & 5 & 5 & 5 & 3 \\ 3 & 4 & 5 & 4 & 3 \\ 4 & 4 & 4 & 4 & 4\end{array}\right]$
(b) With the help of a block diagram, discuss the principle of homomorphic filtering.'
13. (a) Illustrate the different causes of image degradation.
(b) A blur filter $h(m, n)$ is given by $\left|\begin{array}{cccc}0.1 & 0.1 & 0.1 & 0 \\ 0.1 & 0.1 & 0.1 & 0.1 \\ 0.05 & 0.1 & 0.1 & 0.05 \\ 0 & 0.05 & 0.05 & 0\end{array}\right|$
Find the deblur filter using inverse filtering.
14. (a) Discuss the principls of inage"segmentation by watershed transformation and explain its drawbacks.

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\begin{equation*}
\mathrm{Or} \tag{16}
\end{equation*}
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(b) . Discuss image segmentation based on various thresholding techniques.
15. (a) For the image shown below compute the compression ratic that can be achieved using Huffman coding.
$\left[\begin{array}{llll}3 & 3 & 3 & 2 \\ 2 & 3 & 3 & 3 \\ 3 & 2 & 2 & 2 \\ 2 & 1 & 1, & 0\end{array}\right]$

## Or

(b) A source emits three symbols $\dot{A}, \mathrm{~B}, \mathrm{C}$. with a probability $\{0.5,0.25,0.25\}$ respectively. Construct an arithmetic code to encode the word 'C A B'.

