

**ARYA COLLEGE OF ENGINEERING & RESEARCH CENTRE,  
JAIPUR**

**PRATICALS EXAMINATION, 2019-20 (VI Sem.) (ONLINE MODE)**

**6CS4-21: Digital Image Processing Lab**

**BRANCH: CSE**

**Max Marks:-75 (IA-45; ETE-30)**

**Note:- All Questions are compulsory.**

- **P1 and MCQ (Q1 to Q10)** is done by the student whose last two digit of RTU Roll No. is 00 to 10 and 51-60.
- **P2 and MCQ (Q11 to Q20)** is done by the student whose last two digit of RTU Roll No. is 11 to 20 and 61-70.
- **P3 and MCQ (Q21 to Q30)** is done by the student whose last two digit of RTU Roll No. is 21 to 30 and 71-80.
- **P4 and MCQ (Q31 to Q40)** is done by the student whose last two digit of RTU Roll No. is 31 to 40 and 81-90.
- **P5 and MCQ (Q41 to Q50)** is done by the student whose last two digit of RTU Roll No. is 41 to 50 and 91-99.

**Students may use any relevant study material (books/notes) for answering**

**Lab Records and Hardcopies has to submit to HOD after lockdown is over.**

**Time:- 90 min.**

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<b>P-1</b>	To provides the thresholding an image and the evaluation of its histogram using histogram equalization and illustrates the relationship among the intensities (gray levels) of an image and its histogram
<b>P-2</b>	(a) To shows image rotation, scaling, and translation using Geometric transformations. (b) To perform the Two-dimensional Fourier transform operation in an image.
<b>P-3</b>	To perform the Linear filtering using convolution in an image
<b>P-4</b>	Image Edge Detection Using Sobel Filtering and Canny Filtering
<b>P-5</b>	To perform the following operations in an image. a) erosion, b) dilation, c) opening, d) closing,

## MCQ

1	<b>What is image?</b>  a) Picture b) Matrix of pixel c) Collection of pixel d) All of these
2	<b>What is digital image?</b>  a) When $x$ , $y$ , and the amplitude values of $f$ are all finite, discrete quantities, we call the image digital image. b) When $x$ , $y$ , and the amplitude values of $f$ are all infinite, discrete quantities, we call the image digital image. c) a & b d) None of these
3	<b>What is pixel?</b>  a) Pixel is the elements of a digital image b) Pixel is the elements of an analog image c) a & b d) None of these
4	<b>The process of extracting information from the image is called as</b>  a) Image enhancement b) Image restoration c) Image Analysis d) Image compression
5	<b>An image is considered to be a function of <math>a(x,y)</math> where <math>a</math> represents</b>  a) height of image b) width of image c) amplitude of image d) resolution of image
6	<b>Which is the image processing technique used to improve the quality of image for human viewing?</b>  a) Compression b) Enhancement c) Restoration d) analysis
7	<b>Image compression is</b>  a) making image look better b) sharpening the intensity-transition regions c) minimizing degradation over image d) reducing the redundancy of the image data
8	<b>Dilation-Morphological image operation technique is used to</b>  a) shrink brighter areas of the image b) diminishes intensity variation over the image c) expands brighter areas of the image d) scales pixel intensity uniformly

<b>9</b>	<b>Intensity levels in 8bit image are</b>  <b>a) 128</b> <b>b) 255</b> <b>c) 256</b> <b>d) 512</b>
<b>10</b>	<b>Hue and saturation, both together produce</b>  <b>a) Brightness</b> <b>b) Transitivity</b> <b>c) Chromaticity</b> <b>d) Reflectivity</b>
<b>1</b>	<b>To convert a continuous image <math>f(x, y)</math> to digital form, we have to sample the function in _____</b>  <b>a) Coordinates</b> <b>b) Amplitude</b> <b>c) All of the mentioned</b> <b>d) None of the mentioned</b>
<b>12</b>	<b>For a continuous image <math>f(x, y)</math>, Quantization is defined as</b>  <b>a) Digitizing the coordinate values</b> <b>b) Digitizing the amplitude values</b> <b>c) All of the mentioned</b> <b>d) None of the mentioned</b>
<b>13</b>	<b>What is the sum of all components of a normalized histogram?</b>  <b>a) 1</b> <b>b) -1</b> <b>c) 0</b> <b>d) None of the mentioned</b>
<b>14</b>	<b>The transformation <math>T(r_k) = \sum_{j=0}^k n_j / n</math>, <math>k = 0, 1, 2, \dots, L-1</math>, where <math>L</math> is max gray value possible and <math>r-k</math> is the <math>k</math>th gray level, is called _____</b>  <b>a) Histogram linearization</b> <b>b) Histogram equalization</b> <b>c) All of the mentioned</b> <b>d) None of the mentioned</b>
<b>15</b>	<b>If the histogram of same images, with different contrast, are different, then what is the relation between the histogram equalized images?</b>  <b>a) They look visually very different from one another</b> <b>b) They look visually very similar to one another</b> <b>c) They look visually different from one another just like the input images</b> <b>d) None of the mentioned</b>
<b>16</b>	<b>What is the full form for PDF, a fundamental descriptor of random variables i.e. gray values in an image?</b>  <b>a) Pixel distribution function</b> <b>b) Portable document format</b> <b>c) Pel deriving function</b> <b>d) Probability density function</b>

<b>17</b>	<p><b>Which of the following transformations is particularly well suited for enhancing an image with white and gray detail embedded in dark regions of the image, especially when there is more black area in the image.</b></p> <p>a) Log transformations b) Power-law transformations c) Negative transformations d) None of the mentioned</p>
<b>18</b>	<p><b>Which of the following transformations expands the value of dark pixels while the higher-level values are being compressed?</b></p> <p>a) Log transformations b) Inverse-log transformations c) Negative transformations d) None of the mentioned</p>
<b>19</b>	<p><b>What is the first and foremost step in Image Processing?</b></p> <p>a) Image restoration b) Image enhancement c) Image acquisition d) Segmentation</p>
<b>20</b>	<p><b>In which step of processing, the images are subdivided successively into smaller regions?</b></p> <p>a) Image enhancement b) Image acquisition c) Segmentation d) Wavelets</p>
<b>21</b>	<p><b>What is the next step in image processing after compression?</b></p> <p>a) Wavelets b) Segmentation c) Representation and description d) Morphological processing</p>
<b>22</b>	<p><b>What is the step that is performed before color image processing in image processing?</b></p> <p>a) Wavelets and multi resolution processing b) Image enhancement c) Image restoration d) Image acquisition</p>
<b>23</b>	<p><b>How many numbers of steps are involved in image processing?</b></p> <p>a) 10 b) 9 c) 11 d) 12</p>
<b>24</b>	<p><b>What is the expanded form of JPEG?</b></p> <p>a) Joint Photographic Expansion Group b) Joint Photographic Experts Group c) Joint Photographs Expansion Group d) Joint Photographic Expanded Group</p>

<b>25</b>	<p><b>Which of the following step deals with tools for extracting image components those are useful in the representation and description of shape?</b></p> <p>a) Segmentation b) Representation &amp; description c) Compression d) Morphological processing</p>
<b>26</b>	<p><b>How is array operation carried out involving one or more images?</b></p> <p>a) array by array b) pixel by pixel c) column by column d) row by row</p>
<b>27</b>	<p><b>Region of Interest (ROI) operations is commonly called as _____</b></p> <p>a) Shading correction b) Masking c) Dilation d) None of the Mentioned</p>
<b>28</b>	<p><b>Image processing approaches operating directly on pixels of input image work directly in _____</b></p> <p>a) Transform domain b) Spatial domain c) Inverse transformation d) None of the Mentioned</p>
<b>29</b>	<p><b>What does the total number of pixels in the region defines?</b></p> <p>a) Perimeter b) Area c) Intensity d) Brightness</p>
<b>30</b>	<p><b>Which of the following measures are not used to describe a region?</b></p> <p>a) Mean and median of grey values b) Minimum and maximum of grey values c) Number of pixels alone d) Number of pixels above and below mean</p>
<b>31</b>	<p><b>We cannot use normalized area as one of the region descriptor.</b></p> <p>a) True b) False</p>
<b>32</b>	<p><b>Which of the following techniques is based on the Fourier transform?</b></p> <p>a) Structural b) Spectral c) Statistical d) Topological</p>
<b>33</b>	<p><b>imhist (A) Command is used for _____</b></p> <p>a) Showing Histogram of an image A b) Showing equalized histogram of image A c) a &amp; b both d) none of these</p>

<b>34</b>	<b>The principal factor to determine the spatial resolution of an image is _____</b> a) Quantization b) Sampling c) Contrast d) Dynamic range
<b>35</b>	<b>FWT stands for</b> a) Fast wavelet transformation b) Fast wavelet transform c) Fourier wavelet transform d) Fourier wavelet transformation
<b>36</b>	<b>Dilation followed by erosion is called</b> a) opening b) closing c) blurring d) translation
<b>37</b>	<b>Reflection and translation of the image objects are based on</b> a) pixels b) frames c) structuring elements d) coordinates
<b>38</b>	<b>Two main operations of morphology are</b> a) erosion b) dilation c) set theory d) Both a and b
<b>39</b>	<b>With dilation process images get</b> a) thinner b) shrunked c) thickened d) sharpened
<b>40</b>	<b>Opening and closing are each others</b> a) neighbors b) duals c) centers d) corners
<b>41</b>	<b>Erosion followed by dilation is called</b> a) opening b) closing c) blurring d) translation
<b>42</b>	<b>Mathematical morphology is a</b> a) set theory b) logic diagram c) graph d) map

<b>43</b>	<b>Dilation is used for</b>  <b>a)</b> compression <b>b)</b> decompression <b>c)</b> bridging gaps <b>d)</b> translation
<b>44</b>	<b>Closing produces</b>  <b>a)</b> narrow breaks <b>b)</b> lines <b>c)</b> dots <b>d)</b> noise
<b>45</b>	<b>With erosion boundaries of the image are</b>  <b>a)</b> expanded <b>b)</b> shrunked <b>c)</b> blurred <b>d)</b> sharpened
<b>46</b>	<b>Sets in morphology are referred to as image's</b>  <b>a)</b> pixels <b>b)</b> frames <b>c)</b> objects <b>d)</b> coordinates
<b>47</b>	<b>Erosion is referred to as</b>  <b>a)</b> reflection <b>b)</b> filtering <b>c)</b> compression <b>d)</b> decompression
<b>48</b>	<b>Erosion is used for object</b>  <b>a)</b> removing lines <b>b)</b> producing lines <b>c)</b> blurring image <b>d)</b> sharpening image
<b>49</b>	<b>The domain that refers to image plane itself and the domain that refers to Fourier transform of an image is/are :</b>  <b>a)</b> spatial domain in both <b>b)</b> Frequency domain in both <b>c)</b> Spatial domain and Frequency domain respectively <b>d)</b> Frequency domain and Spatial domain respectively
<b>50</b>	<b>What is the sum of all components of a normalized histogram</b>  <b>a)</b> 1 <b>b)</b> -1 <b>c)</b> 0 <b>d)</b> None of these