

Program: BE **ELECTRONICS AND TELECOMMUNICATION** Engineering

Curriculum Scheme: **Revised 2016**

Examination: Third Year Semester **VI**

Course Code: **ECC604** and Course Name: **Image Processing and Machine Vision**

Time: 1 hour

Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

|           |                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| Q1.       | The difference in intensity between the highest and the lowest intensity levels in an image is _____                        |
| Option A: | Noise                                                                                                                       |
| Option B: | Contrast                                                                                                                    |
| Option C: | Saturation                                                                                                                  |
| Option D: | Brightness                                                                                                                  |
|           |                                                                                                                             |
| Q2.       | Digitization of spatial co-ordinates (x,y) is called                                                                        |
| Option A: | gray level quantization                                                                                                     |
| Option B: | finite sampling                                                                                                             |
| Option C: | image sampling                                                                                                              |
| Option D: | image quantization                                                                                                          |
|           |                                                                                                                             |
| Q3.       | Human perception of color closely resembles the _____ color model                                                           |
| Option A: | CMY                                                                                                                         |
| Option B: | RGB                                                                                                                         |
| Option C: | HSI                                                                                                                         |
| Option D: | CMYK                                                                                                                        |
|           |                                                                                                                             |
| Q4.       | DFT 4by 4 matrix is given by                                                                                                |
| Option A: | $\frac{1}{\sqrt{4}} \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & -j & -1 & j \\ 1 & -1 & 1 & -1 \\ 1 & j & -1 & -j \end{bmatrix}$   |
| Option B: | $\frac{1}{\sqrt{4}} \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & j & -1 & -j \\ 1 & -1 & 1 & -1 \\ 1 & -j & -1 & j \end{bmatrix}$   |
| Option C: | $\frac{1}{\sqrt{4}} \begin{bmatrix} 1 & -1 & 1 & -1 \\ 1 & -j & -1 & j \\ 1 & -1 & 1 & -1 \\ 1 & j & -1 & -j \end{bmatrix}$ |

|           |                                                                                                                             |
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| Option D: | $\frac{1}{\sqrt{4}} \begin{bmatrix} 1 & 1 & -1 & -1 \\ 1 & -j & -1 & j \\ 1 & -1 & 1 & -1 \\ 1 & j & -1 & -j \end{bmatrix}$ |
| Q5.       | DCT stands for                                                                                                              |
| Option A: | Discrete Cosine Transform                                                                                                   |
| Option B: | Distance Cost Transform                                                                                                     |
| Option C: | Discrete Cost Transform                                                                                                     |
| Option D: | Distance Cosine Transform                                                                                                   |
| Q6.       | Which of the following is not a real Image Transform?                                                                       |
| Option A: | DCT                                                                                                                         |
| Option B: | DFT                                                                                                                         |
| Option C: | Hadamard Transform                                                                                                          |
| Option D: | Walsh Transform                                                                                                             |
| Q7.       | For an Image of size 2×2,number of basis images are                                                                         |
| Option A: | 0                                                                                                                           |
| Option B: | 2                                                                                                                           |
| Option C: | 1                                                                                                                           |
| Option D: | 4                                                                                                                           |
| Q8.       | for coordinates p(2,3)the 4 neighbors of pixel p are                                                                        |
| Option A: | (3,3)(2,3)(1,3)(1,3)                                                                                                        |
| Option B: | (3,3)(2,3)(1,1)(2,2)                                                                                                        |
| Option C: | (3,3)(2,4)(1,3)(2,2)                                                                                                        |
| Option D: | (3,3)(2,4)(1,3)(2,1)                                                                                                        |
| Q9.       | Final step of enhancement lies in _____ of the sharpened image.                                                             |
| Option A: | Increase range of contrast                                                                                                  |
| Option B: | Increase range of brightness                                                                                                |
| Option C: | Increase dynamic range                                                                                                      |
| Option D: | Decrease dynamic range                                                                                                      |
| Q10.      | A median filter is useful for filtering ----- noise.                                                                        |
| Option A: | white                                                                                                                       |
| Option B: | Gaussian                                                                                                                    |
| Option C: | Rayleigh                                                                                                                    |
| Option D: | Salt and Pepper noise                                                                                                       |
| Q11.      | Digital negative is used to convert ----- pixels into bright pixels.                                                        |
| Option A: | Dark                                                                                                                        |
| Option B: | Bright                                                                                                                      |
| Option C: | color                                                                                                                       |
| Option D: | noise                                                                                                                       |

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| Q12.      | Advantages of canny operator                                          |
| Option A: | Simplicity of the method                                              |
| Option B: | Large computations                                                    |
| Option C: | High error probability                                                |
| Option D: | Less accuracy                                                         |
|           |                                                                       |
| Q13.      | image restoration is to improve the _____ of the image                |
| Option A: | quality                                                               |
| Option B: | noise                                                                 |
| Option C: | intensity                                                             |
| Option D: | color                                                                 |
|           |                                                                       |
| Q14.      | In morphology, structuring element is a _____                         |
| Option A: | pixel                                                                 |
| Option B: | color                                                                 |
| Option C: | background                                                            |
| Option D: | mask                                                                  |
|           |                                                                       |
| Q15.      | For line detection we use mask that is                                |
| Option A: | Gaussian                                                              |
| Option B: | Laplacian                                                             |
| Option C: | ideal                                                                 |
| Option D: | Butterworth                                                           |
|           |                                                                       |
| Q16.      | If the inner region of the object is textured then approach we use is |
| Option A: | discontinuity                                                         |
| Option B: | similarity                                                            |
| Option C: | extraction                                                            |
| Option D: | recognition                                                           |
|           |                                                                       |
| Q17.      | $R_i$ is a connected set, where $i$ is                                |
| Option A: | 1,2,3,4                                                               |
| Option B: | 1,2,3...10                                                            |
| Option C: | 1,2,3...50                                                            |
| Option D: | 1,2,3...n                                                             |
|           |                                                                       |
| Q18.      | For noise reduction we use                                            |
| Option A: | image smoothing                                                       |
| Option B: | image contouring                                                      |
| Option C: | image enhancement                                                     |
| Option D: | image recognition                                                     |
|           |                                                                       |
| Q19.      | Computation of derivatives in segmentation is also called             |
| Option A: | spatial filtering                                                     |

|           |                                                                                                                                                 |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Option B: | frequency filtering                                                                                                                             |
| Option C: | low pass filtering                                                                                                                              |
| Option D: | high pass filtering                                                                                                                             |
|           |                                                                                                                                                 |
| Q20.      | For which of the following regions, compactness is minimal?                                                                                     |
| Option A: | Rectangle                                                                                                                                       |
| Option B: | Square                                                                                                                                          |
| Option C: | Irregular                                                                                                                                       |
| Option D: | Disk                                                                                                                                            |
|           |                                                                                                                                                 |
| Q21.      | Which of the following is the useful descriptor of a boundary, whose value is given by the ratio of length of the major axis to the minor axis? |
| Option A: | Radius                                                                                                                                          |
| Option B: | Perimeter                                                                                                                                       |
| Option C: | Area                                                                                                                                            |
| Option D: | Eccentricity                                                                                                                                    |
|           |                                                                                                                                                 |
| Q22.      | Based on the 4-directional code, the first difference of smallest magnitude is called as:                                                       |
| Option A: | Shape number                                                                                                                                    |
| Option B: | Chain number                                                                                                                                    |
| Option C: | Difference                                                                                                                                      |
| Option D: | Difference number                                                                                                                               |
|           |                                                                                                                                                 |
| Q23.      | Which of the following techniques of boundary descriptions have the physical interpretation of boundary shape?                                  |
| Option A: | Fourier transform                                                                                                                               |
| Option B: | Statistical moments                                                                                                                             |
| Option C: | Laplace transform                                                                                                                               |
| Option D: | Curvature                                                                                                                                       |
|           |                                                                                                                                                 |
| Q24.      | Which of the following statement is TRUE?                                                                                                       |
| Option A: | Statistical moment is sensitive to rotation.                                                                                                    |
| Option B: | central moment is sensitive to rotation.                                                                                                        |
| Option C: | Statistical moment is insensitive to rotation.                                                                                                  |
| Option D: | Statistical moment is sensitive to translation.                                                                                                 |
|           |                                                                                                                                                 |
| Q25.      | What is the order of the shape number of a rectangular boundary with the dimensions of 3×3?                                                     |
| Option A: | 3                                                                                                                                               |
| Option B: | 6                                                                                                                                               |
| Option C: | 9                                                                                                                                               |
| Option D: | 12                                                                                                                                              |