University of Mumbai
Examination 2022

Examinations Commencing from 17th May 2022
Program: **Electronics Engineering**
Curriculum Scheme: **Rev 2019 'C' scheme**
Examination: **TE Semester VI**
Course Code: **ELDO601** and Course Name: **Digital Image Processing & Machine Vision**

Time: 2 hour 30 minutes   Max. Marks: 80

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DATE: 31/5/2022   QP CODE: 94177

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	To convert a continuous image f(x, y) to digital form, we have to sample the function in
Option A:	Coordinates and amplitudes
Option B:	points
Option C:	scale
Option D:	values
2.	Image processing approaches operating directly on pixels of input image work directly in _____
Option A:	Transform domain
Option B:	Spatial domain
Option C:	Inverse transformation
Option D:	Transform
3.	Changing the overall sensitivity of the image is called
Option A:	illumination
Option B:	brightness
Option C:	brightness adaption
Option D:	illumination adaption
4.	Input data in machine vision is
Option A:	Computer files holding digital images
Option B:	Digital images and video
Option C:	Digital images
Option D:	Piece of metal, plastic, glass, wood, etc. to be inspected
5.	Digital image with intensity levels in the range [0,L-1] is called
Option A:	K map
Option B:	histogram
Option C:	truth table
Option D:	graph
6.	Mean Filter reduce noise by using
Option A:	Blurring
Option B:	Acquisition
Option C:	Sharpening

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Option D:	Restoration
7.	Median filters are particularly effective in the presence of
Option A:	Shot noise
Option B:	Median noise
Option C:	Dark noise
Option D:	Impulse noise
8.	What is the sum of all components of a normalized histogram?
Option A:	1
Option B:	-1
Option C:	0
Option D:	2
9.	The range of values spanned by the gray scale is called as
Option A:	Band range
Option B:	Dynamic range
Option C:	Resolution range
Option D:	Peak range
10.	In Slate Inspection System, the first module consists of the
Option A:	product feeding and the mechanical interface
Option B:	optical and sensing equipment
Option C:	illumination setup
Option D:	identification of the visual defects in the image data captured by the line-scan camera

Q2	
A	**Solve any Two** **5 marks each**
i.	Write a short note on Image file formats
ii.	Why is the sum of coefficients of a high pass filter mask zero?
iii.	Write a short note on low pass averaging filter.
B	**Solve any One** **10 marks each**
i.	Define image enhancement. Explain the Dynamic range compression and gray level slicing, enhancement operations with graph of transformation function.
ii.	What is image segmentation? Explain with example Region based segmentation.

Q3	
A	**Solve any Two** **5 marks each**
i.	Write a short note on Homomorphic filtering
ii.	Justify Huffman coding is lossless compression technique
iii.	Explain different types of data redundancies present in Digital Image.
B	**Solve any One** **10 marks each**
i.	List various Industrial applications of machine vision.
ii.	Explain Image Feature Extraction in machine vision

Q4	
A	**Solve any Two** **5 marks each**
i.	What is Machine Vision? State various components used in it.
ii.	Write a short note on Machine Vision System for Quality Grading of Painted Slates.
iii.	Explain any one feature extraction approaches used in machine vision.
B	**Solve any One** **10 marks each**
i.	Explain JPEG encoder and decoder.
ii.	Explain Erosion and Dilation in brief.