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PRESIDENCY UNIVERSITY BENGALURU

SCHOOL OF ENGINEERING

**MAKE UP EXAMINATION – JULY2024**

**Semester : 4**

**Course Code :** CSE2048

**Course Name :** Sem IV - CSE2048 - Robotic VIsion

**Program :** B.Tech. Computer Science and Engineering

**Date :** 18-07-2024

**Time :** 9:30 AM - 12:30 PM

# Max Marks : 100

**Weightage :** 50%

# Instructions:

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

**PART A**

**ANSWER ALL THE QUESTIONS (5 X 2 = 10M)**

1. What is Position based Servoing and Image based servoing
2. What is an robot and why we need robot in this era

(CO3) [Knowledge] (CO1) [Knowledge]

1. In an magnetic spectrum Which light rays has the lowest wave length and high frequency

(CO2) [Knowledge]

1. What is Histogram Equalization why its done.
2. Given an Binary image of 50X50 how much memory does it takes to store.

(CO2) [Knowledge] (CO1) [Knowledge]

**PART B**

**ANSWER ALL THE QUESTIONS (5 X 10 = 50M)**

1. Explain Segmentation with band pass filter and mention different band pass filters used .

(CO5) [Comprehension]

1. What is mobile type robot visual servoing provide the applications of Visual servoing in mobile type robot

(CO4) [Comprehension]

1. Exaplain Opening and Closing operations in mathematical morphology with an example and their applications

(CO2) [Comprehension]

1. Robot took an image around its environment due to low light image aqquaired by the robot got currupted with noise. what is the noise model and provide solution to supress the noise with an example

(CO2) [Comprehension]

1. What is the process of converting an analog signal to digital image exaplain with an neat diagram

(CO1) [Comprehension]

**PART C**

**ANSWER ALL THE QUESTIONS (2 X 20 = 40M)**

1. A) With geometrical representation in Cartesian coordinate system explain RGB color model and HSI color model.

B) Given HSI values as H = 30°and 255°, for S = 0.80, I = 0.70 conver it to RGB model

(CO2) [Application]

1. Write region splitting and merge segmentation algorithm steps and segment the following given image with Threshold=3.

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| 1 | 1 | 2 | 2 |
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| 4 | 1 | 2 | 3 |
| 3 | 3 | 3 | 3 |

(CO5) [Application]