Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JUN 2023

Semester : Semester IV - 2021
Course Code : CSE2048
Course Name : Sem IV - CSE2048 - Robotic VIsion
Program : ISR

Date : 19-JUN-2023
Time : 9.30AM - 12.30PM
Max Marks : 100
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

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

1. Write the diffrence between Eye in hand and Eye to hand.

(CO3) [Knowledge]

2. Define Histogram in Robotic vision.

(CO2) [Knowledge]

3. How many number of channels are present in
a. Binary image
b. Grayscale image
c. Color image

(CO1) [Knowledge]

4. In an magnetic spectrum which has light rays has heighest wave length and high frequency.

(CO2) [Knowledge]

5. Define Robot and who coined the term Robot.

(CO1) [Knowledge]

PART B

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

6. Explain about Arm type robot Visual Servoing and applications of Visual Servoing in Arm Type robot.

(CO4) [Comprehension]

7. Robot took an image from the camera mounted on its head due to defect in its camera sensors some random pixels values changed to 0 and 255 instead of true intensity. What is the noise that got intriduced in the image provide your solution to recover the original image.

(CO2) [Comprehension]

8. Explain about Gabor filter and why its is used in robotic vision explain with related eqautions.

(CO5) [Comprehension]

9. With Neat diagram explain what is quantization and sampling.

(CO1) [Comprehension]

10. Differantiate between Miss Hit and Fit operations in mathematical morphology with an example.

(CO2) [Comprehension]

PART C

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

11. Explain the region splitting and merge segmentation in image processing and segment the following given image with Threshold=3.

6	5	6	6	7	7	6	6
6	7	6	7	5	5	4	7
6	6	4	4	3	2	5	6
5	4	5	4	2	3	4	6
0	3	2	3	3	2	4	7
0	0	0	0	2	2	5	6
1	1	0	1	0	3	4	4
1	0	1	0	2	3	5	4

(CO5) [Application]

12. A) Eplain RGB color model and HIS color model with their geometrical representation in Cartesian coordinate system.

B). Convert H = 30°and 255°, for S = 0.80, I = 0.70 to RGB.

(CO2) [Application]