Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023

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

Date : 13-APR-2023
Time : 11:30AM - 1:00PM
Max Marks : 50
Weightage : 25%

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 3 = 15M)**

1. What do industrial robots look like?
a) Humanoid with legs and arms (CO1) [Knowledge]
b) A small vacuum cleaner
c) A multi-jointed arm with a fixed base
d) A soft, furry pet

2. A continuous image is digitised at _____ points.
a) Random (CO1) [Knowledge]
b) Sampling
c) Contour
d) Vertex

3. Medical image angiography wich arithmetic operation is used to know blood flow.
a) Substraction operation (CO1) [Knowledge]
b) Multiplication operation
c) Division operation
d) Addition operation

4. Image processing approaches operating directly on pixels of input image work in_____ domain?
a) Frequency domain (CO2) [Knowledge]
b) Inverse Transformation domain
c) Transformation domain
d) Spatial domain

5. 10 cm is the wavelength corresponding to the spectrum of

a) Microwaves (CO2) [Knowledge]

b) X-rays

c) Infrared rays

d) Ultraviolet rays

PART B

ANSWER ALL THE QUESTIONS (4 X 5 = 20M)

6. Explain the process of converting an analog image signal to a digital image with an example.

(CO1) [Comprehension]

7. Explain the pose and derive the orientation and position matrix.

(CO1) [Comprehension]

8. Robot took an image from its camera due to some defect in the camera sensors, some random pixel values in acquired image are changed to 255 instead of true intensity values provide your solution to recover the image.

(CO2) [Comprehension]

9. Describe the Erosion and dilation operations using an example.

(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION (1 X 15 = 15M)

10. Define Histogram of Image. Explain the concept of the Histogram Equalization technique for Image enhancement using the following 5X5 image.

3	3	2	1	5
1	5	4	2	2
4	5	4	5	3
2	2	4	2	2
3	5	3	5	2

(CO2) [Application]