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**Presidency University**

**Bengaluru**

**SCHOOL OF COMPUTER SCIENCE AND ENGINEERING**

**MAKEUP EXAMINATION JULY 2024**

**Semester**: 4

**Course Code**: CSE2048

**Course Name**: Robotic Vision

**Program**: BTech

**Date**:9th July 2024

**Time**: 1:30 PM-4:30PM

**Max Marks**: 100

**Weightage:** 50%

**Instructions:**

1. *Read all the questions carefully and answer accordingly.*

**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries 2 marks. (10Qx 2M=20M)**

1. What are the applications of Multiplication and logical AND, OR operation in image robotic vision? [**2**] (**C.O.2**) [**Knowledge**]
2. Define noise in image, what are the major causes of Noise in image [**2**] (**C.O.3**) [**Knowledge**]
3. What is Image restoration? [**2**] (**C.O.3**) [**Knowledge**]
4. What are the major classifications of spatial domain filters? [**2**] (**C.O.3**) [**Knowledge**]
5. Specify the objectives of image enhancement techniques. [**2**] (**C.O.2**) [**Knowledge**]
6. Define Sampling in Robotic Vision. **[2] (C.O.1) [Knowledge]**
7. Describe image digitization Robotic Vision. [2] (C.O.1) [Knowledge]
8. How many numbers of channels are present in RGB, Binary, Grayscale images**.[ 2] (C.O.1) [Knowledge]**
9. State some applications of Robotic Vision. [2] (**C.O.No.1) [Knowledge]**
10. State the importance of edges in digital images.[2] **(C.O.No.4) [Knowledge]**

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries 5 marks. (4Qx10M=40M)**

1. Which is the most commonly used arithmetic operation which allows the radiologist to more readily see the changes in medical image diagnosis , and also what are other application of this operation other than medical images [**10**] **(C.O.2)** [**Comprehensive**]
2. Sankar took images when he went to Spiti Valley and took some photograph using his mobile phone unfortunately images are corrupted with noise due to low light, Write your solution to reduce the noise with block diagram **[10] (C.O.3)** [**Comprehensive**]
3. Explain key stages in Robotic vision with neat diagram. **[10] (C.O.1) [Comprehensive]**
4. Explain the Erosion and Dilation operation used for Morphological operations. **[10] (CO4) [Comprehensive]**

**Part C [Problem Solving Questions]**

**Answer all the Questions. (2QX20=40M)**

1. Explain the region splitting and merge segmentation in Robotic Vision and segment the following given image with Threshold=3.  **[20](CO4) [Application]**

1 1 5 6

2 1 6 7

3 2 7 4

1 0 5 5

1. Define Histogram of Image. Explain the concept of Histogram Equalization technique for Image enhancement using following 5X5 image [**20**] (**C.O.3**) [**Application**]

