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| **Trimester: Oct - Dec 2022**  **Examination: End term Examination/Supplementary Examination** | | |
| **Program code: 09**  **Program: MCA 2021-23 Batch** | **Class: SY** | **Trimester: V**  **(SVU 2021)** |
| **Name of the Constituent College:**  **K. J. Somaiya Institute of Management** | **Name of the department/Section/Center: DST** | |
| **Course Code: 117P09C502** | **Name of the Course: Computer Vision** | |

**Maximum Marks: 50 Date: 27/12/2022**

**Duration: 3 Hrs**

**Instructions:-**

**1. Question No.1 is Compulsory.**

**2. Attempt any four from Q2 to Q6**

**3. Do not mix up sub questions**

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| **Question No.** |  | **Max.**  **Marks** |
| Q 1 | 1. Explain the various applications of computer vision. 2. Explain the various gradient operators used for edge detection. | (05)  (05) |
| Q2 | 1. Perform Histogram equalization of the following image  |  |  |  |  |  | | --- | --- | --- | --- | --- | | 5 | 5 | 5 | 5 | 5 | | 3 | 5 | 7 | 5 | 3 | | 3 | 7 | 7 | 7 | 3 | | 3 | 5 | 7 | 5 | 3 | | 5 | 5 | 5 | 5 | 5 |   (b) Discuss about the Hough Transform for line and circle with the help of  suitable derivations. | (05)  (05) |
| Q3 | 1. Explain any one algorithm describes feature description and feature matching. 2. In what situations is it useful to apply a smoothing operation to an image? Compare averaging and median filtering as methods of smoothing. What are the advantages and disadvantages of each? | (05)  (05) |
| Q4 | 1. What are the purpose of Intensity Transformation functions? Explain image negatives, log transformations and power law transformations. 2. Define 4, 8 and m-adjacency. Compute the lengths of the shortest 4, 8, and m-path between p and q in the following image segment by considering V= {1, 2}.  |  |  |  |  | | --- | --- | --- | --- | | 5 | 1 | 2 | 1(q) | | 2 | 2 | 3 | 2 | | 1 | 2 | 1 | 1 | | (p)1 | 4 | 1 | 2 | | (05)  (05) |
| Q5 | 1. Compare and contrast Harris corner detection algorithm and FAST corner detection algorithm. 2. Write short note on affine transformation. | (05)  (05) |
| Q6 | 1. Explain various template matching methods. State the applications of template matching in computer vision. 2. Write the various applications of Haar classifiers. | (05)  (05) |