Register No.: …….. Name: ……..

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER M.TECH DEGREE EXAMINATION (R,S),MAY 2024

ROBOTICS AND AUTOMATION

(2021 Scheme)

Course Code: **21RA205-A**

Course Name: **Digital Image Processing and Computer Vision**

Max. Marks: **60** **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Explain Haar transform.
2. Illustrate spatial filtering.
3. Explain quantization in images.
4. Describe histogram.
5. Explain MPEG encoding.
6. Describe model-based edge detection.
7. Explain how thresholding is used in edge detection.
8. Summarize Radon transform.

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

9. Explain Walsh-Hadamard transform. (6)

OR

10. Explain DCT in detail and its applications. (6)

MODULE II

11. Apply 3X3 average filter on the given image, and calculate the resultant image

0	2	4	4
1	2	2	4
1	1	4	6

(6)

OR

12. Explain homomorphic filtering. (6)

MODULE III

13. Illustrate DCT based image compression. (6)

OR

14. Explain in detail how chain encoding works using an example. (6)

MODULE IV

15. Explain Watershed algorithm. (6)

OR

16. Analyze the given image and illustrate the steps needed to restore it. Justify your answer.

(6)

MODULE V

17. Define hit and miss transform and explain how it works with an example. (6)

OR

18. Explain morphological closing in detail (6)

MODULE VI

19. Illustrate Fourier-slice theorem (6)

OR

20. Describe the analysis of texture in images. (6)

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