

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: CS362

Course Name: COMPUTER VISION

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

		Marks
1	Define exitance and radiosity.	3
2	Explain foreshortening. What is its significance?	3
3	Explain binocular fusion in stereo vision.	3
4	Define affine transformation between two affine spaces.	3

PART B

Answer any two full questions, each carries 9 marks.

5	a) Explain how images are formed using perspective projection.	6
	b) Explain thin lens equation.	3
6	a) Explain the process of reconstruction in stereo vision.	6
	b) What is the significance of BRDF.	3
7	a) What is the need for performing camera calibration?	2
	b) Explain linear camera calibration and the camera parameters.	7

PART C

Answer all questions, each carries 3 marks.

8	Explain geometric hashing algorithm.	3
9	Explain the process of verification in model based vision.	3
10	In a Bayesian classifier the conditional densities follow normal distribution and the priors are assumed to be equal and the covariance matrix is statistically independent. What can you say about the decision surface?	3
11	Explain minimum error rate classification in Bayesian decision theory.	3

PART D

Answer any two full questions, each carries 9 marks.

12	a) How can you obtain hypothesis using invariants?	9
13	a) Explain the design cycle in a pattern recognition system.	9
14	a) How is prior probability related to posterior probability? What role do they play in decision making? Explain with an example.	5
	b) What could cause uncorrelated estimates of pose? How can this issue be handled?	4

PART E

Answer any four full questions, each carries 10 marks.

- 15 a) Explain Minimum mean squared error (MME) algorithm based on linear discriminant functions. 5
b) What is the disadvantage of using minimum squared error criterion in clustering? 5
- 16 a) Explain perceptron learning algorithm. 6
b) Can you use perceptron to learn a classifier on non linear data? Justify your answer. 4
- 17 a) Explain the various impurity measures used in decision tree learning. 6
b) What is decision tree pruning? 4
- 18 a) With examples describe supervised and unsupervised learning. 10
- 19 a) Design a neural network structure that can perform recognition of cars and trucks from images. Mention the various steps including preprocessing, feature extraction also. 10
- 20 a) Explain the various proximity measures used in clustering algorithms. 5
b) How can you use gradient descent to modify MME. 5
