

Istanbul Bilgi University
Department of Computer Engineering

SPRING, 2022
Campus: Santral

CMPE 407
MACHINE LEARNING

HW on Bayesian Decision Theory

(Duration: minutes)

Name :

Student ID :

Make sure that you explain in detail all your steps - thoughts. You may get extra points for an appropriate observation, you may lose some marks due to an obscure solution.

1. {100 points} Bayesian Decision Theory is a fundamental statistic approach to the problem of pattern classification. It assumes that the decision problem (classification) is posed in probabilistic terms (find out the most probable class), and all relevant probabilities values are known. Give your own UNIQUE and ORIGINAL example of application:
 - (a) {20 points} Define the problem, the classes and the question to answer
 - (b) {10 points} Fix the prior probability of all classes
 - (c) {30 points} Fix the likelihood or class probability for all classes
 - (d) {40 points} Calculate interesting posterior probability to answer your initial question
