Question Bank (2023-24)

Test 1

Machine Learning

1. What is impurity measure in decision trees? (02)
2. How to measure impurity (decision tree)? (02)
3. Why we should measure impurity in decision trees? (02)
4. What is information gain? How it is useful in selecting decision node? (02)
5. Let's assume we want to play badminton on a particular day — say Saturday — how will you decide whether to play or not. Create decision tree. (Example may be different in Test) (08)

Day	Weather	Temperature	Humidity	Wind	Play?
1	Sunny	Hot	High	Weak	No
2	Cloudy	Hot	High	Weak	Yes
3	Sunny	Mild	Normal	Strong	Yes
4	Cloudy	Mild	High	Strong	Yes
5	Rainy	Mild	High	Strong	No
6	Rainy	Cool	Normal	Strong	No
7	Rainy	Mild	High	Weak	Yes
8	Sunny	Hot	High	Strong	No
9	Cloudy	Hot	Normal	Weak	Yes
10	Rainy	Mild	High	Strong	No

6. What is hyperplane? How will you find model parameters in case of multivariate system? (05)
7. How logistic regression differs from linear regression? When you will use logistic regression? (05)
8. A purely autonomous car to be designed so that it will drive itself on roads. Define this problem as machine learning problem. (05)
9. How will you choose learning experience for a machine learning system? (05)
10. How will you choose target function for a machine learning system? (05)
11. How will you select target function representation for a machine learning system? (05)
12. How will you select algorithm for a machine learning system? (05)
13. What is overfitting? How will you prevent overfitting? (05)
14. What is underfitting? How will you avoid underfitting? (05)
15. Why do we use regression analysis? (02)
16. What is covariance? Why and how we use covariance in linear regression? (05)

17. What is scatter plot? How scatter plot helps us to select appropriate regression method?(05)
18. What is sum of squares of residuals? How will you use SSR to calculate parameters for linear regression? (05)
19. Equation for the Simple Linear Regression Model, Multiple Linear Regression Model and Polynomial Linear Regression Model (05)
20. Define the terms - Bias,variance, underfitting and overfitting (05)
21. Calculate precision and recall for a given class of confusion matrix. (05)
22. Study K-fold Cross Validation, Hold out Cross validation, Leave one Out Cross Validation (05)