Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021

Course Name - –Data Science-MCS
Course Code - MCS401B

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Answer all the questions. Each question carry one mark.

9. 1. Consider a linear-regression model with N = 3 and D = 1 with input-ouput\npairs as follows: y1 = 22, x1 = 1, y2 = 3, x2 = 1, y3 = 3, x3 = 2. What\nis the gradient of mean-square error (MSE) with respect to _1 when _0 = 0 and _1 = 1?

   Mark only one oval.

   - [ ] 2.9
   - [ ] 1.9
   - [ ] 1.6
   - [ ] None of the above

10. 2. K-Means is a

Mark only one oval.

- Clustering algorithm
- Feature Selection Algorithm
- Classification algorithm
- None of these

11. 3. We usually use feature normalization before using the Gaussian kernel in SVM. What is true about feature normalization?\n1. We do feature normalization so that new feature will dominate other\n2. Some times, feature normalization is not feasible in case of categorical variables\n3. Feature normalization always helps when we use Gaussian kernel in SVM

Mark only one oval.

- 1
- 1 and 2
- 1 and 3
- 2 and 3

12. 4. Which of the following is true about the Gradient Boosting trees?\nIn each stage, introduce a new regression tree to compensate the shortcomings of existing model\n\nWe can use gradient decent method for minimize the loss function

Mark only one oval.

- 1
- 2
- 1 and 2
- None of these

13. 5. Which of the following can be considered as an object attribute?

Mark only one oval.

- dimensions
- class
- length
- all of the mentioned

14. 6. Adding more basis functions in a linear model... (pick the most probably option)

Mark only one oval.

- Decreases model bias
- Decreases estimation bias
- Decreases variance
- "Doesn't a_ect bias and variance

15. 7. The cost parameter in the SVM means:

Mark only one oval.

- The number of cross-validations to be made
- The kernel to be used
- The tradeoff between misclassification and simplicity of the model
- None of the above

16. 8. R objects can have attributes, which are like _____ for the object.

Mark only one oval.

- metadata
- features
- expression
- dimensions

17. 9. Which of the following is an example of feature extraction?

Mark only one oval.

- Constructing bag of words vector from an email
- Applying PCA projects to a large high-dimensional data
- Removing stopwords in a sentence
- All of the above

18. 10. R files has an extension _____

Mark only one oval.

- .R
- .RP
- .S
- .c

19. 11. A nearest neighborhood approach is best used

Mark only one oval.

- With large size data set
- When irrelevant attributes are removed from data
- When a generalized model of data is desirable
- When an explanation of what has been found is of primary importance

20. 12. Hierarchical Clustering algorithm terminates when _____ .

Mark only one oval.

- there is only a single cluster left.
- two nearest clusters are merged into the same cluster.
- all the data points assigned to a cluster of their own
- Option 4

21. 13. The action 'STACK(A, B)' of a robot arm specify to _____

Mark only one oval.

- Place block B on Block A
- Place blocks A, B on the table in that order
- Place blocks B, A on the table in that order
- Place block A on block B

22. 14. Which of the following is a reasonable way to select the number of principal components "k"?

Mark only one oval.

- Choose k to be the smallest value so that at least 99% of the varinace is retained.
- Choose k to be 99% of m (k = 0.99*m, rounded to the nearest integer).
- Choose k to be the largest value so that 99% of the variance is retained.
- None of these

23. 15. How many atomic vector types does R have?

Mark only one oval.

- 5
- 6
- 8
- 10

24. 16. A measure of goodness of fit for the estimated regression equation is the

Mark only one oval.

- Multiple coefficient for determination
- Mean square due to error
- Mean square due to regression
- None of these

25. 17. Gradient of a continuous and differentiable function

Mark only one oval.

- s zero at a minimum
- is zero at a saddle point
- decreases as you get closer to the minimum
- All the above

26. 18. Suppose you are using SVM with linear kernel of polynomial degree 2. think that you increase the complexity(or degree of polynomial of this kernel). What would you think will happen?

Mark only one oval.

- Increasing the complexity will overfit the data
- Increasing the complexity will underfit the data
- Nothing will happen since your model was already 100% accurate
- None of these

27. 19. What is Recall in confusion Matrix?

Mark only one oval.

- The ratio of the total number of negatively classified positive examples divide to the total number of positive examples
- The ratio of the total number of correctly classified Negative examples divide to the total number of positive examples.
- The ratio of the total number of correctly classified positive examples divide to the total number of positive examples.
- None of these

28. 20. What is the length of b? b <- c(TRUE, TRUE, 1)

Mark only one oval.

- 4
- 5
- 6
- 0

29. 21. Different learning methods does not include?

Mark only one oval.

- Memorization
- Analogy
- Deduction
- Introduction

30. 22.LOOCV is

Mark only one oval.

- Leave of one cross-validation
- Leave out one cross-validation
- Leave one out cross-validation
- None of these

31. 23. What is a top-down parser?

Mark only one oval.

- Begins by hypothesizing a sentence (the symbol S) and successively predicting lower level constituents until individual preterminal symbols are written
- Begins by hypothesizing a sentence (the symbol S) and successively predicting upper level constituents until individual preterminal symbols are written
- Begins by hypothesizing lower level constituents and successively predicting a sentence (the symbol S)
- Begins by hypothesizing upper level constituents and successively predicting a sentence (the symbol S)

32. 24.What will be the output of the following R code? x <- c(3, 7, NA, 4, 7) y <- c(5, NA, 1, 2, 2) x + y

Mark only one oval.

- Symbol
- Missing Data
- 5
- 15.5

33. 25. Branch of statistics which deals with development of particular statistical methods is classified as

Mark only one oval.

- industry statistics
- economic statistics
- applied statistics
- mathematical statistics

34. 26. Data used to optimize the parameter settings of a supervised learner model.

Mark only one oval.

- training
- testing
- validation
- verification

35. 27. Let us say that we have computed the gradient of our cost function and\nstored it in a vector g. What is the cost of one gradient descent updategiven the gradient?

Mark only one oval.

- O(D)
- O(N)
- O(ND)
- O(ND2)

36. 28.What do you mean by a hard margin?

Mark only one oval.

- The SVM allows very low error in classification
- The SVM allows high amount of error in classification
- All of the above
- None of the above

37. 29. Which of the following is/are true about bagging trees?\nIn bagging trees, individual trees are independent of each other\n\nBagging is the method for improving the performance by aggregating the results of weak learners

Mark only one oval.

- 1
- 2
- 1 and 2
- None of these

38. 30. Which of these measures are used to analyze the central tendency of data?

Mark only one oval.

- Mean and Normal Distribution
- Mean, Median and Mode
- Mode, Alpha & Range
- Standard Deviation, Range and Mean

39. 31. Association analysis deals with

Mark only one oval.

- Finding group of objects
- Feature Selection
- Common sequence of objects
- None of these

40. 32. K-fold cross-validation is

Mark only one oval.

- linear in K
- quadratic in K
- cubic in K
- None of these

41. 33.The effectiveness of an SVM depends upon:

Mark only one oval.

- Selection of Kernel
- Kernel Parameters
- Soft Margin Parameter C
- All of the above

42. 34. Which of the following is characteristic of best machine learning method ?

Mark only one oval.

- Fast
- Accuracy
- Scalable
- All of the Mentioned

43. 35. Point out the correct statement?

Mark only one oval.

- The value NaN represents undefined value
- Number Inf represents infinity in R
- NaN can also be thought of as a missing value
- “raw” objects are commonly used directly in data analysis

44. 36. A two-layered neural network used for unsupervised clustering

Mark only one oval.

- back propagation network
- Kohonen network
- perceptron network
- None of these

45. 37. In soft clustering,

Mark only one oval.

- each data point either belongs to a cluster completely or not
- a probability or likelihood of that data point to be in those clusters is assigned
- Both each data point either belongs to a cluster completely or not and a probability or likelihood of that data point to be in those clusters is assigned
- None of these

46. 38. The advantage of Grid search is (are),

Mark only one oval.

- It can be applied to non-di_erentiable functions.
- It can be applied to non-continuous functions.
- It is easy to implement.
- All these

47. 39. Which of the following is a widely used and effective machine learning algorithm based on the idea of bagging?

Mark only one oval.

- Decision Tree
- Regression
- Classification
- Random Forest

48. 40. What is the function to set row names for a data frame?

Mark only one oval.

- row.names()
- colnames()
- col.names()
- column name cannot be set for a data frame

49. 41. A moModel of language consists of the categories which does not include?

Mark only one oval.

- Language units
- Role structure of units
- System constraints
- Structural units

50. 42. Grid search is,

Mark only one oval.

- Linear in D.
- Polynomial in D.
- Exponential in N.
- Linear in N.

51. 43.Suppose you gave the correct answer in previous question. What do you think that is actually happening?\n1. We are lowering the bias\n2. We are lowering the variance\n3. We are increasing the bias\n4. We are increasing the variance

Mark only one oval.

- 1 and 2
- 2 and 3
- 1 and 4
- 2 and 4

52. 44. What is/are true about kernel in SVM?\n1. Kernel function map low dimensional data to high dimensional space\n2. It's a similarity function

Mark only one oval.

- 1
- 2
- 1 and 2
- None of these

53. 45. What is the mode of b in the following R code? b <- c(TRUE, TRUE, 1)

Mark only one oval.

- Numeric
- Character
- Integer
- Logical

54. 46. Dimensionality Reduction deals with

Mark only one oval.

- Projection
- Feature Selection
- Feature Extraction
- None of these

55. 47. Suppose you are dealing with 4 class classification problem and you want to train a SVM model on the data for that you are using One-vs-all methoSuppose you have same distribution of classes in the datNow, say for training 1 time in one vs all setting the SVM is taking 10 seconHow many seconds would it require to train one-vs-all method end to end?

Mark only one oval.

- 20
- 40
- 60
- 80

56. 48. What is F- Measures in Confusion Matrix?

Mark only one oval.

- Measurement that taken account of mean of Precision and Recall
- Measurement that taken account of summation of Precision and Recall
- Measurement that taken account of both Precision and Recall
- None of these

57. 49. R language is a dialect of which of the following languages?

Mark only one oval.

- S
- C
- MATLAB
- SAS

58. 50. Model which consists of management philosophy, behavioral tools and statistical methods as key steps towards improvement is considered as

Mark only one oval.

- serial improvement process model
- behavioral improvement process model
- quality improvement process model
- statistics improvement process model

59. 51.DBSCAN and OPTICS are example of which model?

Mark only one oval.

- Connectivity models
- Centroid models
- Distribution models
- Density Models

60. 52. Like the probabilistic view, the _____ view allows us to associate a probability of membership with each classification

Mark only one oval.

- Exemplar
- Deductive
- Classical
- Inductive

61. 53. What do you mean by generalization error in terms of the SVM?

Mark only one oval.

- How far the hyperplane is from the support vectors
- How accurately the SVM can predict outcomes for unseen data
- The threshold amount of error in an SVM
- None of the above

62. 54. Which of the following is/are true about boosting trees?\nIn boosting trees, individual weak learners are independent of each other\n\nIt is the method for improving the performance by aggregating the results of weak learners

Mark only one oval.

- 1
- 2
- 1 and 2
- None of these

63. 55. Which of the following measures of central tendency will always change if a single value in the data changes?

Mark only one oval.

- Mean
- Median
- Mode
- All of these

64. 56. Bootstrap Method is

Mark only one oval.

- method of cross validation
- method of validation
- classifier performance measure
- None of these

65. 57. K-Means clustering algorithm is example of which model?

Mark only one oval.

- Connectivity models
- Centroid models
- Distribution models
- None of these

66. 58.Variance is

Mark only one oval.

- Sample mean of the squared deviations from the arithmetic mean
- Arithmetic mean of the squared deviations from the sample mean
- Sample mean of the squared deviations from the sample mean
- None of these

67. 59. Which of the following is true about “max_depth” hyperparameter in Gradient Boosting?\nLower is better parameter in case of same validation accuracy\n\nHigher is better parameter in case of same validation accuracy\n\nIncrease the value of max_depth may overfit the data\n\nIncrease the value of max_depth may underfit the data

Mark only one oval.

- 1 and 3
- 1 and 4
- 2 and 3
- 2 and 4

68. 60. R objects can have attributes, which are like _____ for the object.

Mark only one oval.

- metadata
- features
- expression
- dimensions