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

Course Name - –Machine Learning
Course Code - BCSE605C

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Answer all the questions. Each question carry one mark.

9. 1. The process of forming general concept definitions from examples of concepts to be learned is _____

Mark only one oval.

- [ ] Deduction
- [ ] Abduction
- [ ] Induction
- [ ] Conjunction

10. 2. Which data is used to build a data mining model ?

Mark only one oval.

- Validation data
- Test data
- Training data
- Hidden data

11. 3. Supervised learning differs from unsupervised clustering in that supervised learning requires

Mark only one oval.

- at least one input attribute
- input attributes to be categorical
- at least one output attribute
- output attributes to be categorical.

12. 4. ANN stands for

Mark only one oval.

- artificial neural network
- AND neural network
- artificial network
- None of these

13. 5. Unsupervised Learning uses

Mark only one oval.

- labeled dataset
- unlabeled dataset
- both a and b
- none of these

14. 6. Classification uses which type of output variable

Mark only one oval.

- categorical
- continuous
- both a and b
- none of these

15. 7. The total delta measures the total absolute change in network connection weights for each pass of the training data through a neural network. This value is most often used to determine the convergence of a

Mark only one oval.

- perceptron network
- feed-forward network
- back propagation network
- self-organizing network

16. 8. What is Machine learning?

Mark only one oval.

- ◯ The autonomous acquisition of knowledge through the use of computer programs
- ◯ The autonomous acquisition of knowledge through the use of manual programs
- ◯ The selective acquisition of knowledge through the use of computer programs
- ◯ The selective acquisition of knowledge through the use of manual programs

17. 9. In building a linear regression model for a particular data set, you observe the coefficient of one of the features having a relatively high negative value. This suggests that

Mark only one oval.

- ◯ This feature has a strong effect on the model (should be retained)
- ◯ This feature does not have a strong effect on the model (should be ignored)
- ◯ It is not possible to comment on the importance of this feature without additional information
- ◯ Nothing can be determined

18. 10. The model obtained by applying linear regression on the identified subset of features may differ from the model obtained at the end of the process of identifying the subset during

Mark only one oval.

- ◯ Forward stepwise selection
- ◯ Best-subset selection
- ◯ Forward stage wise selection
- ◯ All of these

19. 11. When you trained a binary classifier model which gives very high accuracy on the training data, but much lower accuracy on validation dat Which of the following may be true?

Mark only one oval.

- This is an instance of overfitting
- The training was not well regularized
- The training and testing examples are sampled from different distributions
- All of these

20. 12. Which is method of cross validation?

Mark only one oval.

- K Fold
- Precision
- Recall
- ROC curves

21. 13. Classifier performance can be measured by

Mark only one oval.

- K Fold
- Precision
- Stratified cross-validation
- LOOCV

22. 14. Precision is

Mark only one oval.

- ◯ how many of the positives does the model return
- ◯ how many of the returned documents are correct
- ◯ both a and b
- ◯ none of these

23. 15. Mutual information is

Mark only one oval.

- ◯ Entropy
- ◯ Information gain
- ◯ Association
- ◯ clustering

24. 16.In Bayes Theorem, P(A | B)= { P(B | A) * P(A) } / P(B), where P(B | A) is:

Mark only one oval.

- ◯ The probability of event A (hypothesis) occurring given that B (evidence) has occurre
- ◯ The probability of the event B (evidence) occurring given that A (hypothesis) has occurre
- ◯ The probability of event B (hypothesis) occurring.
- ◯ The probability of event A (evidence) occurring.

25. 17. Bootstrap Method is

Mark only one oval.

- method of cross validation
- resampling technique
- classifier performance measure
- none of these

26. 18. Independent Variable in Regression analysis is known as

Mark only one oval.

- target variable
- predictor
- Outliers
- Multicollinearity

27. 19. If an algorithm works well with the training dataset but not well with test dataset, then such problem is called

Mark only one oval.

- Multicollinearity
- Overfitting
- under fitting
- Outlier

28. 20. In linear regression , the mathematical expression used is

Mark only one oval.

- Y= aX + b
- F(x)=1/ (1+ e -x)
- Y= b0+b1x+ b2x2+ b3x3+.....+ bnxn
- None of these

29. 21. A regression model in which more than one independent variable is used to predict the dependent variable is called

Mark only one oval.

- an independent mode
- multiple regression models
- none of these
- simple linear regression model

30. 22. Logistic regression is a _____ regression technique that is used to model data having a _____outcome.

Mark only one oval.

- linear, numeric
- linear, binary
- nonlinear, numeric
- nonlinear, binary

31. 23. In the simple linear regression equation, the term b0 represents the

Mark only one oval.

- estimated or predicted response
- estimated intercept
- estimated slope
- explanatory variable

32. 24. 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

33. 25. K-fold cross-validation is

Mark only one oval.

- linear in K
- quadratic in K
- cubic in K
- exponential in K

34. 26.As the number of training examples goes to infinity, your model trained on that data will have:

Mark only one oval.

- Lower variance
- Higher variance
- Same variance
- None of these

35. 27.Whih of the following guidelines is appliable to initialization of the weight vetor in a fully onneted neural network

Mark only one oval.

- Should not set it to zero sine otherwise it will ause overfitting
- Should not set it to zero sine otherwise (stohasti) gradient desent will explore a very small spae
- Should set it to zero sine otherwise it auses a bias
- Should set it to zero in order to preserve symmetry aross all neurons

36. 28.The K-means algorithm:

Mark only one oval.

- O(1)
- O(log N)
- O(N)
- O(N* 2)

37. 29. Computational complexity of Gradient descent is,

Mark only one oval.

- linear in D
- linear in N
- dependent on the number of iterations
- polynomial in D

38. 30. Which of the following is true about Naive Bayes?

Mark only one oval.

- Assumes that all the features in a dataset are equally important
- Assumes that all the features in a dataset are independent
- All of these
- None of these

39. 31. Which of the following statements about regularization is not correct?

Mark only one oval.

- Using too large a value of lambda can cause your hypothesis to underfit the data
- Using too large a value of lambda can cause your hypothesis to overfit the data
- Using a very large value of lambda cannot hurt the performance of your hypothesis
- None of these

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

Mark only one oval.

- 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
- Choose k to be the smallest value so that at least 99% of the varinace is retained
- Use the elbow method

41. 33. The most widely used metrics and tools to assess a classification model are:

Mark only one oval.

- Confusion matrix
- Cost-sensitive accuracy
- Area under the ROC curve
- All of the these

42. 34. Which of the following is a disadvantage of decision trees?

Mark only one oval.

- Factor analysis
- Decision trees are robust to outliers
- Decision trees are prone to be overfit
- None of these

43. 35.Which of the following are the spatial clustering algorithms?

Mark only one oval.

- Partitioning based clustering
- K-means clustering
- Grid based clustering
- All of these

44. 36. Which of the following tasks can be best solved using Clustering?

Mark only one oval.

- Detecting fraudulent credit card transactions
- Predicting the amount of rainfall based on various cues
- Training a robot to solve a maze
- All of these

45. 37. A machine learning problem involves four attributes plus a class. The attributes have 3, 2, 2, and 2 possible values each. The class has 3 possible values. How many maximum possible different examples are there?

Mark only one oval.

- 12
- 24
- 48
- 72

46. 38. Compared to the variance of the Maximum Likelihood Estimate (MLE), the variance of the Maximum A Posteriori (MAP) estimate is _____ .

Mark only one oval.

- ◯ higher
- ◯ same
- ◯ lower
- ◯ none of the above

47. 39. Suppose we would like to perform clustering on spatial data such as the geometrical locations of houses. We wish to produce clusters of many different sizes and shapes. Which of the following methods is the most appropriate?

Mark only one oval.

- ◯ Decision Trees
- ◯ Density-based clustering
- ◯ Model-based clustering
- ◯ K-means clustering

48. 40. The average positive difference between computed and desired outcome values.

Mark only one oval.

- ◯ root mean squared error
- ◯ mean squared error
- ◯ mean absolute error
- ◯ Data used to optimize the parameter settings of a supervised learner model

49. 41. A feed-forward neural network is said to be fully connected when

Mark only one oval.

- all nodes are connected to each other
- all nodes at the same layer are connected to each other
- all nodes at one layer are connected to all nodes in the next higher layer
- all hidden layer nodes are connected to all output layer nodes

50. 42.How can you prevent a clustering algorithm from getting stuck in bad local optima?

Mark only one oval.

- Set the same seed value for each run
- Use multiple random initializations
- Set different seed value for each run
- None of the above

51. 43. Epochs represent the total number of

Mark only one oval.

- input layer nodes
- passes of the training data through the network
- network nodes
- passes of the test data through the network

52. 44. 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

53. 45 .TThe 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 these

54. 46. Association rule support is defined as

Mark only one oval.

- the percentage of instances that contain the antecedent conditional items listed in the association rule
- the percentage of instances that contain the consequent conditions listed in the association rule
- the percentage of instances that contain all items listed in the association rule
- the percentage of instances in the database that contain at least one of the antecedent conditional items listed in the association rule

55. 47. The SVM's are less effective when:

Mark only one oval.

- The data is linearly separable
- The data is clean and ready to use
- The data is noisy and contains overlapping points
- None of the above

56. 48. When performing regression or classification, which of the following is the correct way to preprocess the data?

Mark only one oval.

- Normalize the data → PCA → training
- PCA → normalize PCA output → training
- Normalize the data → PCA → normalize PCA output → training
- None of the above

57. 49.Information gain is

Mark only one oval.

- measure of the amount of uncertainty or randomness in data
- measures the relative change in entropy with respect to the independent variables
- measure of error
- None of these

58. 50.The tree can be explained by two entities, namely decision nodes and leaves where the leaves are

Mark only one oval.

- decisions or the final outcomes
- points where the data is split.
- Both a and b
- None of these

59. 51. What are the issues on which biological networks proves to be superior than Al networks?

Mark only one oval.

- flexibility
- robustness & fault tolerance
- collective computation
- all of these

60. 52.Perceptron was introduced by

Mark only one oval.

- Rosenblatt
- Alan Turing
- John McCarthy
- John Holland

61. 53. Sigmoid Activation function is

Mark only one oval.

- f(x) = 1 / 1 + exp(-x)
- f(x) = 1 — exp(-2x) / 1 + exp(-2x).
- R(x) = max(0,x)
- None of these

62. 54. For what purpose Feedback neural networks are primarily used?

Mark only one oval.

- classification
- feature mapping
- pattern mapping
- none of these

63. 55. For a neural network, which one of these structural assumptions is the one that most affects the trade-off between underfitting (i.e. a high bias model) and overfitting (i.e. a high variance model):

Mark only one oval.

- The number of hidden nodes
- The learning rate
- The initial choice of weights
- The use of a constant-term unit input

64. 56. You've just finished training a decision tree for spam classification, and it is getting abnormally bad performance on both your training and test sets. You know that your implementation has no bugs, so what could be causing the problem?

Mark only one oval.

- ◯ You need to increase the learning rate
- ◯ Your decision trees are too shallow
- ◯ You are overfitting
- ◯ None of the above

65. 57.Which algorithm is used for solving temporal probabilistic reasoning?

Mark only one oval.

- ◯ Hill-climbing search
- ◯ Hidden markov model
- ◯ Depth-first search
- ◯ Breadth-first search

66. 58. When the number of input features is 2, the hyper plane is a _____ .

Mark only one oval.

- ◯ two-dimensional plane
- ◯ line
- ◯ circle
- ◯ none of these

67. 59. Basic problem(s) of HMM are

Mark only one oval.

- Evaluation
- Decoding
- Learning
- All of these

68. 60. What is Bagging?

Mark only one oval.

- Building multiple models (typically of the same type) from different subsamples of the training dataset.
- Building multiple models (typically of the same type) each of which learns to fix the prediction errors of a prior model in the chain
- Building multiple models (typically of differing types) and simple statistics (like calculating the mean) are used to combine predictions
- None of these

69. 61. Boosting is used in which method?

Mark only one oval.

- Random subspace
- Gradient Descent
- Blending
- All of these

70. 62. Bagging is suitable for

Mark only one oval.

- low variance low bias models
- high variance high bias models
- low variance high bias models
- high variance low bias models

71. 63. Boosting is suitable for

Mark only one oval.

- low variance high bias models
- high variance high bias models
- low variance low bias models
- high variance low bias models

72. 64.Which of the following is/are true regarding an SVM ?

Mark only one oval.

- For two dimensional data points, the separating hyperplane learnt by a linear SVM will be a straight line
- In theory, a Gaussian kernel SVM cannot model any complex separating hyperplane
- For every kernel function used in a SVM, one can obtain an equivalent closed form basis expansion
- Overfitting in an SVM is not a function of number of support vectors

73. 65. Which among the following prevents overfitting when we perform bagging?

Mark only one oval.

- The use of sampling with replacement as the sampling technique
- The use of weak classifiers
- The use of classification algorithms which are not prone to overfitting
- The practice of validation performed on every classifier trained

74. 66. In decoding problem of HMM deals with

Mark only one oval.

- What is probability that observations are generated by model
- What is most likely state sequence in model that produced the observations
- How to adjust model parameters to maximize
- None of these

75. 67. Which is(are) a type of clustering model?

Mark only one oval.

- Connectivity models
- Centroid models
- Distribution models
- All of these

76. 68.Expectation-maximization algorithm is example of which model?

Mark only one oval.

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

77. 69.In K Means Clustering algorithm, K denotes

Mark only one oval.

- Number of association
- Number of regression
- Number of cluster
- None of these

78. 70. 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
- None of these.