

## REVISION SHEET

### *Course: Artificial Intelligence for real World Applications*

1. The idea of Artificial Intelligence is to make a machine intelligent.
2. John McCarthy, a Professor at the Stanford University coined the word 'artificial intelligence' in 1956 at a conference held at Dartmouth college.
3. A.M. Turing developed a technique for determining whether a computer could or could not demonstrate the Artificial Intelligence. This technique is called Turing Test.
4. Weak AI is the study of mental faculties through the use of mental models implemented on a computer.
5. Strong AI is the embodiment of human intellectual capabilities within a computer
6. The different types of an intelligent agents include:
  - a. Simple Reflex Agent
  - b. Model Based Agent
  - c. Goal based Agent
7. Content Mining is not an application of AI.
8. Sigmoid function, Tanh function and Rectified linear Unit (ReLU) are all different types of activation function in a neural network.
9. Stochastic gradient decent method is used in batch learning.
10. Decision trees are used to make decisions based on parameters. They are typically used for classification.
11. Entropy, also known as disorder, is an unseen element in the system that is random and unpredictable.
12. A perceptron network has 2 input and 1 output.
13. Advantages of Breadth-first search:
  - a. Does not get trapped in blind alley
  - b. Takes less time
  - c. Memory requirement is less
  - d. Finds best solution
14. Examples of Constraint Satisfaction problem are:
  - a. Sudoku
  - b. 4-queen problem
  - c. Monkey and banana
15. Water jug problem is a good example of heuristics.
16. A heuristic function is a function that maps from problem state descriptions to measure desirability.
17. Best first search is OR graph.
18. Admissibility of A\* algorithm states that if the heuristic function never overestimates the actual cost to get to the goal, A\* is guaranteed to return a least-cost path from start to goal.
19. A horn clause is a clause that has at most one positive literal.
20. WFF stands for Well-Formed Formulas.
21. Resolution produces proofs by refutation.
22. A Bayesian network is dependent on conditional dependencies.
23. Bayesian optimization is carried out using gaussian process.
24. The transposition rule states that if  $a \sqcup b$  then we infer that  $\sim a \sqcup \sim b$ .
25. Machine learning is defined as the autonomous acquisition of knowledge through the use of computer programs.
26. The different types of learning include:
  - a. Rote learning
  - b. Inductive learning

- c. Machine learning
- 27. Clustering technique is putting data into unknown classes – based on similarity.
- 28. The goals of clustering are:
  - a. minimize within cluster variation
  - b. maximize between cluster variation
- 29. Characteristics of Random Forest:
  - a. Grouping of tree-structured decision classifiers
  - b. Each tree is grown with a random vector and each node splitting is based on random selection – factors are independent and uniquely distributed.
- 30. The information gain is defined as how much entropy will be gained from splitting an attribute.
- 31. K-NN algorithm is a non-parametric approach to classification so number of parameters are not fixed in advance.
- 32. K-NN algorithm can be used to solve the following types of problem:
  - a. Classification problem
  - b. Estimation problem
  - c. Prediction problem
- 33. Characteristics of Linear Regression:
  - a. It is function-fitting using data.
  - b. Line of best fit through a set of points.
  - c. Linear equation for numeric values or real numbers.
  - d. To predict the outcome or target variable.
- 34. RNN stands for Recurrent neural network.
- 35. The order of executing a deep learning algorithm is:
  - a. Corpus
  - b. Feature selection algorithm
  - c. Classification algorithm
  - d. Classifier
- 36. Back propagation is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.
- 37. Pandas are used to create a dataframe.
- 38. Max pooling operation selects the maximum element from the region of the feature map covered by the filter.
- 39. Applications of Natural Language Processing:
  - a. Semantic meaning of text
  - b. Sentiment Analysis
  - c. Grammatical Structure
- 40. Trending data patterns indicate:
  - a. Increasing trend
  - b. Decreasing trend
  - c. Reversing trend
- 41. Different methods for making a time series stationary:
  - a. Transformation
  - b. De-seasonalize
  - c. De-trend
  - d. Differencing
- 42. Characteristics of non-stationary data:
  - a. Unpredictable behaviour
  - b. Spurious and inconsistent results
  - c. Descriptive statistics rendered useless
- 43. In Moving Average (MA) 'q' is calculated from the autocorrelation function plot.
- 44. TensorFlow has the following core concepts:
  - a. Constants
  - b. Variables

c. sessions

45. The placeholders in TensorFlow are the variables which will be assigned data to at a later stage.
46. feed\_dict is the argument used to feed values to placeholders.
47. The main application of CNN is signal and image processing.
48. The main purpose of pooling CNN is to reduce the dimensions of the feature maps.
49. Characteristics of Tensors:
  - a. Multi-dimensional
  - b. Compatible with NumPy arrays
  - c. Can be executed in a distributed manner on CPUs and GPUs.
50. Tensors are nothing but computational graphs.
51. Keras is designed to enable fast experimentation with deep neural networks.
52. The Logistic Regression outcome is binary in nature.
53. Agglomerative clustering is best represented by Dendrogram.
54. In K-means clustering analysis, the clusters are non-overlapping.