Sample Questions

Information Technology

Subject Name: AI&DS **Semester: VI**

Multiple Choice Questions

	Choose the correct option for following questions. All the Questions carry equal marks
1.	In many problems the path to goal is irrelevant, this class of problems can be solved using
Option A:	Informed Search Techniques
Option B:	Uninformed Search Techniques
Option C:	Local Search Techniques
Option D:	Informed & Uninformed Search Techniques
2.	What are the main cons of hill-climbing search?
Option A:	Terminates at local optimum & Does not find optimum solution
Option B:	Terminates at global optimum & Does not find optimum solution
Option C:	Does not find optimum solution & Fail to find a solution
Option D:	Fail to find a solution
3.	Which algorithm keeps track of k states rather than just one?
Option A:	Local Beam search
Option B:	Hill-Climbing search
Option C:	Stochastic hill-climbing search
Option D:	Random restart hill-climbing search
4.	Consider a problem of preparing a schedule for a class of student. What type of problem is this?
Option A:	Search Problem
Option B:	Backtrack Problem
Option C:	CSP
Option D:	Planning Problem
5.	Which statistical tool should be used to test the equality of 3 or more population means?
Option A:	ANOVA
Option B:	T-test
Option C:	Chi-square test
Option D:	Interval Estimation
6.	What is the other name of the backward state-space search?
Option A:	Regression planning
Option B:	Progression planning
Option C:	State planning

Option D:	Test planning
7.	Which is the list of potential sources of data in Big Data Ecosystem
Option A:	Data Devices, Data Collectors, Data Aggregators, Data Users and Buyers
Option B:	Only data aggregators and Data Collectors
Option C:	Data Aggregators and Data Users
Option D:	Databases , Departmental Data warehouse, Enterprise Data warehouse
8.	Which is not a property of representation of knowledge?
Option A:	Representational Verification
Option B:	Representational Adequacy
Option C:	Inferential Adequacy
Option D:	Inferential Efficiency
9.	Which of the following is not the style of inference?
Option A:	Forward Chaining
Option B:	Modus Ponen
Option C:	Backward Chaining
Option D:	Resolution Refutation
10.	What is Artificial intelligence?
Option A:	Playing a Game
Option B:	Making a Machine intelligent
Option C:	Putting your intelligence into Computer
Option D:	Programming with your own intelligence
11.	Which search method takes less memory?
Option A:	Depth-First Search
Option B:	Breadth-First search
Option C:	Optimal search
Option D:	Linear Search
12.	How many types of agents are there in artificial intelligence?
Option A:	3
Option B:	4
Option C:	1
Option D:	2
13.	Which agent deals with happy and unhappy states?
Option A:	Simple reflex agent
Option B:	Model based agent
Option C:	Learning agent
Option D:	Utility based agent
14.	The action of the Simple reflex agent completely depends upon _____
Option A:	Perception history
Option B:	Current perception
Option C:	Learning theory

Option D:	Utility functions
15.	Which were built in such a way that humans had to supply the inputs and interpret the outputs?
Option A:	AI system
Option B:	Agents
Option C:	Sensor
Option D:	Actuators
16.	Which of the following is performed by the Data Scientist ?
Option A:	Define the question
Option B:	Create reproducible code
Option C:	Challenge results
Option D:	All of the above mentioned
17.	Which of the following is the most important language for Data Scince
Option A:	Java
Option B:	Ruby
Option C:	R
Option D:	None of the mentioned
18.	Which of the following is not a part of data science process?
Option A:	Discovery
Option B:	Model Planning
Option C:	Communication Building
Option D:	Operationalize
19.	Data can be catwgorized into -------groups.
Option A:	1
Option B:	2
Option C:	3
Option D:	4
20.	What is functions of Unsupervised Learning?
Option A:	Find clusters of data
Option B:	Classification
Option C:	Predict time series
Option D:	Regression

Descriptive Questions

10 marks each
1.What is AI? Considering the COVID-19 pandemic situation, how AI helped to survive and renovated our way of life with different applications?
2. 1.Convert the following to predicates: a. Anita travels by Car if available otherwise travels by bus. b. Bus goes via Andheri and Goregaon. c. Car has puncture so is not available. 2.Will Anita travel via Goregaon? Use forward reasoning.
3. Explain Hill climbing and its drawbacks in detail. also state limitations of steepest-ascent hill climbing.
4. How AI technique is used to solve 8 puzzle problem?
5. Explain Min max and Alpha beta pruning algorithms for adversarial search with example.
6. Differentiate Informed search and Uninformed search.
7. explain WUMPUS world environment giving its PEAS description. Explain how percept sequence is generated?
8. Consider the following axioms: All people who are graduating are happy. All happy people are smiling. Someone is graduating. Explain the following: 1. Represent these axioms in first order predicate logic. 2. Convert each formula to clause form. 3. Prove that "Is someone smiling?" using resolution technique. Draw the resolution tree.
9. Write short note on: 1.Logistic regression. 2.Issues in Decision Tree.
10. Apply K-means algorithm on given data for k=3. Use c1(2) ,c2(16) and c3(38) As initial cluster centres. Data : 2,4,6,3,31,12,15,16,38,35,14,21,23,25,30
11. Explain the steps of developing Machine Learning application,
12.What do you mean by EDA ? Explain different categorizations of EDA. For each type of EDA explain 1 technique that belongs to it in detail.
13. In detail, explain steps in the Data Science Project.
14. What do you mean by covariance and correlation ? Explain what the range of coefficients of correlation and covariance suggest. Calculate COV(Age, Strength) and CORR(Age, Strength) for following data. How do you interpret these values? (Some data set will be given to solve above problem)
15. Consider you are performing ML for predicting housing prices you have trained 4 models and following data summarises the predicted house price by each model for 3 different trial runs. (Some data set will be given to perform ANOVA F Test) Perform One way ANOVA F Test on this data and comment on whether the mean house price predicted by models A, B, C are same with level of significance 0.05. (Use of F Table is

allowed)

5 marks each
1.Explain the architecture of a knowledge based agent.
2. What is PEAS descriptor? Give PEAS descriptor for Taxi Driver or medical diagnosis system.
3. Solve following crypto-Arithmetic problem SEND+MORE=MONEY
4. Differentiate Model based and Utility based Agent.
5. What is heuristic function?
6. Explain A* Algorithm with an example.
7. Differentiate propositional logic and Predicate logic
8.Explain forward chaining and backward chaining algorithm with the help of example.
9.Explain Modus ponen with suitable example.
10. Define Machine learning and explain with example importance of Machine learning. Also explain task of Machine learning
11. What are main types of Machine Learning.
12. What are key terminologies of support Vector Machine(SVM)?
13.What are different roles in a Data science project?
14.Explain various measures of the central tendencies of distribution.
15. Write comparison between Business Intelligence and Data Science