



O.S.D.A.V. Public School, Kaithal
Half Yearly (2024-25)
Subject : Artificial Intelligence
Class : X

SET - A

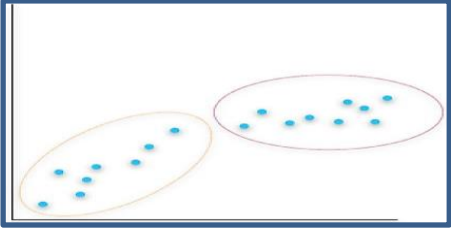
Time:-2 hrs.

M.M.:- 50

General Instructions:

Question paper comprises of six sections A,B,C and D .There are 38 questions in the question paper.
All questions are compulsory.

Q.	Section A	Marks
1.	Machine Learning is a. Machine learning is the study of computer algorithms that improve automatically through experience. b. Refers to any technique that enables computers to mimic human intelligence. c. Machine learning refers to computer systems (both machines and software) enables machines to perform tasks for which it is programmed. d. Machine Learning refers to projects that allow the machine to work on a particular logic.	1
2.	It involves writing a software robot that can automatically collect data from various web pages. Sophisticated bots use AI to find the appropriate data on a page and copy it to the appropriate data field to be processed by an analytics application. It extracts data from : a. Cameras b. Sensors c. Surveys d. Web Scraping	1
3.	Smita is working on a project that involves over a lakh of records. Which of the following should she use to make the best project? (a) Traditional programming (c) IoT (b) Manual processing (d) Neural network	1
4.	Ms. Ruby is intelligent in performing calculations and logical reasoning. This ability refers to: a. Linguistic Intelligence b. Spatial Visual Intelligence c. Mathematical Intelligence d. Existential Intelligence	1
5	Vipul only enjoys music as a whole but he is able to recognize the different patterns of music, like the rhythm and the bass. He is able to use this keen sense of music and composes music pieces and songs. Which of the following intelligence does he have? a. Linguistic b. Musical c. Non-Linguistic d. Logical	1
6	AI includes: i) Data Science ii) Natural Language Processing iii) Visual Basic programming iv) Computer Vision a) i, ii and iii only b) i, iii and iv only c) ii, iii and iv only d) i, ii and iv only	1
7	Email filters are one of the most basic and initial applications of a) CV b) Scikit learn c) NLP d) Decision Making	1
8	A machine can also become intelligent if it is trained with___ which helps them achieve their tasks. (a) Data (b) Input (c) Output (d) Processing	1
9	Identify the domain of AI for Text and Images a. Data Science b. Natural Language Processing c. Computer Vision d. Rule Based	1
10	_____ is the fourth stage of AI Project Cycle. a. Problem Scoping b. Evaluation c. Modelling d. Data Acquisition	1
11	----- is the process of dividing the sentence in to tokens. a. Normalization b. Tokenization c. Lemmatization d. Stemming	1
12	CBT stands for _____. (a) Computer Based Therapy (c) Cognitive Behavioral Therapy (b) Combined Based Therapy (d) Computer Basic Therapy	1

13	When People from different _____ background communicate the chances of wrong interpretation of the message. (a) Educational (b) Emotional (c) Cultural (d) Psychological	1
14	The Sustainable Development Goals (SDGs) were launched at the United Nations Sustainable Development Summit in New York in the year 2015, forming the 2030 Agenda for Sustainable Development. (a) 17 (b) 15 (c) 13 (d) 19	1
15	 <p>Identify the algorithm based on the given graph (a) Dimensionality reduction (c) Classification (b) Clustering (d) Regression</p>	1
16	Statement 1 : A goal has a deadline and fixed plan for achieving the same Statement 2 : Attempting a smaller part of big goal at a time make the goal achievable a) Both Statement 1 and statement 2 are correct (b) Both Statement 1 and statement 2 are in-correct c) Statement 1 is correct but statement 2 is incorrect (d) Statement 1 is incorrect but statement 2 is correct	1
17	In Stemming, the root word of studies is _____. (a) study (b) studi (c) studie (d) studies	1
18	We, humans, are social animals. We tend to organise and/or participate in various kinds of social gatherings all the time. We love eating out with friends and family because of which we can find restaurants almost everywhere and out of these, many of the restaurants arrange for buffets to offer a variety of food items to their customers. Be it small shops or big outlets, every restaurant prepares food in bulk as they expect a good crowd to come and enjoy their food. But in most cases, after the day ends, a lot of food is left which becomes unusable for the restaurant as they do not wish to serve stale food to their customers the next day. So every day, they prepare food in large quantities keeping in mind the probable number of customers walking into their outlet. But if the expectations are not met, a good amount of food gets wasted which eventually becomes a loss for the restaurant as they either have to dump it or give it to hungry people for free. And if this daily loss is taken into account for a year, it becomes quite a big amount. Who are the stakeholders? (a) Restaurants offering buffet (b) Restaurant Chefs (c) Both a. and b. (d) None of the above	1
19	Which of the following is not present on desktop by default? a) Folder (b) Task Bar (c) C:\ Drive (d) Icon	1
20	Which of the following is not true about rule-based system? (a) The rule-based system uses a series of IF-THEN statements that guide a computer to reach on conclusion or recommendation. (b) The algorithm fed by developer. (c) The rule-based system data given by developer. (d) The rule-based system acquires data from random source.	1
21	Ms. Naina was appointed as a head girl of school. Now, needs to prepare a team for different houses. But she couldn't prepare it on time and she reported to the CCA incharge of the school to improve her skills. Here Ms. Naina shown: (a) Self – awareness (b) Responsibility (c) Time-management (d) Adaptability	1



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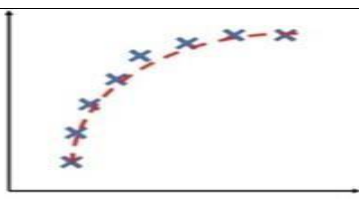
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i. There is no overall choice in the question paper. However, an internal choice has been provided in few questions. Only one of the choices in such questions have to be attempted.

Q.No.	Questions	Marks
Section A		
1.	Srishti is a young woman who makes earrings. She buys jute from a farmer and makes earrings from that. She sees that most women in her village do not work. So, she hires two women to help her. As her orders increase, she hires three more women to work for her. How was she helping her village grow? (a) By selling earrings to women without a job (b) By purchasing earrings from the local market (c) By buying jute from the local farmer and by providing jobs to local women (d) By attracting the women in her village with her creative earrings	1
2.	Search engines not only predict what popular searches may apply to your query as you start typing, but it looks at the whole picture and recognizes what you're trying to say rather than the exact search words. This is an example of (a) Computer Vision (c) Data Sciences (b) Natural Language Processing (d) Natural Logic Understanding	1
3.	DELETE key is used to remove typed text on the _____ side of the cursor. a. left b. right c. both of the above d. None of the above	1
4.	Ms. Ruby is intelligent in performing calculations and logical reasoning. This ability refers to: a. Linguistic Intelligence b. Spatial Visual Intelligence c. Mathematical Intelligence d. Existential Intelligence	1
5	Name any 2 methods of collecting data. a. Surveys and Interviews b. Rumors and Myths c. AI models and applications d. Imagination and thoughts	1
6	“This type of intelligence measure’s one’s awareness of the natural world around them and their sensitivities to any changes that occur. It allows us to identify the variation among two different species and understand how they are related”. Identify the type of intelligence described in the above sentence.	1
7	Machine Learning is a. Machine learning is the study of computer algorithms that improve automatically through experience. b. Refers to any technique that enables computers to mimic human intelligence. c. Machine learning refers to computer systems (both machines and software) enables machines to perform tasks for which it is programmed. d. Machine Learning refers to projects that allow the machine to work on a particular logic.	1

8	Neural Network hidden layer node contain _____ (a) Data & Algorithm (b) Algorithm (c) Data (d) function	1
9	Identify the domain of AI in the following image:(1)  • a. Data Science b. Natural Language Processing c. Computer Vision d. Rule Based	1
10	_____ is the last stage of AI Project Cycle. a. Problem Scoping b. Evaluation c. Modelling d. Data Acquisition	1
11	_____ is divided into multiple layer and each layer is further divided into several blocks. (a) Data set (b) Hidden Layer (c) Neural Network (d) Output Layer	1
12	The 17 Sustainable Development Goals (SDGs) were launched at the United Nations Sustainable Development Summit i n ----- in 2015, forming the 2030 Agenda for Sustainable Development. (a) Dubai (b) New York (c) India (d) Australia	1
13	Which is not an example of Data science? (1) (a) Price Comparison websites (b) Fraud and Risk detection (c) Website Recommendations (d) Sentimental Analysis	1
14	SMART method can be used to set goals to make you successful in your career and personal life. What does 'A' in SMART stand for? (a) Abrupt (b) Accountable (c) Achievable (d) Admirable	1
15	 Identify the algorithm based on the given graph (a) Dimensionality reduction (b) Clustering (c) Classification (d) Regression	1
16	_____ is the process in which the affixes of words are removed and words are converted to their base form. (a) Stemming (b) Lemmatization (c) Tokenization (d) Language Analysis	1
17	----- is the process of dividing the sentence in to tokens. (a) Normalization (b) Tokenization (c) Lemmatization (d) Stemming	1
18	What is the full form of TF-IDF?	1
19	A corpus contains 12 documents. How many document vectors will be there for that corpus? (a) 12 (b) 1 (c) 24 (d) 1/12	1

20	Which of the following is TRUE about rule-based system? (a) The rule-based system uses a series of IF-THEN statements that guide a computer to reach on conclusion or recommendation. (b) The main aim of rule-based system is to explore and visualize the data. (c) The rule-based system is used to manage the random data. (d) The rule-based system acquires data from random source	1
21	_____ is the final component in the process of communication as it defines the response given by the receiver to the sender. a) Response b) Request c) Feedback d) Notice	1
22	Assertion (A): Artificial Intelligence is a technology which completely depends on data. Reason (R): Data is fed into an artificial intelligence machine in order to make it intelligent (a) Both (A) and (R) are correct and (R) is the correct explanation of (A) (b) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A). (c) (A) is correct but (R) is not correct. (d) (A) is not correct but (R) is correct.	1
23	Choose the correct option (a) Data acquisition - Training data, Testing data (b) Data exploration → Training data, Testing data (c) Data scoping → Training data, Testing data (d) Modelling and evaluation → Training data, Testing data	1
24	What will be the outcome, if the prediction is “yes” and it matches with the Reality? and what will be the outcome, if the prediction is “no” and it does not match with the Reality? (a) True Negative, False Negative (c) True Negative, False Positive (b) True Positive, False Negative (d) True Positive, True Negative	1
	Section B	
25	What do you mean by Data Features?	1
26	What do entrepreneurs do when they run their business? Mention any two points.	1
27	Name any myth related to entrepreneurship.	1
28	What is meant by a dictionary in NLP?	1
29	What do you understand by Kinesthetic & Musical Intelligence?	2
30	Define Stop Word and Rare Word.	2
31	What is meant by Overfitting of Data?	2
32	What is the difference between stemming and lemmatization?	2
33.	Explain the following: a. Supervised Learning b. Unsupervised Learning	2
34.	What do you understand by Data Privacy?	2
35.	Mention the precautions to be taken while acquiring data for developing an AI Project.	2
36	While working with NLP what is the meaning of ? a. Syntax b. Semantics	2

37	<p>Through a step-by-step process, calculate Document Vector for the given corpus and mention the word(s) having highest value.</p> <p>Document 1: We are going to Mumbai Document 2: Mumbai is a famous place. Document 3: We are going to a famous place Document 4: I am famous in Mumbai.</p>	3									
38	<p>Calculate Accuracy, Precision, Recall and F1 Score for the following Confusion Matrix on Heart Attack Risk. Also suggest which metric would not be a good evaluation parameter here and why?</p> <table data-bbox="375 566 1013 745"> <tr> <td>The Confusion Matrix</td> <td>Reality: 1</td> <td>Reality: 0</td> </tr> <tr> <td>Prediction: 1</td> <td>50</td> <td>20</td> </tr> <tr> <td>Prediction: 0</td> <td>10</td> <td>20</td> </tr> </table>	The Confusion Matrix	Reality: 1	Reality: 0	Prediction: 1	50	20	Prediction: 0	10	20	3
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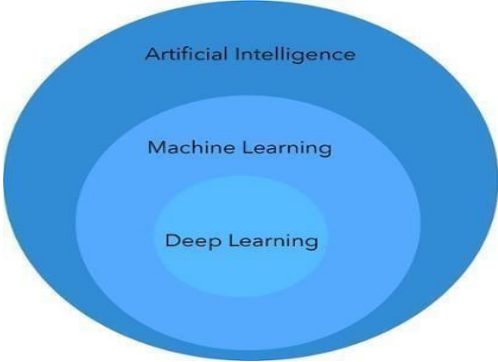
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- Question paper comprises of six sections A,B, C and D .There are 38 questions in the question paper. All questions are compulsory.
- Section A** - From question I to24 are MCQ of 1 mark each.
- Section B**-Question no. 25 to 28 are Very Short Answer Type Questions, carrying 1 marks each.
- Section C** contains Q.29 to Q.36 are Short Answer Type Questions, carrying 2 marks each.
- Section D**-Question no. 37 to 38 are long answer type questions, carrying 3 marks each.
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3.	Smita is working on a project that involves over a lakh of records. Which of the following should she use to make the best project? (a) Traditional programming (c) IoT (b) Manual processing (d) Neural network Ans. (d)	1
4.	Ms. Ruby is intelligent in performing calculations and logical reasoning. This ability refers to: a. Linguistic Intelligence b. Spatial Visual Intelligence c. Mathematical Intelligence d. Existential Intelligence Ans. (C)	1
5	Vipul only enjoys music as a whole but he is able to recognize the different patterns of music, like the rhythm and the bass. He is able to use this keen sense of music and composes music pieces and songs. Which of the following intelligence does he have? a. Ligustic b. Musical c. Non-Lingustic d. Logical Ans. (b)	1
6	AI includes: i. Data Science iii. Natural Language Processing ii. Visual Basic programming iv. Computer Vision a) i, ii and iii only b) i, ii and iv only b) ii, iii and iv only d) i, iii and iv only Ans. (d)	1

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8	A machine can also become intelligent if it is trained with___which helps them achieve their tasks. (a) Data (b) Input (c) Output (d) Processing Ans. (a)	1
9	Identify the domain of AI for Text and Images a. Data Science b. Natural Language Processing c. Computer Vision d. Rule Based Ans. (a or b or c)	1
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14	The Sustainable Development Goals (SDGs) were launched at the United Nations Sustainable Development Summit in New York in the year 2015, forming the 2030 Agenda for Sustainable Development. (a) 17 (b) 15 (c) 13 (d) 19 Ans. (a)	1
15	 Identify the algorithm based on the given graph (a) Dimensionality reduction (c) Classification (b) Clustering (d) Regression Ans (b)	1
16	Statement 1 : A goal has a deadline and fixed plan for achieving the same Statement 2 : Attempting a smaller part of big goal at a time make the goal achievable a) Both Statement 1 and statement 2 are correct b) Both Statement 1 and statement 2 are in-correct c) Statement 1 is correct but statement 2 is incorrect d)Statement 1 is incorrect but statement 2 is correct Ans. (a)	1
17	In Stemming, the root word of studies is_____ (a) study (b) studi (c) studie (d) studies Ans. (b)	1

18	<p>We, humans, are social animals. We tend to organise and/or participate in various kinds of social gatherings all the time. We love eating out with friends and family because of which we can find restaurants almost everywhere and out of these, many of the restaurants arrange for buffets to offer a variety of food items to their customers. Be it small shops or big outlets, every restaurant prepares food in bulk as they expect a good crowd to come and enjoy their food. But in most cases, after the day ends, a lot of food is left which becomes unusable for the restaurant as they do not wish to serve stale food to their customers the next day.</p> <p>So every day, they prepare food in large quantities keeping in mind the probable number of customers walking into their outlet. But if the expectations are not met, a good amount of food gets wasted which eventually becomes a loss for the restaurant as they either have to dump it or give it to hungry people for free. And if this daily loss is taken into account for a year, it becomes quite a big amount.</p> <p>Who are the stakeholders?</p> <p>(a) Restaurants offering buffet (b) Restaurant Chefs (c) Both a. and b. (d) None of the above</p> <p>Ans. (C)</p>	1
19	<p>Which of the following is not present on desktop by default?</p> <p>a) Folder b) Task Bar c) C:\ Drive d) Icon</p> <p>Ans. (a or c)</p>	1
20	<p>Which of the following is not true about rule-based system?</p> <p>(a) The rule-based system uses a series of IF-THEN statements that guide a computer to reach on conclusion or recommendation. (b) The algorithm fed by developer. (c) The rule-based system data given by developer. (d) The rule-based system acquires data from random source</p> <p>Ans (d)</p>	1
21	<p>Ms. Naina was appointed as a head girl of school. Now, needs to prepare a team for different houses. But she couldn't prepare it on time and she reported to the CCA incharge of the school to improve her skills. Here Ms. Naina shown:</p> <p>(a) Self – awareness (b) Responsibility (c) Time-management (d) Adaptability</p> <p>Ans. (b)</p>	1
22	<p>Assertion (A): Artificial Intelligence is a technology which completely depends on data. Reason (R): Data is fed into an artificial intelligence machine in order to make it intelligent</p> <p>(a) Both (A) and (R) are correct and (R) is the correct explanation of (A) (b) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A). (c) (A) is correct but (R) is not correct. (d) (A) is not correct but (R) is correct.</p> <p>Ans. (a)</p>	1
23	<p>Choose the correct option</p> <p>(a) Data acquisition → visualization of data (b) Data exploration → collection of data (c) Problem scoping → 4w canvas, Problem Statement Template (d) Modelling and evaluation → Training data, Testing data</p> <p>Ans. (c)</p>	1
24	<p>The written communication such as notices, circulars, reports, SMS, manuals etc. considered which of the following type of communication?</p> <p>a) Non Verbal b) Verbal c) Visual d) None of these</p> <p>Ans. (b)</p>	1
Section B		

	<p>ML systems can automatically learn and improve without explicitly being programmed.</p> <p>b) Deep Learning (DL) In Deep Learning, the machine is trained with huge amounts of data which helps it in training itself around the data. Such machines are intelligent enough to develop algorithms for themselves.</p>  <p>How they differ?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Deep Learning is the most advanced form of Artificial Intelligence out of these three. Then comes Machine Learning which is intermediately intelligent and Artificial intelligence covers all the concepts and algorithms which, in some way or the other mimic human intelligence. <input type="checkbox"/> Therefore, AI is the umbrella term which covers ML and DL. 	
33	<p>Why training with information/Data is important in Artificial Intelligent devices? Similar to human beings, AI devices need experience to give better results and improve in every next iteration. For giving better results, the machine should be trained with some real data. The more the amount of accurate data, the better predictions will be made by the machine. Hence, data is very important in AI devices. OR The AI devices need to be trained with information / Big data to produce the best possible accurate results. All of AI's learning happens only through this data. So, it makes sense to have as big a dataset as is required to include variety, subtlety, and nuance that makes the model viable for practical use. Before training, the model is just a theorist.</p>	2
34	<p>Explain how AI can play a role in sentiment analysis of human beings? The goal of sentiment analysis is to identify sentiment among several posts or even in the same post where emotion is not always explicitly expressed. Companies use Natural Language Processing applications, such as sentiment analysis, to identify opinions and sentiment online to help them understand what customers think about their products and services (i.e., "I love the new iPhone" and, a few lines later "But sometimes it doesn't work well" where the person is still talking about the iPhone) and overall *</p>	2
35	<p>Mention the precautions to be taken while acquiring data for developing an AI Project. It should be from an authentic source, and accurate. Look for redundant and irrelevant data parameters that does not take part in prediction.</p>	2
36	<p>What do you mean by corpus? In Text Normalization, we undergo several steps to normalize the text to a lower level. That is, we will be working on text from multiple documents and the term used for the whole textual data from all the documents altogether is known as corpus.</p> <p style="text-align: center;">OR</p> <p>A corpus is a large and structured set of machine-readable texts that have been produced in a</p>	2

	<p>natural communicative setting.</p> <p style="text-align: center;">OR</p> <p>A corpus can be defined as a collection of text documents. It can be thought of as just a bunch of text files in a directory, often alongside many other directories of text files.</p>																																																													
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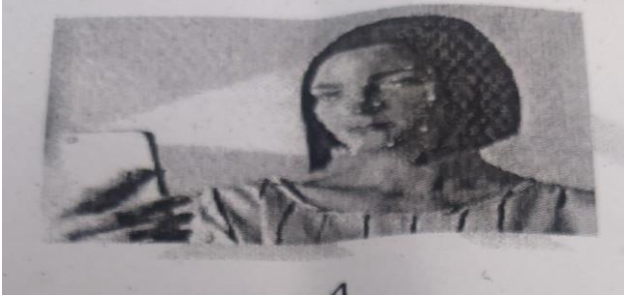
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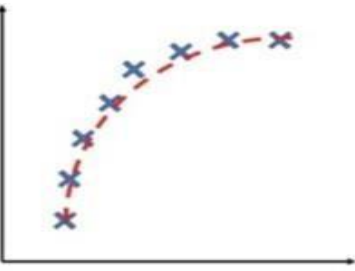
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3.	<p>DELETE key is used to remove typed text on the _____ side of the cursor.</p> <p>a. left b. right c. both of the above d. None of the above</p> <p>Ans. right</p>	1
4.	<p>Ms. Ruby is intelligent in performing calculations and logical reasoning. This ability refers to:</p> <p>a. Linguistic Intelligence b. Spatial Visual Intelligence c. Mathematical Intelligence d. Existential Intelligence</p> <p>Ans. Mathematical Intelligence</p>	1
5	<p>Name any 2 methods of collecting data.</p> <p>a. Surveys and Interviews b. Rumors and Myths c. AI models and applications d. Imagination and thoughts</p> <p>Ans. Surveys and Interviews</p>	1
6	<p>“This type of intelligence measure’s one’s awareness of the natural world around them and their sensitivities to any changes that occur. It allows us to identify the variation among two different species and understand how they are related”.</p> <p>Identify the type of intelligence described in the above sentence.</p> <p>Ans. Naturalistic Intelligence.</p>	1

7	<p>Machine Learning is</p> <p>a. Machine learning is the study of computer algorithms that improve automatically through experience.</p> <p>b. Refers to any technique that enables computers to mimic human intelligence.</p> <p>c. Machine learning refers to computer systems (both machines and software) enables machines to perform tasks for which it is programmed.</p> <p>d. Machine Learning refers to projects that allow the machine to work on a particular logic.</p> <p>Ans. (a)Machine learning is the study of computer algorithms that improveautomatically through experience.</p>	1
8	<p>Neural Network hidden layer node contain _____</p> <p>(a) Data & Algorithm (c) Data</p> <p>(b) Algorithm (d) function</p> <p>Ans. Data & Algorithm</p>	1
9	<p>Identify the domain of AI in the following image:(1)</p>  <p>a. Data Science (c) Computer Vision</p> <p>b. Natural Language Processing (d) Rule Based</p> <p>Ans (c) Computer Vision</p>	1
10	<p>_____ is the last stage of AI Project Cycle.</p> <p>a. Problem Scoping b. Evaluation c. Modelling d. Data Acquisition</p> <p>Ans. (b) Evaluation</p>	1
11	<p>_____ is divided into multiple layer and each layer is further divided into several blocks.</p> <p>(a) Data set (c) Neural Network</p> <p>(b) Hidden Layer (d) Output Layer</p> <p>Ans. (c)</p>	1
12	<p>The 17 Sustainable Development Goals (SDGs) were launched at the United Nations Sustainable Development Summit i n ----- in 2015, forming the2030 Agenda for Sustainable Development.</p> <p>(a) Dubai (b) New York (c) India (d) Australia</p> <p>Ans (b)</p>	1
13	<p>Which is not an example of Data science? (1)</p> <p>(a) Price Comparison websites (c) Website Recommendations</p> <p>(b) Fraud and Risk detection (d) Sentimental Analysis</p> <p>Ans (d)</p>	1
14	<p>SMART method can be used to set goals to make you successful in your career and personal life. What does ‘A’ in SMART stand for?</p> <p>(a) Abrupt (b) Accountable (c) Achievable (d) Admirable</p> <p>Ans. (c)</p>	1

15	 <p>Identify the algorithm based on the given graph</p> <p>(a) Dimensionality reduction (c) Classification (b) Clustering (d) Regression</p> <p>Ans. Regression</p>	1
16	<p>_____ is the process in which the affixes of words are removed and words are converted to their base form.</p> <p>(a) Stemming (b) Lemmatization (c) Tokenization (d) Language Analysis</p> <p>Ans. Stemming</p>	1
17	<p>_____ is the process of dividing the sentence in to tokens.</p> <p>(a) Normalization (b) Tokenization (c) Lemmatization (d) Stemming</p> <p>(a) Ans. Tokenization</p>	1
18	<p>What is the full form of TF-IDF?</p> <p>Ans. Term Frequency and inverse Document Frequency</p>	1
19	<p>A corpus contains 12 documents. How many document vectors will be there for that corpus?</p> <p>(a) 12 (b) 1 (c) 24 (d) 1/12</p> <p>Ans. 12</p>	1
20	<p>Which of the following is TRUE about rule-based system?</p> <p>(a) The rule-based system uses a series of IF-THEN statements that guide a computer to reach on conclusion or recommendation. (b) The main aim of rule-based system is to explore and visualize the data. (c) The rule-based system is used to manage the random data. (d) The rule-based system acquires data from random source</p> <p>Ans. The rule-based system uses a series of IF-THEN statements that guide a computer to reach on conclusion or recommendation.</p>	1
21	<p>_____ is the final component in the process of communication as it defines the response given by the receiver to the sender.</p> <p>a) Response b) Request c) Feedback d) Notice</p> <p>Ans. C) Feedback</p>	1
22	<p>Assertion (A): Artificial Intelligence is a technology which completely depends on data. Reason (R): Data is fed into an artificial intelligence machine in order to make it intelligent</p> <p>(a) Both (A) and (R) are correct and (R) is the correct explanation of (A) (b) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A). (c) (A) is correct but (R) is not correct. (d) (A) is not correct but (R) is correct.</p> <p>Ans. (a) Both (A) and (R) are correct and (R) is the correct explanation of (A)</p>	1

23	<p>Choose the correct option</p> <p>(a) Data acquisition - Training data, Testing data</p> <p>(b) Data exploration → Training data, Testing data</p> <p>(c) Data scoping → Training data, Testing data</p> <p>(d) Modelling and evaluation → Training data, Testing data</p> <p>Ans. (a) Data acquisition - Training data, Testing data</p>	1
24	<p>What will be the outcome, if the prediction is “yes” and it matches with the Reality? and what will be the outcome, if the prediction is “no” and it does not match with the Reality?</p> <p>(a) True Negative, False Negative (c) True Negative, False Positive</p> <p>(b) True Positive, False Negative (d) True Positive, True Negative</p> <p>Ans. True Positive, False Negative</p>	1
Section B		
25	<p>What do you mean by Data Features?</p> <p>The type of data to collect, It should be relevant data.</p>	1
26	<p>What do entrepreneurs do when they run their business? Mention any two points.</p> <p>Ans. Fulfill Customer Needs</p> <p>II. Use Local Materials</p> <p>III. Help Society</p> <p>IV. Create Jobs</p> <p>V. Sharing of Wealth</p> <p>VI. Lower Price of Products</p> <p><i>(1/2 mark for each correct point, 1/2*2=1)</i></p>	1
27	<p>Name any myth related to entrepreneurship.</p> <p>Any two points</p>	1
28	<p>What is meant by a dictionary in NLP?</p> <p>Dictionary in NLP means a list of all the unique words occurring in the corpus. If some words are repeated in different documents, they are all written just once as while creating the dictionary.</p>	1
29	<p>What do you understand by Kinesthetic & Musical Intelligence?</p> <p>i) Kinesthetic Intelligence: Ability that is related to how a person uses his limbs in a skilled manner.</p> <p>ii) Musical Intelligence: As the name suggests, this intelligence is about a person's ability to recognize and create sounds, rhythms, and sound patterns.</p>	2
30	<p>Define Stop word and Rare word.</p> <p>Stop Word : if the words have highest occurrence in all the documents of the corpus, they are said to have negligible value hence they are termed as stop words.</p> <p>Rare Word : These words occur the least but add the most value to the corpus.</p>	2
31	<p>What is meant by Overfitting of Data?</p> <p>Overfitting is "the production of an analysis that corresponds too closely or exactly to a particular set of data, and may therefore fail to fit additional data or predict future observations reliably".</p> <p style="text-align: center;">(OR)</p> <p>An Overfitted Model is a statistical model that contains more parameters than can be justified by the data. Here, to evaluate the AI model it is not necessary to use the data that is used to build the model. Because AI Model remembers the whole training data set, therefore it always predicts the</p>	2

	Data privacy or information privacy is a branch of data security concerned with the proper handling of data – consent, notice, and regulatory obligations. More specifically, practical data privacy concerns often revolve around: Whether or how data is shared with third parties																																																													
35.	<p>Mention the precautions to be taken while acquiring data for developing an AI Project.</p> <p>It should be from an authentic source, and accurate. Look for redundant and irrelevant data parameters that does not take part in prediction.</p>	2																																																												
36.	<p>While working with NLP what is the meaning of ?</p> <p>a. Syntax b. Semantics</p> <p>Syntax: Syntax refers to the grammatical structure of a sentence.</p> <p>Semantics: It refers to the meaning of the sentence.</p>																																																													
37.	<p>Through a step-by-step process, calculate Document Vector for the given corpus and mention the word(s) having highest value.</p> <p>Document 1: We are going to Mumbai Document 2: Mumbai is a famous place. Document 3: We are going to a famous place Document 4: I am famous in Mumbai.</p> <table border="1" data-bbox="277 1034 1241 1256"> <thead> <tr> <th>We</th> <th>Are</th> <th>going</th> <th>to</th> <th>Mumbai</th> <th>is</th> <th>a</th> <th>famous</th> <th>place</th> <th>I</th> <th>am</th> <th>in</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>	We	Are	going	to	Mumbai	is	a	famous	place	I	am	in	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	1	1	1	1	0	0	1	1	1	0	0	0	0	0	0	0	1	0	0	1	0	1	1	1	3
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38.

Calculate Accuracy, Precision, Recall and F1 Score for the following Confusion Matrix on Heart Attack Risk. Also suggest which metric would not be a good evaluation parameter here and why?

3

The Confusion Matrix
 Reality: 1 Reality: 0
 Prediction: 1 50 20
 Prediction: 0 10 20

Prediction: 1	50	20	70
Prediction: 0	10	20	30
	60	40	100

Accuracy:

Accuracy is defined as the percentage of correct predictions out of all the observations

$$Accuracy = \frac{\text{Correct prediction}}{\text{Total cases}} * 100\%$$

$$Accuracy = \frac{(TP + TN)}{(TP + TN + FP + FN)} * 100\%$$

$$Precision = \frac{\text{True Positive}}{\text{All Predicted Positives}} * 100\%$$

$$Precision = \frac{TP}{TP + FP} * 100\%$$

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Prediction: 1	50	20	70
Prediction: 0	10	20	30
	60	40	100

Calculation:

Accuracy:

Accuracy is defined as the percentage of correct predictions out of all the observations

$$\text{Accuracy} = \frac{\text{Correct prediction}}{\text{Total cases}} * 100\%$$

$$\text{Accuracy} = \frac{(TP + TN)}{(TP + TN + FP + FN)} * 100\%$$

Where True Positive (TP), True Negative (TN), False Positive (FP) and False Negative (FN). Accuracy = (50+20) / (50+20+20+10)

$$= (70/100)$$

$$= 0.7$$

Precision:

Precision is defined as the percentage of true positive cases versus all the cases where the prediction is true.

$$\text{Precision} = \frac{\text{True Positive}}{\text{All Predicted Positives}} * 100\%$$

$$\text{Precision} = \frac{TP}{TP + FP} * 100\%$$

$$= (50 / (50 + 20))$$

$$= (50/70)$$

$$= \mathbf{0.714}$$

Recall: It is defined as the fraction of positive cases that are correctly identified.

$$\text{Recall} = \frac{\text{True Positive}}{\text{True Positive} + \text{False Negative}}$$

$$\text{Recall} = \frac{TP}{TP + FN}$$

$$= 50 / (50 + 10)$$

$$= 50 / 60$$

$$= \mathbf{0.83}$$

F1 Score:

F1 score is defined as the measure of balance between precision and recall.

$$\text{F1 Score} = 2 * \frac{\text{Precision} * \text{Recall}}{\text{Precision} + \text{Recall}}$$

$$= 2 * (0.714 * 0.8) / (0.714 + 0.8)$$

$$= 2 * (0.5712 / 1.514)$$

$$= 0.754$$

Therefore,

Accuracy= 0.7

Precision=0.714

Recall=0.8

F1 Score=0.754

Here within the test there is a tradeoff. But Recall is good Evaluation metric. Precision metric needs to improve more.

Because,

False Positive (impacts Precision): A person is predicted as high risk but does not have heart attack.

False Negative (impacts Recall): A person is predicted as low risk but has heart attack. Therefore, False Negatives miss actual heart patients, hence recall metric need more improvement.

False Negatives are more dangerous than False Positives.