

# O.S.D.A.V. Public School, Kaithal Half Yearly (2024-25)

SET - A

Subject : Artificial Intelligence Class : X

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	Ma rks
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.	1
2.	d. Machine Learning refers to projects that allow the machine to work on a particular logic.  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 (b) Manual processing (c) IoT (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 Al for Text and Images a. Data Science b. Natural Language Processing c. Computer Vision d. Rule Based	1
10	is the fourth stage of Al 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 (b) Combined Based Therapy (c) Cognitive Behavioral Therapy (d) Computer Basic Therapy	1

13	When People from different background communicate the chances of wrong interpretation	1
	of the message.	
1.4	(a) Educational (b) Emotional (c) Cultural (d) Psychological	1
14	The Sustainable Development Goals (SDGs) were launched at the United Nations Sustainable	1
	Development Summit in New York in the year 2015, forming the 2030 Agenda for Sustainable Development.	
	(a) 17 (b) 15 (c) 13 (d) 19	
15	(0) 17 (0) 13 (0) 17	1
10		-
	Identify the algorithm based on the given graph	
	<ul><li>(a) Dimensionality reduction</li><li>(b) Clustering</li><li>(c) Classification</li><li>(d) Regression</li></ul>	
16	(b) Clustering (d) Regression  Statement 1: A goal has a deadline and fixed plan for achieving the same	1
10	·	1
	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	
17	In Stemming, the root word of studies is	1
1 /	(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	1
10	gatherings all the time. We love eating out with friends and family because of which we can find	1
	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	
19	N/ N/	1
19	Which of the following is not present on desktop by default?  a) Folder  b) Task Bar  c) C:\ Drive  d) Icon	1
	a) Total but but by Civibility a) Italia	
20	Which of the following is not true about rule-based system?	1
	(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.	
21	Ms. Naina was appointed as a head girl of school. Now, needs to prepare a team for different houses. But she	1
21	couldn't prepare it on time and she reported to the CCA incharge of the school to improve her skills. Here	1
	Ms. Naina shown:	
	(a) Self – awareness (b) Responsibility (c) Time-management (d) Adaptability	

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	1
	(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.	
23	Choose the correct option	1
	(a) Data acquisition → visualization of data	
	(b) Data exploration → collection of data	
	<ul> <li>(c) Problem scoping → 4w canvas, Problem Statement Template</li> <li>(d) Modelling and evaluation → Training data, Testing data</li> </ul>	
24	The written communication such as notices, circulars, reports, SMS, manuals etc. considered which	1
	of the following type of communication?	
	a) Non Verbal b) Verbal c) Visual d) None of these	
	Section B	
25	What do you mean by Data Features?	1
26	Explain Data Exploration stage.	1
27		1
27	What do you understand by Naturalistic & Interpersonal Intelligence?	1
28	What is meant by a dictionary in NLP?	1
29	Write the full form of the following:  a) CUI b) GUI c) DOS d) ICT	2
30	In SMART goals, what does 'R' stand for? Explain.	2
31	Explain the following:	2
	a. Supervised Learning b. Unsupervised Learning	
32	What do you understand by ML & DL? How are they different from each other?	2
33	Why training with information/Data is important in Artificial Intelligent devices?	2
34	Explain how AI can play a role in sentiment analysis of human beings?	2
35	Mention the precautions to be taken while acquiring data for developing an AI Project.	2
36	What do you mean by corpus?	2
37	Calculate Accuracy, Precision, Recall and F1 Score for the following ConfusionMatrix on Heart	3
	Attack Risk. Also suggest which metric would not be a good evaluation parameter here and why?	
	The Confusion Matrix Reality: 1 Reality: 0	
	Prediction: 1 50 20	
	Prediction: 0 10 20	
38	Through a step-by-step process, calculate Document Vector for the given corpus and mention the word(s) having highest value.	3
	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.	



## OSDAV Public School, Kaithal Half Yearly Exam (2024-25) Subject : Artificial Intelligence

SET - B

Class: X

M.M.:- 50

# Time:-2 hrs. General Instructions:

Question paper comprises of 38 questions in the questionpaper. All questions are compulsory.

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  (b) Natural Language Processing  (c) Data Sciences  (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. Al 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 aparticular logic.	1

8	Neural Network hidden layer node contain	1
0	(a) Data & Algorithm (c) Data	1
	(b) Algorithm (d) function	
9	Identify the domain of Al in the following image:(1)	1
	a. Data Science c. Computer Vision	
	b. Natural Language Processing d. Rule Based	
10	is the last stage of Al 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.	1
	(a) Data set (c) Neural Network (b) Hidden Layer (d) Output Layer	
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.	1
	(a) Dubai (b) New York (c) India (d) Australia	
13	Which is not an example of Data science? (1)  (a) Price Comparison websites (c) Website Recommendations (b) Fraud and Risk detection (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	* × × ×-×	1
	*	
	*	
	Identify the algorithm based on the given graph	
	(a) Dimensionality reduction (c) Classification (d) Regression	
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?	1
	(a) 12 (b) 1 (c) 24 (d) 1/12	

Which of the following is TRUE about rule based system?	1		
	1		
(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		
	1		
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).			
(d) (A) is not correct but (R) is correct.			
Choose the correct option	1		
	1		
	1		
· ·			
Section B			
What do you mean by Data Features?	1		
	1		
Name any myth related to entrepreneurship.	1		
What is meant by a dictionary in NLP?	1		
What do you understand by Kinesthetic & Musical Intelligence?	2		
Define Stop Word and Rare Word.	2		
What is meant by Overfitting of Data?	2		
What is the difference between stemming and lemmatization?	2		
Explain the following:	2		
a. Supervised Learning b. Unsupervised Learning			
What do you understand by Data Privacy?	2		
Mention the precautions to be taken while acquiring data for developing an AI	2		
Project.			
	(c) The rule-based system is used to manage the random data. (d) The rule-based system acquires data from random source  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  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.  Choose the correct option (a) Data acquisition - Training data, Testing data (b) Data exploration → Training data, Testing data (c) Data exploration → Training data, Testing data (d) Modelling and evaluation → Training data, Testing data (d) Modelling and evaluation → Training data, Testing data (d) True Negative, False Negative (c) True Negative, False Positive (b) True Positive, False Negative (d) True Positive, True Negative  Section B  What do you mean by Data Features?  What do entrepreneurs do when they run their business? Mention any two points.  Name any myth related to entrepreneurship.  What is meant by a dictionary in NLP?  What do you understand by Kinesthetic & Musical Intelligence?  Define Stop Word and Rare Word.  What is meant by Overfitting of Data?  What is the difference between stemming and lemmatization?  Explain the following: a. Supervised Learning b. Unsupervised Learning  What do you understand by Data Privacy?		

37	Through a step-by-step process, calculate Document Vector for the given corpus and mention the word(s) having highest value.			3	
	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 Mu	mbai.			
38	Calculate Accuracy, Precision, Recall and F1 Score for the following Confusion			3	
	Matrix on Heart Attack Risk. Also suggest which metric would not be a good evaluation parameter here and why?				
	The Confusion Matrix	Reality: 1	Reality: 0		
	Prediction: 1	50	20		
	Prediction: 0	10	20		



## O.S.D.A.V. Public School, Kaithal Half Yearly (2024-25)

SET - A

**Subject : Artificial Intelligence** 

Class: X

Time:-2 hrs. M.M.:- 50

### **General Instructions:**

- i. Question paper comprises of six sections A,B, C and D .There are 38 questions in the question paper. All questions are compulsory.
- ii. **Section A -** From question I to 24 are MCQ of 1 mark each.
- iii. Section B-Question no. 25 to 28 are Very Short Answer Type Questions, carrying 1 marks each.
- iv. **Section C** contains Q.29 to Q.36 are Short Answer Type Questions, carrying 2 marks each.
- v. **Section D-**Question no. 37 to 38 are long answer type questions, carrying 3 marks each.
- vi. 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.

	questions. Only one of the choices in such questions have to be attempted.		
Q.	Questions	Ma rks	
	Section A		
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. Ans. (a.)	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  Ans. (d)	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 (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	

7	Email filters are one of the most basic and initial applications of	1
	a) CV b) Scikit learn c) NLP d) Decision Making	
	Ans. (c)	
8	A machine can also become intelligent if it is trained withwhich helps them achieve their tasks.	1
	(a) Data (b) Input (c) Output (d) Processing	
	Ans. (a)	
9	Identify the domain of Al for Text and Images	1
	a. Data Science b. Natural Language Processing c. Computer Vision d. Rule Based	1
	Ans. (a or b or c)	
10	is the fourth stage of Al Project Cycle.	1
10	a. Problem Scoping b. Evaluation c. Modelling d. Data Acquisition	1
	Ans. (c)	
11		1
	is the process of dividing the sentence in to tokens.  a. Normalization b. Tokenization c. Lemmatization d. Stemming	
	<u> </u>	
12	Ans. (b) CBT stands for .	1
12	(a) Computer Based Therapy (c) Cognitive Behavioral Therapy	1
	(b) Combined Based Therapy (c) Cognitive Behavioral Therapy (d) Computer Basic Therapy	
	Ans. (c)	
13	When People from differentbackground communicate the chances of wrong interpretation	1
	of the message.	1
	(a) Educational (b) Emotional (c) Cultural (d) Psychological	
	Ans. (c)	
14	The Sustainable Development Goals (SDGs) were launched at the United Nations Sustainable	1
	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)	
15		1
	Identify the elecuithm heard on the given grant	
	Identify the algorithm based on the given graph	
	(a) Dimensionality reduction (c) Classification	
	(b) Clustering (d) Regression	
16	Ans (b) Statement 1: A goal has a deadline and fixed plan for achieving the same	1
10		1
	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 in correct but statement 2 is in correct d) Statement 1 is in correct but statement 2 is correct	
	c) Statement 1 is correct but statement 2 is incorrect d)Statement 1 is incorrect but statement 2 is correct Ans. (a)	
17	In Stemming, the root word of studies is	1
1,	(a) study (b) studi (c) studie (d) studies	1
1		
	Ans. (b)	

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  Ans. (C)	1
19	Which of the following is not present on desktop by default?  a) Folder  b) Task Bar  c) C:\ Drive  d) Icon  Ans. (a or c)	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  Ans (d)	1
21	<ul> <li>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:</li> <li>(a) Self – awareness (b) Responsibility (c) Time-management (d) Adaptability Ans. (b)</li> </ul>	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.  Ans. (a)	1
23	Choose the correct option  (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  Ans. (c)	1
24	The written communication such as notices, circulars, reports, SMS, manuals etc. considered which of the following type of communication?  a) Non Verbal  b) Verbal  c) Visual  d) None of these  Añs. (b)	1
	Section B	

25	What do you mann by Data Continues?	1
25	What do you mean by Data Features? The type of data to collect, It should be relevant data.	1
	The type of data to concet, it should be relevant data.	
26	Explain Data Exploration stage.  In this stage of project cycle, we try to interpret some useful information out of the data we have acquired. For this purpose, we need to explore the data and try to put it uniformly for a better understanding. This stage deals with validating or verification of the collected data and to analyze that:  • The data is according to the specifications decided.  • The data is free from errors.  • The data is meeting our needs.	1
27	What do you understand by Naturalistic & Interpersonal Intelligence?	1
	(i) <b>Naturalist Intelligence:</b> An additional category of intelligence relating to the ability to process information on the environment around us.	
	(ii) Interpersonal Intelligence: Interpersonal intelligence is the ability to communicate with others by understanding other people's feelings and the influence of the person.	
28	What is meant by a dictionary in NLP? 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.	1
29	Write the full form of the following:  a) CUI b) GUI c) DOS d) ICT  CUI – character user interface  GUI – Graphical user Interface  DOS – Disk Operating Environment  ICT – Information Communication Technology	2
30	In SMART goals, what does 'R' stand for? Explain. Realistic: A realistic goal would be something that we want to achieve and can work towards. Example of unrealistic goal: "I will read my entire year's syllabus in one day and get good marks." Realistic goal: "I spend 3 hours every day of the year after school to revise my subjects to get good marks in the exams".	2
31	<ul> <li>Explain the following:         <ul> <li>Supervised Learning</li> <li>Supervised learning is an approach to creating artificial intelligence (AI), where the program is given labelled input data and the expected output results.</li> </ul> </li> <li>Unsupervised learning is the training of a machine using information that is neither classified nor labelled and allowing the algorithm to act on that information without guidance. Here the task of the machine is to group unsorted information according to trends &amp; patterns and differences without any prior training of data.</li> </ul>	2
32	What do you understand by ML & DL? How are they different from each other?  a) Machine Learning (ML)  ML is a subset of AI that uses statistical learning algorithms to build smart systems. The	2

	ML systems can automatically learn and improve without explicitly being programmed.	
	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.	
	Artificial Intelligence	
	Machine Learning	
	Deep Learning	
	How they differ?	
	☐ 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.	
	☐ Therefore, Al is the umbrella term which covers ML and DL.	
33	Why training with information/Data is important in Artificial Intelligent devices?	2
•	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 Al'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	
34	makes the model viable for practical use. Before training, the model is just a theorist.  Explain how AI can play a role in sentiment analysis of human beings?	2
٥.	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 *	
35	Mention the precautions to be taken while acquiring data for developing an AI Project.	2
	It should be from an authentic source, and accurate. Look for redundant and irrelevant data parameters that does not take part in prediction.	
	parameters that does not take part in prediction.	
36	What do you mean by corpus?	2
	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.	
	OR	
	A corpus is a large and structured set of machine-readable texts that have been produced in a	
	· · · · · · · · · · · · · · · · · · ·	

	natural	comm	unicative	settin	ıg.								
					OR	2							
	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.												
37	7 Refer from ANSWER KEY OF SET B												
38	I Infolion a sien-ny-sien process calculate Document vector for the given cornus and mention the									the 2			
	Docum	ent 1: \	We are go	oing t	o Mumbai								
	Docum	ent 2: 1	Mumbai i	s a fa	mous place	•							
			_	_	o a famous j	place							
	Docum	ent 4: 1	am famo	ous in	Mumbai.		-						
	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	
			_	_	1	0	0	1	0	-	1	1	-



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

SET - B

Class: X

Time:-2 hrs. M.M.:- 50

#### **General Instructions:**

- i. Question paper comprises of six sections A,B, C and D .There are 38 questions in the question paper. All questions are compulsory.
- ii. 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  Ans: By buying jute from the local farmer and by providing jobs to local women.	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 (b) Natural Language Processing (c) Data Sciences (d) Natural Language Understanding (e) Ans. (a)	1
3.	DELETE key is used to remove typed text on theside of the cursor. a. left b. right c. both of the above d. None of the above Ans. right	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. Al models and applications d. Imagination and thoughts Ans. Surveys and Interviews	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.  Ans. Naturalistic Intelligence.	1

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

15	Identify the algorithm based on the given graph  (a) Dimensionality reduction  (b) Clustering  Ans. 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 Ans. Stemming	1
17	is the process of dividing the sentence in to tokens.  (a) Normalization (b) Tokenization (c) Lemmatization (d) Stemming  (a) Ans. Tokenization	1
18	What is the full form of TF-IDF? Ans. Term Frequency and inverse Document Frequency	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 Ans. 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  Ans. The rule-based system uses a series of IF-THEN statements that guide a computer to reach on conclusion or recommendation.	1
21	is the final component in the process of communication as it defines the response given by the receiver to the sender.	1
	a) Response b) Request c) Feedback d) Notice  Ans. C) Feedback	
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.  Ans. (a) Both (A) and (R) are correct and (R) is the correct explanation of (A)	1

	Change the compact antica	
23	Choose the correct option  (a) Data acquisition - Training data, Testing data	1
	(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	
	Ans. (a) Data acquisition - Training data, Testing data	
24	What will be the outcome, if the prediction is "yes" and it matches with the	1
	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	
	Ans. True Positive, False Negative	
	Section B	
25	What do you mean by Data Features?	1
	The type of data to collect, It should be relevant data.	
26	What do entrepreneurs do when they run their business? Mention any two points.	1
	Ans. Fulfill Customer Needs	
	II. Use Local Materials	
	III. Help Society	
	IV. Create Jobs	
	V. Sharing of Wealth	
	VI. Lower Price of Products	
	(1/2 mark for each correct point, 1/2*2=1)	
27	Name any myth related to entrepreneurship.	1
20	Any two points	1
28	What is meant by a dictionary in NLP?	1
	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	
29	while creating the dictionary.  What do you understand by Kinesthetic & Musical Intelligence?	2
29	What do you understand by Kinesthetic & Musical Intelligence?	2
	i) Kinesthetic Intelligence: Ability that is related to how a person uses	
	his limbs in a skilled manner.	
	ii) Musical Intelligence: As the name suggests, this intelligence is about a person's	
30	ability to recognize and create sounds, rhythms, and sound patterns.  Define Stop word and Rare word.	2
50	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.	
	Rare Word: These words occur the least but add the most value to the corpus.	
31	What is meant by Overfitting of Data?	2
	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".	
	(OR)	
	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 Al Model	
	remembers the whole training data set, therefore it always predicts the	

	correct label for any point in the training dataset. This is known as Overfitting. (OR)  Models that use the training dataset during testing, will always results in correct							
	output. This is known as overfitting.							
32	What is the difference between stemming and lemmatization?	2						
	Stemming is a technique used to extract the base form of the words by							
	removing affixes from them. It is just like cutting down the branches of a							
	tree to its stems. For example, the stem of the words <i>eating</i> , <i>eats</i> , <i>eaten</i> is							
	eat.							
	Lemmatization is the grouping together of different forms of the same word.							
	In search queries, lemmatization allows end users to query any version of a							
	base word and get relevant results.							
	OR							
	Stemming is the process in which the affixes of words are removed and the							
	words are converted to their base form.							
	In lemmatization, the word we get after affix removal (also known as							
	lemma) is a meaningful one. Lemmatization makes sure that lemma is a							
	word with meaning and hence it takes a longer time to execute than							
	stemming.							
	OR							
	Stemming algorithms work by cutting off the end or the beginning of the							
	word, taking into account a list of common prefixes and suffixes that can be							
	found in an inflected word.							
	Lemmatization on the other hand, takes into consideration the morphological analysis of the words. To do so, it is necessary to have detailed dictionaries which the algorithm can look through to link the form back to its lemma.							
33.	Explain the following:	2						
	a. Supervised Learning b. Unsupervised Learning							
	<ul> <li>Supervised learning is an approach to creating artificial intelligence (AI),</li> </ul>							
	where the program is given labelled input data and the expected output							
	results.							
	Unsupervised learning is the training of a machine using information							
	that is neither classified nor labelled and allowing the algorithm to act							
	on that information without guidance. Here the task of the machine is to							
	group unsorted information according to trends & patterns and							
	differences without any prior training of data.							
34.	What do you understand by Data Privacy?	2						
	The world of Artificial Intelligence revolves around Data Proper and							
	The world of Artificial Intelligence revolves around Data. Proper and ethical handling of own data or user data is called data privacy. It is all							
	The world of Artificial Intelligence revolves around Data. Proper and ethical handling of own data or user data is called data privacy. It is all about the rights of individuals with respect to their personalinformation.							

	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								More					
35.	Projec	et.	•		s to be ta			-						2
	It should be from an authentic source, and accurate. Look for redundant and irrelevant data parameters that does not take part in prediction.													
36.		work a.		th N	LP what									
	_	•			to the gra					sent	ence.			
37.	Semantics: It refers to the meaning of the sentence.  37. Through a step-by-step process, calculate Document Vector for the given corpus and mention the word(s) having highest value.  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.								3					
	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		

•	ision, Recall and Fi		<u>-</u>
	= =	vinen metric wour	a not be a good
The Confusion	Reality: 1	Reality: 0	
Matrix Prediction: 1	50	20	
Prediction: 0	10	20	
Prediction: 1	50	20	70
Prediction: 0	10	20	30
	60	40	100
	The Confusion Matrix Prediction: 1 Prediction: 0	The Confusion Reality: 1  Matrix Prediction: 1 50  Prediction: 0 10  Prediction: 0 10  Prediction: 0 10	The Confusion         Reality: 1         Reality: 0           Matrix         Prediction: 1         50         20           Prediction: 0         10         20           Prediction: 1         50         20           Prediction: 0         10         20           60         40

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

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

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

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

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

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.

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

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

=(50/70)

## = 0.714

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

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

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

= 50 / (50 + 10)

= 50 / 60

= 0.83

F1 Score:

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

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

= 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 haveheart 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.