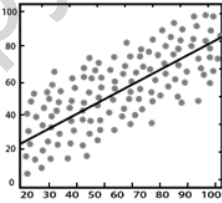


**SUPERNOVA-LEARNPYTHON****CLASS X****SAMPLE PAPER - II****ARTIFICIAL INTELLIGENCE (SUBJECT CODE - 417)****Max. Time: 2 Hours****Max. Marks: 50***General Instructions:*

1. Please read the instructions carefully.
2. This Question Paper consists of 21 questions in two sections: Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. Out of the given (5 + 16 =) 21 questions, a candidate has to answer (5 + 10 =) 15 questions in the allotted (maximum) time of 2 hours.
5. All questions of a particular section must be attempted in the correct order.
6. SECTION A - OBJECTIVE TYPE QUESTIONS (24 MARKS):
  - i. This section has 05 questions.
  - ii. Marks allotted are mentioned against each question/part.
  - iii. There is no negative marking.
  - iv. Do as per the instructions given.
7. SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):
  - i. This section has 16 questions.
  - ii. A candidate has to do 10 questions.
  - iii. Do as per the instructions given.
  - iv. Marks allotted are mentioned against each question/part.

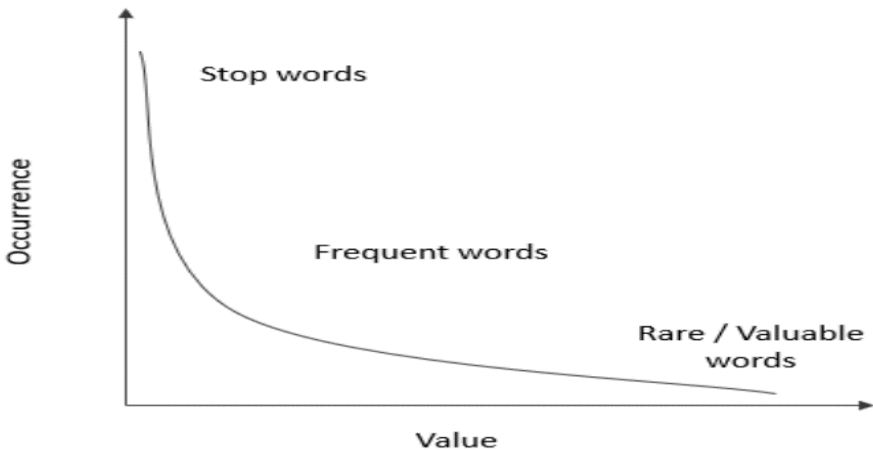
**\*NOTE: This question paper contains 6 pages.****SECTION A: OBJECTIVE TYPE QUESTIONS**

<b>Q. 1</b>	<b>Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)</b>	
i)	_____ is all about finding and listing your goals and then planning on how to achieve them.	1
ii)	Assertion (A) :- The self management skills helps us to manage ourselves. Result (R) :- That does not mean we have to develop a positive attitude, self control, discipline etc. a. Both (A) and (R) are correct and (R) is the correct explanation for (A) b. Both (A) and (R) are correct and (R) is not the correct explanation for (A) c. (A) is true but (R ) is false d. (A) is false but (R ) is true	1
iii)	_____ 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
iv)	Ravi's customer comes to his store and starts shouting at him. He does not get angry. He listens to what his customer is saying. He is _____. a) hardworking b) confident c) patient d) trying new ideas	1

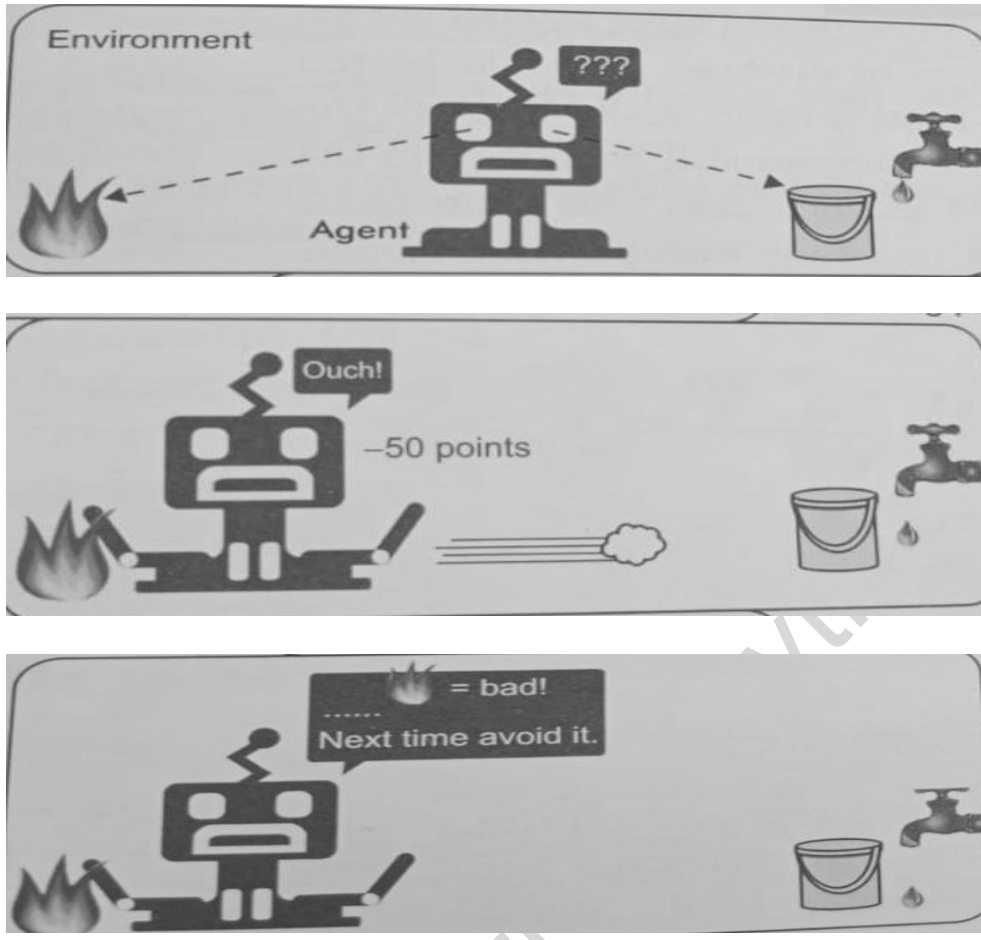
v)	Which of the following functions is not performed using a mouse? a) Turn on b) Hover c) Right click d) Drag and drop	1
vi)	Name the organization that has the Sustainable Development Goals? a) UNICEF b) League of Nations c) United Nations d) World Health Organization	1
<b>Q.2</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
i)	Assertion (A)– One can be a good at mathematics while the other can be a great athlete. Reason(R) – Humans possess different types of intelligences but at different levels. (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
ii)	Identify the algorithm based on the given graph: a. Dimensionally reduction b. Classification c. Clustering d. Regression 	1
iii)	An air conditioner can be turned on and off remotely with the help of the internet but still needs a human touch. This is an example of ..... a) Internet of Things (IoT) b) Artificial Intelligence c) Computer Vision d) Data Science	1
iv)	Amazon had been working on a secret AI recruiting tool. The machine-learning specialists uncovered a big problem: their new recruiting engine did not like women. The system taught itself that male candidates were preferable. It penalized resumes that included the word “women”. This led to the failure of the tool. This is an example of a) Data Privacy b) AI access c) AI Bias d) Data Exploration	1
v)	A _____ is divided into multiple layers and each layer is further divided into several blocks called nodes. a) Neural Networks b) Convolutional Neural Network (CNN) c) Machine learning algorithm d) Hidden Layers	1
vi)	Statement 1: Where block helps you to focus on the context/situation/location of the problem. Statement 2: What block helps you need to determine the nature of the problem. a) Statement 1 is correct and Statement 2 is incorrect b) Statement 2 is correct and Statement 1 is incorrect c) Both Statement 1 and Statement 2 are incorrect d) Both Statement 1 and Statement 2 are correct	1

<b>Q.3</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
i)	Name any 2 methods of collecting data. a) Surveys and Interviews b) Rumours and Myths c) AI models and applications d) Imagination and thoughts	1
ii)	_____ is a domain of AI that depicts the capability of a machine to get and analyse visual information and afterwards predict some decisions about it.	1
iii)	Let's say a user A who is a sports enthusiast bought, pizza, pasta, and a coke. Now a couple of weeks later, another user B who rides a bicycle buys pizza and pasta. He does not buy the coke, but Amazon recommends a bottle of coke to user B. Why did this happen? a) E-commerce websites like Amazon make use of Machine Learning to recommend products to their customers. b) This kind of recommendation comes from collaborative filtering, which is the process of comparing users with similar shopping behaviours in order to recommend products to a new user with similar shopping behaviour. c) Both a and b d) None of the above	1
iv)	Leena was learning about NLP. She wanted to know the term used for the whole textual data from all the documents altogether. Help her in identifying the term used for it. a) Predictions b) Accuracy c) Corpus d) F1 Score	1
v)	The words extracted through Lemmatisation are called _____	1
vi)	It refers to the unsupervised learning algorithm which can group the unknown data according to the patterns or trends identified out of it. (a)Regression (b)Classification (c)Clustering (d)Dimensionality reduction	1
<b>Q.4</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
i)	Rajat has made a model which predicts the performance of Indian Cricket players in upcoming matches. He collected the data of players' performance with respect to stadium, bowlers, opponent team and health. His model works with good accuracy and precision value. Which of the statement given below is <b>incorrect</b> ? (a) Data gathered with respect to stadium, bowlers, opponent team and health is known as Testing Data. (b) Data given to an AI model to check accuracy and precision is Testing Data. (c) Training data and testing data are acquired in the Data Acquisition stage. (d) Training data is always larger as compared to testing data.	1
ii)	Statement 1 : The data with which the machine can be trained is the testing data Statement 2 : The data with which the model is evaluated is the training data a) Statement 1 is correct and Statement 2 is incorrect b) Statement 2 is correct and Statement 1 is incorrect c) Both Statement 1 and Statement 2 are correct d) Both Statement 1 and Statement 2 are incorrect	1
iii)	A single pixel in a grey scale image requires _____ bits to represent different shades from black(0) to white (255).	1

iv)	_____ is a term used for any word or number or special characters occurring in a sentence.	1
v)	What is the full form of TF-IDF?	1
vi)	The stem word for the word “ <i>Carries</i> ” is , a) carry b) carr c) carri d) car	1
<b>Q.5</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
i)	Sahana made a Rail Ticket Availability predictor system for which she had collected the dataset and used all the dataset to train the model. Then, she used the same data to evaluate the model which resulted in the correct answer all the time but was not able to perform with unknown dataset. Name the concept which is causing this issue.	1
ii)	Tharun was confused with the terms used in the evaluation stage. Suggest him the term used for the percentage of correct predictions out of all the observations. (a) Accuracy (b) Precision (c) Recall (d) F1 Score	1
iii)	The evaluation parameter which plays a vital role in the predicting the outbreak of a viral pandemic is , a) True positive b) False positive c) False Negative d) True Negative	1
iv)	Which of the following evaluation metric is a measure of balance between other two metrics? a) Accuracy b) Precision c) F1 score d) Recall	1
v)	Pooja has created an AI classification model that predicts whether a mail is spam or not. She used a confusion matrix to record the output generated by the model. The model predicts mail as spam when it is spam. What is this situation called? a) False Positive b) True Positive c) False Negative d) True Negative	1
vi)	Google processes more than _____ of data every day, had there been no data science, Google wouldn't have been the 'Google' we know today. a) 20 petabytes    b) 20 Giga bytes    c) 20 terabytes    d) 20 zetta byte	1
	<b><u>SECTION B: SUBJECTIVE TYPE QUESTIONS</u></b> <b>Answer any 3 out of the given 5 questions on Employability Skills</b> <b>Answer each question in 20 – 30 words. (2 x 3 = 6 marks)</b>	
<b>Q.6</b>	What is the importance of setting goals in life?	2
<b>Q.7</b>	List some of the maintenance activities for the computer system.	2
<b>Q.8</b>	Entrepreneurship has a positive impact on society. List out any two factors to justify your answer .	2
<b>Q.9</b>	Name the communication style in the following scenarios. a) An umpire declaring a boundary scored by batsman by waving his hands b) A leave letter submitted to your class teacher	2

<b>Q.10</b>	Define Sustainable development.	2
	<b>Answer any 4 out of the given 6 questions in 20 – 30 words each (2 x 4 = 8 marks)</b>	
<b>Q.11</b>	Give the AI domain used in these applications a) Air Traffic route planning b) Snap chat filters	2
<b>Q.12</b>	Define the computer vision tasks associated with multiple objects .	2
<b>Q.13</b>	Sharmila is learning AI and she is eager to know about AI ethics. Help her understand any two ethical issues related to AI.	2
<b>Q.14</b>	a) Mention the sources for data collection. b) Suggest any two points to keep in mind while accessing data from any data source.	2
<b>Q.15</b>	<p>Explain from the given graph, how the value and occurrence of a word are related in a corpus?</p> 	
<b>Q.16</b>	There are some images of boys and girls. The girls are positive cases and boys are negative cases. The model is given 20 images of girls and 30 images of boys. The machine correctly identifies 12 girls and 23 boys. Create a confusion matrix for the particular cases.	2
	<b>Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks)</b>	
<b>Q.17</b>	Samiksha wants to understand more about the field of AI . Help her understand the term artificial intelligence by giving the right definition and explain to her with an example how machines become artificially intelligent.	4

**Q.18** Identify the figure and explain about the type of Learning based AI model given below. Also explain its types. 4



**Q.19** Neural networks are said to be modelled the way how neurons in the human brain behave. A similar system is mimicked by the AI machine to perform certain tasks. Explain how neural networks work in an AI model and mention any three features of Neural Networks. 4

**Q.20** Create a document vector table for the given corpus : 4  
 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.

**Q.21** Traffic Jams have become a common part of our lives nowadays. Living in an urban area means you have to face traffic each and every time you get out on the road. Mostly, school students opt for buses to go to school. Many times the bus gets late due to such jams and students are not able to reach their school on time. Thus, an AI model is created to predict explicitly if there would be a traffic jam on their way to school or not. The confusion matrix for the same is: 4

Confusion Matrix		Reality	
		Yes	No
Prediction	Yes	50	45
	No	17	10

- Identify the total number of wrong predictions made by the model.
- Calculate precision, recall and F1 Score.