KENDRIYA VIDYALAYA SANGATHAN ERNAKULAM REGION
PRE-BOARD EXAMINATION (2026-27)
CLASS: X

MAX MARKS: 50
TIME: 2 Hrs.

SUBJECT: ARTIFICIAL INTELLIGENCE (417)

General Instructions:

- Please read the instructions carefully.
- This Question Paper consists of 21 questions in two sections: Section A & Section B.
- Section A has Objective type questions whereas Section B contains Subjective type questions.
- 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.
- All questions of a particular section must be attempted in the correct order.

SECTION A - OBJECTIVE TYPE QUESTIONS (24 MARKS):

- This section has 05 questions.
- Marks allotted are mentioned against each question/part.
- There is no negative marking.
- Do as per the instructions given.

SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):

- This section has 16 questions.
- A candidate has to do 10 questions.
- Do as per the instructions given.
- Marks allotted are mentioned against each question/part.

	SECTION A: OBJECTIVE TYPE QUESTIONS	
1.	**Answer any 4 out of the given 6 questions on Employability Skills**	**4 X 1 = 4**
(i)	Which type of communication takes place when number of people is small enough to communicate with each other effectively? A. Interpersonal communication C. Public communication B. Intrapersonal communication D. Small group communication	1
(ii)	**Statement 1:** A realistic goal is one that has no timeline or plans for execution.	1

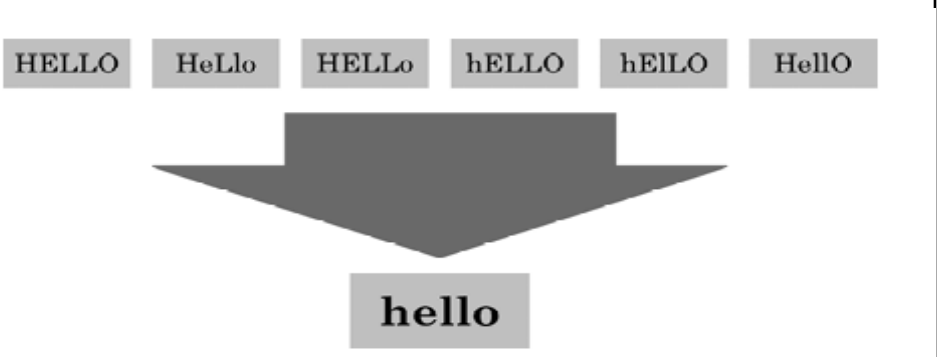
	Statement 2: Breaking down big goals into smaller parts will make the goal achievable. A. Both Statement I and Statement II are correct B. Both Statement I and Statement II are incorrect C. Statement I is correct but Statement II is incorrect D. Statement I is incorrect but Statement II is correct	
(iii)	Entrepreneurs are _____, not _____.	1
(iv)	A _____ is a software program that attaches itself to other programs and alters their behavior. A. Operating system C. Firewall B. Antivirus D. Computer Virus	1
(v)	Here are the steps that take place when starting computer. Rearrange the steps in the correct order. i) Desktop appears after login ii) Login screen appears iii) Power on Self-Test (POST) starts iv) Operating system starts v) Welcome screen appears A. i) → ii) → iii) → iv) → v) C. ii) → iv) → iii) → v) → i) B.iii) → iv) → v) → ii) → i) D. iii) → v) → iv) → ii) → i)	1
(vi)	_____ is caused when natural or a man-made disturbance disrupts the natural balance of an ecosystem. A. Pollution C.Damage B.Natural disaster D.Ecological Imbalance	1
2.	**Answer any 5 out of the given 6 questions.**	**5 X 1 = 5**
(i)	When you search for 'Doctor' on a search website, the results for Doctor images might mostly come up as 'male'. Whereas for 'Nurse' most results would be 'female'. What does this depict? A. Gender bias C.Data Privacy B.Poor training D.Lack of access	1
(ii)	Identify the incorrect statement(s) from the following: (i) Deep learning is a subset of Machine Learning (ii) Machine Learning is a subset of Deep Learning (iii) Artificial Intelligence is a subset of Deep Learning	1

	(iv) Deep Learning is the advanced form of AI and ML A. only (i) C.(ii) and (iii) B.(i) and (ii) D.Only (iii)	
(iii)	In the context of autonomous vehicle safety systems, which type of error would be most critical to minimize? A. False Positive (detecting danger when there isn't any) B.False Negative (failing to detect actual danger) C.True Positive (detecting danger correctly) D.True Negative (correctly identifying that there is no danger)	1
(iv)	Anita and Surjit are creating an AI application that will classify different types of fruits. The Computer Vision task that will identify the type of fruit and assign a label to it is called: A. Segmentation C.Classification B.Classification + Localization D.Object Detection	1
(v)	Identify the application of Computer Vision from the given picture: A. Facial Recognition C. CV in Retail B.Medical Imaging D. Face Filters 	1
(vi)	Smart assistants such as Alexa and Siri are examples of: A. Natural Language Processing C.Data Science B.Machine Learning D.Computer Vision	1
3.	**Answer any 5 out of the given 6 questions.**	**5 X 1 = 5**
(i)	Which algorithms result in two things, a vocabulary of words and frequency of the words in the corpus? A. Sentence segmentation B.Tokenisation C.Bag of Words D.Text normalization	1
(ii)	**Statement 1:** The drone technology helps farmers spot intrusions, predicts diseases, estimates the amount of crop production, save time and avoids the difficulties of physical manual inspections. **Statement 2:** The statement given above is an example of Natural Language Processing. A. Both Statement 1 and Statement 2 are correct. B. Both Statement 1 and Statement 2 are incorrect. C. Statement 2 is correct and Statement 1 is incorrect. D. Statement 1 is correct and Statement 2 is incorrect.	1
(iii)	Recall is a classification metrics that measures: A. How many False positives are correctly identified by model	1

	B. How many actual positive cases were correctly identified by model. C. How many negative cases were correctly identified by model. D. The overall accuracy of the model	
(iv)	Which evaluation condition is indicated by the given diagram? A. False Positive B. False C. True Positive D. True Negative 	1
(v)	Srishti learnt about AI terminologies but was not able to recollect term that is used to refer to machines that perform tasks with vast amounts of data using neural networks. Help her with correct term.	1
(vi)	The 4Ws Problem Canvas is a part of: A. Problem Scoping B.Data Acquisition C.Modeling D.Evaluation	1
4.	**Answer any 5 out of the given 6 questions.**	**5 X 1 = 5**
(i)	**Assertion (A):** Bioethics is an example of a Value-based Framework for AI. **Reason (R):** Bioethics deals with ethical issues related to health, medicine, and biological sciences. A. Both (A) and (R) are true and (R) is the correct explanation of (A). B. Both (A) and (R) are true but (R) is not correct explanation of (A). C. (A) is true, but (R) is false. D. (A) is false, but (R) is true.	1
(ii)	In the given fruit dataset, what do we call Fruit, Color and Price**?** A. Instances B.Values C.Models D.Features 	1
(iii)	State True or False**:**	1

	In machine learning, error is used to determine how accurately the model can predict data.	
(iv)	An AI model was tested with 1000 test samples**.** If True Positive (TP) = 200**,** True Negative (TN) = 600**,** False Positive (FP) = 100**,** and False Negative (FN) = 100**,** how many total predictions were correct? A. 300 B. 600 C. 800 D. 900	1
(v)	_____ is mainly focused on enhancing raw input images or preparing them for other tasks, such as rescaling, change brightness, or changing tones. It is a subset of _____. A. Computer Vision; Image Processing B. Machine Learning; Artificial Intelligence C. Image Processing; Computer Vision D. Object Detection; Image Processing	1
(vi)	Which of the following words is a lemma for **"**caring**"** in Natural Language Processing? A.Care B.Cared C.Cares D. Car	1
5.	**Answer any 5 out of the given 6 questions.**	**5 X 1 = 5**
(i)	Aditi, a student of class XII developed a chatbot that clarifies doubts of Economics students. She trained the software with lots of data sets catering to all difficulty levels. If any student would type or ask questions related to Economics, the software would give an instant reply. Identify the domain of AI in the given scenario. A. Computer Vision C. Data Science B. Natural Language Processing D.None of these	1
(ii)	What is the range of possible pixel values in a byte image format? A.0 to 100 B. 0 to 255 C.1 to 256 D.–128 to 127	1
(iii)	An e-commerce platform analyzes customer purchase patterns to recommend "Customers who bought product X also bought product Y." This uses: A. Classification model B.Regression model C.Association model D.Clustering model	1
(iv)	Data about the houses such as square footage, number of rooms, features, whether a house has a garden or not, and the prices of these houses, i.e., the corresponding labels are fed into an AI machine. By leveraging data coming from thousands of houses, their features and	1

	prices, we can now train the model to predict a new house's price. This is an example of: A. Reinforcement learning B. Supervised learning C.Unsupervised learning D. None of the above	
(v)	The deployment stage of the AI Project Cycle is crucial for: A. Collecting initial data. B. Training the model. C. Ensuring successful integration in real-world environment. D. Exploring data patterns.	1
(vi)	The Indian Government banned a few apps stating – servers in the hostile nation are receiving and using the acquired data improperly. Which terminology suits best for this action? A. AI Ethics B. Data Privacy C. AI Bias D. AI Access	1
	Section – B (Subjective Type Questions)	
	Answer any 3 out of the given 5 questions on Employability Skills in 20-30 words each.	**2 x 3 = 6**
6.	Write one communication barrier and suggest a way to overcome it.	2
7.	List any 4 activities that help in stress management.	2
8.	"To get success, every business idea needs to be unique or special." Is the above statement a myth or a fact? Why?	2
9.	Sustainable development can actually happen only when each one of us works towards it. Mention any four ways in which we can reduce inequality at our own level.	2
10.	"The Trojan Horse was a wooden horse said to have been used by the Greeks during the Trojan War to enter the city of Troy and win the war." What does Trojan horse mean in computer terminology?	2
	Answer any 4 out of the given 6 questions in 20-30 words each.	**4 x 2 =8**
11.	Explain the difference between sector-based and value-based ethical frameworks with one example of each	2
12.	For a healthcare organization aiming to predict disease outbreaks and efficiently allocate resources using medical records, would you recommend Supervised Learning **or** Unsupervised Learning**?** Justify your answer briefly.	2

13.	Explain the given picture which depicts one of the processes in NLP**.** Also mention the purpose achieved by this process. 	2
14.	With reference to the Evaluation stage of the AI Project Cycle, explain the term Accuracy. Also write the formula	2
15.	If you do an image search for vacations on a popular search engine, the first few searches mostly return the picture of beaches. What is the concern here?	2
16.	Give any two characteristics of Artificial Neural Networks.	2
	Answer any 3 out of the given 5 questions in 50-80 words each.	**3 x 4 = 12**
17.	A smart city project wants to implement an integrated AI system. For each of the following requirements, identify the most appropriate AI domain and justify your choice: (i) Analyzing traffic camera footage to count vehicles and detect traffic violations automatically. (ii) Processing citizen complaints written in local languages to categorize them as water supply, electricity, or waste management issues.	4
18.	Differentiate between stemming and lemmatization**.** Explain with the help of an example.	4
19.	(i) Explain Reinforcement Learning with an example. (ii) A drawback of Rule Based Approach is that learning is static. Explain the given statement	4

<table>
<tr><td>20.</td><td>Consider the following documents:
Document 1: ML and DL are part of AI.
Document 2: DL is a subset of ML.

Implement all the four steps of Bag of Words (BoW) model to create a document vector table.</td><td>4</td></tr>
<tr><td>21.</td><td>An AI model made the following sales prediction for a new mobile phone which they have recently launched:
<table><tr><th>Confusion Matrix</th><th>Reality: Yes</th><th>Reality: No</th></tr><tr><td>Prediction: Yes</td><td>50</td><td>40</td></tr><tr><td>Prediction: No</td><td>12</td><td>10</td></tr></table>i. Identify the total number of wrong predictions made by the model.
ii. Calculate precision, recall and F1 Score.</td><td>4</td></tr>
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