

**ARMY PUBLIC SCHOOL, BANGALORE**  
**PRE BOARD EXAM II (2024-25)**

<b>Date: 09/12/24</b>	<b>Set: B</b>	<b>Max Marks: 50</b>
<b>Subject: Artificial Intelligence</b>	<b>Name:</b>	<b>Time: 2 Hr</b>
<b>Class: X</b>	<b>Roll No:</b>	<b>No of Pages: 06</b>

**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. There is no negative marking.
  - iii. Do as per the instructions given.
  - iv. Marks allotted are mentioned against each question/part.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
  - i. This section contains 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.

**SECTION A: OBJECTIVE TYPE QUESTIONS**

**Q1) Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)**

i)	SMART method can be used to set goals to make you successful in your career and personal life. What is the full form of SMART	1
ii)	_____ communication is the use of body language, gestures and facial expressions to convey information to others. (a) Written Communication (b) Formal Communication (c) Non Verbal Communication (d) Verbal Communication	1
iii)	Choose the option which is not a sustainable development goal according to United Nations. a) Clean Water and Sanitation b) Gender Equality c) Population d) Reduced Inequalities	1

iv)	Ramya travelled to Sweden from India to pursue her higher education. But she doesn't know how to speak Swedish (language of Sweden). Because of this, she was unable to find a part time job. This is an example of _____ (a) Interpersonal barrier (b) Physical barrier (c) Organisational barrier (d) Linguistic barrier	1
v)	_____ is a work which is all about identifying and noting how we spent our time, and analysing how to spend our time effectively. (a) Organising (b) Prioritising (c) Controlling (d) Tracking	1
vi)	A computer automatically runs a basic program called as soon as it is switched on or the power button is pushed on: (a) BIOS(Basic Input/Output System) (b) IOS(Input/Output System) (c) BOSS(Basic On System Startup) (d) POS(Power On System)	1

**Q2) Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**

i)	_____ is the process of finding instances of real-world objects in images or videos. (a) Instance segmentation (b) Object detection (c) Classification (d) Image segmentation	1
ii)	Aditi, a student of class XII developed a chatbot that clarifies the 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 (b) Data Science (c) Natural Language Processing (d) None of these	1
iii)	“ Artificial Intelligence red color under Moonlight” The above sentence is an example of correct syntax but incorrect semantics. What is the meaning of semantics: a) rules governing sentence structure, not the meaning of words or phrases. b) understanding how meaning is encoded and decoded through language. c) structure of words, such as prefixes, roots, and suffixes d) study of the origin and history of words	1
iv)	“This type of intelligence measures one’s awareness of natural world around them and their sensitivities to any changes that occur. It allows us to identify the variations among two different species and understand how they are related”. Identify the type of intelligence described in the above sentence. (a) Naturalist Intelligence (b) Interpersonal Intelligence (c) Intrapersonal Intelligence (d) Existential Intelligence	1

v)	A corpus contains 4 documents in which the word 'diet' was appearing once in document1. Identify the term in which we can categorise the word 'diet'. (a) Stop word (b) Rare word (c) Frequent word (d) Removable word	1
vi)	Deep Face technology, which creates a person real in virtual world is based on (a) Computer Vision (b) Computer Aided Design (c) Natural Language Processing (d) Data Science	1

**Q3) Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**

i)	What is a System Map? (a) Helps to make relation between multiple element (b) Indicate the relationship using + or – (c) Both (a) and (b) (d) None of the above	1
ii)	Machine have abilities to learn from the experience or data. a) Artificial Intelligence b) Machine Learning c) Deep Learning d) None of the above	1
iii)	_____are the words which occur very frequently in the corpus but do not add any value to it. (a) Special Characters (b) Stopwords (c) Roman Numbers (d) Useless Words	1
iv)	In text normalization, text from multiple documents and the term used for the whole textual data from all the documents altogether is known as _____ (a) Corpus (b) Tokens (c) Lemma (d) Stem	1
v)	The method of collecting correct and dependable data to work with is known as _____. a) Problem Scoping b) Data Acquisition c) Data Exploration d) Modeling	1
vi)	The F1 score ranges from _____ to _____.	1

**Q4) Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**

i)	If the True Positive value is 10 and False Positive value is 15. Find the value Precision for this AI model a) 0.4 b) 0.5 c) 0.6	1
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	d) None of these	
ii)	Classification and Regression are _____ and approach followed is _____. a) Supervised , learning b) unsupervised, learning c) Supervised , rule-based d) unsupervised, rule-based	1
iii)	Assertion (A)– One can be a good singer 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
iv)	Google translate is Google’s free service that instantly translates words, phrases and web pages between English and other 100 languages. Google translate uses: a) 4w problem canvas b) neural network c) KWLH chart d) System maps	1
v)	When AI is merged with the Internet of Things, it can lead to _____ of data that allows remote access to internet-connected devices and appliances to communicate. a) Storage b) Cloud Computing c) Automation d) Processing	1
vi)	Which of the following Computer Vision tasks is most likely used in automated vehicle parking systems? a) Object Detection b) Image Classification c) Audio Recognition d) Speech Processing	1

**Q5) Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**

i)	Radhika learnt about AI terminologies but was not able to recollect the term that is used to refer to machines that perform tasks with vast amounts of data using neural networks. Help her with the correct term.	1
ii)	Assertion (A): Image classification is the process of categorizing and labeling groups of pixels or vectors within an image based on specific rules. Reasoning (R): Image classification is a crucial step in medical imaging, allowing for the diagnosis of diseases from X-rays or MRI scans. (a) Both A and R are true, and R is the correct explanation for A. (b) Both A and R are true, but R is not the correct explanation for A. (c) A is true, but R is false. (d) Both A and R are false..	1
iii)	Identify the incorrect domain-application pair from the following: (i) Data Science: Price Comparison websites (ii) Computer Vision: Image Processing Software (iii) Natural Language Processing: Alexa (iv) Artificial Intelligence: Spreadsheet  a) Only (iv) b) (i) and (iii) c) (ii) and (iv)	1

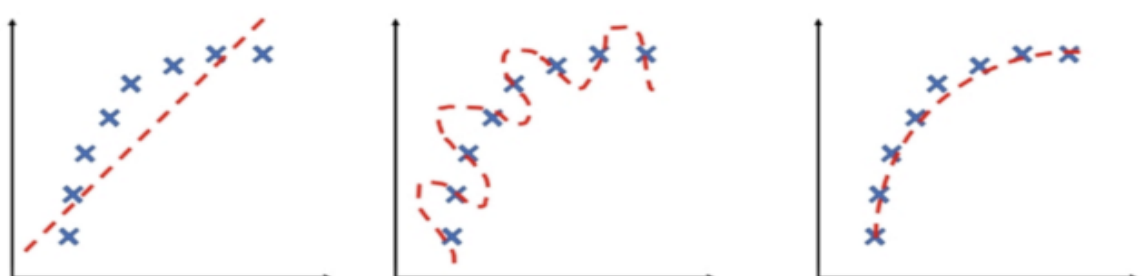
	d) (iii) and (iv)	
iv)	<p>F1 score is :</p> <p>(a) Absolute mean of Precision and Recall</p> <p>(b) Harmonic mean of Precision and Recall</p> <p>(c) Squared mean of Precision and Recall</p> <p>(d) All of these</p>	1
v)	<p>Vinay, student of class 12th with his friend Samar prepared an app called “I Health”, which he has made using large amounts of data and putting all the possible food options that he could put. This app allows the user to keep track of what they eat and the time as well. The app analyses what the user enters and suggests some alternatives to them. This is an example of:</p> <p>a) Computer Vision</p> <p>b) Data Science</p> <p>c) Natural Language Processing</p> <p>d) None of these</p>	1
vi)	Define AI bias.	1

### **SECTION B: SUBJECTIVE TYPE QUESTIONS**

Answer any 3 out of the given 5 questions on Employability Skills (2 x 3 = 6 marks) Answer each question in 20 – 30 words.

Q6)	Sameera is always punctual at school. She has a regular schedule that she follows every day. She plans for study and play time in advance. Enlist the four steps Sameera must have followed for effective time management.	2
Q7)	List and explain any three factors causing ecological imbalance.	2
Q8)	Define System Software and Application Software.	2
Q9)	List any four characteristics of an Entrepreneur?	2
Q10)	You have recently attended a workshop on Cyber security in school. You are excited to share the information with your mother. How would you describe the event.	2

Answer any 4 out of the given 6 questions in 20 – 30 words each (2 x 4 = 8 marks)

Q11)	 <p>Name the following figure according to how well the model's output matches the data sample.</p>	2
Q12)	Define Neural Network of an AI model. Give any 2 features of Neural Network.	2
Q13)	Ajay wants to access data from various sources. Suggest him any four points that he needs to keep in mind while accessing data from any data source.	2
Q14)	Mention and explain any four examples of artificially intelligent applications in our smartphones.	2

Q15)	We, human beings, can read, write and understand many languages. But computers can understand only machine language. Do you think we might face any challenges if we try to teach computers how to understand and interact in human languages? Explain.	2
Q16)	Explain any four applications related to Computer Vision.	2

Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 marks)

Q17)	<p>“Mohan and Soham want to solve the problem of plastic accumulation in the oceans.”</p> <p>Based on the given statement</p> <p>a) Explain the 4Ws canvas.</p> <p>b) Draw the problem statement template.</p>	4									
Q18)	<p>The AI model came up with the following AI model with the following predictions:</p> <p>Find</p> <p>a) How many total tests have been performed.</p> <p>b) Calculate precision ,recall and F1 score</p> <table border="1"> <tr> <td>Confusion Matrix on SPAM FILTERING:</td><td>Reality: YES</td><td>Reality: NO</td></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>	Confusion Matrix on SPAM FILTERING:	Reality: YES	Reality: NO	Prediction: YES	50	40	Prediction: NO	12	10	4
Confusion Matrix on SPAM FILTERING:	Reality: YES	Reality: NO									
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Q19)	<p>Text Normalisation is an important process in NLP to make sure that the Chatbots and the virtual assistance understand and respond to user’s message correctly.</p> <p>Define Normalisation and list the various steps to normalise the given text. Perform each step on the given corpus.</p> <p><b><i>“In an unexpected turn of events of events, the company’s Q3 earning surged by 15.6% year-over-year. The CEO said, ‘We are extremely pleased with the result’”</i></b></p>	4									
Q20)	<p>Paul is a beginner in the field of Artificial Intelligence. He is confused among the core terms of Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL). Many times these terms are used interchangeably, but are they the same? Justify your answer. Help him in understanding these terms by drawing a well labelled diagram to depict the interconnection of these terms.</p>	4									
Q21)	Define AI and the different domains in AI. Explain the AI Project Cycle in detail.	4									