



# Delhi Public School, Howrah

PERIODIC ASSESSMENT II (2024 – 2025)

CLASS – X

**Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence.**

**SUBJECT: ARTIFICIAL INTELLIGENCE (SUBJECT CODE 417)**

**THEORY EXAMINATION**

**Time Allowed:-2 Hours**

**F.M.-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.

### SECTION A: OBJECTIVE TYPE QUESTIONS

Q. 1	Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)	
i.	_____ feedback merely identifies or describes one's action by answering the following three questions – "where am I now?", "where am I going?" and "how can I close the gap?". (a) Specific (b) Formative (c) Descriptive (d) Summative	(1)
ii.	_____ is the capacity for introspection and the ability to recognise oneself as something different from other individuals. (a) Self-regulation (b) Self-motivation (c) Self-dedication (d) Self-awareness	(1)
iii.	_____ motivation refers to behavior that is driven by internal rewards. (a) Extrinsic (b) Intrinsic (c) self (d) Peer	(1)
iv.	Which of the following refers to controlling one's impulses, management of aggression, planning and reasoning, emotional regulation and social skills? (a) Self-regulation (b) Self-motivation (c) Self-dedication (d) Self-awareness	(1)
v.	Viruses on computers are not generated accidentally but are programmed intentionally by a programmer known as virus _____. (a) writer (b) creator (c) author (d) designer	(1)

vi.	There are thousands of files stored in our hard disk in several pieces, and over time, those pieces often gets scattered around our hard disk. Which of the following operations can help improve the hard disk performance by bringing all those scattered pieces together, enabling in finding and opening each file faster? (a) Disk clean-up (b) Disk defragmenter (c) Disk backup (d) Disk format	(1)
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<b>Q. 2</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
i.	_____ is the fuel of AI. (i) Data (ii) Intelligence (iii) Reasoning (iv) Knowledge	(1)
ii.	_____ initiates the working of the human brain by using multi-layered structure of algorithms called neural networks. (a) Reinforcement learning (b) Supervised learning (c) Unsupervised learning (d) Deep learning	(1)
iii.	The area of AI that deals with people getting opportunity to avail several AI tools is called _____. (a) AI Ethics (b) AI Bias (c) AI Access (d) Weak AI	(1)
iv.	AI systems which learns such a degree of data processing that it starts taking decision that can lead to partiality in output generation is termed as _____ AI. (a) destructive (b) biased (c) negative (d) rogue	(1)
v.	_____ is the discipline of teaching machines how to see and perceive the human world. (a) Data Science (b) NLP (c) CV (d) ML	(1)
vi.	_____ intelligence is defined as the ability to visually perceive and modify information present around us. (a) Visual-spatial (b) Audio- visual (c) Visual-analytical (d) Visual-synthetical	(1)

<b>Q. 3</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
i.	Which of the following domains of AI does Amazon's Alexa belongs to? (i) Data Science (ii) CV (iii) NLP (iv) DL	(1)
ii.	_____ method refers to training of an AI system with vast amount of data and has the ability to learn from unstructured or unlabelled data. (a) Deep learning (b) Machine learning (c) Computer Vision (d) Natural Language Processing	(1)
iii.	In 2015, a set of 15 global goals were formulated in the United Nations General Assembly and were adopted by all the United Nation Member States including India to combat poverty, protect the planet, ensure peace and prosperity for all by 2030. It is known as _____. (a) SDGs (ii) Good health and wellbeing goals (iii) No hunger goals (iv) No poverty goals	(1)
iv.	Since childhood you must have been taught that you will be appreciated and rewarded for achieving something good. Hence from this learning we take decisions to perform good actions instead of what is wrong. This level of learning is a type of _____ learning. (a) Supervised (b) Unsupervised (c) Reinforcement (d) Semi- Supervised	(1)
v.	_____ is the process of understanding the reliability of any AI model, based on the outputs by feeding the test dataset into the model and comparing it with actual answers. (a) Evaluation (b) Modelling (c) Analysis (d) Testing	(1)
vi.	Which method of learning is best applicable for continuous data? (a) Classification (b) Clustering (c) Regression (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.	_____ learning is the training of machines using information that is neither classified nor labelled and allowing the algorithm to act on that information without guidance. (a) Unsupervised (b) Deep (c) Reinforcement (iv) Supervised	(1)
ii.	Which of the following is a smart online tool to draw system maps? (i) Smartbot (ii) NumPy (iii) SciPy (iv) Loopy	(1)

iii.	Sensors, surveys, interviews and observations are useful tools in _____ phase. (a) problem scoping (b) data collection (c) data exploration (d) modelling	(1)
iv.	Face unlock feature in our smartphones is an example of- (a) CV (b) NLP (c) Data Science (d) Virtual Assistant	(1)
v.	Structured Query Language is one of the most popular languages for _____. (a) CSV (b) spreadsheet (c) RDBMS (d) Python	(1)
vi.	Which of the following is not true about data collection? (a) One should use the data which is available publicly. (b) The process of data collection does not require any skill. (c) Use reliable source for collecting the data, especially if you look for it online. (d) Do not use the personal dataset of any individual without consent.	(1)

<b>Q. 5</b>	<b>Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)</b>	
i.	_____ intelligence involves an individual's ability to contemplate deep questions about life and survival. (i) Existential (ii) Intrapersonal (iii) Logical-mathematical (iv) Interpersonal	(1)
ii.	What is the name of India's first and largest AI banking chatbot? (a) GVA (b) CTM (c) LMS (d) EVA	(1)
iii.	Collaborative robots (cobots in brief) are applications of AI in _____. (a) healthcare (b) social networking (c) manufacturing industry (d) education	(1)
iv.	_____ skill is the ability to think, learn and solve a problem by taking a decision and selecting the most suitable option out of multiple ones. (a) Problem scoping (b) Problem solving (c) Problem inclusion (d) Problem questioning	(1)
v.	Possible bias in data collection, problem of inclusion, problem of facts and interpretation are the ethical concerns of AI related to _____. (a) implications of AI systems (b) data (c) disadvantages of AI systems (d) future possibilities	(1)
vi.	An IT company uses an attendance system which can predict the presence and absence of employees through facial recognition. The database of facial characteristics and images of employees has been fed to the system for proper functioning in real time. What will be the database termed as? (a) Training data (b) Testing data (c) SQL data (d) Collected data	(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.**

Q. 6	The rules of communication states that about 58% of our success depends on body language. One needs to be very careful with gestures especially when he or she is in a formal setting. Explain two common body language mistakes to avoid and uplift ourselves during a communication.	(2)
Q. 7	Communication barriers may pop up at any stage and create misunderstanding and ambiguity leading to a failed communication. State four factors that can cause communication barriers.	(2)
Q. 8	Discuss two necessary skills that we need to develop in order to work independently.	(2)
Q. 9	An operating system is a software program that manages the hardware and software resources of a computer. Name and explain any of its two categories in brief with examples.	(2)
Q.10	Explain the file management concept in terms of files, folders and sub-folders.	(2)

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

Q.11	AI systems have raised serious ethical concerns all over the world. These issues exists in two forms: (i) Data for AI systems and (ii) Implications of AI systems. Discuss two ethical concerns related to implications of AI systems.	(2)
Q.12	What is a Decision Tree? Define the components (i) Root node and (ii) Leaf node of a Decision Tree.	(2)

Q.13	Machine learning is a subset of Artificial Intelligence which enables machines to improve at tasks with experience. The two techniques used in machine learning are Clustering and Dimensionality Reduction which are types of Unsupervised Learning algorithms. State the differences between Clustering and Dimensionality Reduction techniques with their sample block diagram in this context.	(2)
Q.14	AI systems are only artificially intelligent. These systems cannot beat the intelligence of human beings due to its limited learning capability. Thus, we can say that rule-based systems are the simplest form of AI based on rigid intelligence. Explain the two main components of rule-based system in this regard.	(2)
Q.15	Naved is the coach of a football team. The player's data that Naved maintains contain the performance of the players in the tournaments, which is arranged in a tabular form. Now, you are required to find the trends, patterns and connection in the datasets that he has collected and acquired so far. Which phase of AI project development is targeted for the above analysis? Explain the phase in brief.	(2)
Q.16	"Online recommendation systems such as YouTube video recommendation system and Products Recommendation Engine on an e-commerce website makes use of Reinforcement learning to provide personalized experience to the users". Justify the statement.	(2)

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

Q.17	Explain the 4Ws problem canvas associated with the problem scoping phase of an AI system development.	(4)
Q.18	Define the term Neural Network. Draw a block diagram of Neural Network. State the similarities of the components of biological neural network and artificial network.	(4)
Q.19	The term "Data Science" was coined at the beginning of the 21 <sup>st</sup> Century. For Data Science, usually the data is collected in the form of tables. Define the term Data Science. State and define three commonly used table formats of data.	(1+3)
Q.20	The canteen of Little Star School provides food to the students and needy children in the vicinity. Everyday the canteen prepares nutritious food item such as omelettes and sandwiches. Even with an estimation, most of the time at the end of the day, a lot of sandwiches are left unconsumed and are discarded as they cannot be served again on the next day. This causes huge loss for the canteen's owner and raises the global issue of wastage of food. For this issue an AI based system is prepared so that proper allocation of food preparation per day can be monitored abiding proper stages of an AI project development cycle. The evaluation stage is the final stage of AI project cycle. After training the model with dataset of 20 days, now it is time to check its efficiency. State the first four steps to do so.	(4)
Q.21	Alexander is writing a newspaper report on Data Science and its applications. Help Alexander by stating four application areas of Data Science with brief explanation.	(4)