

ARTIFICIAL INTELLIGENCE (SUBJECT CODE - 417)

Class X (Session 2023-2024) HALF YEARLY EXAM

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 04 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.	Which of the following is NOT an element of communication within the communication process cycle? (a) Channel (b) Receiver (c) Sender (d) Time	1

ii.	Which of these is NOT a common communication barrier? (a) Linguistic barrier (b) Interpersonal barrier (c) Financial barrier (d) Organizational barrier	1
iii.	What is the term used when you quickly click the left mouse button twice? a) Hover b) Drag and drop c) Double clicking d) Moving	1
iv.	Elaborate on the ABC of stress management. Answer: ABC of stress management A: Adversity or the stressful event B: Beliefs or the way you respond to the event C: Consequences or actions and outcomes of the event	1
v.	Which is the correct full form of BIOS ? a) Basic Input/Output System b) Basic Intermediate/Opposite System c) Binary Input/Output System d) None of the Above	1
vi.	Which of the following trap small children into inappropriate relations? (a) Online predators (b) Worms (c) Trojan Horse (d) Anti-Virus	1

Q. 2	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i.	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


ii.	<p>“This type of intelligence measures 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”.</p> <p>Identify the type of intelligence described in the above sentence.</p> <p>Answer: Naturalistic Intelligence. Explanation: An additional category of intelligence relating to the ability to process the information on the environment around us.</p>	1
iii.	<p>The term Artificial intelligence was first coined by _____.</p> <p>a). John McCarthy b). Charles Babbage c). Bill Gates d). Tim Berners Lee</p>	1
iv.	<p>Identify the incorrect statement from the following:</p> <p>(a) AI models can be broadly categorized into four domains. (b) Data Science is one of the Domain of AI Model. (c) Price comparison websites are examples of data science. (d) The information extracted through data science can be used make decision about it</p> <p>i. Only (iv) ii. Only (i) iii. (iii) and (iv) iv. (ii) and (iii)</p>	1
v.	<p>Which of the following is the very first humanoid robot?</p> <p>(a) Sophia (b) ASIMO (c) Pepper (d) Romeo</p>	1
vi.	<p>Which of the following is not a virtual assistant?</p> <p>(a) Alexa (b) Cortana (c) Siri (d) Chatbot</p>	1

Q. 3	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i.	<p>A young boy in class 3 has got some Maths homework to finish. He is sitting at a table which has the Google chat bot - Alexa on it, and he is struggling with his homework. Soon, he starts asking Alexa to answer all his questions. Alexa replies with answers and the boy simply writes them down in his notebook. This is an example of _____</p> <p>AI Access</p>	1

ii.	Name any two examples of Machine Learning? Answer: (Any two out of the following) Virtual Personal Assistants, Recommendation systems like Netflix, Face Apps, Online Fraud Detection	1
iii.	Sequence AI Project Cycle correctly: a) Problem Scoping, Data Acquisition, Data Exploration, Modelling, Evaluation b) Problem Scoping, Data Exploration, Data Acquisition, Modelling, Evaluation c) Problem Scoping, Data Acquisition, Modelling, Data Exploration, Evaluation d) Data Acquisition, Data Exploration, Modelling, Evaluation, Problem Scoping	1
iv.	Two popular examples of pocket assistants are _____ and _____. Answer: Cortana, Alexa, Siri, Google Assistant	1
v.	The _____ Sustainable Development Goals (SDGs) were launched at the United Nations Sustainable Development Summit in New York in the year 2015, forming the 2030 Agenda for Sustainable Development. (a) 17 (b) 15 (c) 13 (d) 19	1
vi.	What are the types of chatbots? Answer: 1.Scriptbot, 2. Smartbot	1

Q. 4	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i.	_____helps in assigning a predefined category to a document, organize it in such a way that helps customers to find information they want. For example spam filtering in email, auto tagging on social media, categorization of news articles etc. NLP	1
ii.	Which of the following is the type of data used by NLP applications? (a) Images (b) Numerical data (c) Graphical data (d) Text and Speech	1
iii.	Chat engines enabled with AI are called _____ Ai Chatbots	1
iv.	Which of the following is an example of data science? a. Social media websites b. Price Comparison websites c. Online Shopping websites d. Blog web sites	1
v.	Which programming language is used for AI? a) Python b) HTML c) Perl	1
vi.	<i>Identify the type of chatbot with the information given below:</i> These bots work on pre-programmed instructions inside the application/machine and are generally easy to develop. They are deployed in the customer care section of various companies. Their job is to answer some basic queries that they are coded for and connect them to human executives once they are unable to handle the conversation. Answer: Explanation: The type of chatbot described is a Rule-Based Chatbot.	1

Q. 5	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)	
i.	An alternative to WhatsApp is the Telegram app which does not collect any data from us. But since WhatsApp is more popular and used by the crowd, people go for it without thinking twice. if one does not want to share his/her data with anyone, he/she can opt for alternative applications which are of similar usage and keep your data safe. This is an example of: a) AI Bias b) Data Privacy	1

	c) Machine learning d) Supervised learning	
ii.	Which of the following is not an application of artificial intelligence? a. Computer vision b. Natural language processing c. Database Management System d. Digital Assistants	1
iii.	Identify the domain of AI in the following image:  a) Data Science b) Natural Language Processing c) Computer Vision d) Rule Based	1

iv.	Snapchat filters use _____ and _____ to enhance your selfie with flowers, cat ears etc. a) machine learning and deep learning b) data and image processing c) augmented reality and machine learning d) NLP and computer vision.	1
v.	Rock paper and scissors game is based on the following domain: a) Data for AI b) Natural Language Processing c) Computer Vision d) Image processing	1
vi.	Define Artificial Intelligence as defined by NITI Aayog . Answer: NITI Aayog: National Strategy for Artificial Intelligence AI refers to the ability of machines to perform cognitive tasks like thinking, perceiving, learning, problem solving and decision making. Initially conceived as a technology that could mimic human intelligence, AI has evolved in ways that far exceed its original conception. With incredible advances made in data collection, processing and computation power, intelligent systems can now be deployed to take over a variety of tasks, enable connectivity and enhance productivity.	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	<p>In SMART goals, what does 'A' stand for? Explain.</p> <p>Answer:</p> <p>A: Achievable</p> <p>Another attribute of a SMART goal is that it should be realistic. It means that it should be possible to achieve the goal with sheer determination and hard work. Creating a goal that you cannot achieve serves no purpose.</p>	2
Q. 7	<p>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.</p> <p>Answer:</p> <p>Time management is the process of organizing and planning how to divide your time between different activities. Get it right, and you'll end up working smarter, not harder, to get more done in less time – even when time is tight and pressures are high.</p>	2
Q. 8	<p>Enlist any two methods to safeguard your password.</p> <p>Answer:</p> <ul style="list-style-type: none">• Don't Be Complacent. ...• Keep Your Passwords Unique. ...• Avoid Common Passwords. ...• Be Careful with the Password Length. ...• Don't Change Them Too Often. ...• Use a Password Manager. ...• Keep Written Passwords Secure. ...• Embrace Biometrics.	2
Q. 9	<p>List the various ways you can use to protect your data.</p> <p>Answer:</p> <ul style="list-style-type: none">• Back up your data. ...• Use strong passwords and multi-factor authentication. ...• Be aware of your surroundings. ...• Be wary of suspicious emails. ...• Install anti-virus and malware protection. ...• Protect your device when it's unattended.	2
Q. 10	<p>What is Stress management and how can you manage your stress?</p> <p>Answer:</p> <p>Stress is a natural reaction to not being able to cope with specific demands and</p>	2

	events, but ongoing stress can affect a person's health and wellbeing. Tips for managing stress include exercise, setting priorities, and speaking with others, which may include counseling.	
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Answer any 4 out of the given 6 questions in 20 – 30 words each (2 x 4 = 8 marks)

Q. 11	<p>How do you understand whether a machine/application is AI based or not? Explain with the help of an example.</p> <p>Answer: Any machine that has been trained with data and can make decisions/predictions on its own can be termed as AI. Eg: The bot or the automation machine is not trained with any data is not an AI while a chatbot that understands and processes human language is an AI.</p>	2
Q. 12	<p>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? Explain.</p> <p>Answer: The concern is about algorithmic bias and search engine optimization. When image search results overwhelmingly display beach pictures for the term "vacations," it raises issues of biased algorithms favoring specific images due to training data.</p>	2
Q. 13	<p>Suhana works for a company wherein she was assigned the task of developing a project using AI project cycle. She knew that the first stage was scoping the problem. Help her list the remaining stages that she must go through to develop the project.</p> <p>Answer:</p> <p>Suhana works for a company wherein she was assigned the task of developing a project using AI project cycle. She knew that the first stage was scoping the problem.</p> <p>Steps of AI project life cycle: 1. Data Acquisition 2. Data Exploration 3. Modelling 4. Evaluation</p>	2
Q. 14	<p>a) Define: b) Machine learning c) Deep Learning</p> <p>Answer:</p> <p>a) Machine learning is an umbrella term for solving problems for which development of algorithms by human programmers would be cost-prohibitive, and instead the problems are solved by helping machines 'discover' their 'own' algorithms, without needing to be explicitly told what to do by any human-developed algorithms.</p> <p>b) It is an application and subset of AI (Artificial Intelligence) that provides a system with the ability to learn from its experiences and improve accordingly without someone physically programming those changes into it.</p>	2
Q. 15	<p>What is AI Bias? Give example.</p> <p>Answer:</p> <p>A simple definition of AI bias could sound like that: a phenomenon that occurs when an AI algorithm produces results that are systemically prejudiced due to erroneous assumptions in the machine learning process.</p> <p>For example, a facial recognition algorithm could be trained to recognize a white</p>	2

	person more easily than a black person because this type of data has been used in training more often. This can negatively affect people from minority groups, as discrimination hinders equal opportunity and perpetuates oppression.	
Q. 16	<p>People of a village are totally dependent on the farmers for their daily food items. Farmers grow new seeds by checking through AI the weather conditions every year. “Does AI create unemployment.” Explain in this context.</p> <p>Answer:</p> <p>AI is likely to displace some jobs: Certain tasks that are routine, repetitive, or dangerous may be automated using AI. This could lead to job losses in industries such as manufacturing, transportation, and customer service. In this case, Yes AI creates job helping farmers learn how to operate checking of new seed, for which an AI trainer could be employed.</p>	2

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

Q. 17	<p>(Case Study) AI and robotics have raised some questions regarding liability. Take for example the scenario of an ‘autonomous’ or AI-driven robot moving through a factory. Another robot surprisingly crosses its way and our robot draws aside to prevent collision. However, by this manoeuvre the robot injures a person.</p> <p>a) Who can be held liable for damages caused by autonomous systems? b) List two AI Ethics.</p> <p>Answer:</p> <p>a) It is actually very difficult to blame anyone in such a scenario. Here is the situation where AI Ethics come in to the picture. Here, the choices might differ from person to person and one must understand that nobody is wrong in this case. Every person has a different perspective and hence he/she takes decisions according to their moralities. But still if someone is to be liable then it should be the programmer who has designed the algorithm of the autonomous vehicle as he/she should have considered all the exceptional conditions that could arise.</p> <p>b) (Any two out of the following) AI Bias, AI Access, Data privacy, AI for kids.</p>	4
Q. 18	<p>Kunal attended a seminar on Artificial Intelligence and has now been asked to write a report on his learnings from the seminar. Being a non-technical person, he understood that the AI enabled machine uses data of different formats in many of the daily based applications but failed to sync it with the right terminologies and express the details. Help Kunal define Artificial Intelligence, list the three domains of AI and the data that is used in these domains.</p> <p>Answer: Elaborate on 3 domains of AI</p> <ul style="list-style-type: none"> • Data Science. • Computer Vision (CV) • Natural Language Processing (NLP) 	4
Q. 19	<p>List in detail with example any four of the various Applications of Artificial Intelligence around us.</p>	4

	<p>Answer: AI Application around us:</p> <ul style="list-style-type: none"> • Voice Assistants • Spam Filters • Facial Recognition • Self-Driving vehicle <p><i>(Elaborate on all, can write any 4)</i></p>	
<p>Q. 20</p>	<p>Amir is amazed to learn about his sister Amaira who is multi-talented and has excelled in academics, music, dancing, sports, and painting. He was quite curious when Amaira told him that he too possessed all these intelligences like every human being does, but only at different levels. He wondered which intelligence she was talking about. Can you help Amir in learning about different types of intelligences by naming and explaining any four types of intelligences?</p> <p>Answer:</p> <ul style="list-style-type: none"> • Spatial intelligence. The ability to think abstractly and in multiple dimensions • Bodily-kinesthetic intelligence. ... • Musical intelligence. ... • Linguistic intelligence. ... • Logical-mathematical intelligence. ... • Interpersonal intelligence. ... • Intrapersonal intelligence. ... • Naturalistic intelligence. <p><i>Elaborate on any 4)</i></p>	<p>4</p>