ANNUAL EXAMINATION

Question Paper 2024

NCERT BASED SYLLABUS

FOR CBSE AND STATE BOARD
FOLLOWING NCERT

ARTIFICIAL INTELLIGENCE (SUBJECT CODE - 417)
CLASS-IX 2023-24

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.

SECTION A: OBJECTIVE TYPE QUESTIONS

Q. 1 Answer any 4 out of the given 6 questions on Employability skill (1 x 4 = 4 marks)

i. Why is self-management important for students studying AI? **1**
a. It enhances creativity
b. It improves communication skills
c. It helps in managing workload and deadlines
d. It increases knowledge retention

ii. "All the deleted files and folder are stored in task bar". True or false **1**

iii. The entrepreneurial skill refers to the ability to handle multiple responsibilities at the same time is **1**
a. self confidence
b. multitasking
c. passion
d. self-management

iv. Which of the following is not the self-management skill? **1**
a. Being positive
b. Being responsible
c. Being stubborn
d. working with hygiene and grooming

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v. Rohan's face lights up with a big smile, and his eyes widen in excitement as he sees Mayank. Mayank's face also lights up, expressing joy and surprise. This is an example of …… **1**

(a) Verbal Communication
(b) Non-Verbal Communication
(c) Visual Communication
(d) None of these

vi. Which of these is not one of the objective of sustainable development? **1**
a. Social
b. Environmental
c. Political
d. Economic

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

i. Assertion(A): Machine Learning is a subset of Artificial Intelligence. **1**

Reasoning(R): While AI encompasses a broader range of concepts and approaches, Machine Learning specifically involves the use of algorithms that enable computers to learn patterns from data.

(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.

ii. How many domains of AI is there? **1**
a. One
b. Two
c. Three
d. Four

iii. Which is the last stage of AI project cycle. **1**
a. Problem Scoping
b. Evaluation and Development
c. Modelling
d. Data Exploration

iv A…… is the smallest unit of a digital image that can be displayed on a digital display device. **1**
a. bit
b. byte
c. pixel
d. none

v In which of the following layers of a neural network does the processing of data occurs? **1**
a. Input layer
b. Hidden layers
c. output layer

vi A python program saved with an extension…….. **1**
a. py
b. pt
c. ph
d. po

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Q. 3 **Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**

i Which of the following is not an application of NLP? **1**
a. Chatbot
b. Virtual assistant
c. Biometric
d. None

ii Which of the following is not a Sustainable Development Goal? **1**
a. Zero hunger
b. climate Action
c. Green Agriculture
d. No poverty

iii Which of the following enables the software to train itself to perform tasks with vast amount of data? **1**
a. Data modeling
b. Deep learning
c. System map
d. none

iv The recommendation feature in YouTube is an example of which of the following? **1**
a. Machine Learning
b. Deep Learning
c. Both a and b
d. None

v What is the function of dendrites? **1**
a. Transmit Information
b. Receive signals
c. Store data
d. both a and b

vi Which function is used to take input from the user? **1**
a. print( )
b. input( )
c. in( )
d.int( )

Q 4 **Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**

i Which of the following is an application of Computer Vision? **1**
a. Fingerprint Recognition
b. Face recognition
c. speech recognition
d. None

ii Which of the following phase in the AI project cycle identify the objectives of developing the project? **1**
a. Data exploration
b. Problem Scoping
c. Data acquisition
d. Evaluation

iii Which one of the following is not a parameter of big data? **1**
a. Velocity
b. Virtuosity
c. Varity
d. Volume

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iv	A neural network is a machine learning algorithm based on the model of a human neuron. (a) True (b) False	**1**
v	Which operator divide the operand and return the reminder? a. / b. // c. % d. #	**1**
vi	In python output of following statement print (10**2) will be……. a. 100 b. 20 c. 5 d. 0	**1**
Q. 5	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i	SDGs are a set of _____ goals	**1**
ii	_____ provides a visual summary of information that helps to find out the trends and patterns contained within data.	**1**
iii	A neural network learns by three methods, namely Supervised learning, unsupervised learning and _____.	**1**
iv	In _____ learning, the algorithm learns from a data set which is unlabeled.	**1**
v	A _____ is a reserved word which you cannot use as the name of an identifiers.	**1**
vi	The _____ function is used to print or display the output .	**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	Differentiate between encoding and decoding in the communication cycle ?	**2**
Q. 7	What is the importance of time management in self-management ?	**2**
Q. 8	State two key difference between a computer's RAM and ROM.	**2**
Q. 9	What is entrepreneurship?	**2**
Q. 10	Mrs. Gupta is concerned about her high monthly electricity bills. She has spent a lot of money in replacing her old appliances with those that have high energy rating, but her household electricity bill hasn't come down significantly. Suggest some other measures she could take to reduce the electricity bill.	**2**

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

Q. 11	What are the different components of NLP ?	**2**
Q. 12	What is computer vision ?	**2**
Q. 13	Name any two data visualization tool .	**2**

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Q. 14	What is big data ?	**2**
Q. 15	Write any two application of Neural network ?	**2**
Q. 16	Write any two feature of python ?	**2**

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

Q. 17	What do you understand by AI ethics? Explain any three AI Ethics issues.	**4**
Q. 18	Explain any two limitations of Artificial Intelligence ?	**4**
Q.19	What is the importance of AI project cycle? List all the stages.	**4**
Q 20	Describe two different way of collecting data .	**4**
Q 21	Define variable and mention rules for choosing a variable names.	**4**

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MARKING SCHEME

CLASS-IX 2023-24

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SECTION A: OBJECTIVE TYPE QUESTIONS

Q. 1	**Answer any 4 out of the given 6 questions on Employability skill (1 x 4 = 4 marks)**	
i.	c. It helps in managing workload and deadlines	
ii.	false	
iii.	b. multitasking	
iv.	c. Being stubborn	
v.	(a) Non-Verbal Communication	
vi.	c. Political	
Q. 2	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i.	(a) Both A and R are correct and R is the correct explanation of A	
ii.	c. Three	
iii.	b. Evaluation and Development	
iv	c. pixel	
v	b. Hidden layers	
vi	a. py	
Q. 3	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i	c. Biomatric	
ii	c. Green Agriculture	
iii	b. Deep learning	
iv	a. Machine Learning	
v	b. Receive signals	
vi	b. input( )	

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Q 4	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i	b. Face recognition	
ii	b. Problem Scoping	
iii	b. Virtuosity	
iv	(a) True	
v	c. %	
vi	a. 100	
Q. 5	**Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)**	
i	17	
ii	DATA VISUALIZATION	
iii	Reinforcement Learning	
iv	unsupervised	
v	keyword	
vi	Print( )	

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	Differentiate between encoding and decoding in the communication cycle ? Encoding: Definition: The process of converting thoughts, ideas, or messages into a symbolic form (such as words, signs, or gestures) that can be easily understood by the intended recipient. Role: The sender or source of the communication engages in encoding to package their message in a way that can be transmitted effectively. Decoding: Definition: The process of interpreting or extracting meaning from the received symbols or messages. It involves the receiver making sense of the encoded information. Role: The receiver engages in decoding to understand and interpret the message sent by the sender. It is the counterpart to encoding. **(2 marks for any two correct point)**	**2**

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Q. 7	What is the importance of time management in self management ? This refer to making efforts to priorities tasks according to their importance and the time in hand to increase your productivity . Preparing a timetable for work , play and relaxation activities and sticking to the allotted timings helps with time management . **(2 marks for correct answer)**	**2**
Q. 8	State two key difference between a computer's RAM and ROM . (2 marks for any two difference)	**2**
Q. 9	What is entrepreneurship? Entrepreneurship is the process of identifying, creating, and pursuing opportunities to establish and manage a new business or venture. It involves taking risks, organizing resources, and innovating to bring a product or service to the market. Entrepreneurs play a crucial role in driving economic growth by introducing novel ideas and solutions. Successful entrepreneurship requires a combination of creativity, resilience, and business acumen to navigate challenges and capitalize on opportunities in the ever-changing business landscape. **(2 marks for correct answer)**	**2**
Q. 10	2 marks for any correct answer	**2**

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

Q. 11	What are the different components of NLP ? Answer:- 1.Natural Language Generation 2.Natural language understanding (one marks for each point)	**2**
Q. 12	What is computer vision ? Answer:- Computer vision is a field of artificial intelligence focused on enabling computers to interpret and understand visual information from the world. It involves the development of algorithms and systems that allow machines to analyze images and videos, extracting meaningful insights. Applications of computer vision range from image recognition and object detection to facial recognition and autonomous vehicles. **(2 marks for correct answer)**	**2**
Q. 13	Name any two data visualization tool . (2 marks for any two correct answer)	**2**
Q. 14	What is big data ? Answer:- Big data refers to large volumes of structured and unstructured data that cannot be effectively processed using traditional database management tools. It is characterized by the three Vs: volume, velocity, and variety, indicating the massive scale, high speed of generation, and diverse types of data sources involved. Big data analytics involves extracting valuable insights and patterns from this vast amount of information to inform decision-making and business strategies. The field of big data also encompasses	**2**

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	technologies and methodologies for storing, processing, and analyzing these massive datasets. **(2marks for correct answer)**	
Q. 15	Write any two application of Neural network ? Answer- Image and Pattern Recognition Gaming Speech recognition Medical Diagnosis Financial Forecasting Recommendation Systems Cybersecurity Robotics (2 marks for any two correct application)	**2**
Q. 16	Write any two feature of python ? Answer- 1.Simple and Readable Syntax: 2.Interpreted and Interactive: 3.High-Level Language: 4.Dynamic Typing: 5.Extensive Standard Library: 6.Cross-Platform Compatibility: 7.Object-Oriented Programming (OOP): 8.Dynamically Typed 9.Community and Documentation 10.Versatility: (2 marks for any two correct feature (one marks for each))	**1+1**

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

Q. 17	What do you understand by AI ethics ? Explain any three AI ethics . AI ethics refers to the principles, guidelines, and considerations that govern the responsible and ethical development, deployment, and use of artificial intelligence (AI) technologies. It involves addressing the potential ethical implications and societal impact of AI systems to ensure they align with values such as fairness, transparency, accountability, and privacy. Key aspects of AI ethics include: **Fairness and Bias:Ensuring** that AI systems treat all individuals and groups fairly and without discrimination. Developers strive to identify and mitigate biases in training data and algorithms to prevent unfair outcomes. **Transparency:** Advocating for transparency in AI systems, making it clear how algorithms make decisions. Transparent AI helps users understand the reasoning behind outcomes and builds trust in the technology. **Accountability:** Establishing mechanisms to assign responsibility for the actions and decisions made by AI systems. This involves defining roles and responsibilities of developers, users, and organizations deploying AI. **Privacy:** Respecting individuals' privacy by protecting their personal data and ensuring that AI applications adhere to privacy laws and regulations. Developers must implement	**1+1+ 1+1**

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	safeguards to prevent unauthorized access or misuse of sensitive information. **Security:** Addressing security concerns related to AI systems, including vulnerabilities that could be exploited for malicious purposes. Implementing robust security measures is crucial to safeguard against attacks and unauthorized access. **Informed Consent:** Ensuring that individuals are adequately informed about how their data will be used by AI systems and obtaining their consent before collecting or processing personal information. **Social Impact:** Considering the broader societal impact of AI technologies, including their effects on employment, economic inequality, and access to resources. Ethical AI development aims to minimize negative consequences and enhance positive societal outcomes. **Human Control and Autonomy:** Maintaining human control over AI systems and ensuring that decisions with significant ethical implications remain within human hands. Avoiding the development of autonomous systems that could pose risks without appropriate oversight. **(1 marks for definition and and 1 marks for each for any three AI ethics)**	
Q. 18	Explain any two limitations of Artificial Intelligence ? **1marks for each correct limitation and 1 marks for each correct explanation**	**2+2**
Q.19	What is the importance of AI project cycle ? List all the stages . **4 marks for correct answer**	**4**
Q 20	Describe two different way of collecting data . **(2 marks for each)**	**4**
Q 21	Define variable and mention rules for choosing a variable names . 2 marks for definition 2 marks for naming rules	**4**

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