INDIAN SCHOOL AL WADI AL KABIR

MID TERM EXAMINATION 2024-25

ARTIFICIAL INTELLIGENCE (417)

MARKING SCHEME

Class: X **Max Marks: 50**

Date: 29-09-2024 **Time: 1 Hours**

SECTION A: OBJECTIVE TYPE QUESTIONS

1	**Answer any 4 out of 6 (1 x 4=4 marks)**	
i	d)What kind of movies do you like?	**1**
ii	c) Statement 1 is correct but Statement 2 is incorrect	**1**
iii	(b)Stress management	**1**
iv	(a) Keeping hands in pockets while talking	**1**
v	(b) External	**1**
vi	(b) From the Latin word "commūnicāre" meaning 'to share'	
2	**Answer any 5 out of 6 (1 x 5=5 marks)**	
i	(b) Naturalist Intelligence	**1**
ii	(c)Surveys	**1**
iii	(b) Problem statement template	**1**
iv	(c) Clustering	**1**
v	(b) (ii) and (iii)	**1**
vi	(a) Comma separated values	**1**
3	**Answer any 5 out of 6 (1 x 5=5 marks)**	
i	(d) Neural networks	**1**
ii	(c) Alpha Numeric data	**1**
iii	Large	**1**
iv	(d) Pandas	**1**
v	1-b, 2-a, 3-b, 4-a	**1**
vi	(d) Spreadsheet	**1**
4	**Answer any 5 out of 6 (1 x 5=5 marks)**	
i	(b)Target Advertisements	**1**
ii	(b) It provides predictions and suggestions based on collected data.	**1**
iii	(d) Any of the above depends on the app	**1**
iv	(d) all of the above	**1**
v	(d)Modelling	**1**
vi	(b) Internet of things	**1**
5	**Answer any 5 out of 6 (1 x 5=5 marks)**	
i	(a) Machine Learning	**1**
ii	(b) Spreadsheet	**1**

iii	(c) matplotlib	**1**
iv	(b)Relevant and Authentic training data	**1**
v	(d)A digital alarm clock that rings at a set time every morning.	**1**
vi	(c) Data Science	**1**

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions (3 x 2 = 6 marks)

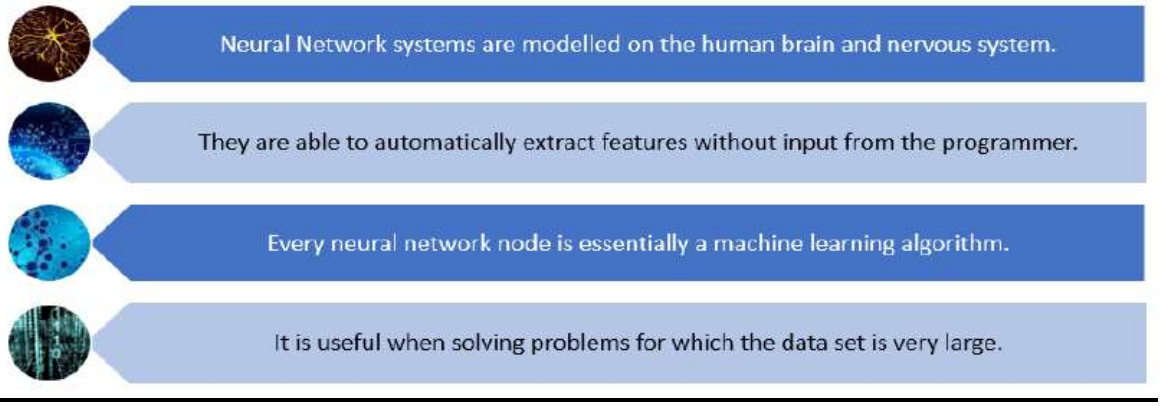
Answer each question in 20 – 30 words.

Q. 6	Four factors to consider when choosing the right method of communication include 1. Target audience 2. Costs 3. Kind/type of information 4. Urgency/priority For instance, face-to-face or video communication may be preferable for delivering sensitive or complex messages that require immediate feedback or clarification. In contrast, email or instant messaging may be suitable for less urgent communications or when documenting information for future reference. Understanding the context and needs of the audience is essential for selecting the most appropriate communication method to effectively convey the message and maintain positive relationships. **(0.5 marks for each factors)**	**2**
Q. 7	Effective time management is crucial for stress management as it helps individuals prioritize tasks, allocate sufficient time for each activity, and maintain a healthy work-life balance. The strategies for improving time management skills to reduce stress are given below. 1.Organise: We plan our day to- day activities. 2.Prioritis: We make a to-do list that has all our activities and we rank them in the order of importance. 3. Control: We have a control over our activities and time. 4. Track: We identify and note where we have spent our time. **(importance of time management 1 Mark, Write and explain Any one strategy-1 mark)**	**2**
Q. 8	It validates effective listening: The person providing the feedback knows they have been understood (or received) and that their feedback provides some value. It motivates: Feedback can motivate people to build better work relationships and continue the good work that is being appreciated. It is always there: Every time you speak to a person, we communicate feedback so it is impossible not to provide one. It boosts learning: Feedback is important to remain focussed on goals, plan better and develop improved products and services. It improves performance: Feedback can help to form better decisions to improve and increase performance **(Any two points with explanation; ½ mark for each point; ½ mark for explanation of each point)**	**2**
Q. 9	'R' stands for Realistic. A realistic goal would be something that we want to achieve and can work towards. For example, "I spend 3 hours every day of the year after school to revise my subjects to get good marks in the exams." **(1 mark for writing the word realistic; 1 mark for explanation)**	**2**
Q. 10	• **Physical exercise and fresh air:** A healthy lifestyle is essential for students. Stress is generally lower in people who maintain a healthy routine. Doing yoga, meditation and deep breathing exercises help in proper blood circulation and relaxes the body. Even taking a walk or playing in the park will help you get a lot of fresh oxygen, which will help you become more active. • **Healthy diet:** Having a healthy diet will also help you reduce stress. Eating a balanced diet, such as Dal, Roti, vegetables and fruits will give you the strength to do your daily	**2**

	work efficiently. • **Positivity:** Focussing on negative aspects of life will add more stress. Instead, learn to look at the good things and stay positive. For example, instead of feeling upset over a scoring less in a test, try to maintain a positive attitude and look at ways to improve the next time. • **Sleep:** We should get a good night's sleep for at least 7 hours so that your brain and body gets recharged to function better the next day. • **Holidays with family and friends:** Going to a relative's place, such as your grandparents' house or a new place during your summer vacations can help you break from the normal routine and come back afresh • **Taking Nature Walks:** Taking nature walks in a pristine environment of a national park or a sanctuary or a trail in country side / village, brings us a calmness by allowing our over stimulated minds a chance to relax and helps us to relax (Write any two - ½ mark for point, ½ for explanation)	

Answer any 4 out of the given 6 questions in 20– 30 words each (4x2 = 8 marks)

Q. 11	<table><tr><th>AI Machine</th><th>Not AI machine</th></tr><tr><td>1. AI machines are trained with data and algorithm. 2. AI machines learn from mistakes and experience. They try to improvise on their next iterations. 3. AI machines can analyses the situation and can take decisions accordingly. 4. AI based drones capture the real-time data during the flight, processes it in real-time, and makes a human-independent decision based on the processed data.</td><td>1. Smart machines which are not AI, do not require training data, they work on algorithms only. 2. Smart machines work on fixed algorithms and they always work with the same level of efficiency, which is programmed into them. 3. Machines which are not AI cannot take decisions on their own. 4. An automatic door in a shopping mall, seems to be AI-enabled, but it is built with only sensor technology.</td></tr></table>	**2**
Q. 12	Robots let humans avoid some hurtful work: (i) Lifting up heavy material at the construction site. (ii) Stirring and mixing metals or liquids at a high temperature. (iii) Collecting and packaging of radioactive waste. (iv) Working in contaminated and dusty environments. **(½ mark for each point)**	**2**
Q. 13	**<u>Rule Based Approach :</u>** • Rule Based Approach Refers to the AI modelling where the relationship or patterns in data are defined by the developer. • The machine follows the rules or instructions mentioned by the developer, and performs its task accordingly **<u>Learning Based Approach</u>** : • Refers to the AI modelling where the relationship or patterns in data are not defined by the developer. • In this approach, random data is fed to the machine and it is left on the machine to figure out patterns and trends out of it.	**2**

	(1 mark for each)	
Q. 14		**2**
Q. 15	**1. NumPy**: NumPy, which stands for Numerical Python, is the fundamental package for Mathematical and logical operations on arrays in Python. It is a commonly used package when it comes to working around numbers. NumPy gives a wide range of arithmetic operations around numbers giving us an easier approach in working with them. NumPy also works with arrays, which is nothing but a homogenous collection of Data. **(0.5 mark for identifying the package and 1.5 marks for explanation)**	**2**
Q. 16	While accessing data from any of the data sources, following points should be kept in mind: 1. Data which is available for public usage only should be taken up. 2. Personal datasets should only be used with the consent of the owner. 3. One should never breach someone's privacy to collect data. 4. Data should only be taken form reliable sources as the data collected from random sources can be wrong or unusable. 5. Reliable sources of data ensure the authenticity of data which helps in proper training of the AI model.	**2**

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

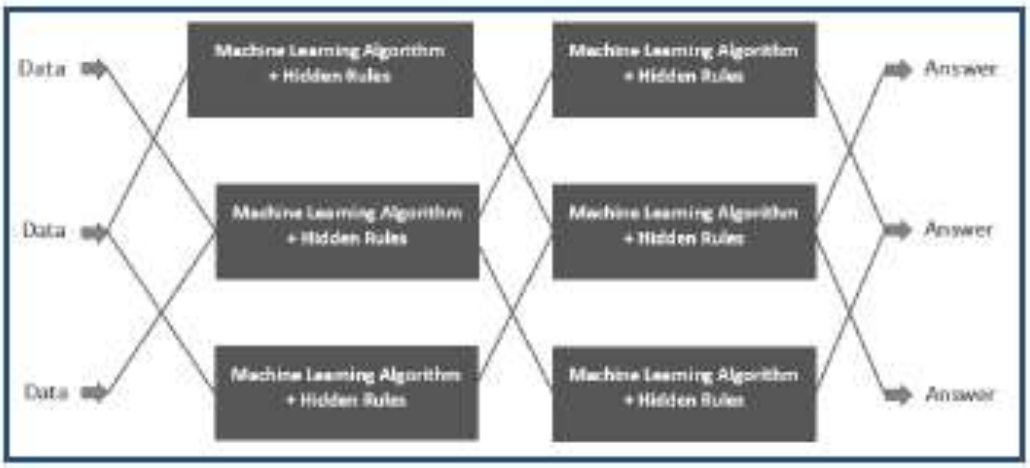
Q. 17	When a machine possesses the ability to mimic human traits, i.e., **make decisions**, **predict the future**, **learn and improve on its own,** it is said to have artificial intelligence. In other words, you can say that a machine is artificially intelligent when it can **accomplish tasks by itself - collect data, understand it, analyse it, learn from it, and improve it.** Machines become intelligent once they are **trained with some data** which helps them achieve their tasks. AI machines also keep updating their knowledge to optimize their output. For example, Netflix gives us recommendations on the basis of what we like. Whenever we start liking a new genre, it updates and gives better suggestions. **(2 marks for definition of Artificial intelligence which includes any of the highlighted terms, 2 mark for an example explanation of how machines become intelligent)** **or** **(only 1 mark for any AI machine example which mimic human traits without explanation)**	
Q. 18	The 4Ws Problem canvas helps in identifying the key elements related to the problem. The 4Ws are Who, What, Where and Why ● The "Who" block helps in analyzing the people getting affected directly or indirectly due to the problem. ● The "What" block helps us to determine the nature of the problem. ● The "Where" block helps us to look into the situation in which the problem arises, the context of it, and the locations where it is prominent. ● The "Why" block suggests to us the benefits which the stakeholders would get from the solution and how it will benefit them as well as the society.	**4**

Problem Statement Template

Our	[stakeholders]	Who
Have a problem that	[need]	What
When/while	[context/ location/ situation]	Where
An ideal solution would be	[solution]	Why

(½ mark each for explanation of 4w s; 2 marks for drawing the problem statement template with correct words in it or explaining the problem statement template)
or
(1 mark to be allotted if only 4Ws are written without explanation)

Q. 19



- This is a representation of how neural networks work. A Neural Network is divided into multiple layers and each layer is further divided into several blocks called nodes.
- Each node has its own task to accomplish which is then passed to the next layer.
- The first layer of a Neural Network is known as the input layer. The job of an input layer is to acquire data and feed it to the Neural Network. No processing occurs at the input layer.
- Next to it, are the hidden layers. Hidden layers are the layers in which the whole processing occurs. Their name essentially means that these layers are hidden and are not visible to the user. Each node of these hidden layers has its own machine learning algorithm which it executes on the data received from the input layer.
- The processed output is then fed to the subsequent hidden layer of the network.
- There can be multiple hidden layers in a neural network system and their number depends upon the complexity of the function for which the network has been configured. Also, the number of nodes in each layer can vary accordingly.
- The last hidden layer passes the final processed data to the output layer which then gives it to the user as the final output.
- Similar to the input layer, output layer too does not process the data which it acquires. It is meant for user-interface.

Q. 20

The learning-based approaches shown in the given figures are Supervised learning and Unsupervised learning.
Figure 1: In a supervised learning model, the dataset which is fed to the machine is **labelled**. In other words, we can say that the **dataset is known to the person** who is training the machine

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	only then he/she is able to label the data. A label is some information which can be used as a tag for data. Here, labelled images of apples are fed into the model and trained. The model correctly identifies the given input as apple Figure 2: An unsupervised learning model works on **unlabelled dataset**. This means that the data which is fed to the machine is random and there is a possibility that the person who is training the model does not have any information regarding it. The **unsupervised learning models are used to identify relationships, patterns and trends out of the data which is fed into it.** It helps the user in understanding what the data is about and what are the major features identified by the machine in it. Here, images of a set of fruits are fed into the AI model and the model clusters them based on similar features. **(1 mark each for identifying each term supervised learning and unsupervised learning; 1 mark per explanation of each term)**	
Q. 21	**Kinesthetic Intelligence:** Ability that is related to how a person uses his limbs in a skilled manner. **Spatial Visual Intelligence:** It is defined as the ability to perceive the visual world and the relationship of one object to another**.** **Existential Intelligence:** An additional category of intelligence relating to religious and spiritual awareness. **Intrapersonal Intelligence:** Describes the level of self-awareness someone has starting from realizing weakness, strength, to recognizing his own feelings **(1 mark for each definition)**	**4**