 **Indian School Al Wadi Al Kabir**

**Pre-Mid Term Examination**

**ARTIFICIAL INTELLIGENCE (CODE:417)**

Class: X Time: 1 Hour

Date: 01/06/2023 Max. Marks: 30

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| General Instructions:  **SECTION A**: I. All Questions are compulsory.  **SECTION B**:  II. Answer any 4 out of the given 5 questions each carries 2 marks.  III.Answer any 2 questions out of given 4 questionseach carries 4 marks. |

**SECTION A: OBJECTIVE TYPE QUESTIONS**

1. **ANSWER ALL THE FOLLOWING: (14 x 1 =14 marks)**
   * + 1. A machine can also become intelligent if it is trained with**\_\_\_\_\_\_\_\_\_\_**which helps them to achieve their tasks. **(data)**
       2. A machine is artificially intelligent when it can accomplish tasks by itself. **(true)**
       3. Is a smart washing machine an example of an Artificially Intelligent devices? (True/False) **(False)**

## \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a subset of AI that uses statistical learning algorithms to build smart systems. (Machine Learning)

## What do you understand by Interpersonal Intelligence?

## Understanding human emotions, feelings and influenced by them is known as interpersonal intelligence.

## OR

## Interpersonal intelligence is the ability to communicate with others by understanding other people's feelings, being influenced by the person.

## OR

## Interpersonal intelligence refers to the ability of a person to relate well with people and manage relationships. It enables people to understand the needs and motivations of those around them, which helps strengthen their overall influence.

## OR

## Interpersonal intelligence refers to the ability to understand social situations and the behavior of other people.

## Define Artificial Intelligence.

## A machine is artificially intelligent when it can accomplish tasks by itself - collect data, understand it, analyze it, learn from it, and improve it.

## OR

## 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.

## OR

## Artificial Intelligence is a way of making a computer, a computer-controlled robot, or a software think intelligently, in a similar manner to how intelligent humans think.

## OR

## AI is a form of intelligence; a type of technology and a field of study. AI theory and development of computer systems (both machines and software) are able to perform tasks that normally require human intelligence.

## OR

## Artificial Intelligence works to implement human intelligence in machines: creating systems that understand, think, learn, and behave like humans.

## OR

## Artificial Intelligence or AI for short, refers to any technique that enables computers to mimic human intelligence. An artificially intelligent machine works on algorithms and data fed to it and gives the desired output.

## What are the three domains of AI?

## Data Science/ Big Data

## Computer Vision

## Natural Language Processing (NLP)

## Name any two examples of Natural Language Processing?

## (Any two out of the following) Email filters/Smart assistants/ Sentiment Analysis/Automatic Summarization/Search results / Language translation / Digital phone calls

* + - 1. Rock paper and scissors game is based on the following domain:

1. Data for AI b)Natural Language Processing
2. Computer Vision d) Image processing

**ANSWER: Data for AI**

* + - 1. Identify the domain of AI in the following image:

1. Data Science c) Computer Vision
2. Natural Language Processing d) Rule Based

**ANSWER: Computer Vision**

* + - 1. Which of the following is not an authentic source for data acquisition?

## Sensor b) Surveys c) Web Scraping d) System Hacking

## ANSWER: System Hacking

## What is Training Dataset?

## A training dataset is a database of examples used during the learning process and is used to fit the parameters.

* + - 1. Define AI Ethics

**AI ethics is a system of moral principles and techniques intended to inform the development and responsible use of artificial intelligence technology.**

## What do you understand by mathematical and logical reasoning?

**A person's ability to regulate, measure, and understand numerical symbols, abstraction and logic.**

**OR**

**Reasoning is based on previous established facts. To establish a new fact or truth one has to put it to the test of reasoning. If the new fact coincides with the previously established facts, it is called logical or rational. It is the ability of a person to regulate, measure and understand numerical symbols, abstraction and logic.**

**SECTION B: SUBJECTIVE TYPE QUESTIONS**

**II.ANSWER ANY 4 OUT OF THE GIVEN 5 QUESTIONS (4 X 2 = 8 MARKS)**

## Name the 4Ws of problem canvases under the problem scoping stage of the AI Project Cycle.

## The 4Ws problem canvas is the basic template while scoping a problem and using this

## canvas, the picture becomes clearer while we are working to solve it.

## a) Who: The “Who” block helps you in analyzing the people getting affected directly or

## indirectly due to it? Under this, you find out who the ‘stakeholders’ to this problem are

## and what you know about them. Stakeholders are the people who face this problem

## and would be benefitted with the solution.

## b) What: Under the “What” block, you need to look into what you have on hand. At this

## stage, you need to determine the nature of the problem. What is the problem and how

## do you know that it is a problem?

## c) Where: In this block, you need to focus on the context/situation/location of the

## problem. It will help you look into the situation in which the problem arises, the

## context of it, and the locations where it is prominent.

## d) Why: in the “Why” canvas, think about the benefits which the stakeholders would get

## from the solution and how would it benefit them as well as the society.

* + - 1. How does a machine become Artificially Intelligent?

**A machine becomes intelligent by training with data and algorithm. AI machines keep updating their knowledge to optimize their output.**

**OR**

**Machines also become intelligent once they are trained with some information which helps them achieve their tasks. AI machines also keep updating their knowledge to optimize their output.**

## Pick the odd one out and justify your answer:

1. Snap Chat Filter b) Face Lock in Phone

## c) Chatbot d) Image search Option

## Ans: Chatbot (1 marks), as it is NLP based, the other three are Computer vision based (1marks for justification).

## Explain Data Exploration stage.

## Arrange the gathered data uniformly for a better understanding.

## • A process of interpreting the acquired data to find out useful information from the acquired

## data.

## • The goal of data exploration is to learn about characteristics and potential problems of a data

## set without the need to formulate assumptions about the data beforehand.

## • In statistics, data exploration is often referred to as “exploratory data analysis” and contrasts

## traditional hypothesis testing.

## • It was most prominently promoted by the statistician “John W. Tukey” to suggest hypotheses

## about the causes of observed phenomena and to assess assumptions on which statistical

## methods are based.

## • Since its beginnings, EDA has been a very graphical approach.

## • Typical plots include histograms, box plots, scatter plots and many more in order to learn

## about distribution

## 5. What do you mean by system maps?

## System maps help us to find the relationship between the elements of the problem which we have scoped

## • A system map shows the components and boundary of a system and the components of the environment

## at a point in time.

## • The main use of a system map is to help structure a system and communicate the result to others.

## • It helps us in strategizing the solution for achieving the goal of our project.

## • help to understand complex issues with multiple factors that affect each other

**III.ANSWER ANY 2 QUESTIONS OUT OF GIVEN 4 QUESTIONS (2X 4 = 8 MARKS)**

## What is Intelligence? Explain in brief any three types of intelligence that are mainly perceived by human beings?

## Intelligence is the ‘ability to perceive or infer information, and to retain it as knowledge to be applied towards adaptive behavior within an environment or context.’

## OR

## Intelligence is the ability to interact with the world (speech, vision, motion, manipulation), ability to model the world and to reason about it, ability to learn, ability to make decisions and to adapt.

## OR

## Intelligence has been defined in many ways: It involves abstract reasoning, mental representation, problem solving, and decision making, the ability to learn, emotional knowledge, creativity, and adaptation to meet the demands of the environment effectively.

## Differentiate between what is AI and what is not AI with the help of an example?

|  |  |
| --- | --- |
| **AI Machine** | **Not AI machine** |
| 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 | 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. |

## Where do we collect data from? Explain any 4 data sources.

## Acquiring Data:

## • Surveys:

## A research method used for collecting data from a predefined group of respondents to

## gain information and insights into various topics of interest.

## • Camera:

## A camera captures a visual image.

## A device for recording visual images in the form of photographs, film, or video signals.

## Could be used to collect data for CV projects.

## • Web Scraping:

## Web scraping is the process of collecting structured web data in an automated fashion.

## It’s also called web data extraction.

## Some of the main use cases of web scraping include price monitoring, price intelligence,

## news monitoring, lead generation, and market research among many others.

## • Observations:

## Some data we can acquire through monitoring and close inspection.

## • Sensors:

## A device which detects or measures a physical property and records,indicates, or otherwise responds to it.

## Temperature Sensors, Humidity Sensors, Pressure Sensors,

## Proximity Sensors, Level Sensors, Accelerometers, Gyroscope, Infrared Sensors, etc.

## • API (Application Program Interface):

## An API is a software intermediary that allows two applications to talk to each other

## What do you understand by Data Privacy?

**Data privacy, sometimes also referred to as information privacy, is an area of data**

**protection that concerns the proper handling of sensitive data including,**

**notably, personal data but also other confidential data, such as certain financial data and intellectual property data, to meet regulatory requirements as well as protecting the confidentiality and immutability of the data. It focuses on how to collect, process, share, archive, and delete the data in accordance with the law.**

**Privacy, in the broadest sense, is the right of individuals, groups, or organizations**

**to control who can access, observe, or use something they own, such as their bodies, property, ideas, data, or information. Control is established through physical, social, or informational boundaries that help to prevent unwanted access, observation, or use. For example:**

** A physical boundary, such as a locked front door, helps prevent others from entering a building without explicit permission in the form of a key to unlock the door or a person inside opening the door.**

** A social boundary, such as a members-only club, only allows members to access and use club resources.**

** An informational boundary, such as a non-disclosure agreement, restricts what**

**information can be disclosed to others.**

**Privacy of information is extremely important in this digital age where everything is interconnected and can be accessed and used easily. The possibilities of our private information being extremely vulnerable are very real, which is why we require data privacy.**

**………………ALL THE BEST…………………**