



BK BIRLA CENTRE FOR EDUCATION
SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL
MID TERM EXAMINATION 2024-25
ARTIFICIAL INTELLIGENCE (843)
MARKING SCHEME



Class: XI
Date: 23-09-2024
Name:

Duration: 2 hrs.
Max Marks: 50
Exam No.

General Instructions:

- 1. Question paper is divided into two parts: Part-A & Part-B.*
- 2. Part-A has two sections namely Section-A and Section-B. Section-A has 1 mark questions and Section-B has 2 marks questions.*
- 3. Part-B has four sections namely Section-C, Section-D, Section-E & Section-F. Section-C has 1 mark questions, Section-D has 2 marks questions, Section-E has 3 marks questions and Section-F has 4 marks questions.*

PART-A (EMPLOYABILITY SKILLS)

SECTION-A (Attempt only 6)

1. What is the purpose of Communication ? 1
(a) Inform (tell someone about something) (b) Influence (get someone to do something you want) (c) Share thoughts, ideas, feelings (d) **All of these**
2. Which of the following is NOT a component of effective communication? 1
a) Clarity b) Feedback c) **Ambiguity** d) Active Listening
3. _____ refers to knowing one's potential by examining and analyzing intellectual and spiritual capacities. 1
(a) **Self-management** (b) Self exploration (c) Grooming (d) Intelligence
4. _____ refers to the things people do to keep themselves neat and presentable. 1
(a) Team norms (b) Team Process (c) **Grooming** (d) None of these
5. _____ is not an alignment option in OpenOffice Writer. 1
(a) Left (b) Justified (c) **Squeeze** (d) Right
6. _____ are basically the beliefs about what matters the most, how to behave and which goals are important to achieve. 1
(a) **Values** (b) Perseverance (c) Attitude (d) None of these
7. In _____ business activity, the services are intangible and cannot be felt or seen. 1
(a) Manufacturing (b) **Service** (c) Trading (d) None of these

8. _____ is in which economic growth and environmental responsibility work together in a mutually reinforcing fashion while supporting progress on social development. 1
(a) White economy (b) Green economy (c) Clean energy (d) None of these

SECTION-B (Attempt only 2)

9. Explain the factors affection perspective in communication. Explain any two. 2

Ans: Cultural Background, Emotions, Experiences, Education, Social Environment

10. What is a team ? Mention some factors which influence team building. 2

Ans: A team is a group of individuals who come together to achieve a common goal or objective.

Factors: Clear Goals and Objectives, Effective Communication, Trust and Mutual Respect, Leadership, Flexibility and Adaptability etc.,

11. By mistake, Niti has typed the entire document in small letter. Which option of Change Case option will she use if she wants to have only the first character in capital ad rest in small letter in a sentence ? Name the menu that has the Change Case option. (Note: Openoffice Writer) 2

Ans: Go to the "**Format**" menu in the menu bar.

Select "**Text**" from the dropdown.

Choose "**Change Case**" and then select "**Sentence case.**"

12. What are the three types of business activities? Explain any two. 2

Ans: Manufacturing Business, Trading Business, Service Business

Manufacturing is the process of converting raw materials into finished goods through the use of labor, machines, tools, and chemical or biological processing. Service businesses provide intangible products or services rather than physical goods.

A trading business involves buying goods from suppliers or manufacturers and selling them to consumers or other businesses.

13. Mention some policy initiatives for green economy in India. Explain any two. 2

Ans: Wildlife Protection Act, 1972 , The Water prevention and Control of Pollution Act, 1974, amended 1988, Establishment of Central Pollution Control Board, Forest Conservation Act, 1980, Environment Protection Act, 1986, National Forest Policy, 1988

Wildlife Protection Act, 1972

The Wildlife Protection Act of 1972 is a landmark legislation aimed at protecting and conserving wildlife and their habitats in India. It provides legal safeguards for various species and regulates activities that may impact wildlife.

The Water prevention and Control of Pollution Act, 1974, amended 1988

This Act was established to address and control water pollution in India. It provides a framework for regulating the discharge of pollutants into water bodies and

ensuring the maintenance of water quality.

PART-B (SUBJECT SPECIFIC SKILLS)

SECTION-C (Attempt any twelve)

14. **Name the founding father of Artificial Intelligence ?** 1

Ans: **John McCarthy**

15. **In which year, LISP (List Processing) AI programming language was developed ?** 1

Ans: **1958**

16. **Assertion / Reason:**

Statement 1: Generative AI can be used to create new and original works of art. 1
Statement 2: Generative AI models can be trained on massive datasets of existing artwork, allowing them to generate new creative account.

- (a) Statement 1 is correct, but statement 2 is incorrect.
(b) Statement 1 is incorrect, but statement 2 is correct.
(c) **Both the statements are correct.** (d) Both the statements are incorrect.

17. **The demand for skilled AI professionals is:** 1

- (a) Decreasing due to automation. (b) Stagnant and not growing.
(c) **Increasing rapidly due to widespread AI adoption.**
(d) Limited to a few specific countries.

18. **Assertion / Reason:**

Statement 1: A career in AI is only suitable for people with strong computer science backgrounds. 1

Statement 2: AI involves complex algorithms and programming languages.

- (a) Statement 1 is correct, but statement 2 is incorrect.
(b) **Statement 1 is incorrect, but statement 2 is correct.**
(c) Both the statements are correct. (d) Both the statements are incorrect.

19. **AI can be used in _____ to optimize traffic flow and improve safety.** 1

Ans: **Transportation systems**

20. **Name two features of Python programming Language.** 1

Ans: High Level language, Interpreted Language, Free and Open Source, Platform Independent (Cross-Platform) – runs virtually in every platform if a compatible python interpreter is installed, Easy to use and learn – simple syntax similar to human language, Variety of Python Editors – Python IDLE, PyCharm, Jupyter, Spyder, Python can process all characters of ASCII and UNICODE, Widely used in many different domains and industries.

21. **Define Tokens. List examples.** 1

Ans: It is the smallest unit of a program that the interpreter or compiler recognizes.

Examples: identifiers, keywords, literals, operators, and punctuators.

22. Predict the output of the given python code snippet: 1
for **i** in range(1,10):
- Ans: 1,2,3,4,5,6,7,8,9
23. 5W1H model stands for : 1
(a) **Why, What, Who, Where, when and How** (b) Why, What, Who, Where, When
(c) Why What, Who, Where, When and Key (d) All of these
24. Brain writing is also known as _____. 1
- Ans: Brainstorming
25. After you ideate, the next step is to _____. 1
- Ans: Prototype
26. In a set of numbers {2,5,7,7,9}, What is the mode ? 1
- Ans: 7
27. Which chart is best suited for comparing multiple categories and their corresponding values ? 1
(a) Scatter Chart (b) Line Chart (c) **Bar Chart** (d) Histogram
28. A matrix with 2 rows and 3 columns is referred to as a: 1
(a) Square matrix (b) Row matrix (c) Column matrix (d) **Matrix of order 2x3**

SECTION-D (Attempt any five)

Name two broad categories of A.I. Explain it with an example. 2

- Ans: 1. Narrow AI (Weak AI):
Narrow AI refers to AI systems designed and trained to perform a specific task or solve a particular problem. **Example: Voice Assistants** like Siri or Alexa
2. General AI (Strong AI):
General AI, also known as Strong AI or AGI (Artificial General Intelligence), refers to a theoretical AI system with generalized human cognitive abilities. Such a system would be capable of performing any intellectual task that a human can do and would possess the ability to understand, learn, and apply knowledge across a wide range of domains.
Example: Superintelligent Personal Assistant, Advanced Research Collaborator

Imagine yourself working in an AI role in a specific industry (e.g., healthcare, finance, retail). Describe what your day-to-day tasks and responsibilities might look like. 2

- Ans: Data Collection and Preprocessing, Model Development and Training, Model Evaluation and Collaboration, Integration and Deployment, Documentation and Continuous Learning

Write a program to calculate the area of a rectangle given the length and breadth are 50 and 20 respectively. 2

Ans: Length=50
breadth=20
area=length*breadth
print(area)

Differentiate between **Series** data structure and **DataFrame** data structure. 2

Ans:

Series	DataFrame
One-dimensional	Two-dimensional
Single set of labels (one axis)	Two sets of labels (rows and columns)
Holds data of a single data type	Can hold data of different data types across columns
Represents a single column of data	Represents a table of data with rows and columns
Suitable for single column or 1D data	Suitable for multiple columns or 2D data

Define : 2
(a) Empathy Map (b) Design Thinking

Ans: (a) It is a tool that really helps you to know your customers.
(b) It is an analytic and creative process that engages a person in opportunities to experiment, create and prototype models, gather feedback and redesign.

Calculate the mean of the following grouped data. 2

Class	Frequency
2 - 4	3
4 - 6	4
6 - 8	2
8 - 10	1

Ans:

Class	Frequency (f)	Mid Value (x)	fx
2-4	3	3	9
4-6	4	5	20
6-8	2	7	14
8-10	1	9	9
	n=10		$\sum fx = 52$

$$\text{Mean} = \frac{\sum fx}{n} = \frac{52}{10} = 5.2$$

SECTION-E (Attempt any two)

Categorize the given 15 applications into three domains: 3
(DATA SCIENCE, NATURAL LANGUAGE PROCESSING, COMPUTER VISION)

1. Gesture recognition for human-computer interaction
2. Chatbots for customer service
3. Spam email detection
4. Autonomous drones for surveillance
5. Google Translate
6. Fraud detection in financial transactions
7. Augmented reality applications (e.g., Snapchat filters)
8. Sports analytics for performance optimization
9. Object detection in autonomous vehicles
10. Recommendation systems for e-commerce platforms
11. Customer segmentation for targeted marketing
12. Text summarization for news articles
13. Automated subtitles for videos
14. Medical image diagnosis
15. Stock prediction

Ans: Data Science:

6,8,10,11,15

Natural Language Processing:

3,2,5,12,13

Computer Vision:

1,4,7,9,14

Write a program to read name and marks of a student. Kindly enter marks of at- 3
least 3 subjects and display the total mark.

Ans: `Name=input("Name")`

`mark1=int(input("Mark of subject 1"))`

`mark2=int(input("Mark of subject 2"))`

`mark3=int(input("Mark of subject 3"))`

`total_marks=mark1+mark2+mark3`

`print("Total marks",total_marks)`

How is a matrix represented ? What are some special types of matrices ? Explain 3
one with example.

Ans: A matrix is represented as a rectangular array of numbers, symbols, or expressions, arranged in rows and columns. The size or dimension of a matrix is defined by the number of rows and columns it contains. For example, a matrix with 3 rows and 2 columns is called a 3x2 matrix.

Square Matrix, Row Matrix, Column Matrix, Diagonal Matrix, Identity Matrix, Zero Matrix (Null Matrix)

Square Matrix :

A matrix with the same number of rows and columns (e.g., 2x2, 3x3).

SECTION-F (Attempt any three)

Mention minimum four differences between MACHINE LEARNING and DEEP LEARNING. 4

Ans:

MACHINE LEARNING	DEEP LEARNING
1. Works on small dataset for accuracy	1. Works on Large dataset
2. Dependent on Low-end machine	2. Heavily dependent on high-end machine
3. Divides the tasks into sub-tasks, solves them individually and finally combine the results	3. Solves problem end to end
4. Takes less time to train	4. Takes longer time to train
5. Testing time may increase	5. Less time to test the data

Consider the following admission.csv and answer the following questions:

4

Name	Class	Gender	Marks
Arjun	10	Male	85
Sneha	9	Female	92
Rohan	9	Male	78
Priya	10	Female	88
Vikram	11	Male	79
Aditi	10	Female	91
Ravi	9	Male	82
Meera	10	Female	89
Aman	9	Male	77

- Create a dataframe from the admission.csv**
- Display the first three rows of the dataframe.**
- Display the details of 'Vikram'.**
- Display the column 'Gender'**

List five phases of Design Thinking. Briefly describe any 3.

4

Ans: Design thinking is a human-centered approach to problem-solving and innovation that is widely used in various fields such as design, business, education, and technology.

Phase are:

1. Empathize, 2. Define, 3. Ideate, 4. Prototype 5. Test,

1:

Objective: Understand the users and their needs, experiences, and motivations.

Activities: This phase involves immersing yourself in the users' environment and experiences to gain deep insights into their lives. Techniques include user interviews, observations, and empathy mapping.

Outcome: A clear understanding of the user's needs and the problems they face, often leading to the creation of user personas that represent different types of users.

2:

Objective: Clearly articulate the problem you are trying to solve.

Activities: In this phase, you analyze the insights gathered during the Empathize phase and synthesize them into a clear problem statement. This is often referred to as the "Point of View" (POV) statement.

Outcome: A well-defined problem statement that focuses on a specific need or

challenge, which will guide the rest of the design process.

3:

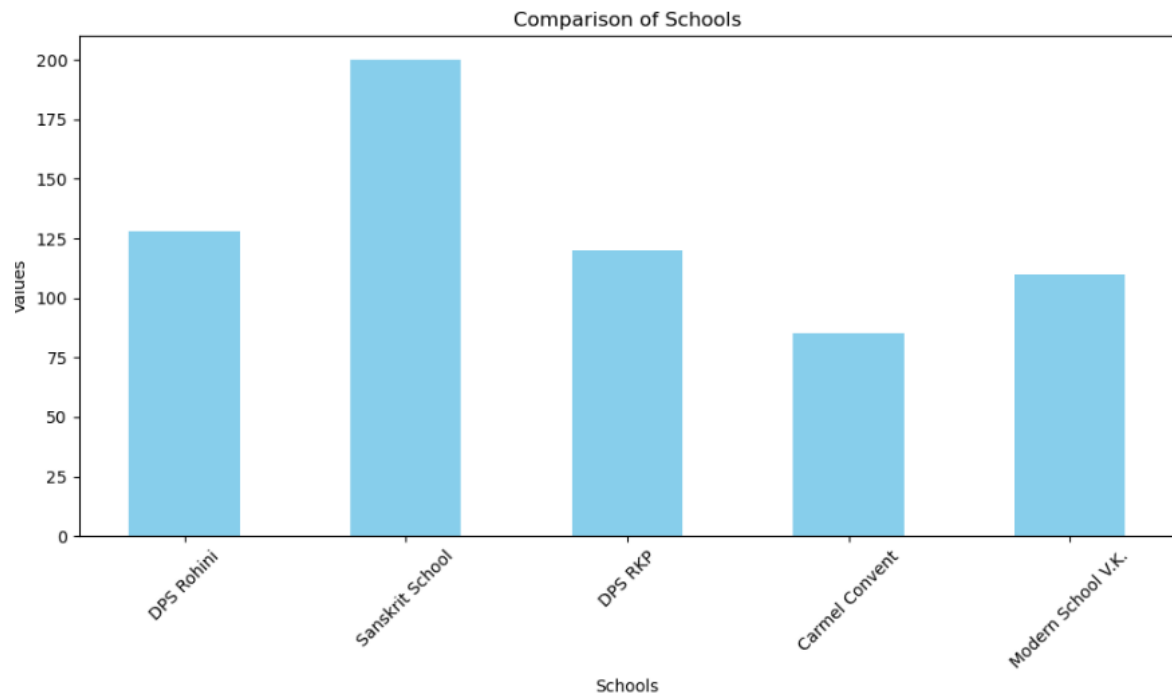
Objective: Generate a wide range of ideas and solutions.

Activities: This is a creative and brainstorming phase where you explore as many ideas as possible, without judgment. Techniques like brainstorming, mind mapping, and sketching are commonly used to encourage free thinking and creativity.

Outcome: A diverse set of potential solutions or ideas, which are then evaluated to identify the most promising ones for further development.

Write a python program to create a bar graph as given below:

4



```
Ans: import matplotlib.pyplot as plt
# Data
schools = ['DPS Rohini', 'Sanskrit School', 'DPS RKP', 'Carmel Convent', 'Modern
School V.K.']
values = [128, 200, 120, 85, 110]
# Create bar graph
plt.figure(figsize=(10, 6))
plt.bar(schools, values, color='skyblue',width=0.5)
# Add title and labels
plt.title('Comparison of Schools')
plt.xlabel('Schools')
plt.ylabel('Values')
# Show the plot
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```