

ANSWER KEY: MIDSEM

PART A

1.
 - A research gap is an area or topic that has not been adequately explored or addressed by existing studies.
 - Few studies examine AI-driven predictive maintenance in emerging industries.
 - Renewable energy and aerospace manufacturing lack attention in this area.
 - Theoretical AI benefits are often discussed, but real-world data is limited.
 - Long-term performance and reliability studies of AI systems are scarce.
2. **Steps Involved:**
 - Defining objectives
 - Determining variables
 - Identifying the setting
 - Developing the observation protocol
 - Observation and recording
 - Recording and analyzing
3. **Overarching Strategy:**
 - When starting on a new topic, it is best to move from tertiary to secondary and only then on to primary sources.
 - Tertiary sources: Overview and key references.
 - Secondary sources: Summaries and expert insights.
 - Primary sources: New data for original research.
4. **Analytical:**
 - Explores relationships between ideas being explored.
 - Analyzes presented facts/findings of an experiment.

Descriptive:

- Purpose is to provide facts or information, to report the findings of experiments.
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PART B

1.

- Represents relationships between data, information, knowledge, and wisdom.
- Moving up the pyramid adds value by answering more questions and enriching data with meaning.

Data:

- Raw, unorganized facts (numbers, characters) without meaning.

Information:

- Processed, organized data showing patterns or relationships.
- Structured data = information.

Knowledge:

- Arises by asking, "How is the information relevant to goals?"
- Connected, applicable information adds meaning and value.
- Knowledge ties information to specific purposes.

2.

- The paragraph must include a topic sentence, explanation, example/evidence, comment, and a linking sentence.
- The paragraph should be logically developed, regardless of the stance taken.

Note: Marks have been deducted for:

- **Structure:** Lack of clarity in expression and logical sequence.
- **Language:** Grammatical errors and incorrect English usage (where applicable).
- **Content:** Inadequate and irrelevant content related to the question.

ANSWER KEY:MIDSEM [make up]

PART A

1.

Pros:

- Provides a quick overview for beginners.
- Identifies broad themes and debates.
- Helps find key ideas and secondary sources.
- Contains related topics and keywords for further research.

Cons:

- Does not offer new information.
- Lacks new analysis.
- Not suitable for in-depth studies on specific topics.

2.

- Respondents are selected based on information provided by initial respondents.
- Useful for identifying samples with specific traits that are otherwise difficult to find.
- Example need to be given

3.

- Refers to unanswered questions in existing research.
- There is a lack of studies on the long-term ecological impacts of microplastics on marine biodiversity.
- There is a need to understand how immediate effects influence entire marine ecosystems and food webs over time.
- There is insufficient investigation of interactions between microplastics and environmental factors like temperature changes and ocean acidification.
- There is a poor understanding of microplastics' cumulative and synergistic effects on marine ecosystems.

4.

- Start with tertiary sources for an overview and broad themes.
- Move to secondary sources for summaries and analyses of existing research, which provide context and support for your study.

- Finally, use primary sources to gather new data or insights that directly address your research questions.
- Example of Data in Each Source needs to be given.

PART B

1. All the tools (observation, interview, survey) need to be explained in detail, if possible, with the advantages and disadvantages of each tool.
2. Need to write the report following IMRAD format. The logical sequence of the format needs to be there.

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