

thermal engineering objective questions File PDF

Thermal engineering objective questions are essential tools for students, professionals, and researchers aiming to evaluate their understanding of core concepts in thermal engineering. These questions are commonly used in competitive exams, university assessments, and certification tests to test knowledge on thermodynamics, heat transfer, and fluid mechanics. Mastering these questions can significantly enhance one's problem-solving skills and prepare individuals for real-world engineering challenges. This article provides a comprehensive overview of thermal engineering objective questions, their significance, common topics covered, and tips for effective preparation.

Understanding Thermal Engineering Objective Questions

What Are Thermal Engineering Objective Questions?

Thermal engineering objective questions are multiple-choice questions (MCQs), true/false statements, or fill-in-the-blank questions designed to assess knowledge of thermal phenomena and principles. They typically require selecting the most appropriate answer from a set of options, emphasizing quick recall and conceptual clarity.

Importance of Thermal Engineering Objective Questions

- **Assessment of Knowledge:** They help evaluate understanding of fundamental principles.
- **Exam Preparation:** Aids in preparing for competitive exams like GATE, IES, and PSU recruitment tests.
- **Self-Assessment:** Enables learners to identify their strong and weak areas.
- **Time Management:** Practicing MCQs improves speed and accuracy.

Common Topics Covered in Thermal Engineering Objective Questions

Thermal engineering encompasses various sub-disciplines, each with specific question types. The most frequently covered topics include:

1. Thermodynamics

- Laws of thermodynamics
- Thermodynamic cycles (Rankine, Carnot, Otto, Diesel)
- Properties of gases and vapors
- Entropy, enthalpy, and internal energy
- Equations of state

2. Heat Transfer

- Conduction, convection, and radiation
- Heat exchangers and their types
- Conductivity, Convective heat transfer coefficients
- Steady and unsteady heat transfer
- Heat transfer through different media

3. Fluid Mechanics and Machinery

- Fluid properties
- Bernoulli's equation
- Pumps and turbines
- Flow measurement devices
- Hydraulic turbines and compressors

4. Refrigeration and Air Conditioning

- Refrigeration cycles
- Psychrometrics
- Cooling load calculations
- Refrigerants and their properties

5. Combustion and Fuels

- Combustion equations
- Calorific value
- Combustion efficiency
- Fuel properties

Sample Objective Questions in Thermal Engineering

To illustrate the type of questions encountered, here are some example multiple-choice questions:

Question 1

Which of the following is a reversible cycle?

- a) Carnot cycle
- b) Rankine cycle
- c) Otto cycle
- d) Diesel cycle

Answer: a) Carnot cycle

Question 2

The rate of heat transfer through a solid by conduction depends on:

- a) Temperature difference, cross-sectional area, and thermal conductivity
- b) Temperature difference and fluid velocity
- c) Surface emissivity and temperature
- d) Fluid pressure and velocity

Answer: a) Temperature difference, cross-sectional area, and thermal conductivity

Question 3

In a Rankine cycle, the condenser operates at a pressure of 0.1 MPa. The cycle's efficiency increases if the condenser pressure is:

- a) Increased
- b) Decreased
- c) Remains constant
- d) Isentropic

Answer: b) Decreased

Preparation Tips for Thermal Engineering Objective Questions

Effective preparation involves strategic study and practice. Here are some tips to excel:

1. Understand Fundamental Concepts

- Focus on grasping the basic principles of laws of thermodynamics, heat transfer modes, and fluid mechanics.
- Use textbooks, online tutorials, and lecture notes for clarity.

2. Practice Regularly

- Solve a variety of MCQs from previous years' question papers and mock tests.
- Use question banks specifically designed for thermal engineering.

3. Focus on Problem-Solving Speed

- Time yourself while practicing to improve speed.
- Learn shortcut methods and formulas for quick calculations.

4. Clarify Doubts Promptly

- Engage with peers or instructors to resolve confusing topics.
- Use online forums and discussion groups.

5. Revise Important Topics

- Make concise notes for quick revision.
- Highlight frequently asked questions and important formulas.

Resources for Thermal Engineering Objective Questions

Several resources can aid in preparing effectively:

- Standard textbooks such as "Thermal Engineering" by R.K. Rajput and "Fundamentals of Thermodynamics" by Sonntag, Borgnakke, and Van Wylen.
- Previous years' question papers from GATE, IES, and PSU exams.

- Online platforms offering mock tests and quizzes.
- Mobile apps dedicated to thermal engineering MCQs.

Benefits of Mastering Thermal Engineering Objective Questions

Mastering these questions not only helps in exam success but also enhances conceptual clarity, which is critical for practical applications. Benefits include:

- Improved problem-solving skills
- Better understanding of thermodynamic systems
- Ability to analyze and interpret thermal data
- Enhanced confidence in technical interviews and professional assessments

Conclusion

Thermal engineering objective questions are a vital component of evaluating knowledge in this complex field. By understanding the types of questions, practicing regularly, and focusing on core concepts, students and professionals can significantly improve their performance. Staying updated with the latest question patterns and resources will give an added advantage. Whether you are preparing for competitive exams or seeking to strengthen your foundational knowledge, mastering thermal engineering MCQs is a strategic step toward success in the field of thermal sciences.

Thermal Engineering Objective Questions: An Expert Review

When it comes to mastering the complex domain of thermal engineering, one of the most effective strategies for students, professionals, and exam aspirants alike is the systematic practice of objective questions. These questions serve as a crucial tool for assessing knowledge, reinforcing concepts, and honing problem-solving skills. In this expert review, we will explore the significance of thermal engineering objective questions, their structure, types, and best practices for utilizing them to excel in competitive exams, university assessments, and professional certifications.

Understanding the Significance of Thermal Engineering Objective Questions

Thermal engineering, a core branch of mechanical engineering, encompasses principles related to heat transfer, thermodynamics, and energy systems. Its breadth and depth can often be overwhelming, making objective questions an invaluable resource for several reasons:

- Comprehensive Coverage of Topics

Objective questions cover a wide array of topics, enabling learners to review and reinforce their understanding of fundamental concepts, laws, and formulas across areas like heat transfer modes, thermodynamic cycles, and refrigeration.

- Assessment of Knowledge and Application

Unlike subjective questions, objective types require precise recall and quick application, helping learners gauge their readiness and identify weak areas.

- Time-efficient Practice

Because of their concise format, objective questions allow for rapid practice sessions, which are vital for time-constrained exams like GATE, ISRO, or PSU engineering tests.

- Preparation for Competitive Examinations

Most competitive exams incorporate multiple-choice questions (MCQs). Familiarity with typical question formats enhances confidence and improves performance.

Structure and Types of Objective Questions in Thermal Engineering

Objective questions in thermal engineering are predominantly of the multiple-choice type but may also include true/false, match-the-following, or assertion-reason questions. Understanding their structure is crucial for effective preparation.

Multiple-Choice Questions (MCQs)

MCQs are the most common form, presenting a question followed by four or five options, with only one correct answer. They test knowledge, application, and sometimes, analytical skills.

Example:

In a Carnot cycle, the efficiency depends on:

- a) The absolute temperature of the hot reservoir only
- b) The absolute temperature of the cold reservoir only

c) Both hot and cold reservoir temperatures

d) The specific heat of the working fluid

Correct Answer: c) Both hot and cold reservoir temperatures

True/False Questions

These assess the candidate's understanding of basic principles or statements.

Example:

The thermal efficiency of a Carnot engine is always less than 100%.

Answer: True

Match-the-Following

This format links concepts or formulas with their descriptions or applications, enhancing associative learning.

Example:

Match the thermodynamic cycles with their typical applications.

| Cycles | Applications |

|-----|-----|

| Rankine | Power plants |

| refrigeration cycle | Air conditioning |

Assertion-Reason Questions

These combine two statements, where the candidate must determine their correctness and relationship.

Example:

Assertion: The efficiency of a Carnot engine depends on the temperature difference between the

reservoirs.

Reason: Greater temperature differences result in higher engine efficiencies.

Answer: Both assertion and reason are correct; reason correctly explains the assertion.

Categories of Thermal Engineering Objective Questions

To optimize learning, question banks are often categorized based on difficulty level, topic, or skill assessed.

- Fundamental Concept Questions

Test basic understanding of laws, definitions, and principles.

- Numerical and Calculation-Based Questions

Require application of formulas and calculations, often involving thermodynamic cycles, heat transfer coefficients, or entropy changes.

- Application and Conceptual Questions

Assess understanding of real-world applications, such as refrigeration cycle efficiencies or heat exchanger design.

- Analysis and Data Interpretation

Involve interpretation of graphs, charts, or thermodynamic property tables, reflecting higher-level comprehension.

Common Topics Covered in Thermal Engineering Objective Questions

A well-rounded question bank should encompass all vital topics within thermal engineering. Here are the most frequently tested areas:

1. Thermodynamics

- Laws of thermodynamics (first, second, third)
- Thermodynamic cycles (Carnot, Rankine, Otto, Diesel)
- Properties of gases and vapors
- Equations of state
- Work and heat transfer in cycles

2. Heat Transfer

- Modes of heat transfer: conduction, convection, radiation
- Fourier's law, Newton's law of cooling, Stefan-Boltzmann law
- Heat exchangers: types, effectiveness, and design
- Heat transfer through composite walls

3. Refrigeration and Air Conditioning

- Refrigeration cycles (Vapor compression, Absorption)
- Coefficient of performance
- Psychrometrics and air properties
- Cooling load calculations

4. Power Plant Engineering

- Steam turbines and Rankine cycle
- Gas turbines and combined cycles
- Nuclear power plants basics
- Fuel combustion and efficiency calculations

5. Fluid Mechanics and Thermodynamics

- Fluid flow principles
- Pressure and velocity relationships
- Pump and compressor efficiencies

Strategies for Effective Practice of Thermal Engineering Objective Questions

Achieving mastery over objective questions requires strategic approaches:

- Understand the Concepts Thoroughly

Avoid rote memorization. Focus on understanding the principles, formulas, and their applications.

- Practice Regularly

Consistent practice helps develop quick recognition of correct options and improves problem-solving speed.

- Use Standard Question Banks and Mock Tests

Leverage well-curated question sets from reputable sources like GATE previous papers, coaching material, or online platforms.

- Analyze Mistakes

Review incorrect answers to identify misconceptions and reinforce learning.

- Time Management

Simulate exam conditions by setting time limits, ensuring you can answer questions efficiently during the actual exam.

- Focus on Weak Areas

Identify topics with lower accuracy and dedicate extra practice to strengthen those areas.

Best Resources for Thermal Engineering Objective Questions

To build a comprehensive question bank, consider these resources:

- Standard Textbooks:
 - ?Thermal Engineering? by R.K. Rajput
 - ?Fundamentals of Thermodynamics? by Sonntag, Borgnakke, and Van Wylen
 - ?Heat and Mass Transfer? by Yunus Çengel

- Previous Year Question Papers:
- GATE, ISRO, BARC, and other PSU exams
- University mock tests

- Online Platforms:
- MadeEasy, GateForum, Unacademy
- Apps offering quizzes and timed tests

- Question Banks and Practice Books:
- Arihant's Objective Question series
- Oswaal's GATE Practice Papers

Conclusion: Unlocking Success through Objective Questions

In conclusion, thermal engineering objective questions are more than mere exam tools—they are gateways to conceptual clarity, problem-solving agility, and exam strategy mastery. By systematically practicing and analyzing these questions, learners can build confidence, improve accuracy, and develop a deep understanding of core principles. Whether preparing for competitive exams, university assessments, or professional certifications, a focused approach to mastering objective questions can significantly elevate your mastery of thermal engineering, ensuring you stay ahead in your academic and professional pursuits.

Remember, consistency is key. Embrace a disciplined practice routine, utilize quality resources, and continually challenge yourself with diverse question formats. Success in thermal engineering is not just about memorizing formulas but about developing a robust, application-oriented understanding—objectives best achieved through strategic preparation with objective questions.

QuestionAnswer What is the primary purpose of a heat exchanger in thermal engineering? The primary purpose of a heat exchanger is to transfer heat between two or more fluids at different temperatures without mixing them. Which law of thermodynamics is primarily used to analyze heat transfer processes? The second law of thermodynamics is primarily used to analyze heat transfer processes, focusing on entropy and the direction of heat flow. What is the significance of the Carnot cycle in thermal engineering? The Carnot cycle represents the most efficient possible heat engine operating between two temperatures, serving as a theoretical benchmark for real engines. Which type of heat transfer occurs in a vacuum, such as the heat transfer from the Sun to Earth? Radiation is the heat transfer mode that occurs in a vacuum, transferring heat through electromagnetic waves. What is the purpose of a regenerative heat exchanger? A regenerative heat exchanger recovers heat from exhaust gases or fluids to preheat incoming fluids, improving overall efficiency. In thermal systems, what does the term 'effectiveness' of a heat exchanger refer to? Effectiveness refers to the

ratio of the actual heat transfer to the maximum possible heat transfer between the fluids in a heat exchanger. What is the primary difference between a Rankine cycle and a Brayton cycle? The Rankine cycle uses a vapor phase working fluid (steam), commonly used in power plants, whereas the Brayton cycle is a gas turbine cycle using air or gas as the working fluid. Which property is most commonly used to analyze heat conduction in solids? Thermal conductivity is the property most commonly used to analyze heat conduction in solids. What is the purpose of a cooling tower in thermal power plants? A cooling tower removes excess heat from the condenser water, transferring it to the atmosphere and maintaining efficient operation of the power plant.

Related keywords: thermal engineering, objective questions, heat transfer, thermodynamics, conduction, convection, radiation, cooling systems, thermal analysis, heat engines

Masterprose study questions

Masterprose study questions have become an essential resource for students and educators aiming to deepen their understanding of literary works, improve critical thinking skills, and excel in assessments. As a comprehensive tool, these questions facilitate active engagement with texts, enabling learners to analyze themes, characters, and literary devices more effectively. In this article, we will explore the importance of masterprose study questions, how to utilize them effectively, and tips for mastering your studies with these valuable resources.

Understanding the Significance of Masterprose Study Questions

What Are Masterprose Study Questions?

Masterprose study questions are carefully curated questions designed to accompany literary texts or educational content. They serve as prompts that guide students through critical analysis, comprehension, and interpretation of literary works. These questions often cover various aspects such as plot, character development, themes, symbols, and writing style.

Why Are They Important?

Using masterprose study questions offers numerous benefits:

- **Enhanced Comprehension:** They push students to think deeply about the text, ensuring a better grasp of the material.
- **Critical Thinking Development:** These questions challenge learners to analyze and evaluate

literary elements critically.

- **Exam Preparation:** They align with curriculum standards and exam formats, making revision more targeted and effective.
- **Active Engagement:** Moving beyond passive reading, students actively interact with the text.
- **Writing Skills Improvement:** Responding to questions helps refine analytical and argumentative writing abilities.

How to Effectively Use Masterprose Study Questions

1. Familiarize Yourself with the Material

Before tackling the questions, ensure you have read the literary work thoroughly. Take notes on key elements such as plot points, character traits, and significant symbols. This foundational understanding will make your responses more insightful.

2. Approach Questions Strategically

Not all questions require the same level of detail. Some may prompt simple recall, while others demand deep analysis.

- **Start with comprehension questions:** These confirm your understanding of basic facts.
- **Progress to analytical questions:** Focus on themes, motives, and literary devices.
- **Reflect on personal interpretation:** Consider your perspective and how it relates to the text.

3. Develop Thoughtful and Well-Structured Responses

When answering:

- **Use Evidence:** Support your points with direct quotes or references from the text.
- **Be Clear and Concise:** Communicate your ideas effectively without unnecessary verbosity.
- **Organize Your Answers:** Use paragraphs, topic sentences, and logical flow.

4. Practice Regularly

Consistent practice with study questions enhances comprehension and confidence. Set aside dedicated time to review questions after reading assignments or before exams.

5. Discuss Responses with Peers or Educators

Engaging in discussions helps you see different perspectives and deepen your understanding. Consider joining study groups or seeking feedback from teachers.

Tips for Mastering Study Questions in Different Contexts

Using Masterprose Study Questions for Exam Preparation

- Simulate Exam Conditions: Practice answering questions within time limits to build exam readiness.
- Identify Weak Areas: Focus on questions you find challenging to strengthen your knowledge.
- Review Model Answers: Compare your responses with model answers or teacher feedback to improve.

Incorporating Study Questions into Writing Assignments

- Outline Essays Based on Questions: Use questions as essay prompts to organize your thoughts.
- Develop Thesis Statements: Frame your responses around central ideas prompted by the questions.
- Cite Evidence Effectively: Support your arguments with quotations from the text.

Enhancing Literary Analysis Skills

- Break Down Complex Questions: Analyze what the question asks for before responding.
- Identify Literary Devices: Recognize metaphors, symbolism, and stylistic elements related to the question.
- Compare and Contrast: Use questions that ask for comparisons to develop comparative analysis skills.

Common Types of Masterprose Study Questions

Recall and Comprehension Questions

These questions test your understanding of factual information in the text.

- Who are the main characters?
- What is the setting of the story?

- Summarize the plot of the chapter.

Analysis and Interpretation Questions

These encourage critical thinking about literary elements.

- What is the significance of the symbol used in the story?
- How does the author develop the protagonist's character?
- What themes are explored in the narrative?

Opinion and Personal Response Questions

These questions invite personal reflection and interpretation.

- What is your opinion of the ending?
- How do you relate to the main character's experiences?
- What message do you think the author intended to convey?

Comparison and Contrast Questions

These involve analyzing similarities and differences between texts or characters.

- Compare the themes of two different stories.
- Contrast the protagonists' motivations.
- How do two authors approach the same theme differently?

Creating Your Own Masterprose Study Questions

While many resources provide pre-made questions, developing your own can significantly enhance comprehension.

- Identify key themes, characters, and symbols.
- Formulate questions that challenge your understanding at various levels.
- Mix factual, analytical, and opinion-based questions for a balanced approach.
- Seek feedback from teachers or peers to refine your questions.

Conclusion

Masterprose study questions are invaluable tools that foster active learning, critical analysis, and exam success. By integrating these questions into your study routine, you can develop a deeper understanding of literature, enhance your analytical skills, and perform confidently in assessments. Remember to approach each question thoughtfully, support your responses with evidence, and continually challenge yourself with new prompts. With consistent practice and strategic use, masterprose study questions can significantly elevate your literary comprehension and academic performance.

MasterProse Study Questions have become an essential resource for students and educators aiming to deepen their understanding of literary works and improve analytical skills. These study questions serve as a comprehensive guide, fostering active engagement with texts through targeted prompts, thought-provoking inquiries, and structured activities. As the educational landscape shifts toward more interactive and student-centered learning, MasterProse Study Questions offer a valuable tool to facilitate critical thinking, textual analysis, and exam preparation. In this article, we will explore the features, benefits, potential drawbacks, and best practices for utilizing MasterProse Study Questions effectively.

Overview of MasterProse Study Questions

MasterProse Study Questions are curated sets of questions designed to accompany literary texts, including novels, plays, poems, and essays. They are typically organized to align with the progression of the work, encouraging students to analyze characters, themes, literary devices, and authorial intent. These questions aim to promote close reading and analytical thinking, helping students develop a nuanced understanding of complex texts.

Core Features of MasterProse Study Questions

- **Structured Format:** Questions are often grouped by chapters, acts, or sections, enabling step-by-step analysis.
- **Diverse Question Types:** Includes comprehension, interpretive, evaluative, and creative prompts.
- **Answer Guides:** Many sets provide suggested answers or discussion points, aiding teachers in assessment.
- **Supplemental Resources:** Often accompanied by thematic summaries, vocabulary lists, and contextual information.

Intended Audience

MasterProse Study Questions are tailored for a broad audience, including:

- High school students preparing for exams like the SAT, ACT, or AP Literature.
- College undergraduates engaging in coursework or research.
- Educators designing lesson plans or classroom activities.
- Self-learners seeking structured guidance in literary analysis.

Advantages of Using MasterProse Study Questions

Implementing these questions in the learning process offers numerous benefits:

Enhanced Critical Thinking Skills

By prompting students to analyze motives, symbols, and themes, these questions foster higher-order thinking. They challenge students to interpret texts beyond surface-level comprehension, encouraging deeper engagement.

Structured Learning Pathway

The organized nature of the questions provides a clear roadmap for studying. Students can systematically approach a text, ensuring comprehensive coverage and reducing confusion during revision.

Preparation for Assessments

MasterProse Study Questions mirror many exam formats, especially essay prompts and short-answer questions. Regular practice with these questions can boost confidence and improve exam performance.

Support for Teachers

Educators benefit from ready-made questions and answer guides, saving preparation time. The questions can serve as discussion starters, homework assignments, or assessment tools.

Encourages Active Reading

Rather than passively reading, students are prompted to actively analyze and reflect on the material, leading to better retention and understanding.

Limitations and Challenges of MasterProse Study Questions

Despite their many advantages, there are some limitations to be aware of:

Potential for Over-Reliance

Students may become dependent on structured questions, which could hinder the development of independent analytical skills if not balanced with open-ended discussions.

Question Quality Variability

Not all sets of study questions are equally well-crafted. Poorly designed questions can be superficial or misleading, leading to superficial understanding.

Limited Flexibility

Pre-made questions may not always align perfectly with specific teaching goals or student needs, requiring teachers to modify or supplement them.

Risk of Rote Learning

Students might focus on memorizing answers rather than engaging critically with the text, reducing genuine comprehension.

Cost and Accessibility

Some comprehensive sets of MasterProse Study Questions are behind paywalls or require subscriptions, potentially limiting access for some learners.

Best Practices for Using MasterProse Study Questions Effectively

To maximize their benefits, educators and students should consider the following strategies:

Complement with Open-Ended Discussions

Use the questions as a starting point, but encourage students to formulate their own questions and interpretations to foster originality and deeper understanding.

Customize and Expand

Adapt questions to suit specific learning objectives or student interests. Add prompts for creative responses or comparative analyses.

Balance Guided and Independent Learning

Combine structured questions with free-form activities like essays, presentations, or debates to develop a well-rounded skill set.

Use as Formative Assessment Tools

Employ the questions periodically to gauge understanding and adjust instruction accordingly.

Encourage Reflection

Prompt students to reflect on their responses and reasoning processes to develop metacognitive skills.

Integrating MasterProse Study Questions into Curriculum

Effective integration involves strategic planning:

Pre-Reading Activities

Introduce questions that activate prior knowledge or predict themes, setting a purpose for reading.

During Reading

Use questions to guide focused reading, highlighting key passages or literary devices.

Post-Reading Analysis

Assign questions that synthesize understanding, compare interpretations, or connect themes across works.

Assessment and Feedback

Utilize responses to evaluate comprehension and provide constructive feedback.

Conclusion

MasterProse Study Questions serve as a versatile and valuable resource in the realm of literary education. Their structured approach, diverse question types, and alignment with curriculum goals make them an effective tool for fostering critical thinking, comprehension, and analytical skills. While they are not without limitations, when used thoughtfully and in conjunction with other pedagogical strategies, they can significantly enhance the learning experience. Whether for students preparing for exams or educators designing engaging lessons, MasterProse Study Questions offer a pathway

to deeper literary understanding and academic success. To maximize their potential, users should focus on customization, active engagement, and balancing guided questions with independent inquiry, ensuring a rich and stimulating exploration of literature.

QuestionAnswer What are masterprose study questions commonly used for? Masterprose study questions are used to help students analyze and understand literary texts more deeply by focusing on themes, characters, and stylistic elements. How can I effectively prepare for masterprose study questions? To prepare effectively, read the text thoroughly, identify key themes and literary devices, and practice answering different types of questions to improve comprehension and analytical skills. Are masterprose study questions suitable for all grade levels? Yes, they can be adapted for various educational levels by adjusting the complexity of the questions to match students' comprehension and analytical abilities. What types of questions are typically included in masterprose study questions? They often include comprehension questions, thematic analysis, character analysis, stylistic questions, and questions that require critical thinking and personal interpretation. How can teachers best utilize masterprose study questions in the classroom? Teachers can use them as discussion prompts, homework assignments, or exam questions to encourage critical thinking and ensure students engage deeply with the text. Where can I find practice masterprose study questions online? Many educational websites, literary resource platforms, and teacher forums offer practice questions tailored to various texts and grade levels. What skills do students develop by answering masterprose study questions? Students improve their analytical thinking, comprehension, textual evidence evaluation, and ability to articulate insights clearly. Can masterprose study questions be used for self-study? Yes, they are valuable for self-study, allowing learners to test their understanding and develop critical analysis skills independently. How do masterprose study questions differ from regular comprehension questions? Masterprose study questions typically require deeper analysis, interpretation, and critical thinking, whereas regular comprehension questions focus on understanding basic content.

Related keywords: masterprose, study questions, literature analysis, comprehension questions, literary themes, exam prep, classroom activities, critical thinking, reading comprehension, educational resources

Read the full article online: [masterprose study questions](#)