# Homework December 25

A towering figure in American literature, Herman Melville's work is celebrated for its profound exploration of human nature and the universe. His narratives, often populated with _____ characters, delve into themes of obsession, isolation, and the quest for meaning. Melville's protagonists, frequently caught in the throes of existential dilemmas, reflect the author's own philosophical inquiries. This sense of disillusionment and the search for truth is a recurring theme in his work. Melville's ability to weave complex and thought-provoking tales has cemented his place as a literary giant.

1

Mark for Review

Which choice completes the text with the most logical and precise word or phrase?

A: cheerful

B: brooding

C: indifferent

D: optimistic

The introduction of social media platforms has significantly altered the way people interact and communicate. These platforms allow users to share their thoughts, experiences, and opinions with a global audience. While this has led to increased connectivity and the democratization of information, it has also raised concerns about privacy and mental health. Critics argue that the constant exposure to curated content can cause users to _____ their own lives, leading to feelings of inadequacy and anxiety. Despite these concerns, the popularity of social media continues to grow, indicating that many people find its benefits outweigh the potential drawbacks.

**2** Mark for Review

Which choice completes the text with the most logical and precise word or phrase?

A: enhance

B: celebrate

C: compare

D: ignore

Oliver Twist, the young orphan protagonist of Charles Dickens' novel, undergoes a series of harrowing experiences that profoundly _____ his character. From the harsh conditions of the workhouse to the criminal underworld of London, Oliver's journey is marked by adversity and resilience. His encounters with various characters, both kind and malevolent, shape his understanding of the world and his place within it.

3 Mark for Review

Which choice completes the text with the most logical and precise word or phrase?

A: mold

B: decorate

C: obscure

D: diminish

The following text is adapted from a historical account of the Lewis and Clark Expedition. Nathaniel Hawke is examining the journals left by Meriwether Lewis.

Nathaniel Hawke would shut himself up for hours on end in his study, poring over the journals that Meriwether Lewis had left him. In them, he found the history of the expedition written in coded language. The journals had not only a historical but a prophetic value. They contained not only the past but also the future of the expedition's discoveries. Nathaniel Hawke was the only one who could decipher them, and he knew that he was in possession of a secret that could engulf any man with overwhelming fascination.

4 Mark for Review

Which choice best identifies the primary purpose of this text?

A: To explain why Nathaniel Hawke isolates himself from his family and community

B: To highlight the loneliness and obsession that comes with discovering an expedition's history

C: To reveal Nathaniel Hawke's unique ability to interpret the prophetic and historical significance of the journals

D: To suggest that Nathaniel Hawke is losing his sanity due to his immersion in the expedition's past

Directions

Economists have traditionally highlighted theories like Keynesianism and Monetarism when discussing monetary policy, a framework that governs the supply of money and interest rates in an economy. These narratives often portray the field as overwhelmingly dominated by a few economic giants, overshadowing other significant contributors. Economist Dr. Lila Thompson, however, has demonstrated that when attention is shifted to lesser-known policies and theorists, a tapestry of contributors with varied approaches and theories emerges, showing a richer diversity than typically acknowledged.

5 Mark for Review

Which choice best describes the function of the underlined portion in the text as a whole?

A: It presents a trend in economic narratives on monetary policy that the text claims has been reevaluated by researchers in light of Thompson's findings on less celebrated contributors.

B: It identifies an aspect of economic narratives about monetary policy that the text implies was overemphasized by economists due to the iconic status of certain theories.

C: It describes a common portrayal in economic narratives of monetary policy that, according to the text, obscures the diversity of its contributors.

D: It summarizes the conventional method for discussing monetary policy, which the text suggests creates a misleading impression of the dominance of a few prominent theories.

The following text is adapted from Gustave Flaubert's Madame Bovary. A small town is depicted with its vibrant market and the interactions among its residents.

The market square was alive with the sounds of vendors calling out their wares and the chatter of townsfolk. Madame Lefevre, with her basket full of fresh produce, stopped to greet Monsieur Dubois. "Good morning, Monsieur Dubois! How is your family?" she asked with a warm smile. "Very well, thank you, Madame Lefevre," he replied. "And yours?" The square was a hub of activity, with children playing and neighbors exchanging news.

6 Mark for Review

Which choice best describes the main purpose of the text?

A: To depict the economic activities and trade in the town

B: To convey the social interactions and community spirit within the town

C: To highlight the architectural beauty of the town

D: To draw attention to the historical significance of the town

Text 1

Data encryption is a field that involves securing information by transforming it into an unreadable format. Traditional methods tend to focus on classical algorithms and predefined protocols. The aim is to achieve a level of security that can protect sensitive information from unauthorized access.

Text 2

Dr. Marcus Bell and his research team propose a novel approach to data encryption. Instead of relying solely on classical algorithms, they suggest integrating quantum computing techniques. This would allow for more secure encryption methods that can adapt to potential threats in real-time, potentially making data protection more robust and future-proof.

7 Mark for Review

Based on the texts, how would Dr. Marcus Bell and his team (Text 2) most likely respond to the "traditional methods" discussed in Text 1?

A: By suggesting that traditional methods might be limiting the potential of data encryption by not utilizing quantum computing techniques

B: By emphasizing that traditional methods are obsolete and should be completely replaced by quantum computing-based methods

C: By stating that they share the same principles but differ in the application of quantum computing in data encryption

D: By agreeing with the traditional methods but proposing to add more predefined protocols to increase security

In Ralph Ellison's 'Invisible Man,' the protagonist navigates a world that refuses to see him. His journey is marked by a series of encounters that reveal the deep-seated racial prejudices and social injustices of the time. Through his experiences, the protagonist comes to understand the complexities of identity and the pervasive nature of invisibility in a society that marginalizes certain groups. The novel is a profound exploration of race, identity, and the human condition.

8 Mark for Review

Which choice best states the main purpose of the text?

A: To explore the themes of race, identity, and invisibility in a prejudiced society

B: To discuss the protagonist's personal growth throughout his journey

C: To explain the societal implications of invisibility

D: To emphasize the racial issues faced by the protagonist

Sira Quiroga, a young seamstress from Madrid, finds herself embroiled in the tumultuous events of the Spanish Civil War. Initially struggling to make ends meet, she eventually becomes a successful couturier and spy. Her journey is marked by personal growth, romantic entanglements, and significant contributions to the war effort.

**9** Mark for Review

Which choice best states the main purpose of the text?

A: To highlight the early struggles and challenges faced by Sira Quiroga in Madrid

B: To emphasize the romantic entanglements of Sira Quiroga during the Spanish Civil War

C: To provide an overview of Sira Quiroga's journey from a seamstress to a successful couturier and spy, noting her personal growth and contributions

D: To provide a detailed account of the Spanish Civil War and its impact on Sira Quiroga's life

Physicist, Dr. Ananya Patel and her team conducted a comprehensive study on the frequency patterns of cosmic microwave background radiation. By analyzing data from various space telescopes, they discovered a unique frequency pattern that appeared consistently in their observations. Patel hypothesized that this specific frequency pattern was a signature of early universe phenomena, providing insights into the conditions shortly after the Big Bang.

**10** Mark for Review

Which observation, if true, would most directly challenge Patel's hypothesis?

A: Similar frequency patterns were observed in unrelated phenomena, such as terrestrial radio waves.

B: In several observations, the unique frequency pattern was absent despite the conditions being similar to those where it was previously observed.

C: A different frequency pattern was observed in a related phenomenon, such as gamma-ray bursts.

D: The same frequency pattern was observed in a different context, such as solar radiation.

Antigone is a circa 441 BCE play by Sophocles, translated in 1888 by R.C. Jebb. Antigone, who is determined to bury her brother Polynices despite the king's edict, is aware of the danger and intensity of her actions but believes them to be justified:

11 Mark for Review

Which quotation from Antigone most effectively illustrates the claim?

A: "For I was born to join in love, not hate—that is my nature."

B: "It was not Zeus who published this decree; nor have the powers who rule among the dead imposed such laws as this upon mankind."

C: "I have longer to please the dead than please the living here: in the kingdom down below I'll lie forever. Do as thou wilt, I shall bury him; well for me to die in doing that. I shall rest, a loved one with him whom I have loved, sinless in my crime."

D: "I knew I must die, even without your decree: I am only mortal. And if I must die before my time, I count that a gain: for when one lives in sorrow as I do, how can it not be a gain to die?"

| Research Group | Year | Design Method | System Efficiency (%) | System Reliability Score (out of 10) |
|---|---|---|---|---|
| Smith and Johnson | 2018 | Integrated Design | 85-92 | 9-10 |
| Lee and Kim | 2019 | Sequential Design | 70-78 | 7-8 |
| Peterson and Davis | 2020 | Concurrent Design | 80-88 | 8-9 |
| Brown and Miller | 2021 | Integrated Design | 86-93 | 9-10 |

Mechatronics engineering is a multidisciplinary field that integrates mechanical, electronic and software engineering. The nature of the domain leads to varied approaches in the design of mechatronics systems. Professors Smith and Johnson argue that the design strategy greatly influences the system's efficiency and reliability.

12 Mark for Review

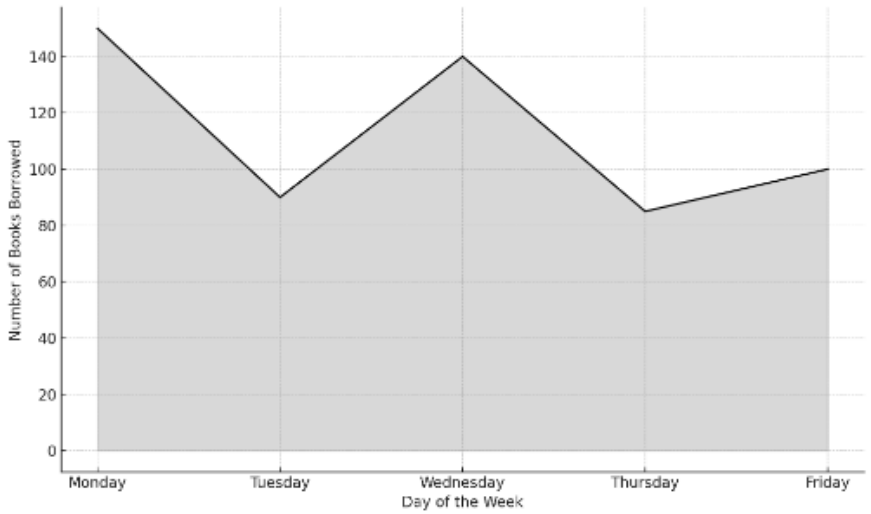
Which choice best describes data from the table that support Smith and Johnson's argument?

A: The study by Lee and Kim used sequential design and had the least system efficiency and reliability scores, while the study by Smith and Johnson had the highest.

B: In their study, Peterson and Davis used concurrent design to produce a system efficiency range of 80-88% and a system reliability score of 8-9.

C: The efficiency and reliability scores produced by Smith and Johnson and by Brown and Miller are similar, while the scores produced by Lee and Kim and by Peterson and Davis each differed substantially from any other score.

D: The system efficiency produced by Smith and Johnson was slightly higher than the one produced by Brown and Miller, even though both groups used the same design method.




A study on library usage patterns recorded the number of books borrowed by students each day over a week. The data showed significant fluctuations in borrowing patterns, with the highest numbers recorded on Monday and Wednesday. Researchers concluded that borrowing patterns were influenced by students' class schedules, citing as evidence the fact that the number of books borrowed _____.

13 Mark for Review

Which choice most effectively uses data from the graph to complete the text?

A: remained consistent throughout the week.

B: varied significantly from day to day.

C: was highest on Friday.

D: included a wide variety of genres.

Ethers are a class of organic compounds characterized by an oxygen atom connected to two alkyl or aryl groups. They are known for their relatively low reactivity, which makes them excellent solvents in organic synthesis. This low reactivity allows ethers to dissolve a wide range of substances without participating in the chemical reactions themselves. Additionally, ethers have relatively low boiling points, which makes them easy to remove from reaction mixtures by simple distillation. Despite these advantages, ethers must be handled with care due to their tendency to form explosive peroxides upon prolonged exposure to air. The utility of ethers in organic synthesis is largely due to _____.

**14** Mark for Review

Which choice most logically completes the text?

A: the discovery of new chemical reactions involving ethers.

B: their ability to dissolve a wide range of substances without reacting.

C: their historical use as anesthetics.

D: their minimal environmental impact.

The Arctic fox (Vulpes lagopus) is a small mammal adapted to living in cold environments, primarily found in the Arctic regions. Its evolutionary history has been a subject of study among scientists for years. Dr. Emily Zhao, a geneticist at the University of Stockholm, conducted a study on the genetic diversity of the Arctic fox. Her research revealed that the Arctic fox's genetic makeup had significant variations, leading to adaptations for extreme cold. These adaptations include a thick fur coat and a unique metabolic rate to survive in sub-zero temperatures. Zhao's team discovered that the genetic divergence between the Arctic fox and its closest relative, the red fox, occurred approximately 390,000 years ago. This divergence coincided with a period of significant climatic cooling during the Pleistocene epoch. Given these findings, the team concluded that _____.

15 Mark for Review

Which choice most logically completes the text?

A: the Arctic fox is a recent evolutionary adaptation to the Arctic environment.

B: the Arctic fox and the red fox share a common ancestor that was adapted to cold environments.

C: the unique adaptations of the Arctic fox are a result of recent climate change.

D: the evolutionary adaptations of the Arctic fox align with historical climate shifts.

The field of technology is vast and complex, encompassing numerous sub-disciplines and areas of study. One such area is the development of productivity software, which involves the creation of tools to enhance work efficiency. These tools can be made from various technologies, including cloud computing, artificial intelligence, and machine learning, as well as _____ to streamline workflows. This groundbreaking work is not only increasing productivity but also advancing our understanding of human-computer interaction.

16 Mark for Review

Which choice completes the text so that it conforms to the conventions of Standard English?

A: software tools, both proprietary and open-source,

B: software tools, both proprietary and open-source;

C: software tools; both proprietary and open-source,

D: software tools both proprietary and open-source,

In a recent study exploring the impact of nuclear fission on energy production, researchers observed the reactions in various reactors. The rate of fission in the reactors _____ in some locations, it was extremely high, while in others, it was kept at a more controlled level. The study found that fission rate had a significant effect on energy output and reactor stability.

**17** Mark for Review

Which choice completes the text so that it conforms to the conventions of Standard English?

A: varied:

B: varied,

C: varied, while

D: varied while

Scientists studying the behavior of sound waves have discovered why certain frequencies are more easily absorbed by materials in different environments. Unlike similar frequencies in controlled settings, which exhibit consistent absorption rates due to _____ in natural environments, sound waves encounter various obstacles that alter their paths. Consequently, in natural settings, the absorption rates vary significantly, affecting the clarity and intensity of the sound.

**18** Mark for Review

Which choice completes the text so that it conforms to the conventions of Standard English?

A: varying frequencies;

B: varying frequencies since

C: varying frequencies,

D: varying frequencies

Particles sometimes penetrate barriers they shouldn't classically be able to pass through, a phenomenon physicist George Gamow explained in 1928—quantum tunneling. A seemingly impossible (and, as experiments confirm, genuinely counterintuitive) phenomenon, _____.

**19** Mark for Review

Which choice best completes the passage so that it conforms to the conventions of Standard English?

A: quantum tunneling occurs when particles lacking sufficient energy penetrate barriers.

B: particles that lack sufficient energy penetrating barriers achieve quantum tunneling.

C: it is when particles lacking sufficient energy penetrate barriers.

D: this happens when particles lack sufficient energy to penetrate barriers.

In nutrition science, macronutrients and micronutrients are essential for maintaining overall health. In a balanced diet, _____

**20** Mark for Review

Which choice completes the text so that it conforms to the conventions of Standard English?

A: macronutrient and micronutrient is essential for energy production and immune function.

B: macronutrient and micronutrient are essential for energy production and immune function.

C: macronutrients and micronutrients are essential for energy production and immune function.

D: macronutrients and micronutrients is essential for energy production and immune function.

Ancient Greek philosophy is a broad term that refers to the intellectual tradition of ancient Greece. Philosophers often used logical reasoning to explore and understand the world around them. These philosophers _____ the foundation of Western thought, influencing countless generations of thinkers and scholars.

**21** Mark for Review

Which choice completes the text so that it conforms to the conventions of Standard English?

A: is laying

B: being laid

C: have laid

D: were laying

In calculus, derivatives are fundamental tools that measure how a function changes as its input changes. The concept of derivatives, which was developed independently by Isaac Newton and Gottfried Wilhelm Leibniz, is essential in understanding rates of change and slopes of curves. Derivatives _____ crucial in fields such as physics, engineering, and economics, where they are used to model dynamic systems and optimize processes.

22 Mark for Review

Which choice completes the text so that it conforms to the conventions of Standard English?

A: has been

B: are

C: being

D: was

Pollution has far-reaching effects on both the environment and human health. Air pollution, for instance, can lead to respiratory diseases and exacerbate existing health conditions. Water pollution, on the other hand, contaminates drinking water sources and harms aquatic life. _____, a study found that communities living near industrial areas have higher rates of chronic illnesses due to prolonged exposure to pollutants.

23 Mark for Review

Which choice completes the text with the most logical transition?

A: For example,

B: By contrast,

C: Specifically,

D: In conclusion,

Coral reefs are known to be one of the most diverse ecosystems on the planet, providing habitat and shelter for many marine organisms. They play a crucial role in nutrient cycling and serve as natural barriers protecting coastal areas from erosion and storms. _____ coral reefs also contribute significantly to local economies through tourism and fishing industries.

**24** Mark for Review

Which choice completes the text with the most logical transition?

A: Moreover,

B: However,

C: Despite this,

D: In the past,

While researching a topic, a student has taken the following notes:

- Archimedes was a Greek mathematician, physicist, engineer, inventor, and astronomer.
- Archimedes is known for formulating the principle of buoyancy, also known as Archimedes' principle.
- Archimedes' principle states that any object, wholly or partially immersed in a fluid, is buoyed up by a force equal to the weight of the fluid displaced by the object.
- Archimedes is also credited with inventing the Archimedean screw, a device used for raising water.
- Archimedes' discoveries laid the groundwork for the fields of hydrostatics and mechanics.

**25** Mark for Review

The student wants to summarize the main contributions of Archimedes. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A: Archimedes was a Greek mathematician and scientist known for his work in hydrostatics and mechanics.

B: Archimedes formulated the principle of buoyancy, which states that any object immersed in a fluid is buoyed up by a force equal to the weight of the fluid displaced by the object.

C: Archimedes, a renowned Greek inventor, formulated the principle of buoyancy and invented the Archimedean screw.

D: Archimedes' contributions include formulating the principle of buoyancy, inventing the Archimedean screw, and laying the groundwork for hydrostatics and mechanics.

While researching a topic, a student has taken the following notes:

- Genes are segments of DNA that code for specific traits in organisms.
- Most human traits are influenced by multiple genes working together (polygenic traits).
- Single-gene disorders are caused by mutations in just one gene and affect relatively few people.
- Huntington's disease is a single-gene disorder that affects approximately 3-7 per 100,000 people worldwide.
- Polygenic disorders like heart disease and diabetes affect millions of people but require mutations in multiple genes plus environmental factors.
- BRCA1 and BRCA2 gene mutations significantly increase breast cancer risk, with carriers having up to 72% lifetime risk compared to 12% in the general population.

**26** Mark for Review

The student wants to describe the impact of the Human Genome Project. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A: BRCA1 and BRCA2 mutations involve just two genes but increase breast cancer risk from 12% to up to 72%, demonstrating how single or paired gene mutations can have dramatic effects on disease risk.

B: Most human traits are influenced by multiple genes working together, known as polygenic traits.

C: Polygenic disorders like heart disease and diabetes affect millions of people and require mutations in multiple genes plus environmental factors.

D: Single-gene disorders are caused by mutations in just one gene, while polygenic disorders involve multiple genes and environmental factors.

While researching a topic, a student has taken the following notes:

- Plant hormones are chemical messengers that regulate growth and development in plants.
- Auxins are the most abundant plant hormones and primarily promote cell elongation and root development.
- Gibberellins are present in much lower concentrations than auxins but are highly effective at stimulating stem elongation and seed germination.
- Cytokinins promote cell division and are found in moderate concentrations, mainly in root tips and developing seeds.
- Abscisic acid (ABA) inhibits growth and is produced in response to environmental stress, though typically in small amounts.
- The concentration of plant hormones is measured in parts per million (ppm) or parts per billion (ppb).

27 Mark for Review

The student wants to indicate which plant hormone has the most dramatic effect on plant growth despite being present in lower concentrations than the most abundant hormone. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A: Although present in much lower concentrations than auxins, gibberellins are highly effective at stimulating stem elongation and seed germination, demonstrating their powerful impact on plant growth.

B: Auxins are the most abundant plant hormones in plants and primarily promote cell elongation and root development.

C: Abscisic acid (ABA), though produced in small amounts, inhibits growth in response to environmental stress.

D: Plant hormones, including auxins, gibberellins, and cytokinins, regulate various aspects of plant growth and development at different concentrations.