

Reading Test

60 MINUTES, 47 QUESTIONS

Turn to Section 1 of your answer sheet to answer the questions in this section.

DIRECTIONS

Each passage or pair of passages below is followed by a number of questions. After reading each passage or pair, choose the best answer to each question based on what is stated or implied in the passage or passages and in any accompanying graphics (such as a table or graph).

Questions 1-9 are based on the following passage.

This passage is adapted from Marilynne Robinson, *Gilead*.
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I wish you could have known my grandfather. I heard a man say once it seemed the one eye he had was somehow ten times an eye. Normally speaking, it
Line seems to me, a gaze, even a stare, is diffused a little
5 when there are two eyes involved. He could make me feel as though he had poked me with a stick, just by looking at me. Not that he meant any harm to speak of. He was just afire with old certainties, and he couldn't bear all the patience that was required of
10 him by the peace and by the aging of his body and by the forgetfulness that had settled over everything. He thought we should all be living at a dead run. I don't say he was wrong. That would be like contradicting John the Baptist.

15 He really would give anything away. My father would go looking for a saw or a box of nails and it would be gone. My mother used to keep what money she had in the bodice of her dress, tied up in a handkerchief. For a while she was selling stewing
20 hens and eggs because times were very hard. (In those days we had a little land around this house, a barn and pasture and henhouse and a wood lot and woodshed and a nice little orchard and a grape arbor. But over the years the church has had to sell it all off.
25 I used to expect to hear they were planning to auction off the cellar next, or the roof.) In any case, times were hard and she had the old man to deal with, and he would actually give away the blankets off his bed. He did that several times, and my mother

30 was at a good deal of trouble to replace them. For a while she made me wear my church clothes all the time so he couldn't get at them, and then she never gave me a moment's peace because she was sure I was going to go off and play baseball in them, as of
35 course I did.

I remember once he came into the kitchen while she was doing her ironing. He said, "Daughter, some folks have come to us for help."

"Well," she said, "I hope they can wait a minute. I
40 hope they can wait till this iron is cool." After a few minutes she put the iron on the stove and went into the pantry and came out with a can of baking powder. She delved around in it with a fork until she drew up a quarter. She did this again until she had a
45 quarter and two dimes lying there on the table. She picked them up and polished the powder off with a corner of her apron and held them out to him. Now, forty-five cents represented a good many eggs in those days—she was not an ungenerous woman. He
50 took them, but it was clear enough he knew she had more. (Once when he was in the pantry he found money hidden in an empty can because when he happened to pick it up it rattled, so he took to going
55 into the pantry from time to time just to see what else might rattle. So she took to washing her money and then pushing it into the lard or burying it in the sugar. But from time to time a nickel would show up where she didn't want it to, in the sugar bowl, of course, or in the fried mush.) No doubt she thought
60 she could make him go on believing all her money was hidden in the pantry if she hid part of it there.

But he was never fooled. I believe he may have been a little unbalanced at that time, but he could see through anyone and anything. Except, my mother
65 said, ne'er-do-wells. But that wasn't really true either. He just said, "Judge not," and of course that's Scripture and hard to contradict.

But it must be said that my mother took a great deal of pride in looking after her family, which was
70 heavy work in those days and especially hard for her, with her aches and pains. But he'd walk off with a jar of her pickled beets without so much as a by-your-leave. That day, though, he stood there with those three coins in his drastic old mummified hand
75 and watched her with that terrible eye, and she crossed her arms right over the handkerchief with the hidden money in it, as he clearly knew, and watched him right back, until he said, "Well, the Lord bless and keep you," and went out the door.

80 My mother said, "I stared him down! I stared him down!" She seemed more amazed than anything. As I have said, she had a good deal of respect for him. He always told her she ought not to worry about his generousities, because the Lord would provide. And
85 she used to say that if He weren't put to so much trouble keeping us in shirts and socks, He might have time to provide a cake now and then, or a pie. But she missed him when he was gone, as we all did.

1

Which statement best expresses a central idea of the passage?

- A) Growing up in difficult economic conditions can make a person self-reliant.
- B) Living in a multigenerational household sometimes reveals widely differing values.
- C) Balancing charity with responsibilities to one's family can be challenging.
- D) Finding the humor in everyday moments can help relieve the stresses of making ends meet.

2

The passage is narrated from the perspective of

- A) a parent amusing children with a comically exaggerated story.
- B) a child with an incomplete understanding of adults' actions.
- C) an adult characterizing a memorable person from his childhood.
- D) an objective observer knowledgeable about each character's inner life.

3

As used in line 4, "diffused" most nearly means

- A) distributed.
- B) averted.
- C) weakened.
- D) boosted.

4

As described by the narrator, the grandfather is most remarkable for his

- A) constant generosity and cheerful manner.
- B) extreme frugality and unfeeling pragmatism.
- C) narrow-minded prejudices and foolish stubbornness.
- D) strong convictions and intense personality.

5

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 8-12 ("He was . . . run")
- B) Lines 15-17 ("He really . . . gone")
- C) Lines 36-38 ("I remember . . . help")
- D) Lines 62-64 ("But he . . . anything")

6

The use of parenthetical sentences in lines 20-26 and lines 51-59 serves mainly to

- A) distract the reader from troubling content by sharing amusing stories.
- B) provide additional context for the events described by the narrator.
- C) slow the pace of the narrative to mirror the grandfather's diminished strength.
- D) indicate that the descriptions of some events are less reliable than they may seem.

7

One point that the narrator makes about the mother while describing the interaction with the grandfather in the kitchen is that the mother

- A) deceived the grandfather for his own good.
- B) resented being interrupted at her work.
- C) was willing to sacrifice to help others.
- D) hid her money to keep herself from spending it.

8

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 43-44 ("She delved . . . quarter")
- B) Lines 47-49 ("Now . . . woman")
- C) Lines 59-61 ("No doubt . . . there")
- D) Lines 68-71 ("But it . . . pains")

9

The image of the grandfather's "drastic old mummified hand" in line 74 mainly serves to

- A) highlight the intensity of the confrontation between the grandfather and the mother.
- B) suggest that the grandfather actually knows where the mother is hiding the rest of the money.
- C) establish that the grandfather understands that the mother will not give him any more money.
- D) reveal that the grandfather is actually frail since the mother controls the family's money.

Questions 10-18 are based on the following passage and supplementary material.

This passage is adapted from Fenella Saunders, "Multitasking to Distraction." ©2009 by Sigma Xi, The Scientific Research Society.

In this era of media bombardment, the ability to multitask has been seen as an asset. But people who commonly have simultaneous input from several
 Line types of media—surfing the Web while texting and
 5 listening to music, for instance—may in fact find it harder to filter out extraneous information. "We embarked on the research thinking that people who multitasked must be good at it," says Clifford Nass, a psychologist at Stanford University who studies
 10 human-computer interaction. "So we were enormously surprised."

Nass and his colleagues separated about 100 undergraduate students into groups of heavy and light media multitaskers. Heavy multitaskers
 15 commonly have five to six inputs going at once, which could include multiple chat windows as well as other forms of data. The two groups took part in four computerized tests designed to determine their ability to discern information of interest amidst
 20 distractions.

For instance, students had to judge whether one of two red rectangles, in a field of blue rectangles, had changed orientation. Another test involved identifying pairs of letters, sometimes with
 25 "distractor" letters flashing between them.

A third test asked students if the current letter shown was the same as the one they had seen two or three letters before. Finally students had to classify a number-letter target (such as "b3") as even or odd, or
 30 a vowel or a consonant.

As the researchers report, the tests showed that the chronic multitaskers consistently were more susceptible to interference from irrelevant stimuli. On the test referring back two or three letters, heavy
 35 multitaskers had a tendency to produce false alarms on letters they had seen earlier, showing that they were more susceptible to distraction from items that seemed familiar and less capable of blocking from memory data that had become inconsequential.

40 Surprisingly, the heavy multitaskers also performed more slowly on tests that required them to quickly switch between tasks, as on the letter-number pairs. It seems that they are less able to filter out their knowledge of the previous task and look at
 45 things afresh.

The researchers found no overarching cognitive or personality differences between the heavy and light multitaskers.

There is considerable evidence that human
 50 cognition is ill suited to multitasking. So why do we work so hard to do it if we're so bad at it? Nass and his colleagues are planning studies to find out, but they have a couple of competing theories. One possibility is that multitaskers have become so
 55 habituated to an onslaught of information that they operate on the assumption that any input is potentially relevant. Another idea is that it's much like why humans now overindulge in unhealthy foods: Just as we are wired to like sugar and fats, we
 60 are predisposed to seek out as much information as possible, particularly about other humans. "It could be that multitasking is just that desire run amok," says Nass. "What may have been an evolutionary advantage becomes an evolutionary disadvantage
 65 when you put it in a world of plenty."

The motivation to understand multitasking is more than academic. "To the extent it's attitudinal, we have to change attitudes," says Nass. "To the extent it's habitual, we have to change practices."
 70 All other implications aside, the results already have conferred relief to some. "The biggest reactions have come from nonmultitaskers, who complain about how much they've felt alienated for being unable to multitask," says Nass. "It's been remarkably
 75 comforting to them."

Figure 1

False Alarm Rates for Light and Heavy Media Multitaskers on Tasks Referring Back Two or Three Letters

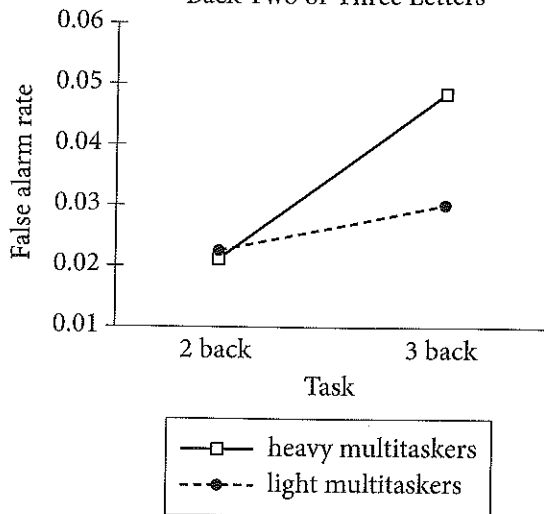
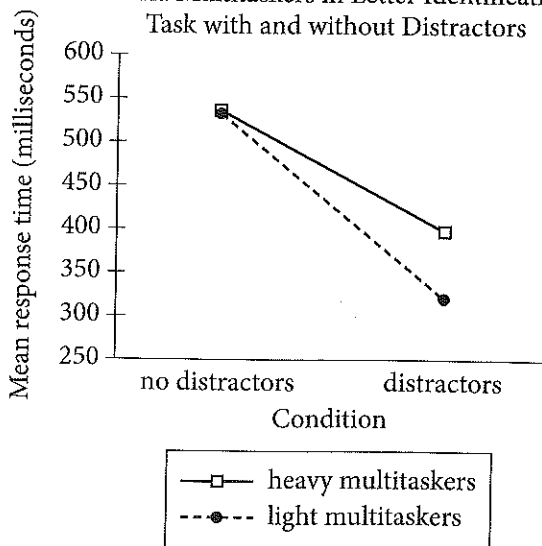


Figure 2

Mean Response Times for Light and Heavy Media Multitaskers in Letter Identification Task with and without Distractors



Figures adapted from Eyal Ophir, Clifford Nass, and Anthony D. Wagner, "Cognitive Control in Media Multitaskers." ©2009 by Eyal Ophir, Clifford Nass, and Anthony D. Wagner.

10

As used in lines 3 and 15, "commonly" most nearly means

- A) plainly.
- B) universally.
- C) routinely.
- D) popularly.

11

Was Nass's original hypothesis regarding the effectiveness of multitasking confirmed or disproved by the experiment described in the passage?

- A) Confirmed, because heavy multitaskers were better able than light multitaskers to remain calm under pressure.
- B) Confirmed, because heavy multitaskers were more experienced at game playing than were light multitaskers.
- C) Disproved, because heavy multitaskers were less effective than light multitaskers at filtering out extraneous information.
- D) Disproved, because heavy multitaskers were less inclined than light multitaskers to follow instructions.

12

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 6-11 ("We embarked . . . surprised")
- B) Lines 12-17 ("Nass . . . data")
- C) Lines 66-69 ("The motivation . . . practices")
- D) Lines 70-75 ("All . . . them")

13

As used in line 23, "orientation" most nearly means

- A) identification.
- B) position.
- C) shape.
- D) familiarization.

14

The passage suggests that a key difference between light and heavy multitaskers is that light multitaskers

- A) have greater success than heavy multitaskers have coping with stressful situations.
- B) are more capable of understanding implicit meanings than heavy multitaskers are.
- C) enjoy simple, repetitive tasks more than heavy multitaskers do.
- D) can concentrate on tasks more capably than heavy multitaskers can.

15

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 21-23 (“For . . . orientation”)
- B) Lines 23-25 (“Another . . . them”)
- C) Lines 26-28 (“A third . . . before”)
- D) Lines 31-33 (“As the . . . stimuli”)

16

The passage describes “false alarms” (line 35) as occurring when students incorrectly identified

- A) a letter as a match to one that was two or three letters back.
- B) the orientation of a rectangle that appeared on the screen.
- C) a pair of letters when distractor letters were present.
- D) the combination of a letter and a number as even or odd and consonant or vowel.

17

According to figure 1, when the two groups were asked to recall letters, how did the accuracy of light multitaskers compare to the accuracy of heavy multitaskers?

- A) Light multitaskers were considerably better than heavy multitaskers at recalling three letters back.
- B) Light multitaskers were consistently worse than heavy multitaskers at recalling two or three letters back.
- C) Light multitaskers were twice as likely as heavy multitaskers to recall two letters back accurately.
- D) Light multitaskers and heavy multitaskers were both better at recalling three letters back than they were at recalling two letters back.

18

According to figure 2, the mean response time of light multitaskers with no distractors is closest to

- A) 325 milliseconds.
- B) 400 milliseconds.
- C) 450 milliseconds.
- D) 525 milliseconds.

Questions 19-27 are based on the following passage.

This passage is adapted from Rachel Nuwer, "This Catfish's Whiskers Are Like Ultra-Sensitive pH Strips." ©2014 by the Smithsonian Institution.

While catfish normally don't come to mind as belonging on the list of animals-that-can-operate-in-the-dark, new research published in *Science* confirms that Japanese sea catfish can indeed hold their own when the lights go out. To do this, those fish turn to chemistry.

Originally, the researchers were investigating how the fish respond to various chemical taste stimuli, but while studying nerve fibers in the catfish's whiskers they noticed that those appendages seemed to be reacting to the amount of carbon dioxide and hydrogen in the tank. When the pH fell a bit, the fibers became activated and excited.

Intrigued, the researchers decided to pursue their curiosity and see if something more was going on. The catfish, they knew, usually fed at night and preferred to eat marine worms that live in burrows. First, they measured the pH around a few captive worms over various time intervals and at various distances. When the worms breathe, they found, those organisms release carbon dioxide and hydrogen, which very slightly lowers the pH in the surrounding water. The catfish, they thought, might be detecting that change.

To find out, the team introduced a few catfish into a tank containing hidden marine worms. They made sure conditions were kept pitch black and used an infrared camera to record the predatory drama that ensued. The fish had no trouble rooting out the worms' hiding places, the team found. Those predators would confidently approach the worms' burrows and "suck them out."

Next, the team decided to perform the same experiment, only this time the worms' burrows were covered in protective netting. But even though the fish could not access the worms, they still spent a significant amount of time in their prey's vicinity, the researchers found.

Finally, the team skipped the worms altogether and just slightly lowered various sections of the aquarium's pH by trickling water of a different pH through a tube inserted in the aquarium. The catfish rushed to those areas and switched into "an appetitive search mode"—science speak for

searches fueled by the munchies—when the hose was on, the team reports. But the fish ignored those areas when the hose was off or was pumping in seawater of the same pH as the aquarium.

In a tank that normally registered at a pH of 8.23, a change to 8.1 or 8.2 excited the fish the most, the researchers found, but a pH of 8.0 or below didn't even register. In other words, the catfish could detect pH changes of less than 0.1 units but perhaps not larger changes, and they were very particular about how they interpreted those changes. The researchers concluded that the catfish possess an "extraordinary sensitivity" to chemical cues.

The downside to the catfish's sensors, however, is their potential vulnerability to climate change. Experts predict that ocean acidification will decrease the pH of the world's waters, which could be bad news for the catfish. The ocean is already 30 percent more acidic today than it was in pre-industrial times, the team points out, and by the end of this century it is supposed to drop another 150 percent, to an average pH of 7.8.

If the catfish's feelers really are so sensitive that they don't work on values that stray outside of about a 0.1 pH window, then those chemical changes might impact their ability to find food. Whether or not the fish will be able to adapt to those changes, the team concludes, remains unknown.

19

As used in line 29, "rooting out" most nearly means

- A) discovering.
- B) poking around.
- C) destroying.
- D) removing.

20

What is the main effect of the phrase set off by dashes in lines 44-45 (“science . . . munchies”)?

- A) It clarifies a technical explanation by interjecting a casual paraphrase.
- B) It emphasizes the author’s view of her own expertise by introducing a mocking tone.
- C) It interrupts the description of a process by highlighting the importance of one of the steps.
- D) It reinforces the researchers’ reactions to a discovery by introducing a hypothetical thought.

21

The passage suggests that which adjustment would most likely disrupt the feeding pattern of the catfish?

- A) Keeping the water continuously dark
- B) Increasing the water’s acidity by more than 0.1 units
- C) Elevating the pH level of the water from 8.1 to 8.2
- D) Activating some of the fibers in the catfish whiskers

22

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 20-23 (“When . . . water”)
- B) Lines 26-29 (“They . . . ensued”)
- C) Lines 52-54 (“In other . . . larger changes”)
- D) Lines 58-59 (“The downside . . . change”)

23

According to the passage, the researchers became convinced that

- A) catfish can discriminate among various types of marine worms.
- B) sea catfish are more sensitive than are freshwater catfish.
- C) Japanese sea catfish will become extinct in this century.
- D) Japanese sea catfish whiskers are effectively attuned to minute chemical changes.

24

At lines 58-59, the author’s purpose in the passage shifts from

- A) interpreting several lines of research on catfish to stating a preference for one of the studies.
- B) outlining the solutions to an environmental problem affecting catfish to highlighting one solution in detail.
- C) summarizing certain findings about the abilities of catfish to examining implications of those findings.
- D) warning of threats to the natural conditions for catfish to describing how to remedy those threats.

25

As used in line 68, “values” most nearly means

- A) quantities.
- B) appraisals.
- C) benefits.
- D) qualities.

26

The research team discussed in the passage would most likely agree that future research on Japanese sea catfish should study

- A) how catfish become acclimated to the darkest ocean depths.
- B) when nerve fibers in catfish whiskers are activated.
- C) whether catfish might adjust to decreasing pH levels.
- D) how industrial pollution in streams and rivers might be controlled.

27

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 29-30 (“The fish . . . found”)
- B) Lines 55-57 (“The researchers . . . cues”)
- C) Lines 62-66 (“The ocean . . . 7.8”)
- D) Lines 70-72 (“Whether . . . unknown”)

Questions 28-37 are based on the following passages.

Passage 1 is adapted from Supreme Court Justice Hugo L. Black, “Concurring Opinion,” *The New York Times Co. v. United States*, 403 U.S. 713 (1971). Passage 2 is adapted from Supreme Court Justice Harry A. Blackmun, “Dissenting Opinion,” *The New York Times Co. v. United States*, 403 U.S. 713 (1971). In 1971, the United States sued the *New York Times* and the *Washington Post* to prevent the newspapers from publishing classified military documents. The Supreme Court upheld by a 6–3 vote the papers’ right to publish the documents.

Passage 1

[T]he Executive Branch seems to have forgotten the essential purpose and history of the First Amendment. When the Constitution was adopted,
 Line many people strongly opposed it because the
 5 document contained no Bill of Rights to safeguard certain basic freedoms. They especially feared that the new powers granted to a central government might be interpreted to permit the government to curtail freedom of religion, press, assembly, and
 10 speech. In response to an overwhelming public clamor, James Madison offered a series of amendments to satisfy citizens that these great liberties would remain safe and beyond the power of government to abridge. Madison proposed what later
 15 became the First Amendment in three parts, . . . one of which proclaimed: “The people shall not be deprived or abridged of their right to speak, to write, or to publish their sentiments; and the freedom of the press, as one of the great bulwarks of liberty, shall
 20 be inviolable.” The amendments were offered to curtail and restrict the general powers granted to the Executive, Legislative, and Judicial Branches two years before in the original Constitution. The Bill of Rights changed the original Constitution into a new
 25 charter under which no branch of government could abridge the people’s freedoms of press, speech, religion, and assembly. Yet the Solicitor General argues and some members of the Court appear to agree that the general powers of the Government
 30 adopted in the original Constitution should be interpreted to limit and restrict the specific and emphatic guarantees of the Bill of Rights adopted later. I can imagine no greater perversion of history. Madison and the other Framers of the First
 35 Amendment, able men that they were, wrote in language they earnestly believed could never be misunderstood: “Congress shall make no law . . .

abridging the freedom . . . of the press. . . .” Both the history and language of the First Amendment
 40 support the view that the press must be left free to publish news, whatever the source, without censorship, injunctions, or prior restraints.

In the First Amendment the Founding Fathers gave the free press the protection it must have to
 45 fulfill its essential role in our democracy. The press was to serve the governed, not the governors. The Government’s power to censor the press was abolished so that the press would remain forever free to censure the Government. The press was protected
 50 so that it could bare the secrets of government and inform the people.

Passage 2

The First Amendment . . . is only one part of an entire Constitution. Article II of the great document vests in the Executive Branch primary power over the
 55 conduct of foreign affairs and places in that branch the responsibility for the Nation’s safety. Each provision of the Constitution is important, and I cannot subscribe to a doctrine of unlimited absolutism for the First Amendment at the cost of
 60 downgrading other provisions. First Amendment absolutism has never commanded a majority of this Court. . . . What is needed here is a weighing, upon properly developed standards, of the broad right of the press to print and of the very narrow right of the
 65 Government to prevent. Such standards are not yet developed. The parties here are in disagreement as to what those standards should be. But even the newspapers concede that there are situations where restraint is in order and is constitutional. Mr. Justice
 70 Holmes gave us a suggestion when he said . . .

It is a question of proximity and degree. When a nation is at war many things that might be said in time of peace are such a hindrance to its effort that their utterance will not be endured so long
 75 as men fight and that no Court could regard them as protected by any constitutional right. . . .

I strongly urge, and sincerely hope, that these two newspapers will be fully aware of their ultimate responsibilities to the United States of America. . . . I
 80 hope that damage has not already been done. If, however, damage has been done, and if, with the

Court’s action today, these newspapers proceed to publish the critical documents and there results therefrom [more damage] . . . then the Nation’s
 85 people will know where the responsibility for these sad consequences rests.

28

The primary purpose of Passage 1 is to

- A) argue that the First Amendment was intended to protect press freedoms such as those sought by the newspapers in this case.
- B) discuss the origins and development of the idea of a free press.
- C) provide an overview of the history of legal challenges to the First Amendment.
- D) describe the controversy over the initial lack of a bill of rights in the Constitution.

29

As used in line 6, “basic” most nearly means

- A) fundamental.
- B) simplistic.
- C) primitive.
- D) initial.

30

Based on the passage, the author of Passage 1 would most likely agree with which statement about the First Amendment?

- A) It helped to alter the essential nature of the Constitution.
- B) It did not fully reflect Madison’s intentions.
- C) It was phrased to allow government restraints on certain types of publications.
- D) It transformed the United States into a democracy.

31

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 14-20 (“Madison . . . inviolable”)
- B) Lines 23-27 (“The Bill of Rights . . . assembly”)
- C) Lines 38-42 (“Both . . . restraints”)
- D) Lines 43-45 (“In the . . . democracy”)

32

Which statement best expresses the central idea of Passage 2?

- A) The constitutional protection of the press does not extend to the publication of material known to be false.
- B) The executive branch has the constitutional authority, on occasion, to prohibit the publication of material that endangers the nation.
- C) The First Amendment was understood by its authors to be applicable only during times of peace.
- D) The Bill of Rights may have limited the government’s power to the point at which the government cannot function effectively.

33

Which choice provides the best evidence that the author of Passage 2 believes that the Constitution prohibits most restrictions on the press?

- A) Lines 52-53 (“The First Amendment . . . Constitution”)
- B) Lines 56-60 (“Each . . . provisions”)
- C) Lines 60-62 (“First Amendment . . . Court”)
- D) Lines 62-65 (“What . . . prevent”)

34

As used in line 74, “endured” most nearly means

- A) experienced.
- B) persisted.
- C) deferred.
- D) tolerated.



35

It can most reasonably be inferred from the passages that the two authors would disagree about the answer to which of the following questions?

- A) Are individual freedoms protected in any way by the Constitution?
- B) Should the Constitution be amended to reflect changing realities?
- C) How should the Bill of Rights be weighed against the principles set forth in the Constitution?
- D) Does the Constitution explain the purpose of a free press?

36

The author of Passage 1 would most likely make which of the following observations about the interpretation of the Constitution offered in the first paragraph of Passage 2?

- A) The interpretation is based on the incorrect assumption that the Constitution's protections of speech are different from its protections of the press.
- B) The interpretation ignores the ambiguity in James Madison's wording in the portion of the Constitution that addresses freedom of the press.
- C) The interpretation provides a rationale for the Constitution's protection of the press that is different from the rationale provided by the Constitution's authors.
- D) The interpretation fails to take sufficiently seriously that the Constitution was amended so as to address concerns about its implications for individual liberties.

37

The author of Passage 2 would most likely raise which of the following objections to the claim made in the last paragraph of Passage 1?

- A) The founding fathers were more concerned about the nation's safety than about freedom of the press.
- B) The purpose of the press is to inform the public, not to censure the government.
- C) The First Amendment has never been understood to permit the publication of classified military documents.
- D) The untimely revelation of certain kinds of state secrets can actually endanger the public interest.

Questions 38-47 are based on the following passage and supplementary material.

This passage and accompanying figures are adapted from Felicia Keesing and Truman P. Young, "Cascading Consequences of the Loss of Large Mammals in an African Savanna." ©2014 by Felicia Keesing and Truman P. Young. The Kenya Long-term Exclosure Experiment (KLEE) is a large-scale experiment consisting of a collection of plots of land that use two types of fencing to keep out different combinations of large mammals, including both wild animals and domestic cattle.

In September 1995, when the KLEE fences had just been completed, we found equal numbers of pouched mice on the plots with and without large mammals. Within a few months, however, the plots without large mammals had significantly more mice than those with a full complement of larger species. Over time, this difference became even more pronounced, with mice on plots without large mammals being twice as abundant on average. During over 10 years of monitoring, the only time the two types of plots had similar densities of mice was toward the end of a prolonged drought in 2000, when mice virtually disappeared from all of the plots.

On the plots that allowed large wildlife, we observed fewer mice than on the plots that did not, and this was true regardless of whether cattle were also allowed on those plots. Similarly, on the plots that allowed cattle, there were fewer mice regardless of whether large animals were present. Together, these observations suggest that both cattle and large wildlife reduce the abundance of mice and that they do so in an additive way. In other words, large wildlife species suppress mouse populations by about 25%, and cattle suppress them by an additional 25%.

We do not know for certain how large grazing mammals reduce the abundance of mice, but we pose two possibilities. First, if mice compete with larger mammals for food, the absence of large mammals should make it easier for mice to find food. Plots should then support larger populations of mice. We conducted feeding trials to ask whether pouched mice might compete with other grazers. Previous work suggested that they were primarily granivorous, but we determined that these same mice are also herbivorous, consuming the same grasses and forbs preferred by larger grazers. Therefore, it is possible that the mice thrived because they were released from competition.

Another possible reason for the increase in mouse populations is that the mice on plots without large mammals were better able to avoid their predators. For example, if vegetation were more abundant on plots without large mammals, mice might have more plant cover under which to hide. In the early years of KLEE, the cover was fairly similar on all of the types of plots, which suggests that, at least at first, differences in exposure to predators could not explain higher abundances of mice on plots without large mammals. Over time, plots from which large herbivores have been excluded have tended to have more cover. If the mice on plots without large mammals were better able to hide from predators, we would expect mice to survive better on those plots. After analyzing data from thousands of individual mice over tens of thousands of trap nights, however, we found that there are no differences in the survival of mice on the two types of plots. Taken together, the evidence suggests that differences in density are probably due to mice experiencing less intense competition for food and, consequently, higher reproductive rates on the plots without large mammals; the mice survived just as well as they did on plots with half the density, because they had more food and possibly food of better quality, as well.

Studies in other parts of Africa have shown similar patterns. In Botswana, for example, Sætnan and Skarpe found higher densities of rodents in experimental areas from which large mammals had been excluded. In a comparative study in Tanzania, Caro found lower densities of small mammals inside a national park than in an area outside of the park that sustained agriculture and pastoralism and had lower densities of large mammals. Taken together, these studies suggest that large mammals can regulate the abundance of small mammals and that the effect seems to be largely through the effects of large mammals on food quality or quantity, rather than through their effects on protective cover.

Figure 1

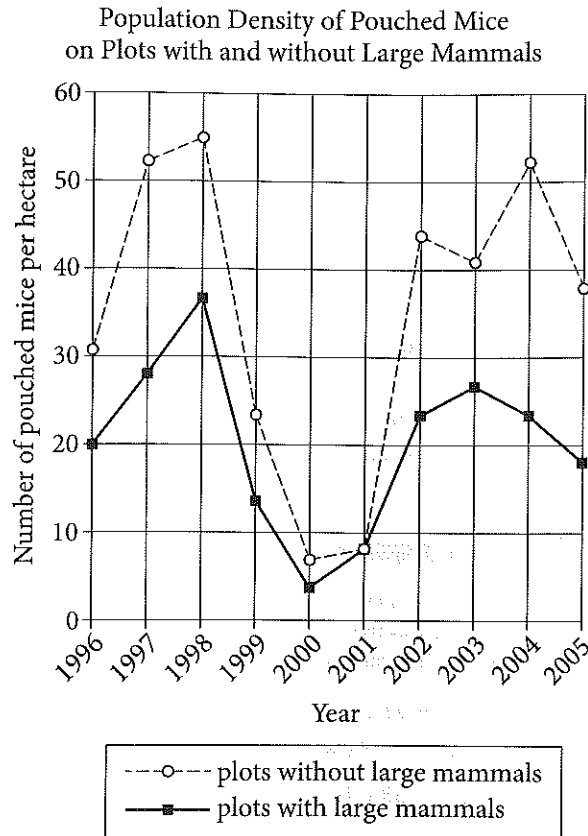
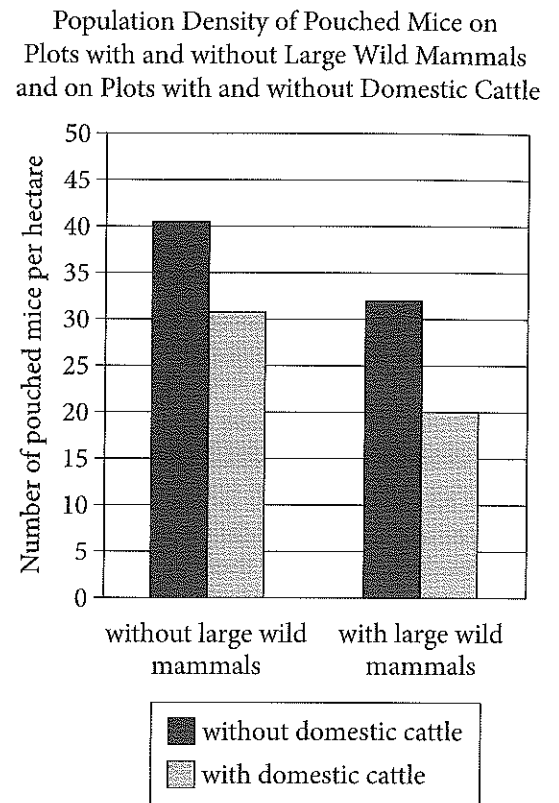


Figure 2



38

As used in line 15, "observed" most nearly means

- A) acknowledged.
- B) noted.
- C) examined.
- D) followed.

39

In the development of the passage, the main purpose of lines 25-27 (“We do . . . possibilities”) is to

- A) suggest that the authors desire to see their research continued by other scientists.
- B) anticipate objections to the data-collection methods described in the passage.
- C) establish the broad importance of hypotheses to scientific investigation.
- D) introduce a discussion of a key question that the authors sought to examine.

40

Based on the passage, the introduction of cattle to a plot containing large wildlife would most likely affect the pouched mice living there by

- A) stunting the mice’s growth because of diminished nutrients in their diet.
- B) compelling the mice to consume a wider variety of plant species than they otherwise would.
- C) diminishing even further the number of mice than does the presence of large wildlife.
- D) forcing the mice to shift from granivorous to herbivorous feeding behaviors.

41

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 14-17 (“On the . . . those plots”)
- B) Lines 19-22 (“Together . . . way”)
- C) Lines 31-32 (“We conducted . . . grazers”)
- D) Lines 32-36 (“Previous . . . grazers”)

42

The fourth paragraph (lines 39-64) mainly serves to

- A) advance a hypothesis about the relationship between the survival rates of pouched mice and the growth rate of cover vegetation.
- B) discuss how researchers ruled out a potential explanation for differences in the pouched mouse populations of the various types of plots.
- C) explore the possibility that pouched mice adapt their strategies for avoiding predators to the immediate environment.
- D) consider an established scientific opinion about the influence of pouched mice on the behaviors of large mammals.

43

Which choice provides the best evidence for the claim that pouched mouse survival rates do not depend on the relative amount of plant cover?

- A) Lines 39-41 (“Another . . . predators”)
- B) Lines 49-51 (“Over . . . cover”)
- C) Lines 51-53 (“If the . . . those plots”)
- D) Lines 54-57 (“After . . . of plots”)

44

Which choice best describes how the authors perceive the other studies discussed in the last paragraph?

- A) They hope that the studies will remind other researchers of the KLEE project’s continued significance.
- B) They regard the objectives of the studies as being similar to the KLEE project’s objectives.
- C) They believe that the findings of the studies corroborate the findings of the KLEE project.
- D) They consider the data gathered in the studies appropriate for use by the KLEE project researchers.

45

As used in line 75, “regulate” most nearly means

- A) control.
- B) fix.
- C) monitor.
- D) standardize.

46

According to figure 1, for which year was the population density of pouched mice on plots both with and without large mammals the greatest?

- A) 1997
- B) 1998
- C) 2002
- D) 2004

47

The data in figure 2 most directly support which of the following claims made by the authors?

- A) The addition of both cattle and wildlife to a plot reduces its pouched mouse population density by approximately one-half.
- B) The drought of 2000 reduced pouched mouse populations on plots both with and without large mammals to the same level.
- C) Differences in pouched mouse population densities between plots with and without large mammals increased over time.
- D) The variations in pouched mouse populations on plots with and without grazers can be attributed to the way different habitats impact reproductive capability.

STOP

If you finish before time is called, you may check your work on this section only.

Do not turn to any other section.