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Topic Break Down

Topic	No. of Questions
Topic 1, English	317
Topic 2, Reading	218
Topic 3, Science	224
Topic 4, Math	278
Total	1037

QUESTION NO: 1

DIRECTIONS: In the passage below, certain phrases are underlined and numbered . The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

The Glass Castle (excerpt)

By Jeannette Walls

[§1] I never believe <1> in Santa Claus. None of us kids did. Mom and Dad refused to let us. They couldn't afford expensive presents and they didn't want us to think we weren't as good as other kids who, on Christmas morning, <2> found all sorts of fancy toys under the tree that were supposedly left by Santa Claus.

[§2] Dad had lost his job at the gypsum, and when Christmas came that year, we had no money at all. On Christmas Eve, Dad took each one of we kids <3> out into the desert night one by one. [§3] "Pick out your favorite star", Dad said. <4> [§4] "I like that one!" I said.

[§5] Dad grinned, "That's Venus," he said. He explained to me that planets glowed because reflected light was constant and stars twinkled because their light pulsed.

[§6] "I like it anyway" I said. <5>

[§7] "What the hell," Dad said. "It's Christmas. You can have a planet if you want." [§8] And he gave me Venus.

[§9] Venus didn't have any moons or satellites or even a magnetic field, but it did have an atmosphere sort of similar to Earth's, except it was super-hot – about 500 degrees or more. <6> "So,"

Dad said, "when the sun starts to burn out and earth <7> turns cold, everyone might want to move to Venus to get warm. And they'll have to get permission from your descendants first." <8>

[§10] We laughed about all the kids who believed in the Santa myth and got nothing for Christmas but a bunch of cheap plastic toys. <9>

[§11] "Years from now, when all the junk they got is broken and long forgotten," Dad said, "you'll still have your stars." <10>
<6>:

A. NO CHANGE

B. Venus didn't have any moons or satellites or even a magnetic field but it did have an atmosphere sort of similar to Earth's except it was super-hot about 500 degrees or more.

C. Venus didn't have any moons, or satellites, or even a magnetic field, but it did have an atmosphere, sort of similar to Earth's, except it was super-hot, about 500 degrees or more.

D. Venus didn't have any moons or satellites or even a magnetic field, but it did have an atmosphere sort of similar to earth's, except it was super-hot – about 500 degrees or more.

ANSWER: A

Explanation:

A is correct. The sentence is written correctly in the passage.

B removes all commas thus making it a run-on. C uses comma splices. D is correct with the exception of "earth's." Since you're talking about the planet, it should be capitalized.

QUESTION NO: 2

DIRECTIONS: In the passage below, certain phrases are underlined and numbered . The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Yoga

[§1] One of today's hottest fads is also one of the world's oldest practices: the ancient art of yoga. At first, I thought yoga was just another fitness fad, like step aerobics classes or Tae Bo. But after my first class, I understood why yoga has lasted for thousands of years, and why so many people are completely into <1> this practice.

[§2] Yoga is different from other fitness activities because it is not only physical. In the correct form, <2> yoga is a practice of unification: an emotional, spiritual, and physical exercise.

[§3] Though it may seem easy to those who <3> have never practiced, yoga poses require great concentration, and they are surprisingly effective in stretching and strengthening muscles. A simple sitting pose such as staff pose, for example, requires you to tighten and lengthen stomach, back, and arm muscles as you stretch you're <4> legs out in front of you and place your hands by your side. More difficult poses, such as brave warrior, require you to balance on one leg and hold a pose that strengthens leg, back, and stomach muscles.

[§4] While yoga tones and strengthens the body, it also tones and strengthens the mind. Many poses can be only held <5> if you are completely focused on the task, and full benefit of the poses comes only through proper breathing. Concentrated, deep breathing during yoga helps you extend more fully into the poses, thereby gaining greater benefit from the stretch. And the steady circulation of breath through your body both calms and energizes.

[§5] I am still relatively new to yoga. I have only been practicing for one year. I am addicted to yoga <6> unlike any other physical activity because it is also a spiritual practice. Through yoga, I am able to release tensions that lodge in various parts of my body: the tight shoulders, the cramped legs, the belly that is in knots. <7> The physical release is also a spiritual release: I feel calm after doing yoga, reconnected to my body, reconnected to myself, more at peace with the world. After a series of asanas (poses), I feel the universal life force within.

The writer would like to add some figurative language to the essay. Which of the following images would be most effective and appropriate?

- A. I feel like a million bucks after doing yoga.
- B. Yoga is like a warm blanket.
- C. Yoga is like a drug.
- D. Yoga is a peaceful journey.

ANSWER: D

Explanation:

This is the most appropriate metaphor. Choice A is a cliché. Choice B is ineffective; it is unclear what emotion the simile is trying to convey. Without further explanation, choice C is an inappropriate comparison.

QUESTION NO: 3

DIRECTIONS: In the passage below, certain phrases are underlined and numbered . The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Annie Smith Peck

[§1] Since a hundred years, <1> the highest mountains in South America have lured climbers from all over the world. But until 1908, Peru's Mt. Huascarán resisted the efforts of all those who attempted to reach its summit. One mountaineer, Annie Smith Peck, vowed to overcome the obstacles and be the first to the top of Mt. Huascarán. In order to succeed, she would have to organize expeditions – deal with reluctant companions –survive bad weather, and <2> climb steep cliffs of ice and rock.

[§2] Peck was born in the United States in 1850. Although she didn't start mountain climbing until she was in her thirties, it <3> soon became clear that she had found her life's work. A natural mountaineer, Peck was soon setting records on expeditions in North America and Europe. She traveled to Bolivia in 1903 and found Mount Huascarán, which had yet to be surmounted, a challenge she simply could not resist. <4>

[§3] (1) Peck mounted four expeditions and made five attempts before she finally conquered Mt. Huascarán. (2) Between those expeditions, Peck returned to the United States to raise money. (3) She received help from many scientific organizations, including the Museum of Natural History. (4) The Museum had also supported Admiral Peary on his trip to the North Pole. (5) Still, Peck struggled at least as much to raise money as she did climbing <5> her beloved mountains.

[§4] In 1908, Peck scraped together the funds for yet another expedition to Mt. Huascarán. This time, she hired two Swiss guides to assist <6> her with the climb. On their first trip up the mountain's slopes, one of the guides became ill, and the entire team was forced to turn back even though they were very close to the top. Being so close to success was very frustrating for Peck, who could not even prove how close they had come because she had accidentally brought the wrong kind of film and was unable to photograph the climb.

[§5] The team rested for a few days, the guide recovered, and on August 28th, they set off again. The climb was extremely difficult. Steps had to be cut <7>one by one into the steep ice; snow bridges and crevasses had to be carefully crossed. The weather was so cold that everyone suffered from frostbite. When Peck and her two guides were just a short distance from the top, they stopped to determine the exact height of the mountain.

[§6] At that moment, one of the guides took advantage of Peck's distraction and climbed the few remaining feet to the summit so that he was the first to reach the peak. What a jerk! <8>Although Peck was understandably angry, she <9> focused on the triumph of achieving her goal: standing at last on the top of Mt. Huascarán.

<3>:

- A. NO CHANGE
- B. thirty's, it
- C. thirties. It
- D. thirties, thus it

ANSWER: A

Explanation:

This is correct as it stands. Choice C would create a sentence fragment.

QUESTION NO: 4

Read the passage and answer the question.

To: Shawn Organ

From: Christine DeIGandio

Subject: Request for additional headcount (accounts payable)

(Paragraph A)

(1) As we've discussed before, the amount of overtime in the accounting department continues to be over budget. (2) A new accounts payable clerk would greatly increase efficiency. (3) I believe that the excessive hours are negatively impacting productivity and employee morale. (4) After analyzing the situation for the past three months, I am recommending that we create a new headcount for an accounts payable clerk. (5) The long work hours seems to have created a hostile work environment. (6) There is little time for personal support and tempers are extremely short.

(7) The accounting team no longer has an optimistic and positive view of their work or the company.

(Paragraph B)

(8) To make our commitments, the team spends an extraordinary amount of time performing manual data entry. (9) This works leaves very little time left for problem solving or creative brainstorming. (10) In my opinion, the company is not being helped by ignoring the creative talents of the team members.

(Paragraph C)

(11) I have attached a report for the last three months that details the hours worked, project statuses, and the costs. (12) Based on this data, I have projected how the costs will decrease with the addition of an accounts payable clerk. (13) The fully loaded costs of an accounts payable clerk is much less than the current overtime costs. (14) Can we discuss this position next week? (15) Please let me know if you have any questions.

Which revision should be made to the placement of sentence 2?

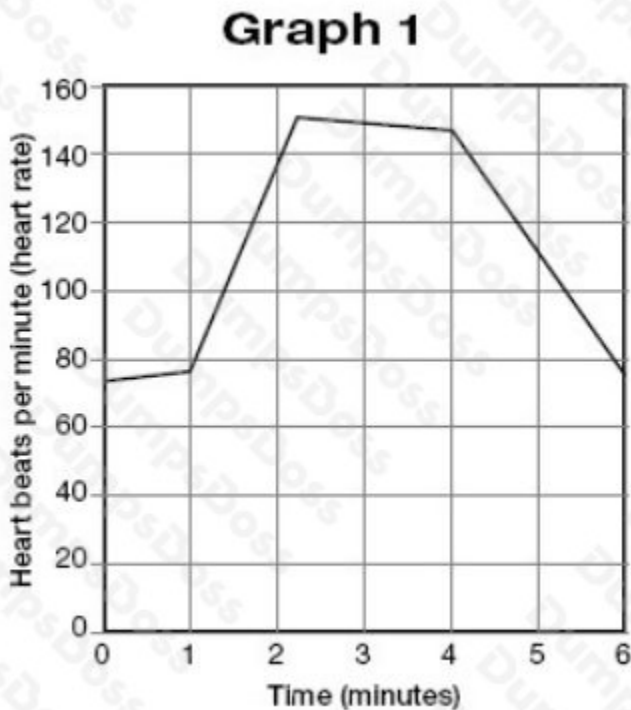
- A. move sentence 2 to follow sentence 11
- B. move sentence 2 to the end of paragraph A
- C. move sentence 2 to the beginning of paragraph C
- D. remove sentence 2
- E. move sentence 2 to follow sentence 12

ANSWER: D

QUESTION NO: 5

The heart is an organ that pumps blood throughout the circulatory system in the body. Red blood cells are a tissue in the body that carry nutrients to the body's cells and waste away from the body's cells. The heart rate increases or decreases depending on the body's needs to transport nutrients and waste.

In an experiment, a female had her heart monitored. For one minute, she sat in a chair quietly. At the end of the first minute to the end of the third minute she did jumping jacks. Finally, she sat again in the chair and waited until her heart rate went back to her resting heart rate as measured in the first minute. After performing this experiment, the following graph was created.



Which of the following statements is true?

- I. During exercise the blood needs to carry fewer nutrients throughout the body.
- II. The body does not need any nutrients when at rest.
- III. Waste is carried away from cells only during exercise.
- IV. During exercise the blood needs to carry more nutrients and wastes throughout the body.

A. I and III

B. III only

C. II and III

D. IV only

- E.** During exercise the blood needs to carry fewer nutrients throughout the body.
- II. The body does not need any nutrients when at rest.

III. Waste is carried away from cells only during exercise.

IV. During exercise the blood needs to carry more nutrients and wastes throughout the body.

ANSWER: D

Explanation:

According to the text above Graph 1, the heart rate increases or decreases depending on the body's need to transport waste and nutrients. Therefore during exercise, the heart rate increases in order to transport more of these materials.

QUESTION NO: 6

In this passage a Mexican American historian describes a technique she used as part of her research.

(1) Doña Teodora offered me yet another cup of strong, black coffee. The aroma of the big, paper-thin Sonoran tortillas filled the small, linoleum-covered kitchen, and I knew that with the coffee I would receive a buttered tortilla straight from the round, homemade comal (a flat, earthenware cooking pan) balanced on the gas-burning stove. For three days, from ten in the morning until early evening, I had been sitting in the same comfortable wooden chair, taking cup after cup of black coffee and consuming hot tortillas. Doña Teodora was ninety years old, and although she would take occasional breaks from patting, extending, and turning over tortillas to let her cat in or out, it appeared that I was the only one exhausted at the end of the day. But once out, as I went over the notes, filed and organized the tape cassettes, exhilaration would set in. The intellectual and emotional excitement I had previously experienced when a pertinent document would suddenly appear now waned in comparison to the gestures and words, the joy and anger doña Teodora offered.

(2) She had not written down her thoughts; but the ideas, recollections, and images evoked by her lively oral expression were jewels for anyone who wanted to know about the life of Mexicanas in booming mining towns on both sides of the Mexico-United States border in the early twentieth century. She never kept a diary. The thought of writing a memoir would have been put aside as presumptuous. But all her life doña Teodora had lived amidst the telling and retelling of family stories. Genealogies of her own family as well as complete and up-to-date information of the marriages, births, and deaths of numerous families that made up her community were all well-kept memories. These chains of generations were fleshed out with recollections of the many events and tribulations of these families. Oral history had proven to be a fertile field for my research on the history of Mexicanas.

(3) My search had begun in libraries and archives – repositories of conventional history. The available sources were to be found in census reports, church records, directories, and other such statistical information. These, however, as important as they are, cannot provide one of the essential dimensions of history, the full narrative of the human experience that defies quantification and classification. In certain social groups this gap can be filled with diaries, memoirs, letters, or even reports from others. In the case of Mexicanas in the United States, one of the many devastating consequences of defeat and conquest has been that the traditional institutions that preserve and transfer culture (the documentation of the past) have ignored these personal written sources. The letters, writings, and documents of Mexican people have rarely, if ever, been included in archives, special collections, or libraries. At best, some centers have attempted to collect newspapers published by Mexicans, but the effort was started late. The historian who tries to reconstruct the past from newspapers is constantly frustrated because, although titles abound, collections are scarce and often incomplete.

(4) Although many hours of previous study and preparation had taken me to doña Teodora's kitchen, I was initially unsure of my place. Was I really an insider or were the experiences that had made the lives of my interviewees such that, although I could speak Spanish and am Mexicana, I was still an outsider?

(5) I realized, nonetheless, that the richness and depth of the spoken word challenges the comforting theories and models of the social sciences. Mexican history challenges social-science models derived solely from victorious imperialistic experiences.

(6) Our history cannot be written without new sources. These sources will determine which concepts are needed to illuminate and interpret the past, and these concepts will emerge from the people themselves. This will permit the description of events

and structures to assume a culturally relevant perspective, thus emphasizing the point of view of the Mexican people. The use of theoretical constructs must follow the voices of the people who live the reality, consciously or not. For too long the experiences of women have been studied according to male-oriented sources and constructs. These must be questioned. For the history of Mexican people, the sources primarily exist in our own worlds. And it is here where we must begin. I often found that as the memory awakened, other sources would emerge. Boxes of letters, photographs, and even manuscripts and diaries would appear. Long-standing assumptions of illiteracy were shattered and had to be reexamined. I saw that constant reevaluation became the rule rather than the exception. I entered women's worlds created on the margin – not only of Anglo life, but of, and outside of, the lives of their own fathers, husbands, sons, brothers, or priests, bosses, and bureaucrats.

What is the effect of the question in paragraph four (4)?

- A. It suggests that sharing ethnicity and language might not be enough to make one an insider.
- B. It eliminates the distinction between insider and outsider.
- C. It refutes the claim that being an outsider is an important criterion for doing research.
- D. It suggests that only those with an outsider's perspective can see things objectively.
- E. It suggests that human sympathy is more important than ethnicity or language.

ANSWER: A

Explanation:

The author acknowledges that she is connected to doña Teodora and other Mexicana interviewees through their shared ethnicity and language. She writes, "I could speak Spanish and am Mexicana". Yet the author wonders if she was "still an outsider". The fact that she raises this question suggests that sharing these common bonds might not be enough to make her an insider.

QUESTION NO: 7

DIRECTIONS: In the passage below, certain phrases are underlined and numbered . The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Planet Earth's Windiest Observatory

[§1] Step outside into blowing snow, freezing fog, 45 mph winds with hurricane-force gusts, and a -50° Fahrenheit windchill. Welcome to a typical January day at the

Mount Washington Observatory. [A] Weather conditions at this facility, which sits atop its <1> namesake's 6,288-foot peak in New Hampshire, has earned <2> the location the nickname "Home of the World's Worst Weather."

[§2] [B] Though somewhat diminutive compared to other mountains, (Colorado's Pikes Peak, <3> for example, is more than twice its height), Mount Washington is the tallest peak in the Presidential Range. <4> The peak stands at the confluence of three major storm tracks, and its steep slopes force <5> rising winds to accelerate. In fact, scientists in 1934 recorded a surface wind speed (of 231 mph): <6> one of the fastest ever recorded.

[§3] In one study, researchers used a laser beam and advanced optical techniques to measure winds. The observatory also keeps detailed weather records that scientists have used to track climate trends and weather patterns. The <7> observatory has also advanced scientists' understanding of clouds, of ice physics, <8> and the atmosphere.

[§4] To conduct all this research, staff are on-site year-round. Observers, who work <9> several twelve-hour shifts over the course of a week. To change personnel in winter, though, <10> crews ascend the mountain in a vehicle, gripping <11> the snow using revolving tracks similar to those on a military tank. Observers go outside every hour to gather data, which they send to the

National Weather Service. [C]

[§5] Though isolated, the Mount Washington Observatory offers weather enthusiasts many ways to get involved. The observatory takes volunteers and accepts interns, who assist with research. The <12> bold can take part in educational trips to the summit in winter. [D] For those who are planning to make a trip to Mount Washington, <13> the observatory has a website with live video feeds of the summit.

<6>:

- A. NO CHANGE
- B. speed of 231 mph –
- C. speed of 231 mph;
- D. speed, of 231 mph,

ANSWER: B

QUESTION NO: 8

DIRECTIONS: In the passage below, certain phrases are underlined and numbered . The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Industrial Revolution

[§1] The Industrial Revolution was essentially a rapid change in the method of production of material goods. <1> Products once made by hand were now able to be produced by machine or by chemical processes. The Industrial Revolution transformed Western society, creating an international capitalist economy, urbanization, labor reforms, a system to educate the public, <2> and labor specialization.

[§2] (1) In the first century of the Industrial Revolution, the country undergoing the most dramatic change was England. (2) After 1850, the Industrial Revolution spread rapidly <3> throughout Europe. (3) While the pace of change during the Industrial Revolution was indeed very rapid, the Industrial Revolution itself stretched over a rather long period of time – from the middle of the 18th century in the 1700s <4> through World War I (1914).

[§3] Several key discoveries and inventions enabled the Industrial Revolution to take place included <5> machines and tools like the cotton gin, the radio, the circular saw, the cylindrical press, and the steam engine. Cement, dynamite, and aluminum were invented, as were the bleaching and paper-making processes. At the same time, there was a tremendous growth in population and urbanization. In fact, the population growth in England was so dramatic that the country's population doubled between 1750–1820. This meant a great demand for food, clothing, and shelter, demands that became the driving force behind <6> the Industrial Revolution.

[§4] Mass production of goods was made possible in large part due to <7> the steam engine. The steam engine enabled factories to move from the countryside (where they were by bodies of water, their source of power) into cities and towns, which were becoming increasingly crowded. <8>

<3>:

- A. NO CHANGE
- B. was quickly spreading
- C. spread with great rapidity
- D. spread fast

ANSWER: A

Explanation:

This is the most correct and concise choice.

QUESTION NO: 9

Technology is rapidly expanding the scope of capabilities for both professional and personal use; such is the case with smart phones. Professionals now have devices available to them capable of digital media, internet access, phone communication, multi-person scheduling and office tools for documents and presentations. Businesspeople that are often mobile may maximize the use of these critical features on smart phones. Individuals who simply enjoy the luxury of multi-function devices often use these devices for frivolous pursuits such as downloading catchy ring tones, instant messaging about the latest gossip and looking up the world record for most cans crushed on one's head during the Superbowl. This fusion of capabilities and increased availability of such devices could be a sign of a growing blend in society between work and personal life, or individuals could simply be taking a luxurious approach to their connectivity in personal lives.

The term "frivolous" implies that the author:

- A. is fascinated by the endless capabilities on smart phones.
- B. hopes that technology ceases to expand its scope.
- C. believes that the average individual does not need a smart phone.
- D. has a smart phone.
- E. wants to see more developments added to smart phone technology.

ANSWER: C

Explanation:

Based on the contextual description of trivial uses and knowledge, "frivolous" means useless or unnecessary. So, if the author believes that individuals not involved in business are unnecessarily using smart phones, that the author would think that these people do not need smart phones (choice C). The author makes no mention of their specific hopes for how the technology will turn out in the future, so choice B and choice E can be eliminated. The authors matter-of-fact tone allows you to rule out "fascination" (choice A), and there is no evidence to support whether or not the author has a smart phone (choice D). Choice C is the best option.

QUESTION NO: 10

Determine whether the underlined portion of the sentence below is correct or whether it needs to be revised.

Yesterday I fell down the stairs and then tried to act like I did so on purpose.

- A. Yesterday I fell down the stairs and then
B and C are run-ons. D and E misuse their semicolons: the parts before them are not independent clauses.
- B. Yesterday I fell down the stairs, I
- C. I fell down the stairs yesterday, I
- D. After I fell down the stairs yesterday; I
- E. Falling down the stairs; I

ANSWER: A

Explanation:

The correct answer is

A. B and C are run-ons. D and E misuse their semicolons: the parts before them are not independent clauses.

QUESTION NO: 11

Monica sells pretzels in the cafeteria every school day for a week. She sells 14 pretzels on Monday, 12 pretzels on Tuesday, 16 pretzels on Wednesday, and 12 pretzels on Thursday. Then, she calculates the mean, median, and mode of her sales. If she sells 13 pretzels on Friday, then

- A. the mode will increase.
- B. the mean will stay the same.
- C. the median will stay the same.
- D. the median will decrease.
- E. the mean will increase.

ANSWER: C

Explanation:

For the first four days of the week, Monica sells 12 pretzels, 12 pretzels, 14 pretzels, and 16 pretzels. The median value is the average of the second and third values:

$$\frac{12 + 14}{2} = \frac{26}{2} = 13$$

If Monica sells 13 pretzels on Friday, the median will still be 13. She will have sold 12 pretzels, 12 pretzels, 13 pretzels, 14 pretzels, and 16 pretzels. The median stays the same.

QUESTION NO: 12

The bacterial strain SN2 (*Alteromonas naphthalenivorans*) is known to contaminate both tidal flats and seawater. The graphs in Figure 1 show the results of an experiment intended to measure the cell growth of SN2 in a tidal flat environment with added Naphthalene (TF-N) and a tidal flat environment with added Pyruvate (TF-P). The concentration of Naphthalene and Pyruvate were also measured within this experiment. Additionally, changes in the optical density of seawater was measured when both Naphthalene and Pyruvate were added. The goal of this experiment was to better understand the Eco physiological behavior of SN2 in contaminated environments. The graphs in Figure 2 depict levels of correlation in level of gene expression between conditions.

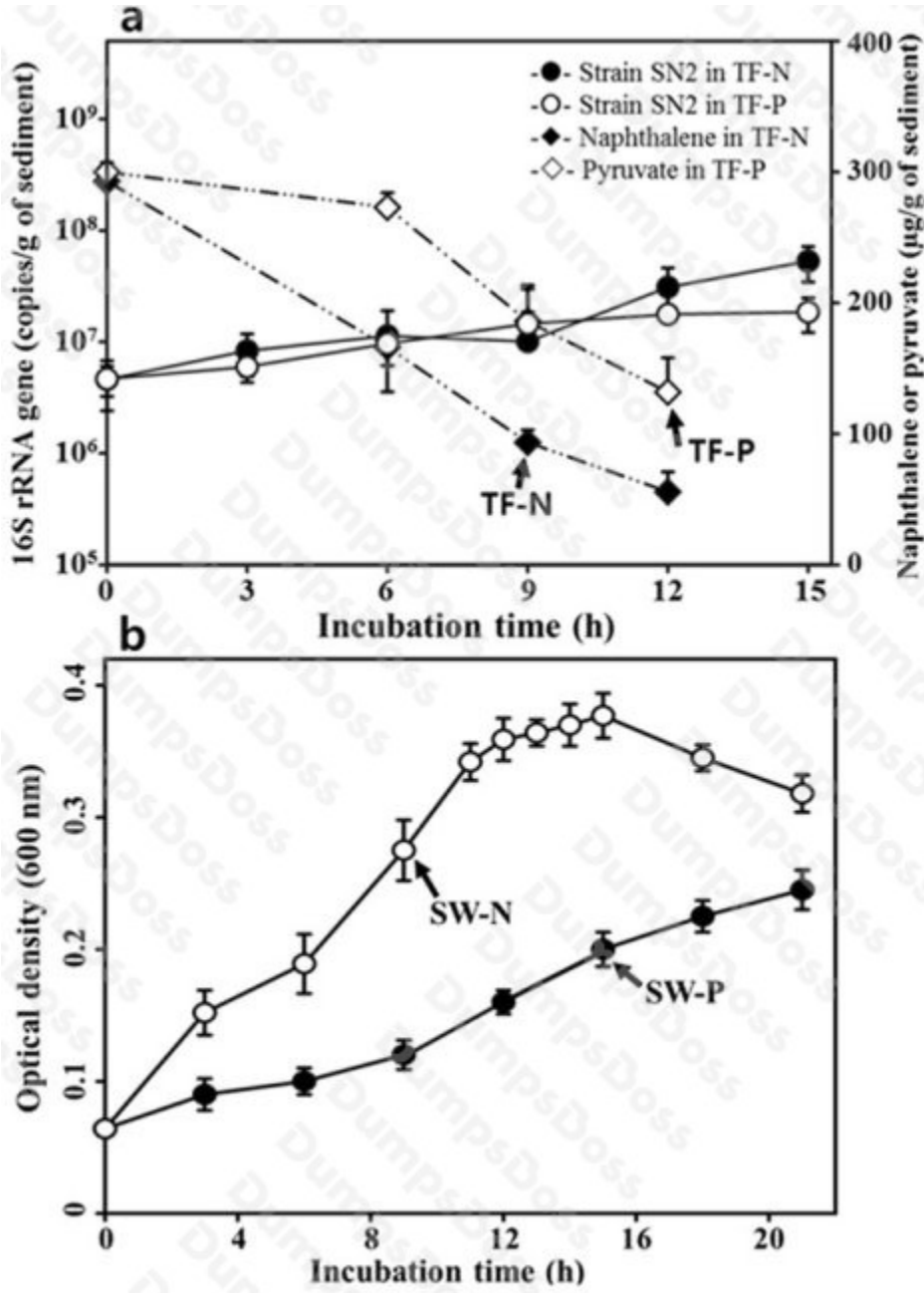


Figure 1

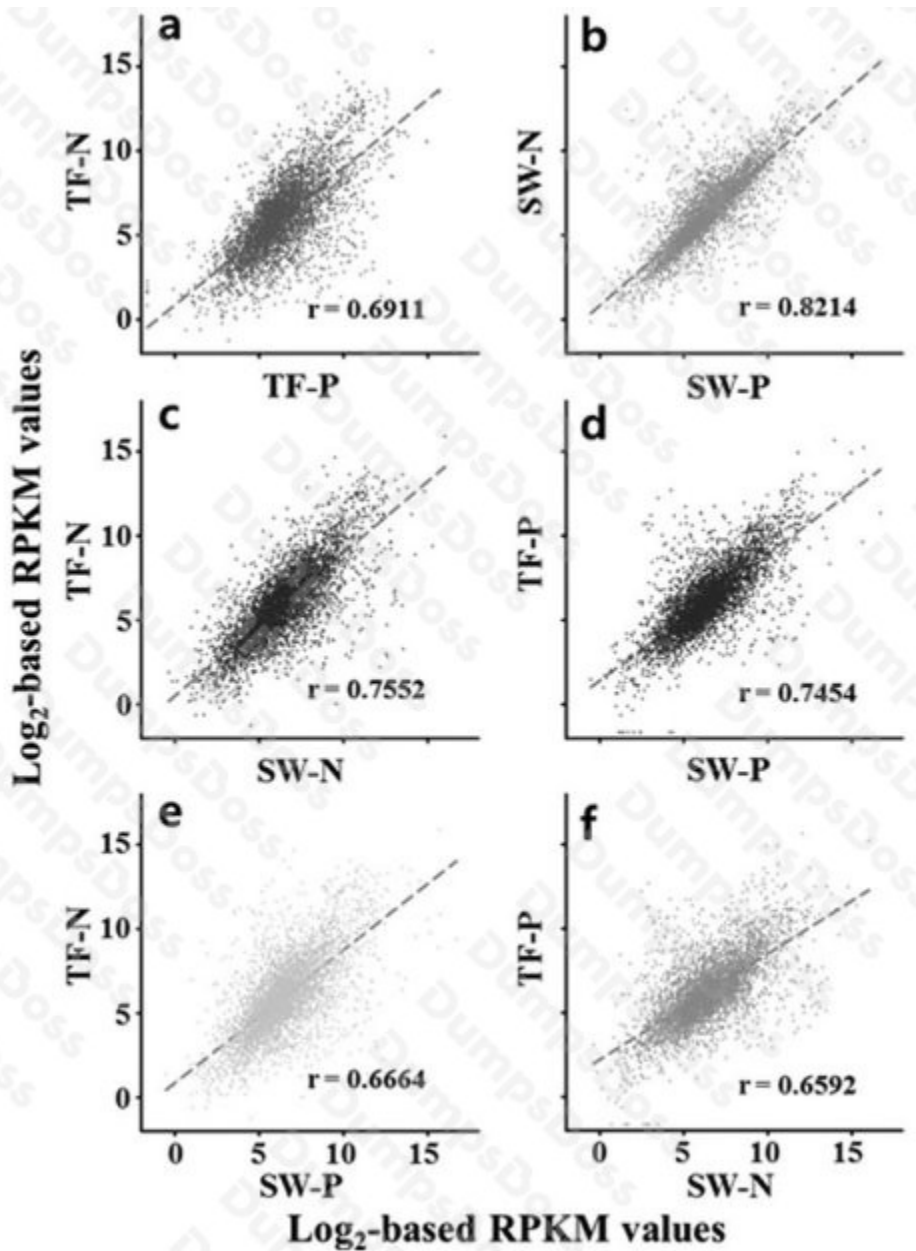


Figure 2

Figures adapted from Genome-wide transcriptional responses of *Alteromonas naphthalenivorans* SN2 to contaminated seawater and marine tidal flat sediment by Hyun mi Jin et al.

In Figure 1, what is the relationship between Pyruvate concentration and Naphthalene concentration?

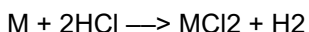
- A. As Pyruvate decreases, Naphthalene increases.
- B. As one decreases, the other does as well.
- C. As Pyruvate increases, Naphthalene decreases.
- D. There is no clear relationship between concentrations of Pyruvate and Naphthalene in Figure 1.

ANSWER: B**Explanation:**

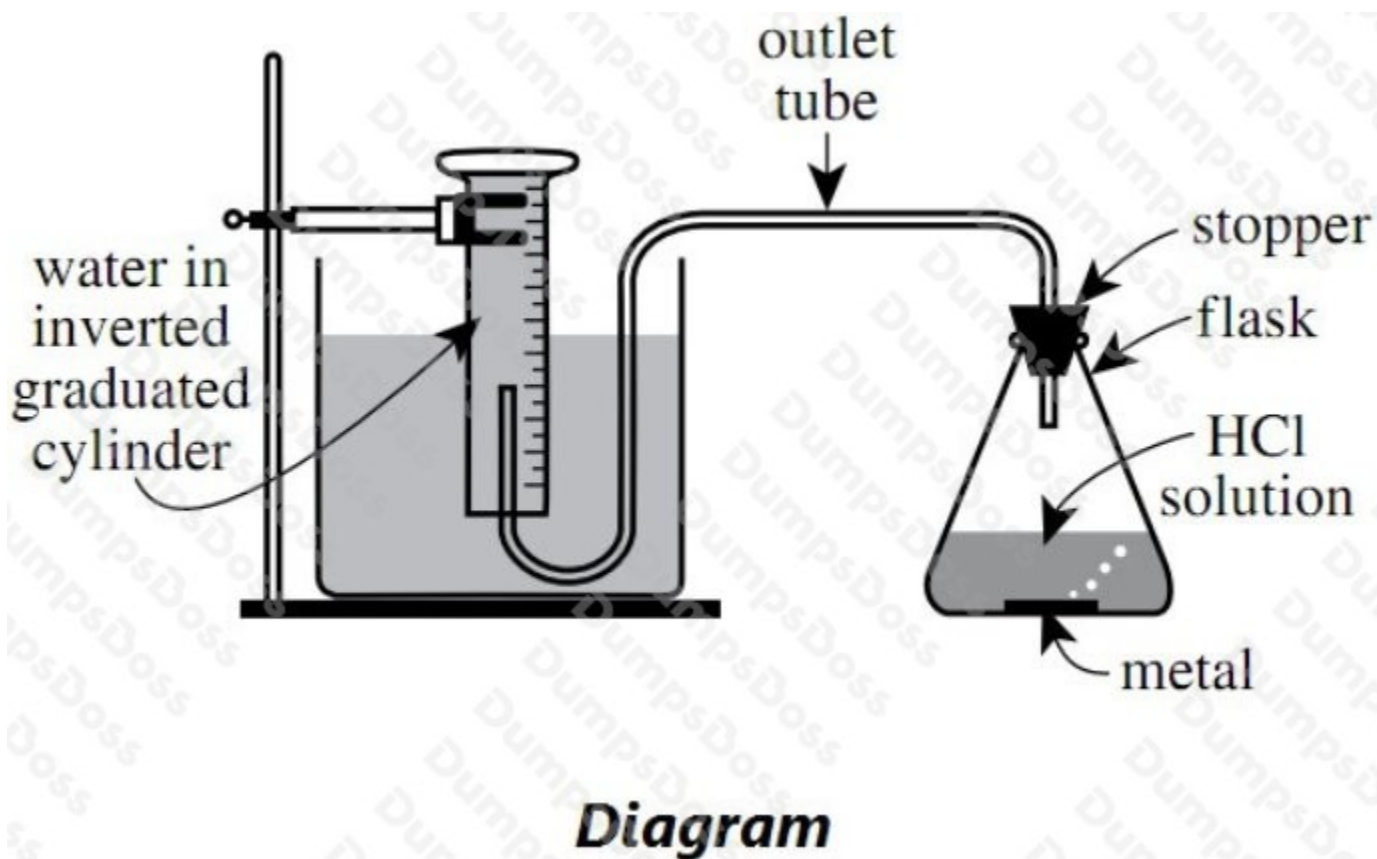
As one decreases, the other does as well. Consider only the top graph in Figure 1. The trend in the strain SN2 in both conditions should be ignored given the question inquires about concentrations of Pyruvate and Naphthalene specifically. The dashed lines indicate change in their concentrations.

QUESTION NO: 13

When a solid metal (M) such as iron (Fe), nickel (Ni), or zinc (Zn) is placed in an aqueous hydrochloric acid (HCl) solution, a reaction that produces H₂ gas occurs:



Two experiments were conducted to study the production of H₂ in this reaction. The apparatus shown in the diagram below was used to collect the H₂ gas produced in each trial.



As H₂ was produced in the stoppered flask, it exited the flask through the outlet tube and displaced the water that had been trapped in the inverted graduated cylinder. (This displacement occurred because the H₂ did not dissolve in the water.) The volume of water displaced equaled the volume of gas (H₂ and water vapor) collected.

In each trial of the experiments, Steps 1-3 were performed:

1. The apparatus was assembled, and 25 mL of a 4 moles/L HCl solution was poured into the empty flask.

2. A selected mass of Fe, Ni, or Zn was added to the flask, and the stopper was quickly reinserted into the flask.
3. When H₂ production ceased, the volume of water that was displaced from the graduated cylinder was recorded.

The apparatus and its contents were kept at a selected temperature throughout Steps 2 and 3. The atmospheric pressure was 758 mm Hg throughout all 3 steps. Experiment 1

In each trial, a selected mass of Fe, Ni, or Zn was tested at 30°C (see Figure 1).

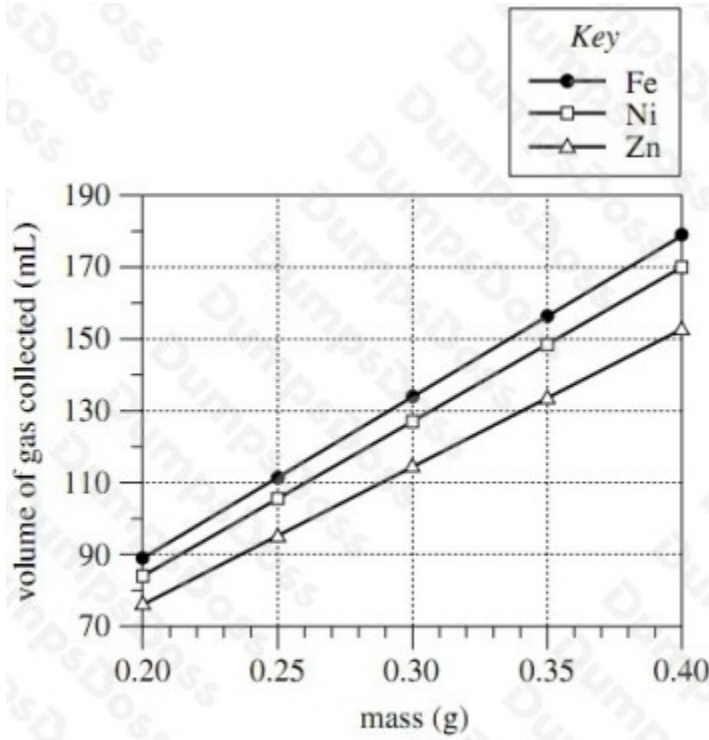
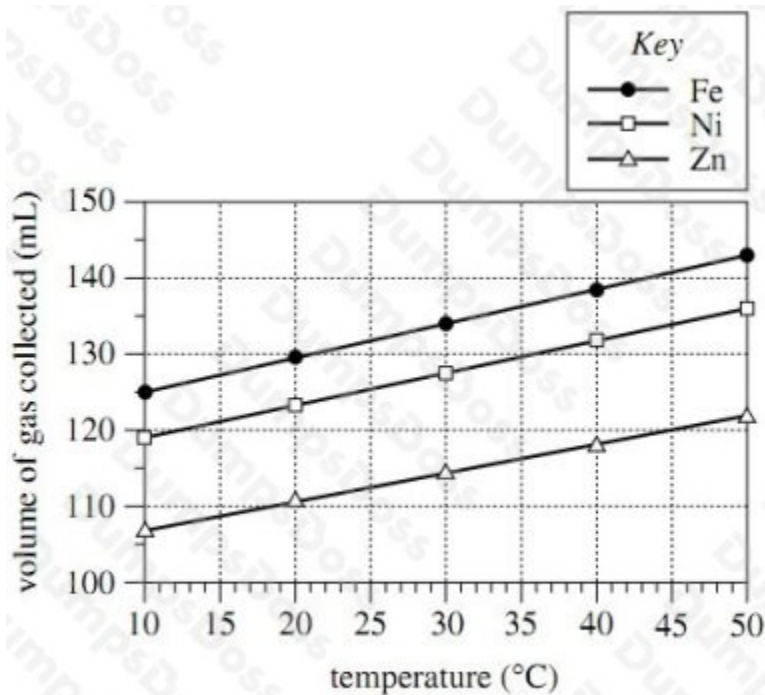


Figure 1

Experiment 2

In each trial, 0.30 g of Fe, Ni, or Zn was tested at a selected temperature (see Figure 2).

**Figure 2**

Consider the balanced chemical equation in the passage. Based on this equation, if 10 moles of HCl are consumed, how many moles of H₂ are produced?

- A. 5
- B. 10
- C. 15
- D. 20

ANSWER: A

QUESTION NO: 14

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Yoga

[§1] One of today's hottest fads is also one of the world's oldest practices: the ancient art of yoga. At first, I thought yoga was just another fitness fad, like step aerobics classes or Tae Bo. But after my first class, I understood why yoga has lasted for thousands of years, and why so many people are completely into <1> this practice.

[§2] Yoga is different from other fitness activities because it is not only physical. In the correct form, <2> yoga is a practice of unification: an emotional, spiritual, and physical exercise.

[§3] Though it may seem easy to those who <3> have never practiced, yoga poses require great concentration, and they are surprisingly effective in stretching and strengthening muscles. A simple sitting pose such as staff pose, for example, requires you to tighten and lengthen stomach, back, and arm muscles as you stretch you're <4> legs out in front of you and place your hands by your side. More difficult poses, such as brave warrior, require you to balance on one leg and hold a pose that strengthens leg, back, and stomach muscles.

[§4] While yoga tones and strengthens the body, it also tones and strengthens the mind. Many poses can be only held <5> if you are completely focused on the task, and full benefit of the poses comes only through proper breathing. Concentrated, deep breathing during yoga helps you extend more fully into the poses, thereby gaining greater benefit from the stretch. And the steady circulation of breath through your body both calms and energizes.

[§5] I am still relatively new to yoga. I have only been practicing for one year. I am addicted to yoga <6> unlike any other physical activity because it is also a spiritual practice. Through yoga, I am able to release tensions that lodge in various parts of my body: the tight shoulders, the cramped legs, the belly that is in knots. <7> The physical release is also a spiritual release: I feel calm after doing yoga, reconnected to my body, reconnected to myself, more at peace with the world. After a series of asanas (poses), I feel the universal life force within.

If the writer were to combine two paragraphs, which two paragraphs would it be most logical to connect?

- A. paragraphs 1 and 2
- B. paragraphs 2 and 3
- C. paragraphs 3 and 4
- D. paragraphs 4 and 5

ANSWER: A

Explanation:

The second paragraph continues to explain why yoga is different and expresses the main idea of the essay.

QUESTION NO: 15

DIRECTIONS: In the passage below, certain phrases are underlined and numbered . The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

The Personality of Superman

[§1] In the original Jerry Siegel and Joel Shuster "Superman" stories, Superman's personality is rough and aggressive. He was seen stepping in to stop wife beaters, profiteers, a lynch mob and gangsters, <1> with rather rough edges and a looser moral code than we may be used to today. In later adventures he became, softer, <2> and had more of a sense of idealism and moral code of conduct. Although not as cold-blooded <3> as the early Batman, the Superman featured in the comics of the 1930s is unconcerned about the harm his strength may cause, tossing villainous characters in such a manner that fatalities <4> would presumably occur, although these were seldom shown explicitly on the page. This came to an end when Superman vowed never to take a life.

[§2] Superman is an extremely moral person, believing it is immoral to kill anyone under any circumstances, and will do whatever he can to avoid it. Clark's upbringing in the Midwest largely contributes to this, as his adoptive parents raised him to do the right thing. <5>

[§3] In Superman/Batman #3, Batman says, "It is a remarkable dichotomy. <6> In many ways, Clark is the most human of us all. Then... he shoots fire from the skies, and it is difficult not to think of him as a god. And how fortunate we all are that it does not occur to him."

[§4] Superman is also a bit of a loner, in that, <7> for much of his life, he doesn't reveal his true identity and powers to anyone, not even his closer friends. <8> Many times they come close to figuring it out on their own, but often he will arrange an elaborate deception to trick them into believing Clark Kent and Superman are entirely separate. He's known to collect mementos <9> of his adventures and his life in the Fortress of Solitude, and has even been known to have wax statues of all his friends their. <10>

<1>:

- A. NO CHANGE
- B. a lynch, mob and gangsters
- C. a lynch mob, and gangsters
- D. a, lynch mob and gangsters

ANSWER: C

Explanation:

C is correct. Commas are supposed to follow each item in a series of three or more.

QUESTION NO: 16

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The Spine

[§1] Good spine health is important for every person. The human spine support the weight of the head, protects the body's organs, and receives <1> the gravitational pull that helps with posture. Comprised of 33 bones, each called vertebra, the spine is divided into five regions: cervical, <2> thoracic, lumbar, sacral, and coccygeal. Vertebrae are named according to the region where they are located along the spine and in numerical order. Discs serve as cushions between each vertebra. Nerves run along the spine, carrying signals between the spine and the rest of the body.

[§2] There are many reasons why people experience problems with their spine. Some people like us are born <3> with defects such as spina bifida, which stunts infant <4> brain and spine development. Trauma to the spine can also create problems, in addition <5> when the damage is irreversible. Paralysis happened <6> when the spine is injured beyond repair, and may result in loss of function in the arms or legs. Another reason for damage is the body's natural deterioration. As a person ages, the spine wears out. The discs that separate each vertebra lose moisture, and nerves that run alongside the spine can become more narrow, which <7> decreases the spines <8> ability to absorb pressure, especially when walking, jogging, or jumping.

[§3] Prevention is the best way to maintain a healthy back. There are varieties of ways that people keep themselves pain free and functioning at optimum levels. Sleeping on your back with a pillow under the knees supports its <9> natural curve during the night. When sitting at a desk, keeping ears, shoulders, and hips in line while resting the back firmly against the chair helps with posture. Standing straight with relaxed shoulders, hips, and knees will eliminate undue pressure on the spine. Walking with your head held high, chin tucked, and toes pointed forward will prevent slouching. Plus, you will look fantastically confident. <10>

[§4] Diet and sunshine are also important for back health, well-balanced <11> foods build lean muscles that support the spine. Lean proteins, fresh fruits and vegetables, and plenty <12> of water to keep the body hydrated are best choices for a daily regimen. While Vitamin D is found in many foods such as salmon and green leaf lettuce. The <13> sunshine is a body's best source. At least ten minutes of day <14> sunlight will strengthen bones and provide energy to the body's systems, encouraging the body to stand straighter. <15>

<2>:

- A. NO CHANGE
- B. regions; cervical,
- C. regions — cervical
- D. regions, cervical,

ANSWER: A

Explanation:

A is the correct answer because of colons. Colons are placed at the end of an independent clause. They are used to signal a list of items if there are no additional introductory phrases.

QUESTION NO: 17

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The Real McCoy

[§1] "It's the real McCoy." You might have heard this expression before, but who – or what – is a McCoy, real or otherwise? The saying has been used for generations to declare its' <1> the genuine article, the original and best. [A] While its origin is disputed, many people believe the expression was inspired by the inventions of a Canadian American engineer named, <2> Elijah McCoy. McCoy, a railroad worker who, as a teenager, had formally studied mechanical engineering, revolutionized railroad and factory operations, affecting both incredibly <3> with his dozens of patented products.

[§2] While working for the Michigan Central Railroad in the 1870s, then <4> McCoy was assigned to work on the wheel bearings and axles of trains. <5> Trains needed to come to a halt after only a few miles of travel so that the moving parts could be oiled by hand – a tedious, time-consuming process. McCoy invented a device that released oil while a train was in motion, substantially reducing the number <6> of maintenance stops had the effect of making <7> travel more efficient. [B] This automatic lubricating device became the first of his fifty-seven patents.

[§3] McCoy applied the principles of this invention to other engineering challenges. Factories in the late 1800s, for example, <8> increasingly relied on steam engines to power factory machines. As with trains, therefore <9> many of the machines' parts had to be oiled manually. McCoy, recognizing <10> the similarities between train wheels and factory machines,

designed automated oilers for steam engines. These innovations allowed factories to give machines a certain timelessness, <11> increasing factory productivity and, as a result, profits. <12>

[§4] McCoy's inventions were an instant success. [C] Not surprisingly, other inventors inundated the market with similar – and usually inferior – devices. [D] Supposedly, factory owners who wanted a product proven to do it <13> would ask if their purchase was “the real McCoy.” McCoy's inventions would continue to benefit industries in the United States well into the twentieth century, as his name became synonymous with quality and authenticity. <14>

<13>:

- A. NO CHANGE
- B. lend itself to superiority
- C. give off the best result
- D. work well

ANSWER: D

QUESTION NO: 18

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best source. At least ten minutes of day <14> sunlight will strengthen bones and provide energy to the body's systems, encouraging the body to stand straighter. <15> <11>:

- A. NO CHANGE
- B. health; well-balanced
- C. health: well-balanced
- D. health well-balanced

ANSWER: B

Explanation:

B is the correct answer because of semicolons. Semicolons separate two independent clauses; A and C are incorrect because the answers use inaccurate punctuation marks. D is incorrect because the independent clauses are missing a punctuation mark.

QUESTION NO: 19

DIRECTIONS: In the passage below, certain phrases are underlined and numbered . The question will present alternatives for the underlined part. In most cases, you are to choose the one that best expresses the idea, makes the statement appropriate for standard written English, or is worded most consistently with the style and tone of the passage as a whole. If you think the original version is the best, choose "NO CHANGE".

Lightning in the Sand

[§1] As my friend Anna and I walked the sand dunes of southeastern New Mexico, she told me that she hoped we'd find a fulgurite, one as translucent white as the southeastern New Mexico sands around us. <1> A fulgurite – whose name stems from the Latin word fulgur, which means "thunderbolt" – is a hollow silica glass tube formed when lightning strikes sand. A fulgurite is created in one explosive second by fusion and pressure as sand heated by a lightning blast melts, <2> and becomes glass. Commonly called "petrified lightning," a fulgurite places <3> the shape of a miniature lightning bolt into the earth, often branching deep into the ground.

[§2] Anna told me that I had possibly seen a small fragment of a fulgurite before, without realizing I had, on a beach. She explained though that even experts <4> are rarely able to locate a fully intact fulgurite. The thin, brittle glass tubes break easily. <5> Occasionally, after strong, sustained winds have shifted desert sands, while <6> an unbroken, previously buried fulgurite will be revealed, showing as a tube protruding from the ground. <7> I scanned the area, hopeful that I'd see a tube newly uncovered. <8> Anna made clear that we'd be lucky to come upon a small piece of fulgurite, just a few inches long.

[§3] Anna had shown me fulgurites she had found on other trips. Their colors ranged from black to brown to green, corresponding to the color of the sand in which she had discovered them. I wasn't surprised that I'd never recognized fulgurites on any beach: no one had ever told me what to look for <9> Their interiors, though, are smooth, clear glass stained <10> with tiny bubbles trapped formed by air and moisture <11> during the rapid cooling of the melted sand after the lightning strike.

[§4] We continued exploring the dunes. Anna laughed and said we needed only to stop at the local gift shop to unearth <12> our treasure. <13> But given our <14> luck finding fulgurites in deserts and on beaches, <15> she wanted to keep searching to find our own piece of bright, white lightning in the sand.

The best placement for the underlined portion <11> would be:

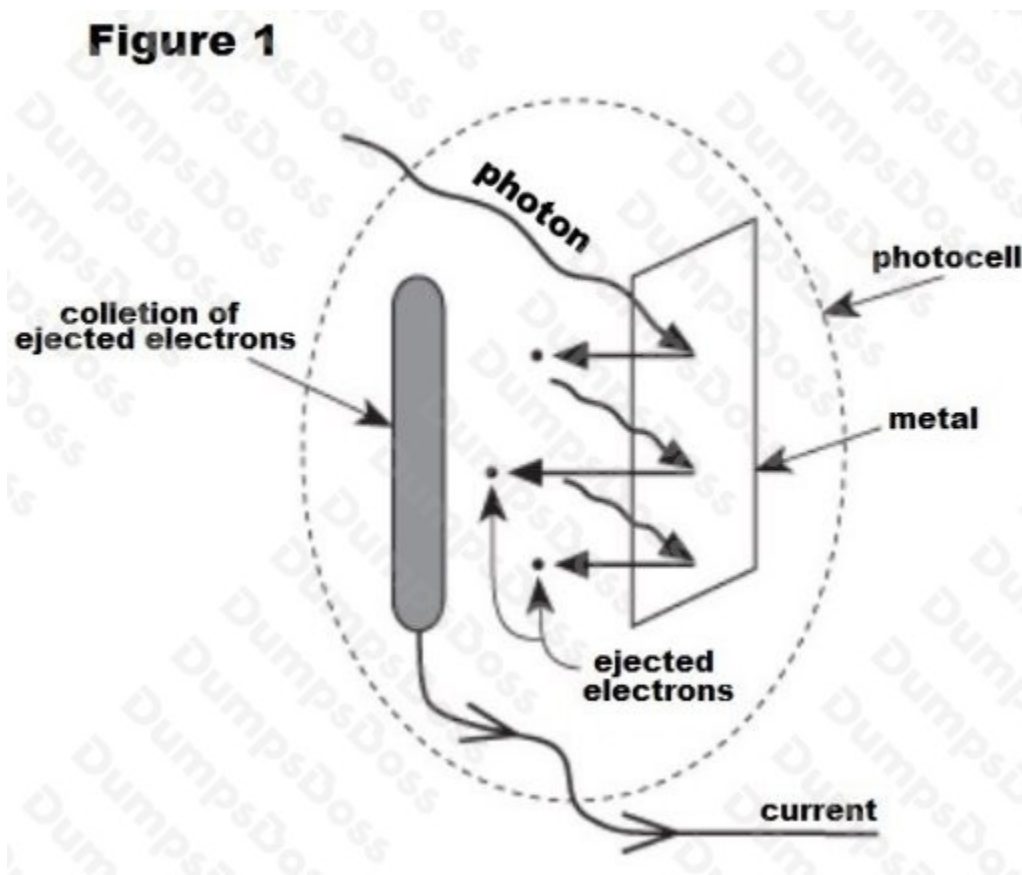
- A. where it is now.

- B. after the word bubbles.
- C. after the word during.
- D. after the word cooling.

ANSWER: B

QUESTION NO: 20

A photocell is a device for generating an electrical current from light (see Figure 1).



Each photocell contains a metal. A photon of light that strikes the metal can eject an electron from the metal if the photon's energy exceeds the metal's work function. The maximum kinetic energy the ejected electron can have is the photon's energy minus the metal's work function. The amount of electrical current varies with light's relative intensity (a measure of the number of photons with a given energy striking the metal each second).

Table 01 shows the results of 9 trials in which a photocell was exposed to light.

Table 1

Table				
Trial	Energy per photon (eV)*	Relative intensity of light	Electrical current (mA)†	kinetic energy of electron if ejected from metal (eV)
1	2.0	low	0	0.0
2	2.0	medium	0	0.0
3	2.0	high	0	0.0
4	4.0	low	29	0.9
5	4.0	medium	43	0.9
6	4.0	high	60	0.9
7	6.0	low	27	2.9
8	6.0	medium	40	2.9
9	6.0	high	55	2.9
*eV = electron volts				
†mA = milliamps				

When 8.0 eV photons were shone on the photocell, electrons ejected from the metal in the photocell had a maximum kinetic energy of 4.9 eV.

Based on this information and Table 1, the relative intensity of the light shone on the photocell:

- A. was high.
- B. was low.
- C. was medium.
- D. cannot be determined.

ANSWER: D

Explanation:

According to the passage, the maximum kinetic energy an ejected electron can have is the photon's energy minus the metal's work function. As Trials 4-6 show, the maximum kinetic energy of an ejected electron is not influenced by the relative intensity of the light. Therefore, one cannot determine the intensity of the light based solely on the energy per photon and the maximum kinetic energy of an ejected electron.