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Student: _____

Class: _____

Date: _____

Read the passage - 'Excerpt from "Sir Timothy Berners-Lee: Biography"' - and answer the question below:

Excerpt from "Sir Timothy Berners-Lee: Biography"

Excerpt from "Sir Timothy Berners-Lee: Biography"

Timothy Berners-Lee was born in London, England. His mathematician parents, who had worked on the revolutionary Mark I computer, frequently discussed mathematics at home, and encouraged Timothy's scientific interests. From an early age, he was fascinated by both mathematics and electronics. As a schoolboy, he closely followed the emerging field of transistor technology and built electronic devices to control his model trains.

②

As a physics student at Oxford, Berners-Lee continued to tinker with electronic devices. In his spare time, he painstakingly soldered together his own computer terminal from a discarded calculator, broken television sets and a car battery. His unauthorized use of the nuclear physics laboratory's mainframe led to his being barred from the system. He had already begun devising his own computer languages, and after graduating with a degree in physics in 1976, he found his services as a computer programmer in immediate demand.

③

After graduation, Berners-Lee worked for two years with Plessey Telecommunications, one of Britain's major telecommunications firms. Berners-Lee's work there included the refinement of bar code technology. The following two years were spent with D.G. Nash Ltd., where he designed typesetting software and a multi-tasking operating system. After working for Nash, Berners-Lee was ready to try his wings as a freelance consultant software engineer, a period that culminated in a six-month stint at CERN, the European particle physics laboratory in Geneva, Switzerland.

④

When his assignment at CERN ended in 1981, Berners-Lee took a job at Image Computer Systems, developing graphics and communications software and a generic macro language. Although CERN had abandoned Berners-Lee's Enquire program, the young software engineer had made a lasting impression, and in 1984 CERN offered him a fellowship to work on distributed real-time systems for data acquisition and system control.

⑤

On returning to Geneva, Berners-Lee found a more challenging situation than before. The lab had even greater need for a flexible system of sharing research documents. At the time, the Internet, a rudimentary[1] network developed by the Pentagon, was gradually being adopted by researchers

around the world for exchanging plain text messages through mail groups. By 1989, CERN was already home to the largest Internet node in Europe, but finding information over the Internet was no easy task. Requests for information had to be sent from one user to another, and replied to individually. Distributing messages to a group, and collecting their feedback, created long documents, with relevant information buried under a blizzard of queries,[2] addresses and replies.

Berners-Lee imagined combining the Internet with linked hypertext documents, to provide access to an open-ended body of interactive information. In March 1989, Berners-Lee proposed a global hypertext[3] project, one that would permit researchers all over the world to share work-in-progress, transmitted instantaneously, without the delays associated with traditional scholarly publication or cumbersome mail groups. With collaborators at CERN, Berners-Lee wrote the "hypertext transfer protocol" (HTTP) for transmitting documents over the Internet. HTTP standardizes communication between web servers, where documents are stored, and the client programs, or browsers, used to view them. He also originated a system of identifying documents, originally known as the universal resource indicator, now known as the universal resource locator (URL). He devised the hypertext markup language (HTML) for formatting web documents, and programmed the first web server to store and transmit them. To make the proposed network visible to the end user, he created the first web browser, an application for both viewing and editing the documents online, which he named WorldWideWeb. He made the entire system available within CERN in October 1990.

[1]**rudimentary:** basic
[2]**queries:** questions
[3]**hypertext:** lists of other pages on the Web/internet where you can find more information.

Courtesy of the Academy of Achievement. http://www.achievement.org/autodoc/page/ber1bio-1 (12/14/2012).

1. How does the information about Timothy Berners-Lee's time at Oxford relate to his later work at CERN?

   A. It demonstrates his ability to creatively solve problems.

   B. It shows where he got the idea for creating hypertext.

   C. It sets up his later desire to do freelance work.

   D. It shows him to be a rule-breaker.

Read the passage - 'Excerpt from "Sir Timothy Berners-Lee: Biography"' - and answer the question below:

2. Based on the last paragraph, what describes "hypertext transfer protocol" (HTTP)?

   A. a network to link computers

   B. a system to view documents

   C. a way to create and share information

   D. a language to standardize information

Read the passage - 'Excerpt from "Sir Timothy Berners-Lee: Biography"' - and answer the question below:

3. What impression does the phrase "buried under a blizzard" create in paragraph 5?

   A. The researchers got a lot of helpful information.

   B. The message system made it hard to find information.

   C. The network was slowed like a highway during a storm.

   D. The documents gave the researchers too many replies.

Read the passage - 'Closing in on Saturn's Rings' - and answer the question below:

Closing in on Saturn's Rings

Closing in on Saturn's Rings

Hundreds of years before telescopes were invented, ancient sky watchers were gazing into the night sky to view Saturn, which shines brighter than most of the stars in the sky. But it was not until Galileo pointed his telescope at Saturn in 1610 that those famous "hula-hoop" rings were seen.

②

Although Galileo saw the rings, he did not know what they were. He thought the rings were two moons, one on each side of the planet. These "moons" seemed to play "hide-and-seek" with him, appearing and disappearing over several years of observations.

③

Dutch astronomer Christiaan Huygens's solved the mystery in the 1650s. In his book, Huygens described Saturn as being "surrounded by a thin flat ring." The discovery of Saturn's mysterious ring system led to a rush of observations of the planet during Huygens's time.

Saturn's Unique Rings

④

Today, astronomers are still studying Saturn, the sixth planet from the sun,

in an attempt to understand the planet and its ring system. After hundreds of years of Saturn watching, there is still much information that astronomers do not know about the planet and its signature rings.

Other planets have rings, but they are so faint that we cannot easily see them. Saturn's rings stand out because they are very bright and contain lots of material. Their brightness is due to their makeup*. The rings are made of icy material that reflects sunlight, just as ice does on Earth.

A Popular Destination Spot

Saturn and its ring system are so special that three spacecraft have visited the planet over the past thirty years to take some close-up views. None of the spacecraft, however, has landed on the ringed planet. Saturn, like Jupiter, is a gas giant and does not have a solid surface.

⑦

The first spacecraft to fly by Saturn was Pioneer 11 in the late 1970s. In the early 1980s, Voyager 1 and 2 flew by the ringed planet. Even the Earth-orbiting Hubble Space Telescope has been "eyeing" the planet, snapping several spectacular pictures since its launch in 1990.

Finding the Keys to the Rings

⑧

Observations from Hubble, the three spacecraft, and many ground-based telescopes have yielded valuable information about Saturn and its famous rings. The planet's ring system is made up of about 10,000 rings, called ringlets. The ring system is about 175,000 miles (280,000 km) across, yet only about half a mile (1 km) thick. These measurements may seem very large, but remember, the rings orbit a huge planet. So, compared with Saturn's size, the rings appear paper-thin.

⑨

The rings are not made up of solid sheets of material. Astronomers believe the rings are made of pieces of dusty water ice, which range in size from dust grains to boulders. These particles gently collide with each other as they go around Saturn. The rings orbit Saturn just as our moon goes around the Earth. If our moon broke apart, the pieces would form a ring around our planet. The collisions between the ring particles are what make the ring system so thin.

And Now—Ringside Seats

⑩

Although astronomers have spent about 400 years looking at Saturn, they do not know everything about its ring system. Now a new spacecraft designed to study Saturn, its moons, and its complex ring system has settled into orbit around the planet. Named Cassini, for the Italian astronomer who studied the planet in the late 1600s, the spacecraft spent nearly seven years traveling to Saturn.

On July 1, 2004, the seasoned traveler finally arrived. The spacecraft flew through the faint, wispy outer rings and settled into orbit around the second largest planet in the solar system. It will spend four years studying the planet. Scientists hope Cassini will help explain how and when Saturn's rings were formed, why there are gaps between the rings, and even why Saturn has such a spectacular ring system.

*__makeup:__ various combining parts

From the National Aeronautics and Space Administration (NASA)

4. How does the use of the terms “paper-thin” and “dust grains to boulders” impact the reader?

   A. They make the selection more interesting.

   B. They provide descriptive background information.

   C. They compare the rings to common things on earth.

   D. They help the reader visualize the dimensions of the rings.

Read the passage - 'Closing in on Saturn's Rings' - and answer the question below:

5. Which is the impact of the phrase “sky watchers” as used in paragraph 1?

   A. It emphasizes the skill of early astronomers.

   B. It provides an explanation of what astronomers do.

   C. It creates contrast between ancient and modern astronomers.

   D. It shows the importance of the telescope in observing the sky.

Read the passage - 'Power' - and answer the question below:

Power

Power

It seems like every time you watch the news or read a newspaper these days, people are talking about generating electricity with wind power. There are good reasons for that, of course. Burning coal to produce electricity creates a lot of pollution, oil is getting more and more expensive every day, and hydroelectric power[1] requires building a dam across a river, and people don’t like doing that.

②

Everyone talks like wind power is a new idea, but when you think about it, mankind has been using the wind to create power ever since the first guy put a sail on a boat. Sails don’t make electricity, but they turn the wind into motion, which is pretty much the same thing. Windmills aren’t exactly a new idea either. The Persians built windmills 1,300 years ago in the area we call Afghanistan today. Their windmills were mostly used to turn a heavy stone wheel that crushed grain and turned it into flour. Doing all that by hand takes a lot of work, so having a windmill do the work instead was a pretty big deal in the ancient world.

In parts of the world where there isn't a lot of open water like rivers or creeks, people have to dig wells to get access to water under the ground. In some places, the water is a long way down there, so if you have to pump it up to the surface by hand, a little thing like filling a bucket can take an hour. Figuring out how to make a windmill turn the pump instead was a great invention, because the windmill can keep the pump going, and keep the water flowing, all the time. All you have to do to fill the bucket is stick it under the water spout. In fact, historians think that a lot of the American Midwest probably wouldn't have been settled at all if the pioneers hadn't had windmills with them. Windmills made farming and living possible in areas that would simply have been too dry otherwise.

④

So people have been using the wind to do work for a long time. Believe it or not, they have also been using it to generate electricity for a long time. As far back as 1927 a company in Minnesota called Jacobs Wind was selling windmills with an electrical generator that could charge batteries. Most of them were sold to people who lived on farms or in rural areas where they couldn't get electrical service through power lines the way you and I do. They charged their batteries from the windmills, and then used the batteries to heat their homes, power their lights, pretty much everything. Jacobs Wind sold over 30,000 of those windmills.

Of course, the wind turbines[2] we use to generate electricity today are much, much bigger than anything they were using on farms back in the 1930s. In some of the larger wind turbines built in the western United States, the central tower is nearly 300 feet tall, and the blades can be as much as 130 feet long. If you've got a good site where the wind blows pretty hard, and blows all the time, it's natural to want to build a bunch of wind turbines there, and those sites are usually known as wind farms. A large wind farm might have as many as 100 giant wind turbines, generating enough electricity to power an entire city.

[1]**hydroelectric power**: power that comes from the force of falling or flowing water
[2]**turbine**: a device that converts wind power to electrical power

6. Based on context clues in the last paragraph, what does *site* mean?

   A. direction

   B. location

   C. scenery

Read the passage - 'Power' - and answer the question below:

7. Which context clue in paragraph 2 explains the meaning of *ancient*?

   A. "wind power is a new idea"

   B. "1,300 years ago"

   C. "takes a lot of work"

Read the passage - 'Industrial Vernacular' - and answer the question below:

Industrial Vernacular

Industrial Vernacular

by Robert S. McCarl III

In his book *Made in America*, John Kouwenhoven has described the importance of what he calls the American vernacular: the blending of skill and resources in North America with labor markets and expertise drawn from a variety of international sources. This vernacular, or blending, he argues, resulted in such important inventions as the cotton gin, the flat-hulled steamboat, the double-bit axe, and the repeating firearm. Watson machines —both those patented by the company and those used informally by workers in the plant—reveal changes in the way in which the vernacular has been expressed. During the 1930s or 1940s, a Watson machinist, Al Gardner, and an engineer, Gordon Van Vleet, collaborated to design and build a traverse-screw machine that automatically cuts the long circular traverse[1] screw still used in many Watson machines to guide a wire-holding jig. Though never patented, the traverse-screw machine is in continuous use today even though the state-of-the-art cybernetic[2] machinery it supports hardly resembles the plug-and-gear Watson Machine bunchers and stranders[3] of an earlier era.

This vernacular process—hands-on craftsmanship and innovation used to solve design and engineering problems in machine-tool construction—is perhaps one of the most important aspects of the trade to document in more detail and present to outside audiences. Certainly, the number of workers, the reliance upon more sophisticated electronics, and the necessity for companies such as Watson Machine to build some machines (such as the Kinrei buncher) on an international basis have changed the machine trade. Nevertheless, industrial craftsmanship and control by individual machinists still exists in the machine-tool industry at Watson Machine, and it deserves particular attention in future documentation efforts.

[1]**traverse**: involves rotation, twisting, or zig-zagging
[2]**cybernetic**: a type of communication and control process
[3]**bunchers and stranders**: machines involving the use of rotating and twisting

Library of Congress.
http://memory.loc.gov/ammem/collections/paterson/essay3b.html

(03/26/2013).

Library of Congress.
http://memory.loc.gov/ammem/collections/paterson/essay3b.html
(05/21/2012).

8. Which words help the reader understand the meaning of *vernacular*?

   A. skill, resources, inventions

   B. trade, detail, documentation

   C. machinist, engineer, patented

   D. workers, electronics, international

Read the passage - 'Industrial Vernacular' - and answer the question below:

9. In the first paragraph, how does the reference to "the cotton gin," "the flat-hulled steamboat," "the double-bit axe," "and the repeating firearm" help convey meaning?

   A. by showing the influence of farming techniques on new transportation methods

   B. by explaining the founding of the Watson Machine Company in the 1930s and 1940s

   C. by describing the effect of innovative farm equipment on other developing industries

   D. by conveying the significance of blending resources in developing innovative machinery

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Read the passage - 'Industrial Vernacular' - and answer the question below:

10. How does the phrase "state-of-the-art cybernetic machinery" impact the meaning of the selection?

    A. It criticizes companies for ignoring the use of hands-on craftsmanship.

    B. It uses it as a way of contrasting hands-on craftsmanship to modern machinery.

    C. It explains the importance of replacing hands-on craftsmanship with modern technology.

    D. It praises the newer designs of machines over the older ones designed with hands-on craftsmanship.