

Construct Meaning: Main Idea 2

Read the following passages. Then choose the best answer to each question.

Passage 1: Computers

I

Prior to World War II, John V. Atansoff, a professor of physics, and Clifford E. Berry, a graduate student at Iowa State College, began building an electronic computer. In 1939, Atansoff finished the construction of a small prototype computer he built to test his ideas. Atansoff then used this model to begin work on his Atansoff-Berry Computer (ABC), but in 1942 was forced to stop due to the war. The unfinished computer used 300 vacuum tubes to perform calculations, capacitors to store binary data, and punched cards to communicate input/output. One important aspect of this computer was that unlike the old mechanical adding machines which used direct counting, the ABC utilized logical operations to perform addition and subtraction. Prior to the ABC, the spokes on the mechanical adding machines "counted" the solution to their calculation by turning the same number of times as the values of the addends. The ABC, however, used the logical operators.

II

During World War II, researchers made more advances to ease the burden of performing calculations. The Defense Department needed an easier way to compute its firing and ballistic tables. So, J. Presper Eckert and William Mauchley at the Moore School for Engineering of the University of Pennsylvania found a solution for the Defense Department's dilemma. In 1946, they developed the ENIAC, Electronic Numerical Integrator and Calculator. It filled a thirty by fifty-foot room and weighed thirty tons. The computer had 18,000 vacuum tubes which were used to perform calculations at a rate of 5,000 additions per second. This is much faster than any human could perform, but a great deal slower than the computers of today. Operators used plug boards and wires to program the desired operations and entered the numbers used in the calculations by turning a series of dials until they corresponded to the correct digits.

III

In the following few years, a number of other "first generation" computers were built. All of these early computers used vacuum tubes to perform their calculations. One development among these first computers was the use of an internally stored program. In 1945, John von Neumann wrote a paper describing how a binary program could be electronically stored in a computer. This program would enable the computer to alter the operations to be performed depending upon the results of previous steps. For example, the computer could be programmed so that whenever it calculated a number less than ten, it should add five. This concept greatly increased the flexibility of computers. In 1947, the EDVAC, Electronic Discrete Variable Automatic Computer, was built by Eckert and Mauchley at the University of Pennsylvania. The EDVAC utilized the idea of an electronically-stored program. (Adapted from, *A Journey through the History of Information Technology*, Kathleen Guinee, 1995)

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Now choose the best answer to each question.

1. Identify the Main Idea of Paragraph I:

- A. Atansoff and Berry were forced to suspend their work due to the outbreak of war.
- B. The new computer used many tubes to help with calculations.
- C. The spokes are what is used to perform calculations.
- D. The new computer was able to use logical operation for adding and subtracting; it did not rely on mechanical counting.

2. Identify the Main Idea of Paragraph II:

- A. ENIAC was developed to help the defense department perform necessary calculations.
- B. ENIAC performed 5000 operations per second.
- C. ENIAC weighed 30 tons.
- D. ENIAC was programmed with a series of plugs and wires.

3. Identify the Main Idea of Paragraph III:

- A. Many other computer developments followed ENIAC.
- B. A very important development in early computers was the electronically stored program
- C. The EDVAC was built by Eckert and Mauchley at the University of Pennsylvania in 1947.
- D. All early computers used vacuum tubes.

Passage 2: Construction of the Pyramids

I

The shape of the pyramids is the logical one for producing buildings of great height when the building material available is stone. The design mimics the natural geometry of a mountain, an incline of about 52 degrees. The Egyptian architects realized the ever widening base would easily support the increasing number of stone blocks above it, making the structure very stable. The shape demanded large blocks. An average 2 ½ ton limestone block used in the pyramid construction would have probably taken eight men nine or ten days to move from the quarry, float across the Nile, and drag to the top of the pyramid.

II

The most likely method of getting the blocks to the top of the structure was through massive construction ramps. Exactly how the ramps were laid out is unknown, but they may have been straight or in a spiral pattern around the pyramid. The ramps may have been topped with a surface of tafla, a clay. Tafla, when wet, becomes very slippery and may have allowed the Egyptian builders to use shorter, steeper ramps than might have otherwise been possible. By wetting the ground in front of the block a slick path would be created

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allowing the stone to be dragged by rope as it sat on sledges. It is also possible the stones could have been moved on rollers. By placing rounded logs under the stone, crude wheels would have made the load easier to pull. Pictures inscribed on ancient monument walls, though, suggest the blocks were dragged without the aid of rollers. Once a stone was at the top of the pyramid, it was probably moved into its final position with the use of levers. (Copyright Lee Krystek 1997. All Rights Reserved.)

Now choose the best answer to each question.

4. Identify the Main Idea of Paragraph I:

- A. The average block in the pyramids weighs 2 ½ tons.
- B. The design of a pyramid mimics that of a mountain
- C. The pyramids shape is logical for building structures of great height.
- D. The huge stone blocks were floated across the Nile River.

5. Identify the Main Idea of Paragraph II:

- A. Ramps and slippery clay were most likely used to move the heavy blocks into place.
- B. Rounded logs were most likely used to move the heavy blocks into place.
- C. Levers were used once a block was at the top of the pyramid.
- D. Egyptian builders were adept at building great structures.

Passage 3: EMS

I

J.D. "Deke" Farrington, MD, FACS is known as the father of modern EMS. Farrington, and others, questioned why the lessons learned by the military medical corps during World War II and the Korean War could not be brought into the civilian community to improve the standard of civilian care. During the 1950s, emergency medicine and EMS were not as advanced as what we enjoy today.

II

In San Francisco, New York, New Orleans, and other American cities, interns were assigned to ambulances to provide care for the victims of trauma and other conditions outside of the hospital. Most hospitals did not have a place to manage emergencies. Some hospitals had set up an unstaffed "emergency room" at the back of the hospital. The "ambulance driver" had to ring the doorbell beside the emergency room door so that the nurse could come down from the ward to unlock the door. The nurse then checked the patient and called a physician from home if she thought that the patient was really sick. (Did you ever wonder why modern emergency departments are in the rear of the hospital and not out front? Tradition.) All the physicians on staff had to take turns "covering the emergency room." A patient involved in a major wreck with multiple fractures, and perhaps a ruptured spleen or a head injury, might be seen by an ophthalmologist or a dermatologist. Many physicians knew that they were ill prepared to handle trauma or a major myocardial infarction, but there was no alternative. (Taken from *History of EMS* by Norman E. McSwain, Jr).

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Now choose the best answer to each question.

6. Identify the Main Idea of Paragraph I:

- A. J.D. "Deke" Farrington is the founder of modern emergency medical services.
- B. Modern emergency medical services come from lessons learned during the Korean War.
- C. Emergency services and EMS have changed greatly since the 1950s.
- D. Emergency services and EMS have remained the same since the 1950s.

7. Identify the Main Idea of Paragraph II:

- A. San Francisco and New Orleans had very poor emergency response.
- B. Emergency rooms are located to the rear of most hospitals due to tradition.
- C. In the 1950s, Physicians took turns staffing the emergency room even if they were not qualified to do so.
- D. Hospitals had a lack of what we would call high quality emergency care prior to modern EMS.

Passage 4: Welding

Welding is a process by which two or more pieces of metal are joined together through the application of heat, pressure, or a combination of both. Most welding processes may be grouped into two main categories: pressure welding, in which the weld is achieved by pressure; and heat welding, in which the weld is achieved by heat. Heat welding is the most common welding process used today. With the development of new techniques during the first half of the 20th century, welding replaced bolting and riveting in the construction of many types of structures, including bridges, buildings, and ships. It is also a basic process in the automotive and aircraft industries and in the manufacture of machinery. Along with soldering and brazing, it is essential in the production of virtually every manufactured product that involves metals. The welding process best suited to joining two pieces of metal depends on the physical properties of the metals, the specific use to which they are applied, and the production facilities available. Welding processes are generally classified according to the sources of heat and pressure used. (Taken from Encarta Encyclopedia)

Choose the best answer for question 8.

8. Identify the Main Idea of Passage 4:

- A. Welding is a method of soldering and brazing.
- B. Welding is used in heavy manufacturing.
- C. Welding is a process of joining metals.
- D. Welding is essential in the automotive and aircraft industries.

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Passage 5: Dental Assisting

Blood oozing from an open tooth socket after extraction can be controlled by the application of a folded sterile gauze sponge compress over the wound. The patient is requested to bite firmly, and the compress may remain in place for 20 to 30 minutes. It is replaced as necessary with a fresh compress until bleeding is controlled. If the wound cannot be controlled with the application of a compress, the operator/dentist may suture the wound closed. Another alternative is to cauterize the area with the electric cautery. If a severed blood vessel is the cause of the hemorrhage, the dentist may ligate the vessel. (As used here ligate means to tie closed.) If the injury to the tissue is more complex, the dentist may request that a physician be called to attend to the patient. (Taken from *Modern Dental Assisting*)

Now choose the best answer for question 9.

9. Identify the Main Idea of Passage 5:

- A. Bleeding can occur after a tooth extraction.
- B. Excessive bleeding after tooth extraction can be controlled in several different ways.
- C. Some bleeding after a tooth extraction is so severe that a physician may have to be called to treat the patient.
- D. Bleeding after tooth extraction is usually controlled through the use of a folded sterile gauze sponge.

Passage 6: Electronics Safety

TVs and computer or video monitors are among the more dangerous of consumer electronic equipment when it comes to servicing. (Microwave ovens are probably the most hazardous due to high voltage at high power.) There are two areas which have particularly nasty electrical dangers: the non-isolated line power supply and the CRT high voltage. Major parts of nearly all modern TVs and many computer monitors are directly connected to the AC line - there is no power transformer to provide the essential barrier for safety and to minimize the risk of equipment damage. In the majority of designs, the live parts of the TV or monitor are limited to the AC input and line filter, degauss circuit, bridge rectifier and main filter capacitor(s), low voltage (B+) regulator (if any), horizontal output transistor and primary side of the flyback (LOPT) transformer, and parts of the startup circuit and standby power supply. The flyback generates most of the other voltages used in the unit and provides an isolation barrier so that the signal circuits are not line connected and safer. (Taken from *Notes on the Troubleshooting and Repair of Television Sets* Version 3.09 Copyright © 1994-2004 Samuel M. Goldwasser , All Rights Reserved)

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Now choose the best answer for question 10.

10. Identify the Main Idea of Passage 6:

- A. Care must be taken when servicing Television, computer and video monitors because of potential electrical dangers.
- B. Microwave oven are the most dangerous household appliance to repair.
- C. Major parts of television are connected to the AC power line.
- D. The isolation barrier provides safety and security for anyone attempting to repair a television or the monitor.

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Answer Key

1. D
2. A
3. B
4. C
5. A
6. A
7. D
8. C
9. B
10. A