



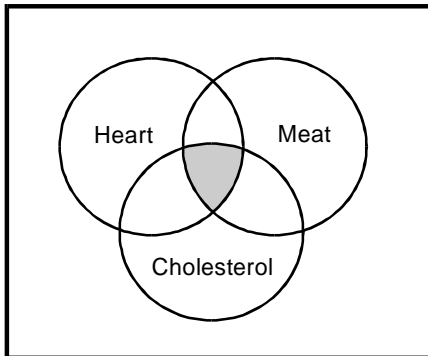
SECTION 4

TEST II SAMPLE QUESTIONS

This section of the Georgia Assessments for the Certification of Educators® (GACE™) Preparation Guide provides sample selected-response questions with an annotated answer key for you to review as part of your preparation for the test. The sample selected-response questions are designed to illustrate the nature of the test questions. Work through the questions carefully before referring to the annotated answer key, which follows the sample selected-response questions. The answer key provides the correct response to each question, describes why each correct response is the best answer, and lists the objective within the test framework to which each question is linked.

QUESTIONS

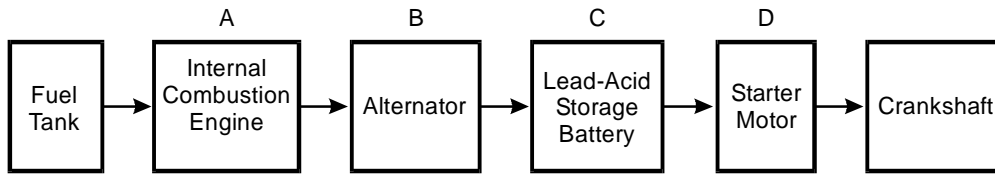
1. Use the Venn diagram below to answer the question that follows.



The diagram above represents an Internet search using three keywords. Which of the following searches is represented by the shaded area in the diagram?

- A. heart OR cholesterol OR meat
- B. heart NOT cholesterol NOT meat
- C. heart AND cholesterol AND meat
- D. heart OR cholesterol AND meat
2. A video editor would most appropriately use the compositing features of video-editing software to:
- A. balance the colors in images captured by two different cameras.
- B. compress a video file so that it can be streamed on the Internet.
- C. produce a slow-motion effect using a clip shot at normal speed.
- D. superimpose one image over a second image.
3. Which of the following is a technique that uses input from CAD software to build a three-dimensional object layer by layer?
- A. rapid prototyping
- B. computer modeling
- C. robotic assisted manufacturing
- D. computer numerical control (CNC) milling
4. Which of the following color formats is most appropriate for images that are to be used on a Web site?
- A. RGB
- B. CMYK
- C. spot
- D. Pantone
5. A satellite would more appropriately be put into a polar orbit rather than into a geosynchronous orbit for which of the following applications?
- A. providing navigation signals to ships at sea
- B. broadcasting a television signal to remote areas
- C. monitoring tropical storms in real time
- D. photographing the entire earth's surface

6. Use the diagram below to answer the question that follows.



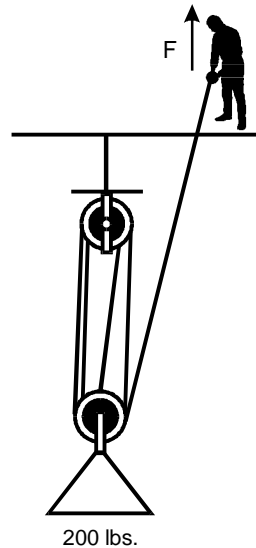
Which of the following components in the diagram has mechanical energy as an input and electrical energy as an output?

- A. A
- B. B
- C. C
- D. D
7. Which of the following components is used to provide an interface between an electric generating plant and a long-distance transmission line system?
- A. voltage regulator
- B. air-core capacitor
- C. step-up transformer
- D. full-wave rectifier

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8. A 12-volt power source supplies power to a DC motor that operates on a current of 2.5 amps. What is the power consumed by the motor?
- A. 15 watts
 - B. 30 watts
 - C. 60 watts
 - D. 75 watts
9. In the second half of the twentieth century, increased reliance on the intermodal freight transportation system occurred primarily because of standardization of:
- A. techniques for routing and tracking shipments.
 - B. billing and record-keeping procedures.
 - C. techniques for loading and unloading cargo.
 - D. shipping container size and dimensions.
10. Four-stroke-cycle gasoline engines use spark plugs to ignite their fuel. This function in diesel engines is performed primarily by:
- A. glow plugs.
 - B. intake valves.
 - C. compression.
 - D. fuel injection.

11. Use the diagram below to answer the question that follows.



A worker uses the pulley system in the diagram to unload 200-pound containers from the hold of a ship. What minimum upward force is required to lift a container using this system?

- A. 20 pounds
- B. 40 pounds
- C. 50 pounds
- D. 100 pounds

ANNOTATED ANSWER KEY

For question	The correct response is	Reason	Test Objective
1	C	Venn diagrams are used to represent the relationships among members of sets. The shaded region of this diagram represents the intersection of the search terms "heart," "meat," and "cholesterol." This means that this region represents members that belong to all three groups. Search engines use the operator "AND" to indicate that the search should return Web sites related to both the term before and the term after the "AND." The search entry "heart AND cholesterol AND meat" will result in the search engine returning Web sites related to all three terms.	0012
2	D	In graphic arts, compositing is the act of combining or assembling individual images into a single image. In video production, this often involves taking one image that has one or more areas of transparency and placing it over a second image to create a new image.	0013
3	A	Rapid prototyping is a manufacturing process that constructs objects layer by layer, usually in very small increments. The input for the process is frequently CAD software that accesses a database containing the specifications for constructing each layer of the object.	0014
4	A	Computer monitors create color by mixing light of three colors: red, green, and blue. The RGB color system also creates color by mixing the three colors red, green, and blue. By using the RGB color system to create Web sites, a Web designer can ensure that the image as it is displayed on the Web is a true representation of the image as it was created.	0015
5	D	Satellites in geosynchronous orbit have velocities matched to that of the earth's rotation. As a result, they can be made to remain above a fixed point of the earth's surface. By contrast, a satellite in polar orbit can be made to pass over all of the earth's surface. This would be an advantage for a satellite that is to photograph the entire earth's surface.	0016
6	B	The output of an internal combustion engine is motion, or mechanical energy. In this diagram, the output of the engine is received by an alternator. An alternator is a device that converts mechanical energy to electrical energy. In the case of the system in the diagram, the alternator receives the mechanical energy from the internal combustion engine, converts it to electrical energy, and then supplies that electrical energy to the battery for charging.	0017

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For question	The correct response is	Reason	Test Objective
7	C	As electrical energy travels through wires, some of it is lost as heat due to resistance of the conductors. This energy loss is greater for larger currents. Electric generating plants minimize this loss by using step-up transformers to increase the voltage, which reduces the current. Step-down transformers are used later in the distribution system to bring the voltage back down to the level needed by consumers.	0018
8	B	In an electric circuit, the power consumed by a component is the product of the voltage across the component and the current through the component. In the example, the voltage through the motor is 12 volts. The current through the motor is 2.5 amps. The power consumed by the motor is 12 volts \times 2.5 amps, or 30 watts.	0019
9	D	Intermodal freight transportation is transportation of freight in a vehicle or large container that is then itself transported by two or more modes of transport. In the second half of the twentieth century, the dimensions of shipping containers were standardized so that they could be efficiently loaded onto trains, ships, airplanes, and trucks.	0020
10	C	In both four-stroke-cycle gasoline engines and diesel engines fuel is ignited by heat. In four-stroke-cycle gasoline engines, the heat is supplied by the spark created by a spark plug. In diesel engines, heat is supplied by the compression of gases in the cylinder by the moving piston.	0021
11	B	The mechanical advantage of a block-and-tackle system can be determined by counting the number of rope segments supporting the load. In this case, there are 5 rope segments supporting the 200-pound load. Four of the rope segments can be seen between the pulleys. The fifth rope segment is the rope in the worker's hands. A mechanical advantage of 5 means that the system can be used to multiply the worker's force by a factor of 5. The force required to lift the container is 200 pounds \div 5, or 40 pounds.	0022