PASSAGE 48

➢ ***Read the following passage and mark the letter A, B, C, or D on your answer sheet to indicate the correct answer to each of the questions from 1 to 10.***

Three scales of temperature, each of which permits a precise measurement, are in concurrent use: the Fahrenheit, Celsius, and Kelvin scales. These three different temperature scales were each developed by different people and have come to be used in different situations.

The scale that is most widely used by the general public in the United States is the Fahrenheit scale. In 1714, Daniel Gabriel Fahrenheit, a German physicist who was living in Holland and operating an instrument business, developed a mercury-in-glass thermometer and the temperature scale that still carries his name. His original scale had two fixed points: 0° was the lowest temperature that he could achieve in a solution of ice, water, and salt, and 96 was what he believed was the normal temperature of the human body (though this was later determined to be 98.6°). Based on this scale, he calculated that the freezing point (or ice point) of water was 32°; in later studies, it was determined that the boiling point of water (the steam point) was 212°. The Fahrenheit scale came to be accepted as the standard measure of temperature in a number of countries, including Great Britain, and from there it was spread to British colonies throughout the world.Today, however, the United States is the only major country in the world that still uses the Fahrenheit scale.

The scale that is in use in many other countries is the Celsius scale. Anders Celsius (1701-1744), a Swedish astronomer, developed a thermometer in 1741 that based temperatures on the freezing and boiling temperatures of water. On the thermometer that Celsius developed, however, 0° was used to indicate the boiling temperature of water, and 100° was used to indicate the freezing temperature of water. After his death, the scale was reversed by a friend, the biologist Carl von Linne (1707-1748), who achieved acclaim for his development of the Linnean's classification system for plants and animals. On the new scale after the reversal by von Linne, 0° indicated the freezing temperature of water, and 100° indicated the boiling temperature of water. At around the same time that Celsius and von Linne were working on their thermometer in Sweden, a similar thermometer was being developed in France. After the French Revolution, the scale developed in France was adopted as part of the metric system in that country under the name centigrade, which means"a hundred units,"and from there it spread worldwide. In 1948, an international agreement was made to rename the centigrade scale the Celsius scale in honor of the scientist who was first known to use a 100-degree scale, though it should be remembered that the scale that Celsius actually used himself was the reverse of today's

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scale.

A third scale, the Kelvin scale, is generally used today for scientific purposes. This scale was first suggested in 1854 by two English physicists: William Thomson, Lord Kelvin (1824-1907) and James Prescott Joule (1818-1889). The Kelvin scale defines 0° as absolute zero, the hypothetical temperature at which all atomic and molecular motion theoretically stops, and 100° separates the freezing point and boiling point of water, just as it does on the Celsius scale. On the Kelvin scale, with 0° equal to absolute zero, water freezes at 273°, and water boils at a temperature 100° higher. The Kelvin scale is well suited to some areas of scientific study because it does not have any negative values, yet it still maintains the 100° difference between the freezing point and boiling point of water that the Celsius scale has and can thus easily be converted to the Celsius scale by merely subtracting 273° from the temperature on the Kelvin scale.

Question 1: The word fixed in paragraph 2 could best be replaced by

A. ordered **B**. repaired **C**. established **D**. attached

Question 2: What is stated in the passage about the temperature scale developed by Fahrenheit?

A. On it, 0° was the freezing point of water.

B. It was based on the lowest and highest temperatures that he could achieve with a mixture of salt and water.

C. On it, 100° was the boiling point of water.

D. It was based on an inaccurate understanding of the normal temperature of the human body

Question 3: The author refers to many other countries in paragraph 3 in order to

A. introduce a discussion of the areas of the world where the Celsius scale is used.

B. argue for the need for a standard measure of temperature throughout the world.

C. provide an example that demonstrates the effectiveness of the Celsius scale.

D. relate the widespread use of the Celsius scale to the previously mentioned limited use of the Fahrenheit scale.

Question 4: Which of the following is NOT true about the Celsius scale, according to the passage?

A. It was developed by an astronomer from Sweden.

B. It came into use in the eighteenth century.

C. One hundred degrees separated the freezing and boiling temperatures of water on it.

D. On it, 0° indicated the temperature at which water freezes.

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Question 5: The word reversed in paragraph 3 is closest in meaning to

A. brought in **B**. turned around **C**. thought up **D**. sent back

Question 6: The word adopted in paragraph 3 could best be replaced by

A. taken on **B**. brought up **C**. looked upon **D**. turned down

Question 7: Which of the sentences below expresses the information in the *italic* sentence in paragraph 3?

A. The discovery of the centigrade scale in 1948 brought honor to the scientist who discovered it.

B. After an international organization decided to use the centigrade scale in 1948, Celsius reversed the numbers on the scale.

C. In 1948, nations agreed to name the centigrade scale after the man who developed an earlier version of the scale.

D. In 1948, Celsius honored the scientist who was first known to use a 100-degree scale by naming it the centigrade scale.

Question 8: A hypothetical temperature in paragraph 4 is one that

A. is assumed to exist.

B. has been found to be false.

C. is known to be impossible.

D. has been proved through experiments.

Question 9: The phrase well suited to in paragraph 4 could best be replaced by

A. appropriate for **B.** outfitted with **C**. related to **D.** in harmony with

Question 10: It can be inferred from the passage that a temperature of 50° centigrade would be equal to

A. 223° on the Kelvin scale. **B**. 273° on theKelvinscale.

C. 323° on the Kelvin scale. **D**. 373° on theKelvin scal.

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