

SAT Biology Practice Paper

Question 1

The first items in the Biology E/M test are arranged in sets with common answer choices. These items appear in the core section of the test. Remember, these are not MATCHING challenges — each answer choice can be used once, more than once, or not at all.

Nitrogenous base that occurs in RNA but not in DNA

Select an Answer

- A Deoxyribose
- B Ribose
- C Uracil
- D Cytosine
- E Thymine

Question 2

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Sugar that occurs in DNA but not in RNA

Select an Answer

- A Deoxyribose
- B Ribose
- C Uracil
- D Cytosine
- E Thymine

Question 3

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A nitrogenous base that occurs in DNA in equal quantities with guanine

Select an Answer

- A Deoxyribose
- B Ribose
- C Uracil
- D Cytosine
- E Thymine

Question 4

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The change in plant types inhabiting an area over time, resulting in a climax community

Select an Answer

- A Succession
- B Dispersion
- C Fertilization
- D Speciation
- E Mutation

Question 5

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The inability of two populations to interbreed after being separated by a barrier for a long period of time

Select an Answer

- A Succession
- B Dispersion
- C Fertilization
- D Speciation
- E Mutation

Question 6

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Plants growing in and around a pond eventually filling in the pond and changing it to a terrestrial habitat

Select an Answer

- A Succession
- B Dispersion
- C Fertilization
- D Speciation
- E Mutation

Question 7

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Organisms that comprise the greatest mass of living substance (biomass) in a terrestrial food chain

Select an Answer

- A Decomposers (e.g., bacteria)
- B Producers (e.g., grasses)
- C Primary consumers (e.g., mice)
- D Secondary consumers (e.g., snakes)
- E Tertiary consumers (e.g., hawks)

Question 8

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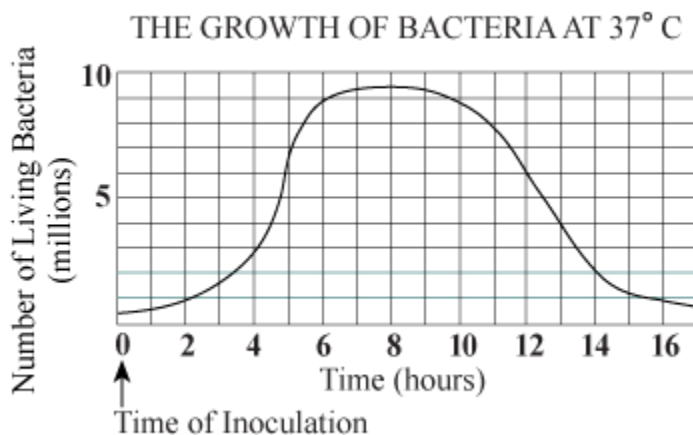
Organisms that convert nitrogen-containing organic molecules into nitrates

Select an Answer

- A Decomposers (e.g., bacteria)
- B Producers (e.g., grasses)
- C Primary consumers (e.g., mice)
- D Secondary consumers (e.g., snakes)
- E Tertiary consumers (e.g., hawks)

Question 9

The multiple choice questions have five answer choices — one (and only one) is correct in each case.



In the graph above, the time when the number of living bacteria is increasing at the greatest rate occurs

Select an Answer

- A during the first 2 hours
- B between the 2nd and the 4th hour
- C between the 4th and the 6th hour
- D between the 6th and the 10th hour
- E between the 11th and the 13th hour

Question 10

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

The pH of human blood is slightly basic. Which of the following is most likely to be the pH of human blood?

Select an Answer

- A
10.6
- B
7.4
- C
7.0
- D
6.4
- E
4.6

Question 11

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

In animals, ritualized contests with little risk of serious injury or death to participants within the species lead to

Select an Answer

- A a stable dominance hierarchy
- B biological altruism
- C adaptive radiation
- D instinctive behavior
- E a broader habitat

Question 12

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

Which of the following correctly explains how a favorable genetic trait can increase in frequency in a population?

Select an Answer

- A Lamarck's principle
- B Natural selection
- C Adaptive radiation
- D Genetic recombination
- E Segregation of alleles

Question 13

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

A stream is free of pollutants within a few miles downstream of a point at which a small amount of sewage is being dumped into it. This is most likely the result of

Select an Answer

- A succession
- B eutrophication
- C evaporation
- D photosynthesis
- E Decomposition

Question 14

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

As rain mixes with chemicals such as sulfur dioxide in the air, acid rain is produced. This may result in

Select an Answer

- A lowering the pH in ponds, thus limiting the survival of many organisms
- B lowering the pH in ponds, thus affecting water temperature
- C raising the pH in ponds, thus encouraging the growth of organisms
- D raising the pH in ponds, thus limiting animal development
- E depleting atmospheric carbon dioxide available for photosynthesis

Question 15

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

ATP is produced during which of the following processes?

I.	Photosynthesis
II.	Aerobic respiration
III.	Fermentation

Select an Answer

- A I only
- B II only
- C I and III only
- D II and III only

Question 16

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

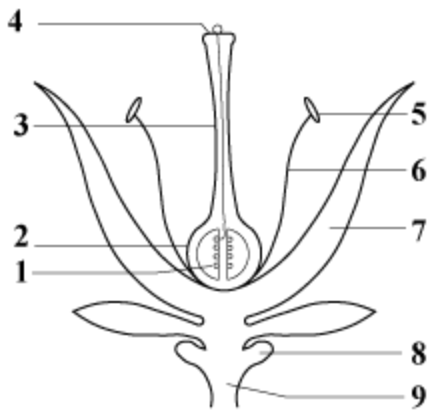
All of the following are population characteristics EXCEPT

Select an Answer

- A number of individuals
- B phenotype
- C sex ratio
- D age distribution
- E death rate

Question 17

The multiple choice questions have five answer choices — one (and only one) is correct in each case.



Commonly, the fruit is derived from

Select an Answer

A

2

B

4

C

7

D

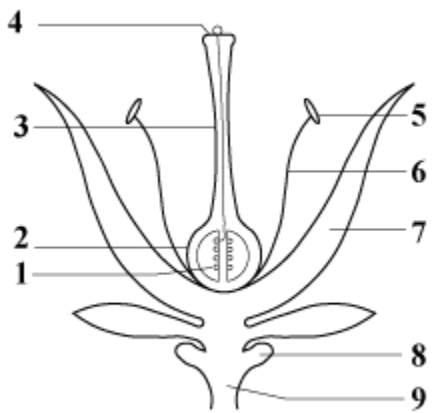
8

E

9

Question 18

The multiple choice questions have five answer choices — one (and only one) is correct in each case.



Pollination involves a transfer of pollen from

Select an Answer

- A
4 to 1
- B
4 to 2
- C
4 to 5
- D
5 to 4
- E
5 to 9

Question 19

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

In a breeding experiment using gray and white mice of unknown genotypes, the following results were obtained.

Cross	Parents			Offspring	
	Female	X	Male	Gray	White
I	Gray	X	White	82	78
II	Gray	X	Gray	118	39
III	White	X	White	0	50
IV	Gray	X	White	74	0

If the gray female from cross IV were mated with the gray male from cross II, then which of the following would most likely be true?

Select an Answer

- A All of the offspring would be gray.
- B All of the offspring would be white.
- C Half of the offspring would be gray.
- D One-quarter of the offspring would be gray.
- E One-quarter of the offspring would be white.

Question 20

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

In a breeding experiment using gray and white mice of unknown genotypes, the following results were obtained.

Cross	Parents			Offspring	
	Female		Male	Gray	White
I	Gray	X	White	82	78
II	Gray	X	Gray	118	39
III	White	X	White	0	50
IV	Gray	X	White	74	0

If two gray progeny of cross IV mate with each other, what is the probability that any one individual offspring will be gray?

Select an Answer

- A
100%
- B
75%
- C
50%
- D
25%
- E
0%

Question 21

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

Three students added equal volumes of pond water to each of four beakers (I–IV) and placed each in a different constant temperature bath, maintained at 5°C , 15°C , 25°C , and 35°C , respectively. The students then added ⁶ water fleas, *Daphnia pulex*, to each of the four beakers and recorded the time in each case. After ¹ hour, the students removed ³ *Daphnia pulex* from each beaker and each student immediately observed one *Daphnia pulex* under low-power magnification of a light microscope. (The transparent body of the *Daphnia pulex* can be seen

easily under a light microscope.) Heart rates were recorded as beats per minute. The results of the experiment are summarized in the chart below.

Beaker	Temperature	Time Daphnia Added	Time Daphnia Removed	Heartbeats Per Minute (average of 3 Daphnia)
I	5 °C	2:00 p.m.	3:00 p.m.	41
II	15 °C	2:10 p.m.	3:10 p.m.	119
III	25 °C	2:20 p.m.	3:20 p.m.	202
IV	35 °C	2:30 p.m.	3:30 p.m.	281

The independent variable in this experiment is the

Select an Answer

- A
amount of light
- B
number of water fleas
- C
pH of the water
- D
temperature of the water
- E
average heart rate

Question 22

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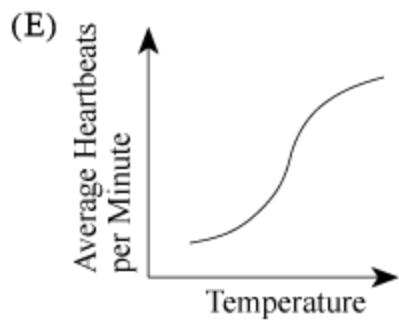
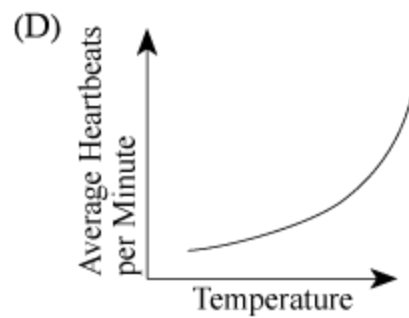
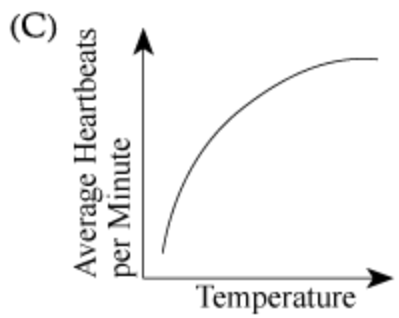
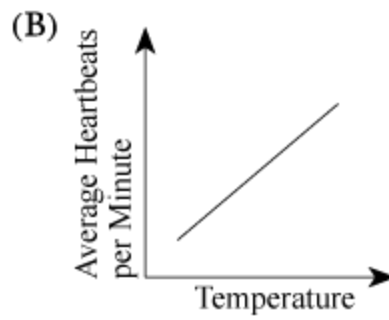
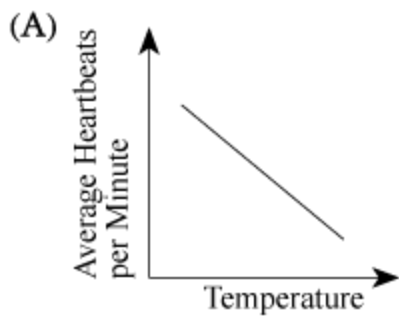
Three students added equal volumes of pond water to each of four beakers (I–IV) and placed each in a different constant temperature bath, maintained at 5 °C, 15 °C, 25 °C, and 35 °C, respectively. The students then added 6 water fleas, *Daphnia pulex*, to each of the four beakers and recorded the time in each case. After 1 hour, the students removed 3 *Daphnia pulex* from each beaker and each student immediately observed one *Daphnia pulex* under low-power

magnification of a light microscope. (The transparent body of the *Daphnia pulex* can be seen easily under a light microscope.)

Heart rates were recorded as beats per minute. The results of the experiment are summarized in the chart below.

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IV	35 °C	2:30 p.m.	3:30 p.m.	281

If a graph is constructed using the data given in the table, it will most closely resemble which of the following?



Select an Answer

- A) A
- B) B
- C) C
- D) D

Question 23

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

A student examined two different groups of cells and made the following observations

Trait	Cell I	Cell II
Cell wall	Present	Present
Ribosomes	Present	Present
Nucleus	Absent	Present
Ability to photosynthesize	Present	Absent
Cell respiration	Present	Present

These observations support which of the following conclusions?

Select an Answer

- A Cell I is more complex in its organization than cell II.
- B Cell I is a prokaryote.
- C The ancestors of cell II appeared earlier in the fossil record than the ancestors of cell I.
- D Cell II does not have a cell membrane.
- E Both groups of cells are from plants.

Question 24

The multiple choice questions have five answer choices — one (and only one) is correct in each case.

Blood flows from the heart to the lungs in the pulmonary artery and returns from the lungs to the heart in the pulmonary vein. The blood in the pulmonary artery is

Select an Answer

- A
higher in O_2 and lower in CO_2 content than the blood in the pulmonary vein
- B
higher in both O_2 and CO_2 content than the blood in the pulmonary vein
- C
lower in O_2 and higher in CO_2 content than the blood in the pulmonary vein
- D

lower in both O_2 and CO_2 content than the blood in the pulmonary vein

E

higher in O_2 content, but about the same in CO_2 content as the blood in the pulmonary vein