

Base your answers to questions 69 and 70 on the information below and on your knowledge of biology.

**For Teacher  
Use Only**

An investigation is carried out to determine the effect of exercise on the rate at which a person can squeeze a clothespin.

69 In this investigation, the independent variable is the

- (1) control
- (2) exercise
- (3) rate of squeezing
- (4) number of participants

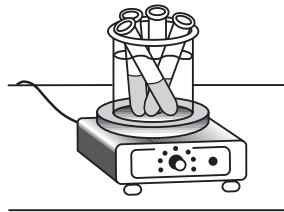
69

70 Muscle fatigue occurs during this activity when

- (1) carbon dioxide is used up in the muscle cells
  - (2) simple sugar is converted to starch in the muscle cells
  - (3) proteins accumulate in mitochondria in the muscle cells
  - (4) certain waste products collect in the muscle cells
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70

71 Part of a laboratory procedure is shown in the diagram below.



This setup would most likely be involved in a procedure to

- (1) stain specimens while making a wet mount
- (2) test for the presence of glucose using an indicator
- (3) separate pigments in a mixture
- (4) determine the pH of solutions

71

Base your answers to questions 72 and 73 on the information below and on your knowledge of biology.

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A valuable medicine is obtained from a certain rare species of plant. Scientists are anxious to find another more abundant species of plant that is closely related to the rare one, and also produces the medicine.

Two newly discovered plant species, A and B, were studied and compared to the rare one. The results of the study are shown in the table below.

Species of Plant	Characteristics of Flowers	Shape of Leaves	Species Number of Chromosomes	Enzyme A Present	Enzyme B Present	Enzyme C Present
rare species	pink 5 petals	round	36	yes	yes	yes
species A	pink 5 petals	oval	34	no	no	yes
species B	white 5 petals	round	36	yes	yes	yes

72 Which newly discovered species is more closely related to the rare species? Support your answer. [1]

Species: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

72

73 Which procedure could also be carried out to help determine which newly discovered species is most closely related to the rare species?





- (1) measurement of respiration rate in the plants
  - (2) chromatography of pigment extracts from the plants
  - (3) determination of the type of gas released by photosynthesis in the plants
  - (4) analysis of chemical bonds present in glucose in the plants
- \_\_\_\_\_

73

74 The characteristics of four finches that inhabit the same island are represented in the chart below.

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**Characteristics Chart**

<p>Large Ground Finch</p>  <p>Beak: crushing</p> <p>Food: mainly plant</p>	<p>Warbler Finch</p>  <p>Beak: probing</p> <p>Food: 100% animal</p>
<p>Small Ground Finch</p>  <p>Beak: crushing</p> <p>Food: mainly plant</p>	<p>Large Tree Finch</p>  <p>Beak: grasping</p> <p>Food: mainly animal</p>

Complete the table below using information in the characteristics chart and your knowledge of biology. [2]

Competes With the Large Tree Finch	Type of Finch	State <i>one</i> reason why it competes or does <i>not</i> compete with the large tree finch.
no		
yes		

74

75 Studies of the finches of the Galapagos Islands have shown that

- (1) DNA will change to produce structures needed by birds to survive intense competition
- (2) a bird's beak changes annually in response to the type of food that is most abundant each year
- (3) natural selection occurs when there are scarce resources and intense competition
- (4) the beak of a finch will change if the environment of the bird remains stable

75

Base your answers to questions 76 through 78 on the information below and on your knowledge of biology.

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A student prepared four different red blood cell suspensions, as shown in the chart below.

Suspension	Contents
A	red blood cells in normal blood serum (0.7% salt solution)
B	red blood cells in 10% salt solution
C	red blood cells in distilled water
D	red blood cells in tap water

76 Which suspension would contain red blood cells that would appear wrinkled and reduced in volume?

- (1) A
- (2) B
- (3) C
- (4) D

76

77 The change in red blood cell volume is principally due to the movement of

- (1) serum
- (2) oxygen
- (3) water
- (4) salt

77

78 Which process is most likely involved in the change in red blood cell volume?

- (1) active transport
  - (2) evaporation
  - (3) replication
  - (4) diffusion
- 

78