

# NATIONAL SCIENCE LEAGUE – 2015

## JUNIOR HIGH LIFE SCIENCE CONTEST

### - ANSWER KEY -

- |                   |                   |
|-------------------|-------------------|
| 1. _____ C _____  | 26. _____ D _____ |
| 2. _____ D _____  | 27. _____ A _____ |
| 3. _____ B _____  | 28. _____ A _____ |
| 4. _____ A _____  | 29. _____ D _____ |
| 5. _____ C _____  | 30. _____ C _____ |
| 6. _____ B _____  | 31. _____ C _____ |
| 7. _____ A _____  | 32. _____ B _____ |
| 8. _____ D _____  | 33. _____ A _____ |
| 9. _____ C _____  | 34. _____ D _____ |
| 10. _____ B _____ | 35. _____ A _____ |
| 11. _____ A _____ | 36. _____ B _____ |
| 12. _____ B _____ | 37. _____ A _____ |
| 13. _____ C _____ | 38. _____ C _____ |
| 14. _____ C _____ | 39. _____ A _____ |
| 15. _____ A _____ | 40. _____ D _____ |
| 16. _____ B _____ | 41. _____ B _____ |
| 17. _____ D _____ | 42. _____ A _____ |
| 18. _____ B _____ | 43. _____ D _____ |
| 19. _____ A _____ | 44. _____ A _____ |
| 20. _____ D _____ | 45. _____ C _____ |
| 21. _____ C _____ | 46. _____ B _____ |
| 22. _____ B _____ | 47. _____ B _____ |
| 23. _____ A _____ | 48. _____ A _____ |
| 24. _____ C _____ | 49. _____ D _____ |
| 25. _____ C _____ | 50. _____ D _____ |

## Life Science

DIRECTIONS: On the answer sheet, write the letter of the choice that best answers the question or completes the statement.

1. Which of these is the smallest?  
A. a paramecium  
B. a white blood cell  
C. a virus  
D. a bacterial cell
2. The larynx is part of your  
A. digestive system.  
B. circulatory system.  
C. excretory system.  
D. respiratory system.
3. Budding is a type of reproduction that occurs in  
A. crabs.  
B. yeast.  
C. earthworms.  
D. sponges.
4. Nitrogen-fixing bacteria live in the root nodules of  
A. pea plants.  
B. ferns.  
C. oak trees.  
D. mosses.
5. Which of these controls the functioning of the other endocrine glands?  
A. the adrenals  
B. the thyroid  
C. the pituitary  
D. the ovaries
6. In which part of the cell does aerobic respiration occur?  
A. the nucleus  
B. the mitochondria  
C. the ribosomes  
D. the Golgi bodies
7. A clam and a hamster are both classified in the same  
A. kingdom.  
B. phylum.  
C. class.  
D. order.
8. Which niche does a predatory carnivore occupy in a food chain?  
A. It produces food for other animals.  
B. It eats both plants and animals.  
C. It eats only plants.  
D. It eats only other animals.
9. In which of these cell parts is DNA found?  
A. the cell membrane  
B. the Golgi bodies  
C. the nucleus  
D. the ribosomes
10. Voluntary muscles are muscles that  
A. make up your heart.  
B. allow your arm to move.  
C. can expand only and not contract.  
D. surround your small and large intestines.
11. Prophase and telophase are parts of the process of  
A. cell division.  
B. photosynthesis.  
C. fermentation.  
D. pollination.

12. Which of these organisms is best suited to live in a dark basement?  
A. algae  
B. yeast  
C. lichens  
D. onions
13. Marrow is found in your  
A. liver.  
B. brain.  
C. bones.  
D. muscles.
14. Nephrons are located in your  
A. liver.  
B. lungs.  
C. kidneys.  
D. pancreas.
15. Which of these animals goes through complete metamorphosis?  
A. a butterfly  
B. a spider  
C. an octopus  
D. a lobster
16. Simple sugars are combined to make  
A. fats.  
B. starches.  
C. proteins.  
D. vitamins.
17. Certain species of bacteria are saprophytes and play a helpful role in ecosystems. This is because saprophytes  
A. supply oxygen to other organisms.  
B. are used as a source of food by herbivores.  
C. carry on aerobic respiration only.  
D. break down dead organisms.
18. Animal and plant cells both have  
A. chloroplasts.  
B. cell membranes.  
C. a large vacuole in the middle.  
D. a cellulose cell wall.
19. Light first enters your eye through the  
A. cornea.  
B. retina.  
C. iris.  
D. pupil.
20. The medulla is part of your  
A. digestive system.  
B. circulatory system.  
C. respiratory system.  
D. nervous system.
21. In plants, food for the seed is stored in the  
A. flowers.  
B. roots.  
C. cotyledons.  
D. leaves.
22. Which of these animals has compound eyes?  
A. a barn owl  
B. a honey bee  
C. an octopus  
D. a frog

23. Which word is followed by its correct definition?  
A. alveoli - microscopic sacs found in the lung  
B. villi - small hairs lining the trachea  
C. cartilage - connects muscles to bones  
D. vein - smallest blood vessel in your body
24. Reptiles and amphibians both  
A. reproduce in water.  
B. have scales covering their bodies.  
C. have lungs.  
D. can live in hot, dry places.
25. In cells, the term "selectively permeable" has to do with the activities of the  
A. nucleus. C. cell membrane.  
B. ribosomes. D. cytoplasm.
26. A placenta is found in which female at some time during her lifetime?  
A. amphibian C. reptile  
B. bird D. mammal
27. Into which chamber of the heart does the pulmonary vein carry blood?  
A. the left atrium C. the left ventricle  
B. the right atrium D. the right ventricle
28. Organisms classified as monerans do not have  
A. a nucleus surrounded by a membrane.  
B. ribosomes.  
C. cytoplasm.  
D. a cell membrane.
29. All living species must be able to  
A. make their own food.  
B. move in order to escape predators.  
C. carry on aerobic respiration.  
D. reproduce.
30. The phloem and xylem found in certain plants  
A. store food until it is needed in the winter.  
B. are the places where the most photosynthesis occurs.  
C. enable substances to move from the leaves to the roots and the roots to the leaves.  
D. produce the auxins needed by the plant.
31. Penicillin killing the bacteria growing on your throat cells is an example of the action of an  
A. antibody. C. antibiotic.  
B. antihistamine. D. antigen.

32. All of the living things found in a lake make up  
A. a population. C. an ecosystem.  
B. a community. D. a habitat.
33. Which is a correct statement?  
A. Mammals are vertebrates.  
B. Cows are omnivores.  
C. Turtles are warm-blooded.  
D. Sponges have a closed circulatory system.
34. Peristalsis is the process by which  
A. nerve impulses travel from neuron to neuron.  
B. air is forced into and out of the lungs.  
C. hormones are released into the blood.  
D. food is moved through the digestive system.
35. An ameba and a paramecium both are  
A. single-celled organisms.  
B. able to obtain food in the same way.  
C. organisms made of cells that contain chloroplasts.  
D. classified in the Fungi Kingdom.
36. Zygotes are formed during  
A. budding. C. asexual reproduction.  
B. sexual reproduction. D. vegetative propagation.
37. Which of these people used a simple light microscope to observe living things in pond water?  
A. Anton van Leuwenhoek C. Charles Darwin  
B. Gregor Mendel D. Louis Pasteur
38. Atherosclerosis is a disease wherein  
A. the valves in the heart do not work properly.  
B. the red blood cells clump together and clog the capillaries.  
C. fatty deposits build up on the walls of the arteries.  
D. blood leaks out of the veins in the legs.
39. Nutrients in the food you eat are changed to a form your cells can use during the process of  
A. digestion. C. excretion.  
B. respiration. D. circulation.
40. Which mineral is found in red blood cells and is involved in carrying oxygen to the body cells?  
A. iodine C. calcium  
B. magnesium D. iron
41. The modern theory of evolution is based on the observations of  
A. Robert Hooke. C. Theodor Schwann.  
B. Charles Darwin. D. Carolus Linnaeus.

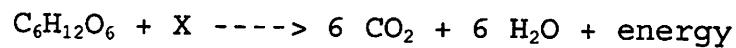
42. If you ate one gram of each of the following foods, which one would provide the greatest amount of protein?  
 A. meat  
 B. potatoes  
 C. carrots  
 D. apples
43. Which is an organic substance?  
 A. water  
 B. table salt (sodium chloride)  
 C. calcium  
 D. vitamin D
44. In which part of a cell do gene mutations occur?  
 A. the nucleus  
 B. the endoplasmic reticulum  
 C. the ribosomes  
 D. the Golgi bodies
45. What does the letter "h" look like when seen through a compound light microscope with a magnification of 40 power?



46. Ciliates and flagellates are two kinds of  
 A. non-flowering plants.  
 B. protozoans.  
 C. fungi.  
 D. moss.

USE THE FOLLOWING INFORMATION AND YOUR KNOWLEDGE OF LIFE SCIENCE TO ANSWER QUESTIONS 47 AND 48:

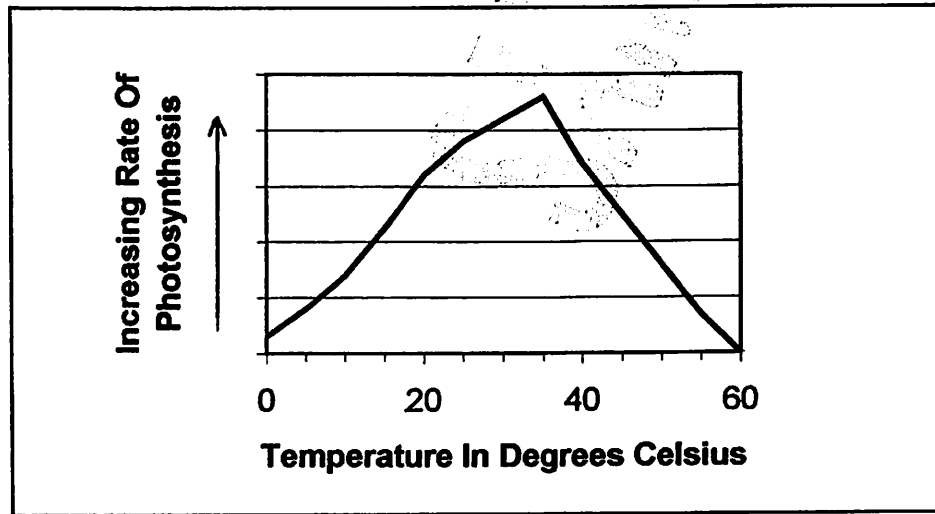
The formula below represents a process that occurs in cells.



47. Which process is represented by the above formula?  
 A. photosynthesis  
 B. respiration  
 C. fermentation  
 D. digestion
48. The "X" in the above formula represents  
 A. oxygen.  
 B. water.  
 C. carbon dioxide.  
 D. chlorophyll.

USE THE FOLLOWING INFORMATION AND YOUR KNOWLEDGE OF LIFE SCIENCE TO ANSWER QUESTION 49:

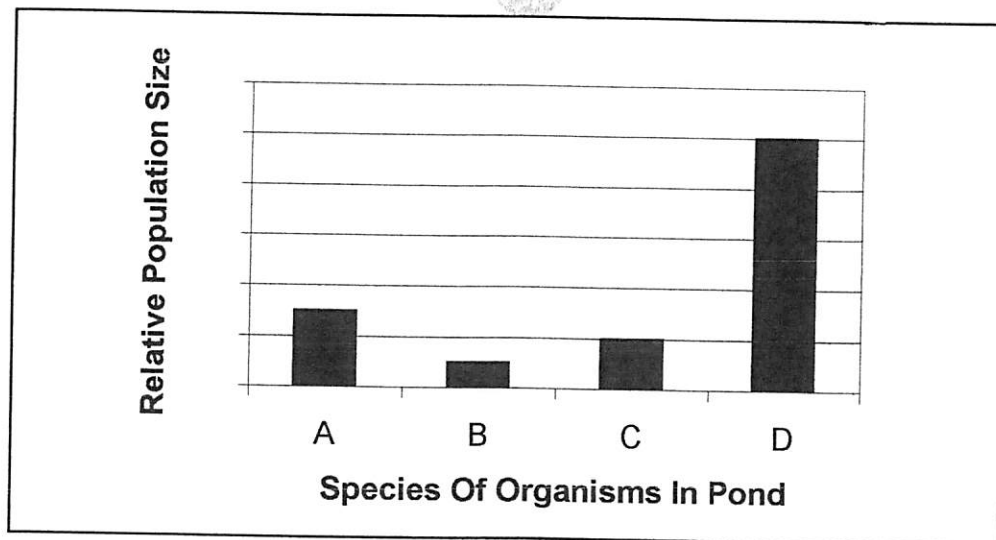
The bar graph below shows the relationship between the average temperature of the environment and the rate of photosynthesis in plants.



49. According to the graph, the rate of photosynthesis is greatest in plants living where the average temperature of the environment is closest to
- A. 0°C.
  - B. 6°C.
  - C. 20°C.
  - D. 35°C.

USE THE FOLLOWING INFORMATION AND YOUR KNOWLEDGE OF LIFE SCIENCE TO ANSWER QUESTION 50:

The graph below shows the relative population size of four different organisms living in a pond. Recently a sewage treatment plant accidentally spilled sewage into the pond. The relative population size of these organisms was determined after the spill. The amount of oxygen gas dissolved in the water was measured and found to be zero parts per million.



50. Which species is most likely to be anaerobic bacteria?
- A. Species A
  - B. Species B
  - C. Species C
  - D. Species D