

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO



GRADE-5 & 6

DARWIN

# INTERNATIONAL SCIENCE OLYMPIAD - 2023

## Test Paper

Test Booklet Series

DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

Roll No.:

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Student's Name:

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Maximum Time: 90 Minutes

Maximum Marks: 120

### INSTRUCTIONS

1. Please **DO NOT OPEN** the contest booklet until the proctor has given permission to start.
2. There are 30 questions in this paper. **Easy:** 3 points for each correct answer. **Medium:** 4 points for each correct answer. **Hard:** 5 points for each correct answer. 1 point will be deducted for each incorrect answer, and no penalty for skipping a question.
3. There is only ONE correct answer to each question.
4. No electronic devices capable of storing and displaying visual information are allowed during the exam.
5. Use of **calculator** is strictly prohibited in the exam.
6. Fill your **Name, Roll No., Grade and School Name** in the answer sheet.
7. To mark your choice of answers by darkening the circles in the Answer Sheet, use an HB Pencil or a **Blue/Black Ball Point Pen** only.
8. Shade your answer clearly as per the example is shown below:

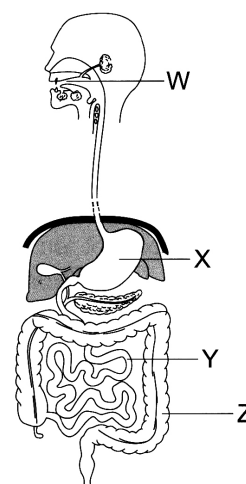
CORRECT	INCORRECT								
<table border="1"><tr><td>A</td><td>●</td><td>C</td><td>D</td></tr></table>	A	●	C	D	<table border="1"><tr><td>✓A</td><td>✗B</td><td>●C</td><td>⊖D</td></tr></table>	✓A	✗B	●C	⊖D
A	●	C	D						
✓A	✗B	●C	⊖D						

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## SECTION – A (3 POINT PROBLEMS)

- Which particles are responsible for electrical conductivity in metals?  
(A) Anions (B) Cations (C) Electrons (D) Protons
- Following classifications have been made on the basis of solubility of substance. Identify the group resembling all water-soluble substance.  
(A) Glucose, potassium permanganate and wax  
(B) Common salt, cough syrup and sugar  
(C) Ink, carbon monoxide and cooking oil  
(D) Sugar, nitrogen and baking soda

- The diagram below shows the human digestive system. Which part of the human digestive system removes water from undigested waste?  
(A) W  
(B) X  
(C) Z  
(D) Z



- A brother and sister take the same time to run up a set of steps. The sister has a greater mass than her brother. Which of the following is correct?

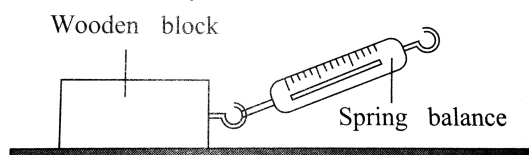
	Has done the most work	Has developed the greatest power
(A)	brother	brother
(B)	brother	sister
(C)	sister	brother
(D)	sister	sister

- Which of the following is an adaptation feature of mountain plant?  
(A) Cone shape of the plant (B) Needle like leaves  
(C) Wax coated leaves (D) All of the above
- The velocity of sound in air is not affected by change in  
(A) moisture content of the air (B) the temperature of air  
(C) the atmospheric pressure (D) the composition of air
- What is the source of the oxygen released into the air as a product of photosynthesis?  
(A) Chlorophyll (B) Carbon dioxide only  
(C) Water only (D) Both water and carbon dioxide

8. Which of the following is the best definition of a population?
- (A) A group of individuals that can interbreed and produce fertile offspring  
(B) The number of individuals of the same species in a given area  
(C) A group of species living and interacting with each other in a given area  
(D) The total number of individuals in a given area
9. Which of the following characteristics found in a structure necessarily indicates that it is alive?
- (A) The presence of genetic material  
(B) The presence of a lipid bilayer  
(C) Metabolism  
(D) Movement
10. A body moves through a distance of 3 m in the following different ways. In which case is the maximum work done?
- (A) When pushed over an inclined plane  
(B) When lifted vertically upward  
(C) When pushed over smooth rollers  
(D) When pushed on a plane horizontal surface

**SECTION – B (4 POINT PROBLEMS)**

11. Walking Fern is named so as –
- (A) It knows walking  
(B) It is dispersed through walking  
(C) Its spores are able to walk  
(D) It spreads by its leaf tips
12. A red blood cell is 8  $\mu\text{m}$  in diameter. If drawn 100 times larger than its actual size, what diameter will the drawing be in mm?
- (A) 0.08 mm                      (B) 0.8 mm                      (C) 8 mm                      (D) 80 mm
13. In ancient times, people used different units of measurement of length and distance. Some of them are
- P.** Cubit                      **Q.** Footstep  
**R.** Handspan                      **S.** Arm length
- The correct arrangement in terms of their increasing length is
- (A) R, Q, P, S                      (B) R, P, Q, S  
(C) R, P, S, Q                      (D) R, S, P, Q
14. Krish uses a spring balance to pull a wooden block over a tiled floor. Which of the following factors will not affect the amount of force needed to pull the wooden block?



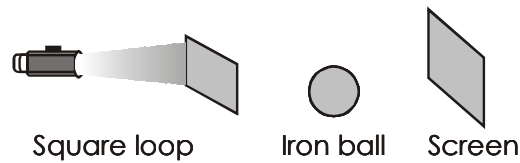
- (A) The mass of the spring balance  
(B) The mass of the wooden block  
(C) The surface of the tiled floor  
(D) The surface of the wooden block that comes in contact with the tiled floor

15. What is the ability of a bat to detect the distance of an object called?  
 (A) Instinctual (B) Echolocation (C) Ecosystem (D) Adaptation
16. Study the characteristics of organism W.

- i. It lays eggs  
 ii. It is cold blooded  
 iii. It breathes through skin

What could be organism W?

- (A) Frog (B) Dove (C) Snake (D) Elephant
17. Study the set- up given here. Which of the following options shows the correct shape of the shadow formed on the screen?



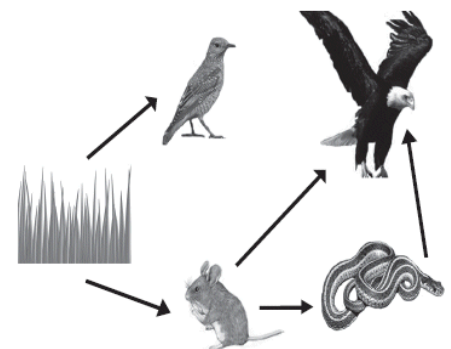
- (A)  (B)  (C)  (D) 

18. The best method to determine the age of tree is to  
 (A) Measure its diameter  
 (B) Count the number of leaves  
 (C) Count the number of annual rings at the base of main stem  
 (D) Find out the number of branches
19. Heavy water is  
 (A) A product of oxygen and hydrogen  
 (B) Water of mineral springs  
 (C) Water obtained by repeated distillation and condensation  
 (D) Ordinary water containing dissolved salts heavy metals
20. Which group of organisms in the carbon cycle converts carbon into a form that is available to primary consumers?  
 (A) Decomposers (B) Saprotrophs (C) Detritus feeders (D) Producers

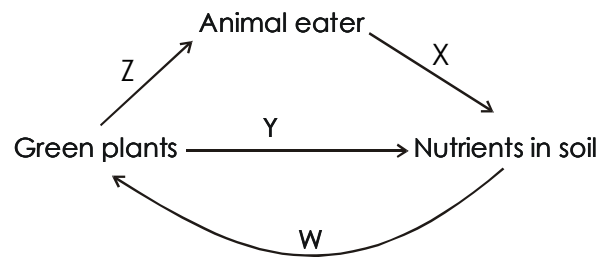
**SECTION – C (5 POINT PROBLEMS)**

21. The diagram below shows a simplified food web.  
 What is the role of the snake in this food web?

- (A) Primary consumer  
 (B) Secondary consumer  
 (C) Tertiary consumer  
 (D) Producer



22. Decomposers enrich the soil with nutrients for the plants. The diagram below shows the role of decomposers in the balance of life on the Earth.



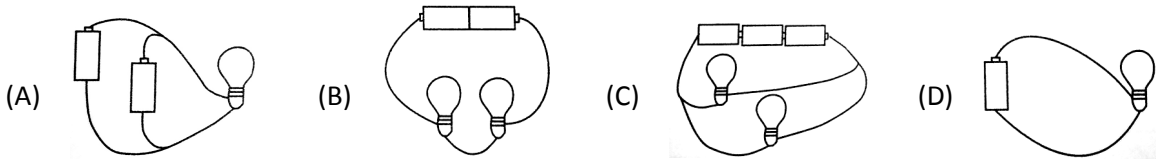
At which point(s) of the food web will decomposition occur?

- (A) Z only  
(B) Y and Z only  
(C) X and W only  
(D) W, Y and Z only
23. The diagram shows the blood flow in some parts of the human body.

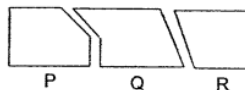


Which of the arrows show blood that contains a large amount of oxygen?

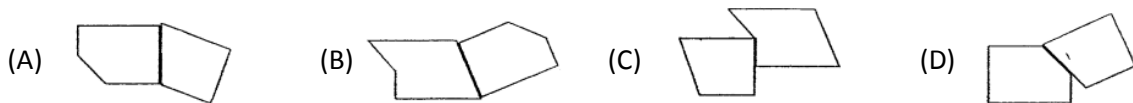
- (A) A and B  
(B) A and C  
(C) A, C and D  
(D) B, C and D
24. In which of the following arrangement of electrical circuits will the bulbs not light up, assuming that all the bulbs and dry cells are identical?



25. A bar magnet was broken into three pieces, P, Q, and R as shown below.



Which of the following is not possible when two broken pieces of magnets are brought together?



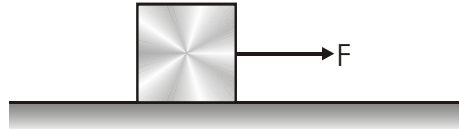
26. Giselle filled four identical cups made of different materials with equal amount of water at 80°C. She then left the four cups on a table. She recorded the time taken for the water in the cup to reach room temperature.

Material of the cup	Time taken for water to reach room temperature (min)
P	30
Q	15
R	60
S	45

Based on the results shown above, which materials would be most suitable to make an ice-box?

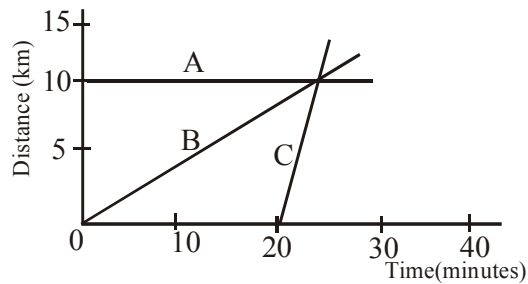
- (A) P  
(B) Q  
(C) R  
(D) S

27. A block which lies on the floor is being pulled by a force  $F$  to the right, but remains at rest.



What causes the block to remain at rest?

- (A) The mass of the block is big enough to resist motion  
 (B) The applied force is not big enough to move the block  
 (C) The applied force is much smaller than the weight of the block  
 (D) The friction between the block and the floor resists motion
28. Consider the distance-time graph shown in the figure for the three friends A, B and C. All of them move along a straight road in a fixed direction. Who was moving the fastest at  $t = 25$  minutes?



- (A) A                      (B) B                      (C) C                      (D) A and C
29. A bus moves at a uniform speed  $v_1$  for some time and then with a uniform speed  $v_2$ . The distance-time table is given below. Plot the corresponding distance-time graph and answer the following questions. What is the average speed for the complete Journey ?
- |                      |   |    |    |    |    |     |     |
|----------------------|---|----|----|----|----|-----|-----|
| <b>Time(min)</b>     | 0 | 20 | 40 | 60 | 80 | 100 | 120 |
| <b>Distance (km)</b> | 0 | 20 | 40 | 65 | 95 | 125 | 155 |
- (A) 55 km/h              (B) 60 km/h              (C) 65 km/h              (D) 77.5 km/h
30. A body is weighed at the poles and then at the equator. The weight
- (A) at the equator will be greater than at the poles  
 (B) at the poles will be greater than at the equator  
 (C) at the poles will be equal to the weight at the equator  
 (D) depends upon the object

