



International FSP Contests

**2024** QUESTION BOOKLET

**FSP**  
**Science**  
**Contest**



**GRADE** **7** & **8**

**VIBRANT YOUNGSTERS**

Time Allowed : 90 Minutes

Maximum Marks : 90

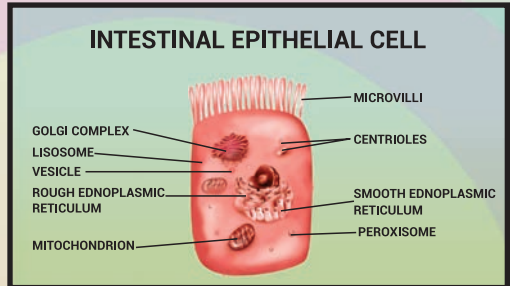
## WRITTEN DIRECTIONS FOR THE CONTEST

- 1) Wait till the invigilator gives the all-clear before beginning the contest.
- 2) Examine your name, father's name, school name, address, and other details one last time on the bubble sheet and answer page.
- 3) Only record your responses on the bubble sheet. Choose the best response from the four alternatives provided, and only one option should be marked per question.
- 4) Fill in the circles on the bubble sheet with blue or black ink; lead pencils are not permitted.
- 5) It is completely forbidden to use any kind of assistance, including cell phones and technological devices.
- 6) Three points are awarded for each right response. Negative marking would occur. A single point would be subtracted for each wrong response.
- 7) No justification may be given for an unaccompanied candidate to leave the examination room, including to use the restroom.
- 8) No objects, including electrical devices, are allowed within the room.
- 9) The competition is divided into the following five categories:
  - A) Vibrant youngsters Grade 1 & 2
  - B) Vibrant youngsters Grade 3 & 4
  - C) Vibrant youngsters Grade 5 & 6
  - D) Vibrant youngsters Grade 7 & 8
  - E) Vibrant youngsters Grade 9 & 10 / 0-levels
- 10) The contest is only open to enrolled students.
- 11) No candidate may remove any provided materials, including answer books, from the hall, even if they are partially filled in or utilized.
- 12) Neither the examiner nor the invigilator may respond if a participant does not understand a word or phrase on the exam paper.
- 13) Please visit [www.fspcompetitions.org](http://www.fspcompetitions.org) to learn about future competitions or to offer insightful comments.
- 14) Vibrant youngsters FSP must receive reports of any academic misconduct or malpractice at [info@fspcompetitions.org](mailto:info@fspcompetitions.org).

**Q-1.**

Which of the following is present on the surface of intestinal epithelial cells?

- A** Zymogen granules
- B** Pinocytic vesicles
- C** Phagocytic vesicles
- D** Microvilli

**Q-2.**

Rhizobium is a bacteria found in soil that helps in fixing nitrogen in leguminous plants. It attaches to the roots of the leguminous plant and produces nodules. These nodules fix atmospheric nitrogen and convert it into ammonia that can be used by the plant for its growth and development.

Rhizobium Bacteria which fixes atmospheric nitrogen are found in nodules growing in:

- A** Leaves of leguminous plants
- B** Roots of leguminous plants
- C** Stem of leguminous plants
- D** All options are correct

**Q-3.**

The process of injecting weak microbes into a healthy body and producing antibodies to fight against strong microbes is known as –

- A** Vaccination
- B** Medication
- C** Antibiotics
- D** None of them

**Q-4.**

**You shine a flashlight in your friend's eye and observe the pupil constrict. Which characteristic of living things have you observed?**



Living things are made of cells.



Living things reproduce.



Living things grow and develop.



Living things respond to stimuli in the environment.

**Q-5.**

**Statement 1: The species is reproductively isolated natural population.**

**Statement 2: Prokaryotes cannot be kept under different species on the basis of reproductive isolation.**



Statement-1 and Statement-2 are True and statement-2 is a correct explanation for statement-1



Statement -1 and statement -2 are True and statement-2 is not a correct explanation for statement-1



Statement-1 is true and statement-2 is false



Both the statements are false.

## Q-6

In majority of higher animals and plants, \_\_\_\_ and \_\_\_\_ are mutually exclusive events.



A growth; nutrition



B nutrition; consciousness



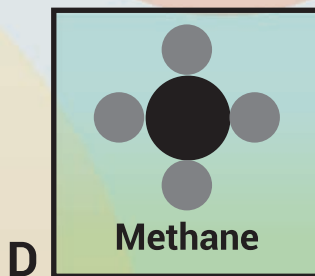
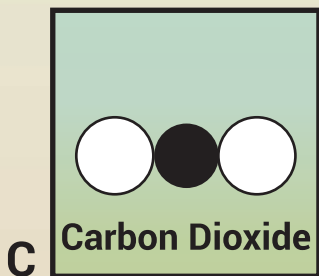
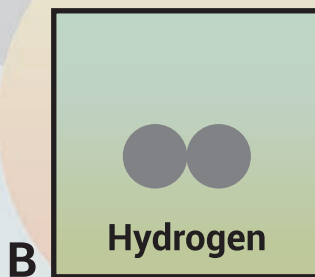
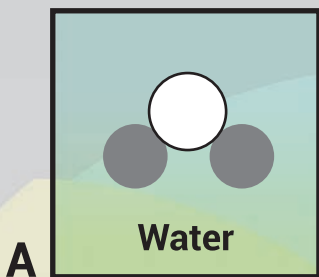
C growth; reproduction



D reproduction; consciousness

## Q-7

A compound is a molecule that contains at least two different elements. Each of the following substances in the list are molecules. One of these is not a compound. Which one is it?



A



B



C







D

## Q-8

The photograph is of Marie Curie (1867-1934). She showed the existence of the element radium and she produced 0.1g of the compound radium chloride in 1902 by processing tons of pitchblende ore obtained from mines in Bohemia.

What is meant by the term compound?



-  A substance made up of only one type of atom.
-  A substance made up of two or more different types of atom mixed together but not chemically combined.
-  A substance that cannot be split up into simpler substances by chemical means.
-  A substance made up of two or more different types of atom chemically combined.

**Q-9**

Four children were asked to arrange forces due to rolling, static and sliding frictions in an increasing order. Their arrangements are given below. Choose the correct arrangement.



Rolling, Static, Sliding



Static, Rolling, Sliding



Rolling, Sliding, Static



Sliding, Static, Rolling

**Q-10**

In a science lab, Claudio rubs the north pole of a bar magnet against a wooden coffee stirrer, an iron nail, and a plastic spoon. After rubbing each item for two minutes, Claudio tries to pick up one steel paper clip using each object. The independent variable tested in this experiment is...



The magnetic strength of the bar magnet



The magnetic properties of the selected materials



The amount of rubbing



Time

**Q-11**

**Maglev trains use magnets to elevate trains so that they never touch the tracks. The poles of the magnets on the trains facing the poles of the magnets on the tracks must be...**



The same, so they attract each other



The same, so they repel each other



Opposites, so they repel each other



Opposites, so they attract each other

**Q-12**

**A boat or a plane has a pointed or tapering front / head. Why?**



To increase the friction of fluid or resistance



To reduce the friction of fluid



To look good



For no reason

**Q-13**

**Which of the following is present in a maximum amount in acid rain?**



Hydrochloric acid



Sulphuric acid



Nitric acid

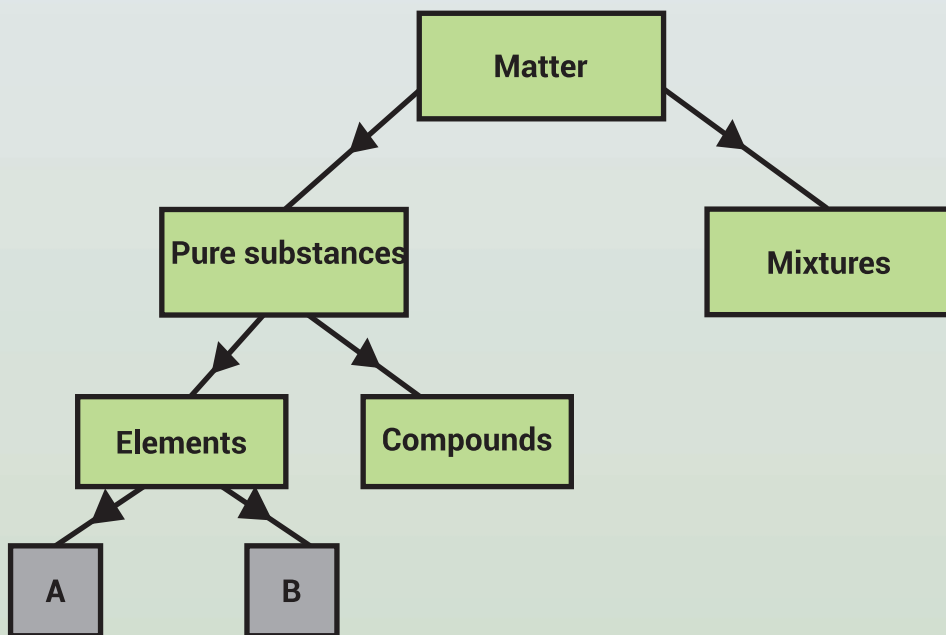



Ammonium nitrate





## Q-14


Matter is the 'stuff' that all things are made of, including us. The diagram shows how some types of matter are classified. The diagram is not complete. Elements are often divided into two subgroups. What are these two sub-groups A and B?



 Non-metals and gases

 Metals and liquids

 Liquids and gases

 Metals and non-metals

## Q-15

Which of the following taxonomic categories is being described by the given statements(i-iii) ?

(i) It is the basic unit of classification.

(ii) It is defined as the group of individuals which resemble in their morphological and reproductive characters and interbreed among themselves and produce fertile off springs.

(iii) Human beings belong to the species sapiens which is grouped in the genus Homo.



Species



Genus



Order







Family

Read the story and answer questions 16 to 19

Rahul, a 10-year-old boy, has exceptional mathematical skills. His parents, both mathematicians, encourage his talent and provide him with challenging puzzles and games. Rahul's teacher, Mrs. Gupta, also recognizes his abilities and gives him advanced math assignments. Rahul's friends are amazed by his problem -solving skills and often ask for his help.





**Q-16**

**Rahul's mathematical abilities are most likely due to an interaction between\_\_\_\_\_**

-  Heredity and environment
-  Discipline and nutrition
-  Health and growth
-  Education and discipline





**Q-17**

**Which factor has the least influence on Rahul's math skills?**

-  His parents' guidance
-  His teacher's support
-  His genetic predisposition
-  His nutrition and diet

**Q-18**

**Rahul's exceptional abilities are an example of\_\_\_\_\_**

-  Nature vs. nurture debate
-  Importance of education
-  Power of discipline
-  Impact of nutrition

**Q-19**

**What is the most likely reason for Rahul's friends seeking his help?**



His athletic skills



His artistic talents



His problem-solving abilities



His language skills

**Q-20**

**Copper is used for making electrical wires. Which of the following properties of copper are responsible for the same?**

- (i) High thermal conductivity**
- (ii) High electrical conductivity**
- (iii) High melting point**
- (iv) High tensile strength**



(i) High thermal conductivity and (ii) High electrical conductivity



(ii) High electrical conductivity and (iv) High tensile strength



(i) High thermal conductivity and (iii) High melting point



(iii) High melting point and (iv) High tensile strength

**Q-21**

A group of biology students designed an experiment to investigate the effect of light intensity on plant growth. They planted identical seeds in different trays and placed them under different light sources with varying intensities: 100 watts, 50 watts, and 25 watts. After two weeks, they measured the height of the plants. Which question can the students' experiment best answer?



A Do plants grow faster in darker conditions?



B Does the intensity of light affect plant growth?



C Do plants grow taller in warmer temperatures?



D Is water essential for plant growth?

**Q-22**

Maria compared the strength of different adhesives by applying equal amounts of each to separate pieces of fabric and attaching them to a surface. She then measured the weight required to detach the fabric from the surface. Maria repeated this process for five different adhesives and compared the average weight required to detach the fabric for each adhesive. Which question can Maria's experiment best answer?



A Which adhesive dries the fastest?



B Which adhesive is the most expensive?



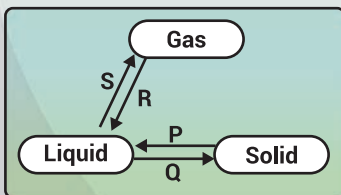
C Which adhesive is the strongest?



D Which adhesive is the easiest to apply?

**Q-23**

Which of the following labelled arrows in the given figure represents the process of evaporation?



P



Q



R



S

**Q-24**

Which of the following option will replace 'X' and T in the table.

Plants (aquatic)	Lily	'X'
Desert plant	Cactus	Opuntia
Herb	'Y'	Coriander



X = Lotus, Y = Banyan



X = Rose, Y = Mint



X = Lotus, Y = Mint



X = Opuntia, Y = Cotton

**Q-25**

The following diagrams show a battery and bulb connected by wires to various materials. Which of the bulb will lights?



Bulb 1



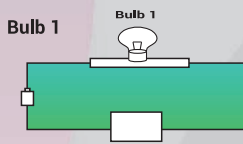
Bulb 2



Bulb 3



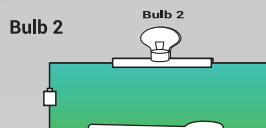
Bulb 4



ALUMINUM FOIL



BRASS KEY



PLASTIC SPOON



AIR

**Q-26**

Approximately how long ago is it believed that the giant impact event leading to the Moon's formation occurred?



4.5 billion years ago



3.5 billion years ago



2.5 billion years ago



1.5 billion years ago

**Q-27**

Ahmed and Ali were given one mirror each by their teacher. Ahmed found his image to be erect and of the same size whereas Ali found his image erect and smaller in size. This means that the mirrors of Ahmed and Ali are respectively



plane mirror and concave mirror



concave mirror and convex mirror



plane mirror and convex mirror



convex mirror and plane mirror

**Read the story and answer questions 28 to 30**

The city's stormwater management team is designing a new flood protection system for the downtown area. They need to choose the right material for the flood gates to ensure they can withstand the water pressure and last for many years. The team leader, Amna, consults with the engineering team and receives the following email:

**Subject: Flood Gate Material Options****Dear Amna,****We've shortlisted three materials for the flood gates:**

1. Aluminum: Lightweight, corrosion resistant, but may not be strong enough for extreme water pressure.
2. Steel: Strong and durable, but may rust and require frequent maintenance.
3. Fiberglass: Resistant to corrosion and water damage, but may be more expensive than the other options.

Best,

Engineering Team

**Q-28****Which material is resistant to both corrosion and water damage?**

Aluminum



Steel



Fiberglass



None of the above



**Q-29**

**What is the main advantage of using fiberglass for the flood gates?**



It is the cheapest option



It is the strongest material



It is resistant to corrosion and water damage



It is the lightest material

**Q-30**

**What is the benefit of using lightweight materials for the flood gates?**



They are stronger



They are cheaper



They are easier to install



They are more durable

# EDUCATIONAL LEADERSHIP

# AWARDS 2024

## *FSP Mathematics Contest*

### INTERNATIONAL FSP CONTESTS

Inst Head Name	Job Title	Institution Name	City
Ms. Noureen Lakhani	Principal	Sultan Mahomed Shah Aga Khan School	Karachi
Ms. Yasmin Naeem	Principal	Lahore Grammar School	Lahore
Ms. Rabia Rehan	Principal	Beaconhouse Newlands	Multan
Ms. Naureen Mansoor	Principal	Sun Academy	Karachi
Ms. Rida Maqsood	Campus Head	The City School Jhang Sr.	Jhang
Ms. Rubina Pervaiz	Principal	Aga Khan School	Hafizabad
Lt Col Mehmmod Shah (Retd)	Principal	Fauji Foundation Model School - Shakargarh	Shakargarh
Mr. Amjad Qureshi	Principal	APSAC Zamzama Senior	Nowshera

Ms. Aisha Karim	Vice Principal	The City School Gulshan E Hadeed Campus	Karachi
Lt. Col Muhammad Habib Khan	Principal	Fauji Foundation Model School - Thorar	Rawalakot
Ms. Noureen Saleem Lakhani	Principal	Sultan Mahomed Shah Aga Khan School - Afternoon Shift	Karachi
Mr. Irshad Barkat	Principal	Beaconhouse School System	Lahore
Ms. Shahida Jamal Khan	Principal	HITEC Pre School	Taxila

# ANSWER SHEET

## GRADE 7 & 8

Q.NO ANSWER

- 1 (A) (B) (C) ●  
2 (A) ● (C) (D)  
3 ● (B) (C) (D)  
4 (A) (B) (C) ●  
5 (A) ● (C) (D)  
6 (A) (B) ● (D)  
7 (A) ● (C) (D)  
8 (A) (B) (C) ●  
9 (A) (B) ● (D)  
10 (A) ● (C) (D)  
11 (A) ● (C) (D)  
12 (A) ● (C) (D)  
13 (A) ● (C) (D)  
14 (A) (B) (C) ●  
15 ● (B) (C) (D)

Q.NO ANSWER

- 16 ● (B) (C) (D)  
17 (A) (B) (C) ●  
18 ● (B) (C) (D)  
19 (A) (B) ● (D)  
20 ● (B) (C) (D)  
21 (A) ● (C) (D)  
22 (A) (B) ● (D)  
23 (A) (B) (C) ●  
24 (A) (B) ● (D)  
25 (A) (B) ● (D)  
26 ● (B) (C) (D)  
27 (A) (B) ● (D)  
28 (A) (B) ● (D)  
29 (A) (B) ● (D)  
30 (A) (B) ● (D)



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