

FSP SCIENCE CONTEST

QUESTION BOOKLET

GRADE 7 & 8

VIBRANT YOUNGSTERS

TIME ALLOWED: 90 Minutes

MAXIMUM MARKS: 90



FAMOUS STUDENTS PLATFORM

INSTRUCTIONS

- 1) DON'T START ATTEMPTING THE PAPER UNTIL INSTRUCTED BY THE INVIGILATOR.
- 2) INSTRUCTIONS FROM THE EXAMINATION INVIGILATOR MUST BE CARRIED OUT PROMPTLY.
- 3) CAREFULLY RECHECK YOUR NAME, FATHER NAME, SCHOOL NAME, ADDRESS ETC AT THE BUBBLE SHEET / ANSWER SHEET.
- 4) RECORD ALL ANSWERS ON THE BUBBLE SHEET ONLY. SELECT BEST ANSWER FROM THE FOUR GIVEN OPTIONS AND MARK ONLY ONE OPTION IN EACH QUESTION.
- 5) USE BLUE / BLACK INK TO FILL UP THE CIRCLES FOR YOUR ANSWERS ON THE BUBBLE SHEET.
 USE OF LEAD PENCIL IS NOT ALLOWED.
- 6) USE OF ANY HELPING MATERIAL INCLUDING CELL PHONES AND ELECTRONIC DEVICES IS STRICTLY PROHIBITED.
- 7) EVERY CORRECT ANSWER EARNS THREE POINTS. THERE WOULD BE NEGATIVE MARKING.
 ONE POINT WOULD BE DEDUCTED FOR EVERY INCORRECT ANSWER.
- 8) CANDIDATES MAY NOT LEAVE THE EXAMINATION ROOM UNESCORTED FOR ANY REASON, AND THIS INCLUDES USING THE WASHROOM.
- 9) NO MATERIALS OR ELECTRONIC DEVICES SHALL BE BROUGHT IN TO THE ROOM.
- 10) THERE ARE FIVE CATEGORIES OF THE CONTEST AS UNDER:
- A) VIBRANT YOUNGSTERS (GRADE I & 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)
- 11) ONLY REGISTERED STUDENTS CAN PARTICIPATE IN THE CONTEST.
- 12) NO CANDIDATE SHALL TAKE OUT OF THE HALL ANY ANSWER BOOK(S) OR PART OF AN ANSWER BOOK, WHETHER USED OR UNUSED, OR OTHER SUPPLIED MATERIAL.
- 13) IF A PARTICIPANT DOES NOT UNDERSTAND A WORD OR PHRASE ON THE EXAM PAPER, NEITHER EXAMINER NOR INVIGILATOR IS PERMITTED TO ANSWER.
- 14) FOR INFORMATION ABOUT UPCOMING CONTESTS OR PROVIDING VALUABLE FEEDBACK, PLEASE VISIT <u>WWW.FSPCOMPETITIONS.ORG</u>
- 15) ANY ACADEMIC MISCONDUCT OR MALPRACTICE MUST BE REPORTED TO FSP VIBRANT YOUNGSTERS AT INFO@FSPCOMPETITIONS.ORG

How to Develop interest in Science?

Effective teaching methodologies can spark an interest in exploring different avenues in science. Lecture, chalk & talk approach will not motivate students to take up Sciences as their major subject for specialization. If, the teacher removes the apprehension of failure and inculcates the habit of exploring without the stress of obtaining success then studying science becomes fun and interesting. Students are therefore trained to look at failures as learning experiences which leads to study in depth approach rather than surface study. It is at the Nursery level that natural curiosity is developed and as the child acquires skills, they can explore ideas to do research in issues of local & global significance.

Stories, telling them stories of scientific discoveries and adventures will also create interest in science. Videos in school complementing the topics taught in class have a great impact too. TV Channels needs to focus on scientific programs encouraging young people to come forward with new projects and proposals. To practice and apply their new learning students should be given the option of Computer Based Simulations. An appropriate level of challenge is given and the student has to apply all the skills learnt in theory. So, for Chemistry, Physics & Biology practical are not only limited to setting up apparatus in labs & testing materials or using the microscope. The simulation is like a game/quiz or puzzle to be solved within a certain time frame. Problem Based Learning (PBL) is another approach that stimulates a thought process and then students quench the thirst of knowledge by seeking awareness from different sources. The burden lies on school Academic coordinators in preparing the activities, to keep challenging students to come up with their own solution either alone or in groups.

Activity Based Learning (ABL) shifts the role of the teacher from passively imparting information and students merely rote learning to actively engaging everyone in getting the task done by using basic knowledge and then reasoning and devising a strategy to achieve a result.

Later, reflection on what went right and what could be done differently. The young future scientists show the qualities of bring independent brave, risk takers, who have the spirit to creatively process new information and venture out and question the unknown.

By: Dr. Uzma Shakir Vice Principal, The Intellect School, Karachi.



www.fspcompetitions.org

Q.1) People can use the engineering-design process to develop solutions to problems. One step in the process is testing if a potential solution meets the requirements of the design.

The passage below describes how the engineering-design process was used to test a solution to a problem. Read the passage. Then answer the question below.



Ian was an engineer at a water treatment plant. At the plant, an expensive filter was used to remove disease-causing bacteria from the water. But over time, the filter would become clogged with bacteria. If the filter became clogged, the water would not move through quickly enough. Ian had to decide when the filter was too clogged and needed to be replaced. So, during his inspection, Ian checked the filter by measuring how quickly water moved through it.

Which of the following could lan's test show?

- A Whether the Filter was clogged.
- B The amount of bacteria in the water before it was filtered.
- C Whether an inexpensive filter would become clogged more often.
- All of the above.



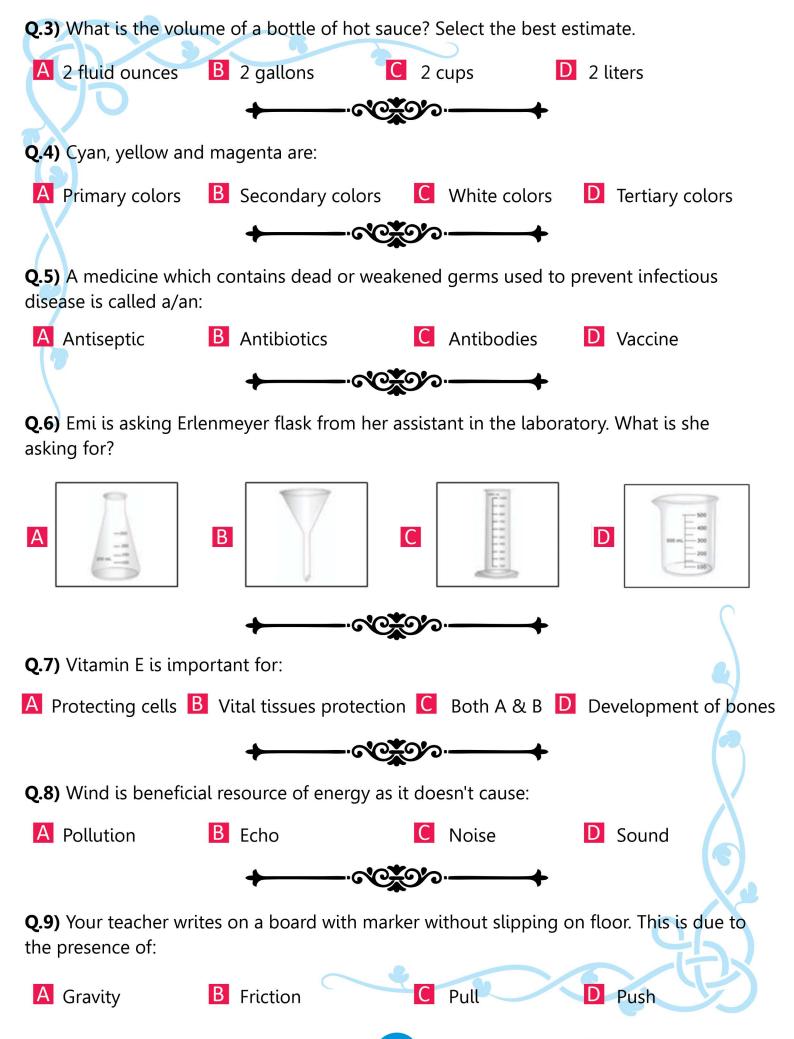
- **Q.2)** Livy, who works for a solar power company, was designing solar panels for houses. She wanted each individual solar panel to meet two requirements:
- **Requirement 1:** The solar panel had to be no larger than 1.65 square meters.
- Requirement 2: The solar panel had to generate more than 200 watt-hours of energy in direct sunlight.

Livy designed and tested three solar panel prototypes. Her results are shown below.

Design	Area (m²)	Energy generated in direct sunlight (Wh)
Α	1.66	180
В	1.65	265
С	1.61	200

Which design met the both requirements?

- A Design A
- B Design B
- C Design C
- None of these



Q.10) Olivia is outside with her friend on a sunny day. Olivia is wearing a light-colored shirt, and she notices that she feels colder than her friend, who is wearing a dark shirt. She wonders what factors affect how fabric warms an object. So, she decides to design an experiment. She has the following supplies available:

- A black cotton shirt
- A white cotton shirt
- Two identical empty glass jars
- Two thermometers

Using only these supplies, which question can Olivia investigate with an experiment?

- When placed in the sun, does a glass jar wrapped in cotton heat up more than a glass jar wrapped in wool?
- B When wrapped in a cotton shirt and placed in the sun, does a large jar or a small jar heat up more?
- When placed in the sun, does a glass jar wrapped in a black cotton shirt heat up more than a glass jar wrapped in a white cotton shirt?
- All of the above.



Q.11) The dead sea is full of:

A Sand

B Salt

Minerals

D Shells



Q.12) What do these two changes have in common?

- Firing a clay pot in hot kiln.
- A banana getting ripe on the counter.
 - A Both are only physical changes.
 - B Both are caused by heating.
 - Both are chemical changes.
 - D Both are caused by cooling.



Q.13) Diseases which are caused by micro-organisms are called:

A Contagious

B Infectious

Venereal

D Incurable

Q.14) This is a piece of pumice. Do you see the hollow gaps in this piece of rock? The gaps come from air and water bubbles that became trapped while the rock was forming. Pumice is usually formed near volcanoes. Sometimes, the lava in a volcano can cool very quickly. Pumice forms when the lava traps air and water bubbles as it cools.

What type of rock is pumice?

- A Metamorphic
- **B** Igneous
- Sedimentary
- None of the above





- **Q.15)** An explorer walks into a lab in a science building. She has a compass in her hand and finds that the south pole of her compass points toward the room's East wall when she is nearer that wall and toward the west wall when she is nearer that wall. You could explain this if magnetized metal had been installed in the East and West walls with North poles pointing into the room. If no magnetic material was installed in the North or South walls of the room, she would expect that:
 - A The south pole of the compass would tend to point toward those walls.
 - B The north pole of the compass would tend to point toward those walls.
 - The compass needle would not point in any particular direction.
 - The north pole of the compass needle would tend to point toward the centers of those walls, but the south pole would tend to point toward the sides of those walls.



Q.16) Limestones are very rich in:

- A Calcium B Calcium carbonate C Carbonate D Magnesium carbonate
- Q.17) Water in freezing form may break the rocks into pieces by force of:
 - A Reduction B Expansion C Evaporation D Condensation

Q.18) The passage below describes how the engineering-design process was used to test a solution to a problem. Read the passage. Then answer the question below.



Lexi was creating a costume that would light up with white and green lights. She wanted to use as many lights as possible. The lights would be powered by a battery pack, so she needed to know how many lights she could connect to the battery pack. If she connected too many lights to the battery pack, then all the lights would be dim. So, Lexi connected white lights one by one until they started to dim. Then, she counted how many white lights she had connected.

Which of the following could Lexi's test show?

- A How many white lights she could attach to a battery pack without causing the lights to dim.
- B How long a battery pack would last before the lights dimmed.
- If a battery pack could power more green lights than white lights.
- D All of the above.



Q.19) The passage below describes an experiment. Read the passage and then follow the instructions below.

Jeffery divided 40 unripe bananas evenly among eight paper bags and sealed the bags. He poked 20 small holes in four of the bags and left the other four without holes. He kept the bags at room temperature for three days. Then, Jeffery opened the bags & counted the number of brown spots on each banana. He compared the average number of brown spots on bananas from bags with holes to the average number of brown spots on bananas from bags without holes.

Identify the question the Jeffery's experiment can best answer.

- A Do bananas develop more brown spots when they are kept at room temperature compared to in a cold refrigerator?
- **B** Do bananas develop more brown spots if they are kept in bags with holes compared to bags without holes?
- Both of the above.

None of the above.



Q.20) Mr. Ali is pushing a heavy table but finding it very difficult.. The force of friction can be reduced by the help of.

- A Ball bearing
- **B** Lubricants
- Cushion surfaces
- All of them

Q.21) The tallest sand dunes in North America are in Colorado. In this desert region, the top few inches of sand are usually dry, but the lower layers remain moist year-round. Ord's kangaroo rats spend their entire lives in these dunes. They collect seeds from grasses and prairie sunflowers, and then bury the seeds in the moist layers of sand. Later, the rats come back to eat their buried seeds. The seeds absorb enough moisture from the sand that the kangaroo rats never need to drink water!



- A The grasses and the prairie sunflowers.
- B The Ord's kangaroo rats.
- The grasses, the water and the sand dunes.
- All of the above.



Q.22) Read the text about an object in motion:

Complete the statement. Assume that the motorcycle's mass did not change. The gravitational potential energy stored between the motorcycle and Earth as Preston rode up the hill.

- A Increased B Decreased
- C Stayed the same D First increased then decreased



- Q.23) A dangerous activity which results in many deaths due to gas explosion in caves is:
- B Climbing mountain C Extracting oil D Hydropower generation A Coal mining



- Q.24) Which one of the following is the smallest bird?
 - A Bee humming bird
- **B** Penguin
- Ostrich
- All of these

Q.25) Jane was designing small aircraft called drone to pick up items from warehouse shelves. He knew that the drones' propeller blades would get damaged if they bumped into anything while flying through the warehouse. So, Jane wanted to add blade guards to protect the propeller blades. The guards had to be sturdy so they would not break in a crash. But he thought that if the guards weighed too much, the drones would not fly well. So, Jane put guards made of lightweight metal on one drone. Then he observed how well the drone flew with the guards.



Which of the following could Jane's test show?

- A How much the drone weighted with blade guards?
- B If the blade guards would break in a crash.
- C If adding the blade guards made the drone fly poorly.
- None of the above.



- **Q.26)** Hannah has a garden that is sometimes visited by deer. She notices that the deer eat some plants in her garden more than others. She wonders what factors affect which plants the deer eat. So, she decides to design an experiment. She has the following supplies available:
- A garlic spray used to keep garden pests away
- Four tomato plants
- Four bean plants

Using only these supplies, which question can Hannah investigate with an experiment?

- A Do the deer eat fewer leaves from bean plants sprayed with garlic spray than from unsprayed bean plants?
- B Do the deer eat more leaves from tomato plants or from squash plants?
- Do the deer eat fewer leaves from bean plants sprayed with coffee spray than from unsprayed bean plants?
- D All of the above.

Q.27) According the following text, what evidence of a volcanic eruption did the captain observe?

Before sunrise on November 14, 1963, the crew of the fishing boat Isleifur II had just finished putting their lines in the ocean off the southern coast of Iceland. As the crew waited to have breakfast, a strong smell of sulfur drifted over the boat. At first, crew members thought that the cook had burned the eggs or that something was wrong with the boat's engine. But when the sun started to rise, the crew saw black smoke billowing from the water a few kilometers away.

The captain of the Isleifur II assumed the smoke was coming from a boat that was on fire, so he sailed closer to try to help. As the Isleifur II approached the smoke, the surface of the sea grew rough. The captain and crew saw flashes of lightning in the column of smoke and glowing pieces of molten rock shooting up out of the water. The captain realized this was not a burning boat. It was a volcano erupting under the water!



The erupting undersea volcano seen by the sailors on the Isleifur II

- 1. He heard a report on the radio warning about a volcanic eruption.
- 2. He smelled sulfur and then realized it was not coming from his boat.
- 3. He saw pieces of molten rock shooting out of the water.
- 4. He knew his crew had finished putting their fishing lines in the ocean.

A 1 & 2

B 2&3

C 3 & 4

D 1 to 4



Q.28) A food chain is a model that shows how the matter eaten by organisms moves through an ecosystem. Below is a food chain from the River Frome, a freshwater ecosystem in England.

Use the information in the food chain to fill in the blank below.

(Next Page)

Matter first enters this food chain when the using photosynthesis.

makes its own food

Α







Midge larva

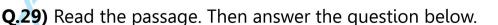




Brown trout



Great cormorant





In a tide pool in California, California mussels live up high on the rocks. They are only submerged during high tide, when the water level is the highest.

Giant green anemones and ochre sea stars live lower in the tide pool. They are submerged during high tide but exposed to air during low tide, when most water drains out of the tide pool.

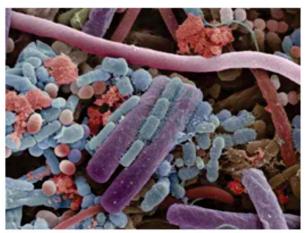
Species such as red octopuses and fluff y sculpin fish must stay underwater at all times. So, they swim in parts of the tide pool that are underwater even at low tide.

Which of the following best describes an ecosystem in a California tide pool?

- A The rocks, the salt water and the California mussels
- B The giant green anemones, the ochre sea stars and the red octopuses
- A school of fluffy sculpins
- D All of the above.



Q.30) Read the passage. Then answer the question below.



The human body is home to trillions of microscopic bacteria, viruses, fungi and parasites. These microscopic organisms are a normal part of healthy human bodies. Many of these microscopic organisms help our bodies stay healthy, but some can cause disease.

Distinct groups of microscopic organisms live in diff erent parts of our bodies. For example, the bacteria species *E. coli* is found in human intestines. Golden staph is a species of bacteria that lives on our skin. Our mouths contain many species of bacteria, including types of Streptococcus.

(Next Page)

Which of the following best describes a population in the human body?

- A The different microscopic organisms in the mouth
- B The bacteria, the fungi and the viruses on the skin
- **©** E. coli bacteria in the intestines
- D All of the above.





ANSWER SHEET

INSTRUCTIONS:

- This is a generic answer sheet to be used by participants of all grades. Students of Grade 1-2 will fill in circles of first 20 questions. Grade 3-4 will fill in circles of 25 questions & Grade 5-10 will fill in circles of 30 questions.
- Please recheck your Name, Father Name, Garde & School written below, the same would appear at your certificate.
- Use of lead pencil is not allowed.
- Use only Black / Blue ink to fill in the circles.

Choose only ONE of the FOUR proposed answers (A,B,C or D) & fill in the circles with your answer.

Example of correctly filled table of answers.







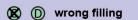


O Correct Filling Answer "C"











(D) wrong filling





wrong filling



BC D wrong filling

Q. No.

1

2

4

5

Answer







Answer

17

18

19

















(D)



















(D)

(D)





7

8





(B)

















(D)

(D)

(D)



10

11

12



























(B)









Q. No.

16









(C)



(D)

(D)

20

21

22





B

(B)

B



(C)



23









24









26

27

28

29

25





(B)





13

















B

B







15

14













30









EDUCATIONAL LEADERSHIP & HIGH ACHIEVER AWARDS

FSP MC (VOL-7) 2022 OUR EDUCATIONISTS OUR PRIDE

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Congratulations



FAMOUS STUDENTS PLATFORM

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