

FSP SCIENCE CONTEST

QUESTION BOOKLET

GRADE 9 & 10

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



Bahria Foundation College Attock

What is Science?

Science is a systematic enterprise that builds and organise knowledge in the form of testable explanations and predictions about the universe. Science is the intellectual and practical activity encompassing the systematic study of the structure and behaviour of the physical and natural world through observation and experiment.

How to develop interest in Science?

We can develop the interest of students in science by making our teaching Activity Based. Instead of teaching them the way that the students imagine everything in science which can make all boring for them, it is better to teach them practically, through experiments through models, show them videos. For example if we cannot show them the actual shape of atom we can show them animated videos on atom which can easily make them understand the real structure of atom. Similarly for types of reactions we should show them the reactions practically and show them videos about different types of reactions. They can use different apparatus like microscope, beakers, cylinders, balance, etc for better understanding. We can arrange for them the science camps where they will be able to learn from their peers. We can arrange visits of Natural History Museum or Science Centre for them to understand the science.



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1 0 0 % H o w get Marks? If the concept is clear and teaching was done in the way that concepts are clear then students can easily get 100% marks and we can make the concept clear only by Activity Based Teaching that will be students' centred not teachers' centred. Instead of making them imaginative it is better to make them practical that what they learnt they practice in the lab under the supervision of their teachers. To get 100% marks they should do some example problems, they should go through some flash cards, they can make a concept map from memory, they should try to explain the materials in simple terms, they should remember concepts with mnemonics devices, they should take practice quizzes, they should rewrite notes in their own words, they should read and summarize textbook chapters.

Future of Scientists:

What does it take to be a successful scientist in the modern world? The obvious answers are deep knowledge of a discipline and mastery of the scientific methods. But there are other key requirements, such as the ability to think critically and solve problems creatively and collaboratively. Communication skills are a must and mastery of modern technology helps. For generation, classes in science, technology, engineering, and maths (STEM) have been focussed almost exclusively on building knowledge alone. A steady diet of lecture based learning was designed to fill students up with facts and test their ability to memorize them. Teaching the other skills was too often given short shrift. Now educators and education researchers are calling for change. They argue that creative thinking, problem solving, motivation, persistence and other twenty first century skills can and should be taught and fostered through well-designed courses. Developing these skills enhances students' ability to master and retain knowledge; many hope that focussing on them will help to curb the alarming rate at which students interested in STEM abandon the subjects. Future of Scientists is very bright if they believe in research work and help on working on new projects and keep on finding the ways to make life on earth more easy, secure, and healthy.



By: Ms. Nabeela Shaheen Principal Bahria Foundation College Attock **Q.1)** Gary is washing dishes after cooking his dinner. He notices that some of the dishes still feel oily after being washed. He wonders what factors affect how clean dishes are after they are washed. So, he decides to design an experiment. He has the following supplies available:

- A sponge
- Liquid dish detergent
- A bar of soap
- Hot water
- Cold water
- A pile of dirty dishes

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

- Are dishes cleaner when washed with liquid dish detergent or with bar soap?
- B Are dishes cleaner when washed with a soapy sponge or with a soapy rag?
- Are dishes washed in a dishwasher cleaner than dishes washed by hand?
- D All of the above.



Q.2) 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.

Logan was a landscape architect who was hired to design a new city park. The city council wanted the park to have space for outdoor concerts and to have at least 20% of the park shaded by trees. Logan thought the concert area should be at least 150 meters from the road so that traffic noise didn't interrupt the music. He developed three possible designs for the park with the concert area in a different location in each design. Then, he tested each design by measuring the distance between the road and the concert area.

Which of the following could Logan's test show?

- A Which design would have the greatest distance between the concert area and the road.
- B If at least 20% of the park would be shaded by trees in each design.
- Which design would have the least traffic noise in the concert area.
- All of the above.

- Q.3) What do these two changes have in common?
 - Dew appearing on grass in the morning
 - An iceberg melting slowly
 - A Both are only physical changes.
- **B** Both are chemical changes.
- Both are caused by heating.
- **D** Both are caused by cooling.



- **Q.4)** The name of the mosquito which is responsible for transmitting dengue fever is.
 - Culex mosquito B Aedes C Anopheles mosquito D None of above
- **Q.5)** The table shows data about how the temperature of each cake changed over 5 minutes.

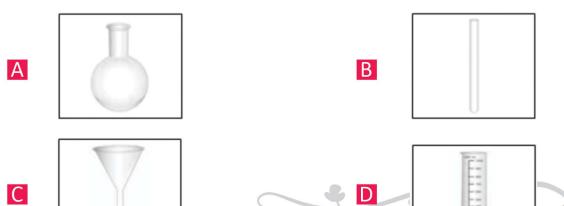
Cake	Initial temperature (°C)	Final temperature (°C)	
Cake on the plate	91	81	
Cake in the pan	91	83	

Which statement is correct?

- A Thermal energy was transferred more quickly out of the cake on the plate.
- B Thermal energy was transferred more quickly out of the cake in the pan.
- C Thermal energy was transferred out of the both cakes at the same rate.
- D None of the above.



Q.6) Ali needs a test tube for his experiment in the lab. Which of the following he needs?



Q.7) The passage below describes an experiment. Read the passage and then follow the instructions below.



a catapult for launching ping pong balls

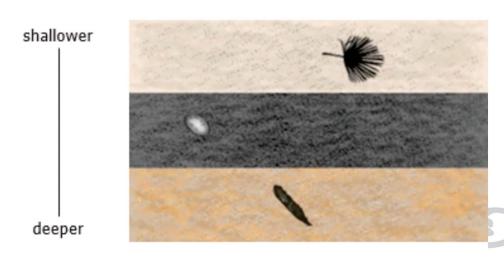
Gary placed a ping pong ball in a catapult, pulled the catapult's arm back to a 45° angle, and launched the ball. Then, Gary launched another ping pong ball, this time pulling the catapult's arm back to a 30° angle. With each launch, his friend Lamar measured the distance between the catapult and the place where the ball hit the ground. Gary and Lamar repeated the launches with ping pong balls in four more identical catapults. They compared the distances the balls traveled when launched from a 45° angle to the distances the balls traveled when launched from a 30° angle.

Identify the question that Gary and Lamar's experiment can best answer.

- Do ping pong balls travel farther when launched from a 30° angle compared to a 45° angle?
- Do ping pong balls stop rolling along the ground sooner after being launched from a 30° angle or a 45° angle?
- Both of the above
- D None of the above.



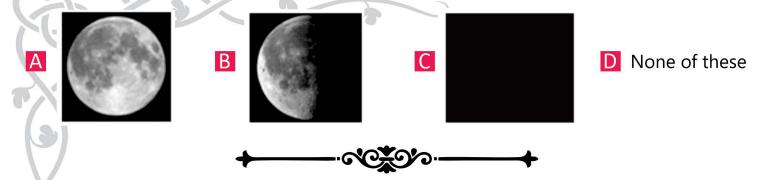
Q.8) This diagram shows fossils in an undisturbed sedimentary rock sequence.



(Next Page)

Which of the following fossils is older? Select the more likely answer. A None of the above. **Q.9)** How long is a paintbrush? Select the best estimate. C 12 yards A 12 inches B 12 feet D 12 miles **Q.10)** Although solar energy is safe, free of pollution and freely available but it is difficult to: C Store A Harness **B** Conserve Transfer **Q.11)** Coal, crude, petroleum and natural gas are examples of: A Elements Compounds B Man made fuels Fossils fuel Q.12) The kind of theory in which testing goes on by suggesting new hypotheses is classified as: A Productive theory B Deductive theory C Observatory theory D Reductive theory Q.13) The model below shows the Moon at one position in its orbit around Earth. The white half of the moon represents the part of the Moon that is lit up by the Sun:

Select the phase of the Moon shown in the model.



Q.14) Aisha notices that her cell phone charges more quickly sometimes and more slowly other times. She wonders what factors affect how quickly a phone charges. So, she decides to design an experiment. She has the following supplies available:

- One cell phone
- A two-foot-long charging cable
- A five-foot-long charging cable
- A stopwatch
- A wall outlet

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

- A Does a cell phone charge faster when plugged into a wall outlet or into a computer?
- **B** Does a tablet charge faster with a two-foot-long charging cable or a five-foot-long charging cable?
- Does a cell phone charge more quickly when it is turned on or when it is turned off?
- All of the above.



Q.15) Read the following passage and think about the evidence that kinetic energy, chemical potential energy, and thermal energy changed.

Ellen biked in a straight line along the street. Then, to avoid the sun, she moved over to ride under the shade of some trees. But as she pedaled faster and sped up, Ellen started to feel hot even in the shade.

Consider the following claim:

While Ellen was pedaling, chemical potential energy was converted to both kinetic energy and thermal energy.

Which piece of evidence best supports the claim?

- A The sun was bright during Ellen's bike ride, but Ellen rode in the shade.
- B Ellen first rode in a straight line, and then she turned.
- C Ellen used her muscles to move faster, and the effort made her hot.
- D None of the above.

Q.16) Tyrone was hired by the city council to design a new park with space for outdoor concerts. The city council had two requirements:

- Requirement 1: The park had to have between 2 and 3 kilometers of walking trails.
- Requirement 2: The concert space had to be more than 150 meters away from the road.

Tyrone designed and measured three models of the park. His results are shown below.

Design	Length of walking trails (kilometers)	Distance between concert space and road (meters)	
Α	2.5	152	
В	2.8	146	
С	3.2	149	

Which of the following designs meets both of the requirements?

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



Q.17) Consider the following force: A hockey stick is pushing on a hockey puck.

According to Newton's third law, what other force must be happening?

- A The hockey puck is pushing on the hockey stick.
- B The hockey puck is pulling on the hockey stick.
- C Both of the above.
- D None of the above.



Q.18) All organisms need food for energy. But how does an organism's body actually get energy out of food? Read the following passage to answer.

Food supplies an organism with many small, energy-rich molecules. These molecules are taken in by the organism's cells. Inside cells, the molecules from food are broken down to release energy that cells can use. This energy powers cell processes that allow the entire organism to grow and live.

- 1. Molecules from food can provide energy to cells.
- 2. Breaking down molecules can release energy.
- 3. Cells use energy to promote the organism's growth.
- 4. Cells usually take in large food molecules.

Which of the above statements are true?

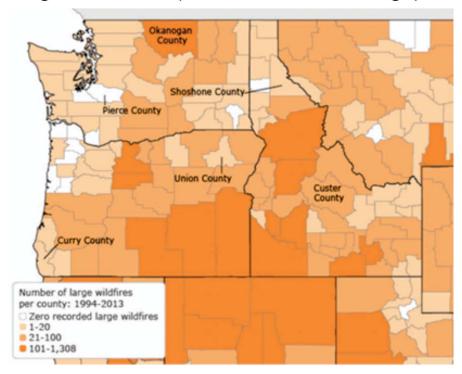
- A 1 & 2
- B 2&3
- C 3 & 4
- **D** 1, 2 & 3

Q.19) The energy of running water is exploited to run turbines in:

A Hydroelectric power stations B Railway stations C Oceans D Rural area



Q.20) Read the passage below the map and answer the following question.



Source: Federal Emergency Management Agency

Scientists make hazard maps for many different types of natural hazards. The map shows data about wildfires, which are unplanned fires burning in wilderness areas. This map shows wildfire data for each county in one region of the United States.

Based on the given map, which statement is true?

- A Between 1994 and 2013, Custer County had fewer large wildfires than Okanogan County.
- B Between 1994 and 2013, Pierce County had more large wildfires than Curry County.
- Between 1994 and 2013, Shoshone County and Union County had the exact same number of large wildfires.
- D The number of wildfires in all the countries was same.



Q.21) Bowl shaped depressions due to cutting of mountain walls by glacier are called:

A Horns B Cirques C Arties

D Hanging valleys

Q.22) The passage on the next page describes an experiment. Read the passage and think about the variables that are described.



Glasses of cola with ice

Emmy's brother thought that crushed ice would keep his soda cooler than whole ice cubes. To test this idea, Emmy divided a large bottle of soda equally among six glasses. Emmy added five whole ice cubes to each of the first three glasses while her brother crushed five ice cubes into small pieces before adding them to each of the other three glasses. Ten minutes after all the ice had been added to the glasses, Emmy used a thermometer to measure the temperature of the soda in each glass.

Which of the following was an independent variable in this experiment?

- A The temperature of the soda
- B The size of the ice pieces
- Both are independent variables
- None is independent variable



Q.23) What is the temperature of a warm swimming pool? Select the best estimate?

A 129°C

B -129°C

C 29°C

D 29°F



Q.24) Read the text. Then answer the question on the next page.



Earth is surrounded by a layer of gases called the atmosphere. These gases make up the atmosphere sustain life on Earth. Living organisms take in and release some of these gases. Gases in the atmosphere also help insulate Earth from extreme temperatures and block some harmful forms of sunlight.

(Next Page)

Earth's organisms rely on the atmosphere for which of the following?

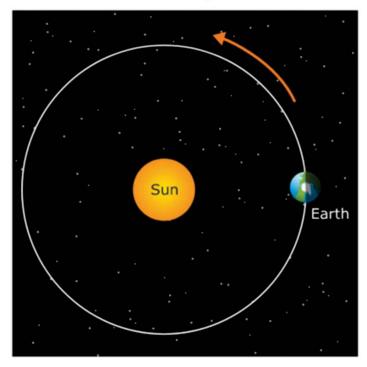
- (1) Stable temperatures
- (2) Oxygen
- (3) Carbon dioxide
- (4) Sunlight

- A 1 & 2
- B 2&3
- C 3&4
- **D** 1, 2 & 3



Q.25) Complete the following sentence after reading the passage below.

The Sun gives off light, which is a form of energy. A constant amount of sunlight travels away from the Sun at all times. The sunlight travels in straight lines in all directions. The model below shows the shape of Earth's orbit around the Sun. Earth is shown at one point in its orbit during the month of December.



The total amount of sunlight that approaches Earth is about _____ in June as in December.

A The same

B Twice as much

C Half as much

Four times



Q.26) Which of the following are characteristics of tropical coral reefs?

- A tropical coral reef is a type of ecosystem in the ocean. Tropical coral reefs are found in warm, shallow water near the equator. They have many large formations called corals.
- Corals may look like rocks or plants, but they are actually structures made up of living animals and can grow over time.
- Corals provide shelter for fish, crabs, eels, and many other organisms. These coral reef organisms are prey for larger animals, such as sea turtles, sharks, and dolphins. Most of these organisms need tropical coral reefs in order to survive and reproduce.

(Next Page)



A tropical coral reef

Several types of corals

- 1. They are usually found in the deep ocean.
- 2. They are used by many diff erent organisms.
- 3. They have warm, salty water.
- 4. They have many large rocks called corals.

A 1 & 2

B 1&3

C 2&3

None of the above



Q.27) Phases of appearance of moon are caused by the movement of moon around the:

A Sun

B Earth

Planets

D Stars



Q.28) Read the passage and look at the picture

- The Saharan Atlas, a mountain range in northern Africa, began to form millions of years ago as the Eurasian Plate and the African Plate moved toward each other. As the plates collided, the continental crust was forced upward to form tall mountains.
- Along the sides of the mountains in the Saharan Atlas, there are riverbeds called wadis. Wadis contain water only during wet seasons. The rest of the year, the river beds are dry.



Complete the Sentence.

The Saharan Altas formed at a ______b

boundary.

None of these

B Convergent

C Transform

- Q.29) The walls of left ventricle are thicker than the walls of right ventricle because:
 - A Blood reaches this ventricle with extra pressure
 - B It has to pump the blood to lungs
 - Blood reaches this ventricle in huge amount
 - D It has to pump blood to the whole body



Q.30) Read the passage below and answer the following question.

Meteorologists can make predictions about weather events. For example, the passage below describes how a meteorologist might use observations of Earth's atmosphere to predict a tornado event.



A tornado passing through a field

A meteorologist uses atmospheric maps to examine air masses, which are large areas of air in Earth's lower atmosphere. The meteorologist notices that an air mass with dry air is approaching an air mass with warm, moist air. In the same region, there are strong winds higher in the atmosphere. The meteorologist recognizes that this combination of air masses and winds in the region could lead to a tornado event.

- 1. Scientists can study air masses to predict weather events.
- 2. Some air masses contain dry air; other air masses contain moist air.
- 3. Meteorologists are scientists who study meteors.
- 4. Air masses cannot be used to predict weather events.

Which of the above statements are true?

A 1 & 2
B 1 & 3
C 2 & 3
D None of these

BEST OF LUCK!



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.





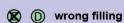


O Correct Filling Answer "C"





B



wrong filling





BC D wrong filling

(D) wrong filling

1

Q. No.









(D)

16

Answer

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2



B

(C)

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Answer

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(B)

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(B)

(B)





30

B

EDUCATIONAL LEADERSHIP & HIGH ACHIEVER AWARDS

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

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SYEDA AROOJ MURTAZA	PRINCIPAL	PCENS SCHOOL	RAWALPINDI
SYEDA NUZHAT SHABBIR	PRINCIPAL	GOVT. CENTRAL MODEL SCHOOL	LAHORE
MS. SAMREEN NADEEM	PRINCIPAL	LAHORE GRAMMAR SCHOOL CANAL CAMPUS	LAHORE
SYEDA SABIHA HAIDER	VICE PRINCIPAL	BAHRIA COLLEGE EAB-1 MAJEED CAMPUS	KARACHI
LT. COL. MUHAMMAD JAVAID RETI	D PRINCIPAL	FAUJI FOUNDATION SCHOOL	HARIPUR
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Congratulations



FAMOUS STUDENTS PLATFORM

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