



INTERNATIONAL CATS CONTESTS

COMPETENCE & APTITUDE TESTING SERVICES

FASTEST GROWING CONTESTS IN PAKISTAN



ICATS **SCIENCE**

CONTEST 2021

Question Booklet

GRADE 7 & 8

JUVENILES

Time Allowed: 90 Mins.

Maximum Marks: 90

ICATS SCIENCE CONTEST 2021

JUVENILES (GRADE 7 & 8)

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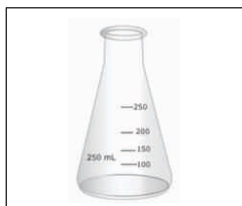
TOTAL QUESTIONS : 30 MCQS

INSTRUCTIONS

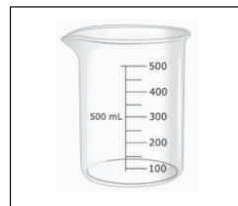
1. DON'T START ATTEMPTING THE PAPER UNTIL INSTRUCTED BY THE INVIGILATORS.
2. INSTRUCTIONS FROM THE EXAMINATION INVIGILATORS MUST BE CARRIED OUT PROMPTLY.
3. CAREFULLY RECHECK YOUR NAME, FATHER NAME, SCHOOL NAME, ADDRESS ETC AT THE BUBBLE SHEET / ANSWER SHEET.
4. RECORD ALL ANSWERS ON THE BUBBLE SHEET 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 INTO THE ROOM.
10. THERE ARE FIVE CATEGORIES OF THE CONTEST AS UNDER:
 - A. TODDLERS (GRADE 1 & 2)
 - B. KIDS (GRADE 3 & 4)
 - C. JUNIORS (GRADE 5 & 6)
 - D. JUVENILES (GRADE 7 & 8)
 - E. ADOLESCENTS (GRADE 9 & 10 / O-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 WWW.CATSCONTESTS.ORG
15. ANY ACADEMIC MISCONDUCT OR MALPRACTICE MUST BE REPORTED TO INTERNATIONAL CATS CONTESTS AT INFO@CATSCONTESTS.ORG

Q1. Emi is asking Erlenmeyer flask from her assistant in the laboratory. What is she asking for?

A



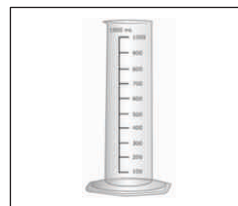
C



B



D



Q2. 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, Jeffrey opened the bags and 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 Jeffrey'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?

C | Both of the above.

D | None of the above.

Q3. 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?

A | 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?

C | 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?

D | All of the above.



Q4. 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.

C | Both are chemical changes.

D | Both are caused by cooling.

- Q5.** 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 Ian'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
- D** | all of the above



- Q6.** 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.
- C** | the compass needle would not point in any particular direction.
- D** | 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.

Q7. 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 (m ²)	Energy generated in direct sunlight (Wh)
A	1.66	180
B	1.65	265
C	1.61	200


Which design met the both requirements?

A | design A

B | design B

C | design C

D | none of these



Q8. Limestones are very rich in:

A | calcium

B | calcium carbonate

C | carbonate

D | magnesium carbonate



Q9. What is the volume of a bottle of hot sauce? Select the best estimate.

A | 2 fluid ounces

B | 2 gallons

C | 2 cups

D | 2 liters

Q10. 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
- C** | if a battery pack could power more green lights than white lights
- D** | All of the above



Q11. Cyan, yellow and magenta are:

- A** | primary colors
- B** | secondary colors
- C** | white colors
- D** | tertiary colors



Q12. Diseases which are caused by micro-organisms are called:

- A** | contagious
- B** | infectious
- C** | venereal
- D** | incurable

Q13. A medicine which contains dead or weakened germs used to prevent infectious disease is called a/an:

A | antiseptic

B | antibiotics

C | antibodies

D | vaccine



Q14. Water in freezing form may break the rocks into pieces by force of:

A | reduction

B | expansion

C | evaporation

D | condensation



Q15. Vitamin E is important for:

A | protecting cells

B | vital tissues protection

C | both a and b

D | development of bones



Q16. 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

C | sedimentary

D | None of the above



Q17. 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

C | cushion surfaces

D | all of them



Q18. Your teacher writes on a board with marker without slipping on floor. This is due to the presence of

A | gravity

B | friction

C | pull

D | push



Q19. The dead sea is full of

A | sand

B | salt

C | minerals

D | shells



Q20. Wind is beneficial resource of energy as it doesn't cause

A | pollution

B | echo

C | noise

D | sound

Q21. A dangerous activity which results in many deaths due to gas explosion in caves is

A | coal mining

B | climbing mountain

C | extracting oil

D | hydropower generation

Q22. Which one of the following is the smallest bird?

A | bee humming bird

B | penguin

C | ostrich

D | all of these

Q23.



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

D | None of the above

Q24. Read the text about an object in motion

- Preston rode his motorcycle from the bottom of a hill to the top of the hill.

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



Q25.



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!

Which of the following best describes a community in the Great Sand Dunes?

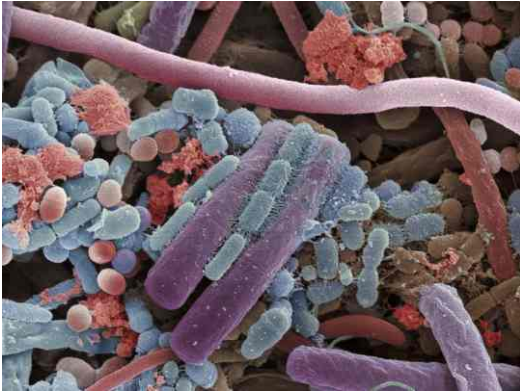
A | the grasses and the prairie sunflowers

B | the Ord's kangaroo rats

C | the grasses, the water and the sand dunes

D | All of the above

Q26. 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 different 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*.

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

C | *E. coli* bacteria in the intestines

D | All of the above



Q27. 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.

Matter first enters this food chain when the _____ makes its own food using photosynthesis.



macroalgae



midge larva



brown trout



great cormorant

Q28. Read the passage. Then answer the question below.



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 fluffy 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
- C** | a school of fluffy sculpins
- D** | All of the above



Q29. 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?
- C** | Do the deer eat fewer leaves from bean plants sprayed with coffee spray than from unsprayed bean plants?
- D** | All of the above

Q30. According to 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

National Toppers
ICATS
ART
Contest
2021

Student Name	Father Name	Grade	School
TEHREEM SHIRAZ	SYED SHIRAZ ALAM	1	CANTT. PUBLIC HIGH SCHOOL & GIRLS COLLEGE (HYDERABAD)
MUHAMMAD AHMED KHAN	UZAIR AHMAD KHAN	2	ARMY PUBLIC SCHOOL (JUNIOR)
RAMISHA SAHAR	RAJA ISHAQ ASAD	3	FATIMA FERTILIZER SCHOOL
ZARLISH MOMINAH	TAYYAB SIDDIQUE	4	ARMY PUBLIC SCHOOL (DEFENCE COMPLEX ISLAMABAD)
DARSAMIN RAFIQUE	AZHAR RAFIQUE	5	NOVA CITY SCHOOL
AAFEEN KHALIL	KHALIL FAZIL	6	ISLAMABAD COLLEGE OF ARTS AND SCIENCES
HOORIA NOUMAN	NOUMAN ILYAS	7	KOSHAR CHILDREN'S ACADEMY
FATIMA RIZWAN	RIZWAN LIAQAT	8	LAHORE GRAMMAR SCHOOL
DUA ZAIN	M. ZAIN	9	HIRA FOUNDATION SCHOOL
WAJIHA SHAKEEL	SHAKEEL SIDDIQ	10	THE INTELLECT SCHOOL

Congratulations

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Creative Writing
Contest
2021

Student Name	Father Name	Grade	School
MUHAMMAD HAZIQ UMAR	UMAR SARWAR	1	LAHORE GRAMMAR SCHOOL
M ABDULLAH	IKHTIYAR AHMED	2	FAUJI FOUNDATION SCHOOL (IAND)
ALISHBA HAMEED	ABDUL HAMEED	3	ST. GREGORY'S HIGH SCHOOL
SHAHMEER	AMEER HUSSAIN	4	LAHORE GRAMMAR SCHOOL (VALENCIA TOWN)
ESHAAL ALEEM	ALEEM AHMED KHAN	5	THE CITY SCHOOL (GULSHAN JUNIOR CAMPUS)
MUHAMMAD YAHYA	IFTIKHAR MANZOOR	6	INTERNATIONAL ISLAMIC UNIVERSITY ISLAMABAD SCHOOL
SYEDA SABA ZAWAR	SYED ZAWAR	7	THE CITY SCHOOL (JHELUM CAMPUS)
EMAN AMNA	AFTAB	8	HAYAT SCHOOL & COLLEGE
ALIZHA NOOR ARSHAD	MRS. FOZIA ARSHAD	9	THE INTERNATIONAL SCHOOL OF CHOUEIFAT
MANAAM RAZA	RAZA UL MOHSIN	10	LAHORE GRAMMAR SCHOOL (1A1 SENIOR)

Congratulations

Compete
if you are the best