



INTERNATIONAL
CATS CONTESTS
COMPETENCE & APTITUDE TESTING SERVICES
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QUESTION BOOKLET

**GRADE 7 & 8
JUVENILES**

Time Allowed: 90 Mins.
Maximum Marks: 90

2023

**ICATS
SCIENCE
CONTEST**



ICATS SCIENCE CONTEST 2023

JUVENILES (GRADE 7 & 8)

TIME ALLOWED : 90 MINUTES, MAXIMUM MARKS : 90

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, CALCULATORS 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. 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)
10. REGISTERED STUDENTS CAN PARTICIPATE IN THE CONTEST.
11. 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.
12. IF A PARTICIPANT DOES NOT UNDERSTAND A WORD OR PHRASE ON THE EXAM PAPER, NEITHER EXAMINER NOR INVIGILATOR IS PERMITTED TO ANSWER.
13. FOR INFORMATION ABOUT UPCOMING CONTESTS OR PROVIDING VALUABLE FEEDBACK, PLEASE VISIT WWW.CATSCONTESTS.ORG
14. ANY ACADEMIC MISCONDUCT OR MALPRACTICE MUST BE REPORTED TO INTERNATIONAL CATS CONTESTS AT INFO@CATSCONTESTS.ORG

Q1 While digging on dry land, a student found a fossil mold of a fish. Which of the following is the best conclusion the student can draw from this?

- A** Fish lived on land long ago.
- B** The fish was a plant eater.
- C** Water once covered the dry land.
- D** Someone must have placed the fossil in the ground.

Q2 The Sun's energy changes lake water into a gas. What step in the water cycle is this?

- A** condensation
- B** precipitation
- C** evaporation
- D** runoff

Q3 In the locker room, a softball was sitting in the middle of a level bench. Roger bumped the bench and the softball rolled toward the edge. Then, the softball fell off the bench, hit the ground and rolled quickly along the flat floor of the locker room. Roger tried to grab the ball, but he could not reach it before it rolled underneath some lockers.

When was the most gravitational potential energy stored between the softball and Earth? Assume that the softball's mass did not change.

- A** when the ball was sitting in the middle of the bench
- B** when the ball was about to hit the locker room floor
- C** when the ball was rolling quickly toward the lockers
- D** None of these

Q4 The roller coaster train slowly moved away from the station and over the top of a tall hill.

As the train began to rush down the hill, the riders felt like they were rising out of their seats! The train sped up until the track flattened out at the bottom of the hill.

At the bottom, the riders felt like they were being pushed down into their seats.



Consider the following claim:

As the train rushed down the hill, gravitational potential energy was converted into kinetic energy.

Which piece of evidence best supports the claim?

- A** The speed of the train increased as the height of the train decreased.
- B** The people in the train felt like they were being pushed down at the bottom of the hill.
- C** The train kept moving when it reached the flat part of the track.
- D** None of these.

Q5 What is the temperature of someone with a fever? Select the better estimate.

- A** 40 °F
- B** 40 °C
- C** 98.6 °F
- D** 37 °C

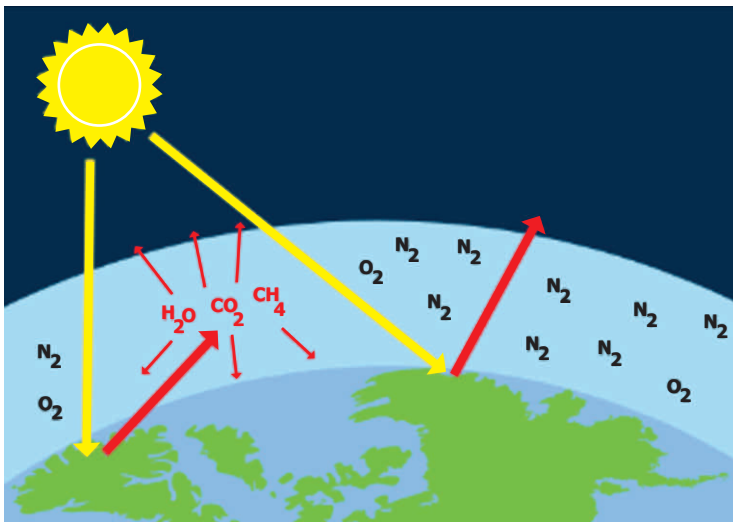
Q6 How long is an ice skate? Select the best estimate.

- A** 29 centimeters
- B** 29 meters
- C** 29 kilometers
- D** 29 millimeters

Q7

When infrared radiation is absorbed by a greenhouse gas molecule, the molecule gains energy that is stored for a very short time. The molecule then releases the energy as infrared radiation. The infrared radiation released by the greenhouse gas molecules may escape into outer space. This radiation is shown below by the small red arrows pointing outside the atmosphere.

Some infrared radiation may also be absorbed and released many more times by other greenhouse gas molecules and by Earth's surface. This radiation is shown below by the small red arrows pointing back towards Earth. Because this infrared radiation is trapped near Earth's surface, the average temperature of Earth's surface is warmer than it would be if all the infrared radiation escaped into space.



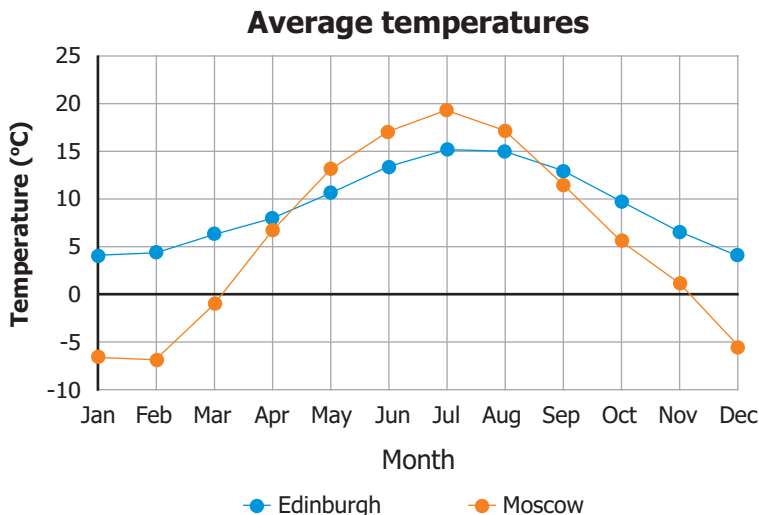
Based on the information above, which of the following statement is true?

- A Greenhouse gas molecules gain energy after absorbing infrared radiation.
- B Earth's average temperature is colder than it would be if Earth's atmosphere did not contain any greenhouse gases.
- C Once infrared radiation is absorbed by a greenhouse gas molecule, the infrared radiation can never leave Earth's atmosphere.
- D Greenhouse gas molecules cool down the Earth's surface by absorbing infrared radiation.

Q8

A large range of temperatures is common in locations with a humid continental climate. The average temperature is usually 10°C or higher during the four warmest months and is -3°C or lower during the coldest month.

Look at the temperature data from Edinburgh and Moscow.



Which city's average monthly temperatures are consistent with a humid continental climate?

A Edinburgh

B Moscow

C both Edinburgh and Moscow

D neither Edinburgh nor Moscow

Q9

Louder the sound, the more it has, hence it causes a greater in particles.

A energy & movement

B energy & vibrations

C low energy & high vibration

D energy & light

Q10 A bottle opener belongs to which class of the levers

A Effort in the middle

B Fulcrum in the middle

C Resistance in the middle

D None of these

Q11 The bats can fly in the darkness of night without colliding with the other objects by emitting special sounds while flying. Which characteristic of sound is used by the bats to navigate?

A Ultrasound

B Infrasound

C Audible sound

D None of these

Q12 At noon the Sun appears white as

A light is least scattered.

B all the colours of the white light are scattered away.

C blue colour is scattered the most.

D red colour is scattered the most.

Q13 The collision of India and Asia that formed the Himalayas is still colliding today, causing the mountain range to continue to rise. What keeps the mountain from getting too big?

A erosion

B volcanism

C deposition

D plate tectonics

- Q14** Since 1950, groundwater has been severely depleted in many U.S. regions. In recent years, farmers and engineers have come together to find solutions to conserve fresh water, including groundwater.



A modern irrigation system delivers drops of water to a plant.

For example, farmers are making an effort to provide a precise amount of water to their crops. Older irrigation systems used much more water than crops needed, but engineers have developed newer irrigation systems that use water more efficiently. These irrigation systems provide the right amount of water directly to the roots of crops. As a result, farmers can use less water and still grow healthy crops.

Which of the following statements explains why it is necessary to find solutions to conserve groundwater?

- A** When groundwater is withdrawn from aquifers, it cannot easily be replaced.
- B** Groundwater is a limited resource, and it is being used up quickly.
- C** Groundwater use has become more efficient, but groundwater depletion has increased.
- D** All of the above.

- Q15** Earth is an integrated system that consists of rock, air, _____ and living things that all interact with each other.

- A** land **B** water **C** plants **D** animals

- Q16** Which lived on Earth first?

- A** Dinosaurs **B** Humans **C** Trilobites **D** Reptiles

Q17 _____ exist(s) because of Earth's revolution and its tilt, different parts of Earth receive direct rays of sunlight for more hours of the day at certain times of the year.

A seasons

B climate

C weather

D All of these.

Q18 The diagram shows water flow in a meandering river channel. Which of the following best explains why water flows in the river channel?



A gravitational force

B energy from the Sun

C differences in water salinity

D energy from Earth's interior

Q19 Your local meteorologist is talking about air pressure. Which of the following is something he or she might say?

A "The anemometer shows that the air pressure is increasing!"

B "The psychrometer tells that since this morning, the air pressure has decreased."

C "A storm is coming, so the barometer shows the air pressure dropping."

D "The anemometer shows that the air pressure is decreasing!"

Q20

China's Yangtze River is the longest river in Asia. The Yangtze River drains water from almost one-fifth of China's land area. It starts from melting glacial water in the mountains of the Tibetan Plateau. Its waters ultimately drain into the East China Sea.

Which sentence describes the headwaters of the Yangtze River?

- A China's Yangtze River is the longest river in Asia.
- B The Yangtze River drains water from almost one-fifth of China's land area.
- C It starts from melting glacial water in the mountains of the Tibetan Plateau.
- D Its waters ultimately drain into the East China Sea.



Q21

The members of the planning team want to make sure their list of needs is complete. Flood barriers would be set up by the team in charge of school buildings, called the buildings team. So, the planning team asks the buildings team if there are any more constraints to think about.

The buildings team sends this letter to the planning team:

To the Planning Team:

Here are two more constraints for the flood barrier project:

1. The lunchroom floods every winter. We don't want to buy new barriers each year.
2. We have many jobs to do around the school. So, it's important that setting up the barriers does not take more than one hour.

Sincerely,

The Building Team

Think about the new constraints sent by the buildings team. What should the planning team add to the list of needs the barriers should meet?

- A can be set up by one person
- B can be used for maximum 3 years
- C can be set up in 60 minutes or less
- D none of these

Q22 What type of simple machine is found on the floor of a bathtub?

A screw

B inclined plane

C wedge

D pulley

Q23 Read the description of a trait.

James knows how to lift heavy objects safely.

What information supports the conclusion that James acquired this trait?

A James's siblings also know how to lift heavy objects safely.

B James learned how to lift heavy objects safely from his stepfather.

C James lifts heavy objects safely at work.

D None of these.

Q24 The Nashua River is located in Massachusetts and New Hampshire. In the 1960s it was one of the most polluted rivers in America. Paper mills and other industries had been dumping dyes and chemicals into the river for decades. Parts of the river were so polluted that only sludge worms could survive in it. Then, a local resident named Marion Stoddart took action and organized a cleanup of the Nashua River. Thanks to Stoddart's efforts, the first state and federal clean water Acts were passed. These new laws helped support the long cleanup process. Today, the Nashua River is a thriving ecosystem widely used for recreation.

What is the main idea of the passage?

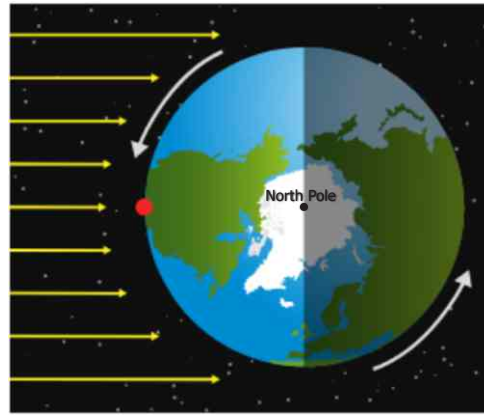
A Ecosystems change over time based on human activities and natural processes.

B Human activity has negatively impacted the environment and our natural resources.

C Animals cannot survive in rivers and waterways that have been polluted by human activities.

D Individuals and communities are doing things to help protect Earth's resources and environments.

- Q25** The model shows sunlight reaching part of Earth as Earth rotates. Look at the point on Earth marked ●.



Which image shows what the sky would look like from the red point on the model?



- Q26** Our stomach expands when the food enters and contracts when it goes out. Thus the stomach can expand and contract. This is possible because our stomach is made of _____.

A bones

B muscles

C blood

D iron

Q27 Why do stainless steel pots often have wooden handles?

- A** Wood is a good thermal conductor **C** Wood is a good electric insulator
B Wood is a good thermal insulator **D** It is not possible to make handles out of steel

Q28 On heating water, it is observed that bubbles come out from it. This concludes that:

- A** Water contains air **C** Water contains dissolved minerals
B Air contains water **D** All of these

Q29 Ali puts a few pears in a bowl with some other fruits. A few days later, he notices that some of the pears are soft and ripe, while others are hard and unripe. He wonders what factors affect how quickly fruit becomes ripe. So, he decides to design an experiment. He has the following supplies available:

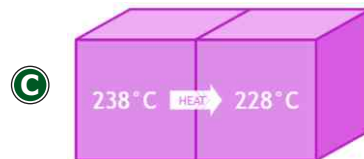
- two unripe bananas
- two unripe pears
- a glass bowl
- two paper bags

Using only these supplies, which of the questions can Ali investigate with an experiment?

- A** Do apples or bananas ripen more quickly?
B Do pears become ripe more quickly when stored in a glass bowl or in a paper bag?
C Do pears stored in a glass bowl ripen more quickly than pears stored in a metal bowl?
D Does a pear become ripe more quickly when stored in a paper bag by itself or in a paper bag with an apple?

- Q30** Two solid blocks are heated to the temperatures shown below. The blocks are placed so they touch.

Which diagram shows the direction heat will flow?



D None of these

National Toppers
ICATS
Art Contest
2023

Student Name	Father Name	Grade	School
ZOHA SUALEH	MIR M. SHAH SUALEH	1	FUTURE WORLD SCHOOL
SHAZIL ASAF	ASAF JAVED	1	ARMY PUBLIC SCHOOL & COLLEGE FOR BOYS
MUHAMMAD WALEE KHAN	FAHEEM ASHRAF	2	NUST CREATIVE LEARNING SCHOOL & COLLEGE
RAYYAN IRFAN	DR. MUHAMMAD YOUSAF	3	DHA JUNIOR SCHOOL
ANABIYA	HUSSAIN ABID	3	APS&C PMA
MAHNOOR	GHULAM MUSTAFA	4	AES SCHOOL FOR GIRLS
MEERAB KHAN	ADNAN ASIF KHAN	5	LAHORE GRAMMAR SCHOOL (JUNIOR SECTION)
MAHEEN MUNIR	MUNIR KHAN	6	FAUJI FOUNDATION SCHOOL
TALHA ALI KHAN	SADAQAT ALI	7	JOINT STAFF PUBLIC SCHOOL & COLLEGE
AREESHA MOBEEN	MOBEEN TAHIR	8	LAHORE GRAMMAR SCHOOL
ASMA NAEEM	NAEEM AMIN	9	ALLAMA IQBAL PUBLIC GIRLS HIGH SCHOOL
SUMERA KHAN	IMRAN KHAN	10	AES SCHOOL FOR GIRLS

Congratulations

National Toppers
ICATS
Creative Writing
Contest
2023

Student Name	Father Name	Grade	School
FAARIS ALI QURESHI	DANYAL QURESHI	1	LAHORE GRAMMAR SCHOOL
KHADIIJA AHSAN	AHSAN MAJEED	2	LAHORE GRAMMAR SCHOOL
ZAYYAN MUSTAFA	QAMAR MUSTAFA	3	ARMY PUBLIC SCHOOL (BOYS & GIRLS)
SIBTAIN ALI KHAN	FAWAD ALI PATHAN	4	PAK-TURK MAARIF INT'L SCHOOLS & COLLEGES
SAARIM THARANI	IMRAN NOORALI THARANI	5	AGA KHAN SCHOOL GARDEN
M. AHMED JADOON	ELLI RAZA JADOON	6	THE CITY SCHOOL (RAVI CAMPUS)
ARISHA MAZHAR	MAZHAR ALI	7	KOHSAR CHILDREN'S ACADEMY
VERDAH SAHAR USMAN	USMAN TARIQ SHEIKH	7	LAHORE GRAMMAR SCHOOL
SALEHA SHAHID	SHAHID WAHEED	8	THE CITY SCHOOL (PESHAWAR CAMPUS)
HALEEMA USMAN	USMAN AHMED	8	TNS BEACONHOUSE
UMAIMA AIMEN	MUBASHIR MUSTAFA	9	RANGERS PUBLIC SCHOOL
RANIA ZAKIA MALIK	TAHIR NAEEM MALIK	10	ISLAMABAD COLLEGE OF ARTS AND SCIENCES

Congratulations

Compete if you are the best

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