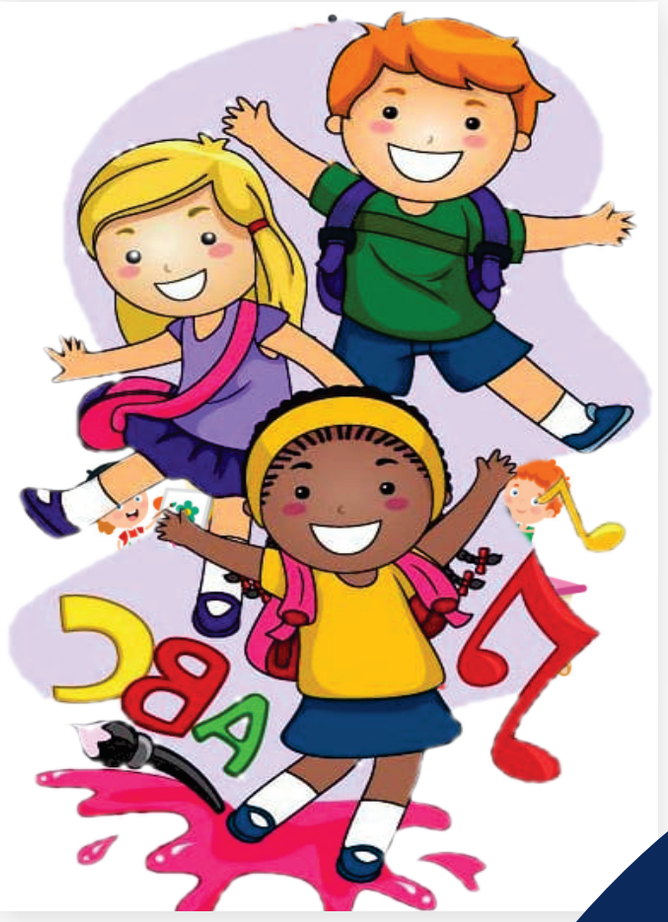
NASO
NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

Navars Edutech

PREVIOUS YEAR QUESTION PAPER

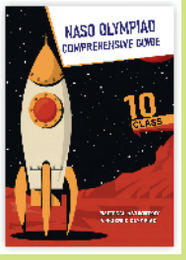


FEATURES

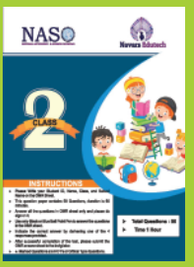
- Naso last 5 years question paper's.
- Answer keys for all the question papers.
- OMR Sheets at the end of all question papers to practice.
- Sample revision question paper for more practice.
- Recommended for all Science Olympiads / Competitions.

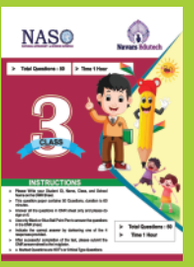
7th CLASS

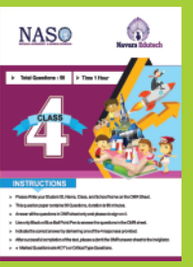
NASO OLYMPIAD COMPREHENSIVE GUIDE

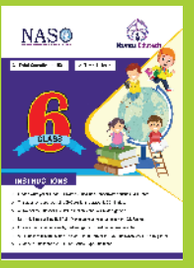


NASO QUESTION PAPER 2018

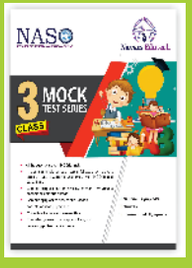








NASO MOCK TEST SERIES



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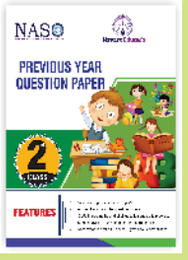
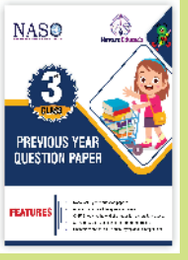
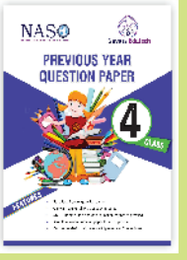
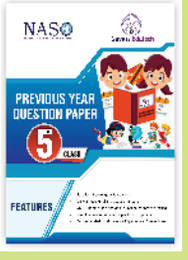
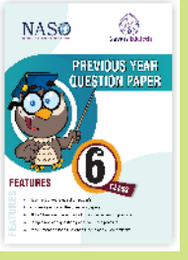
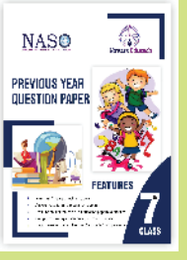


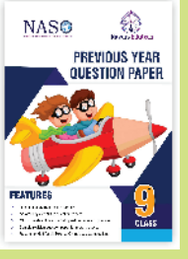


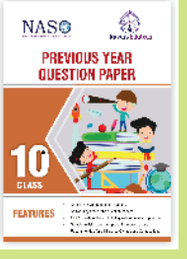












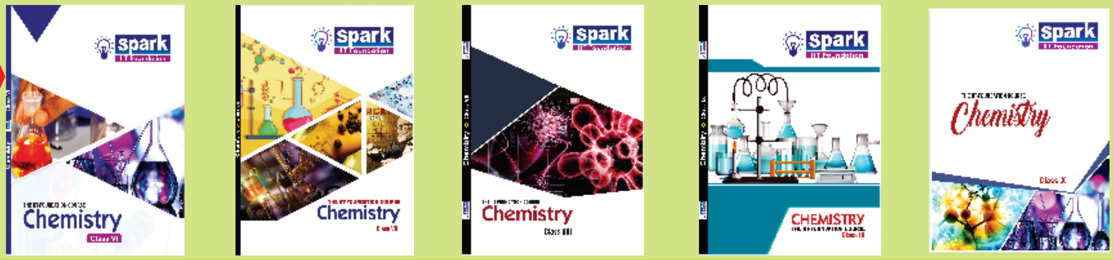
NASO WORKBOOK

SMART BAIN IQ PUZZLE

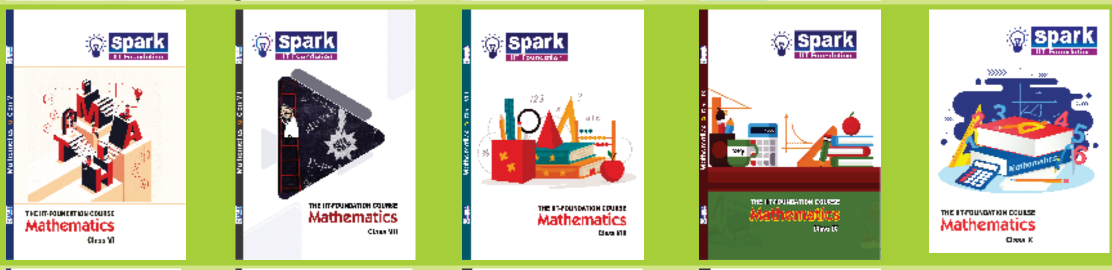
NASO EXCELLENCE GUIDE

SPARK IIT FOUNDATION

CHEMISTRY



MATHEMATICS



PHYSICS

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INDEX

NASO
NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

CLASS 7

Duration : 60 Minutes **Max Marks : 50**

GENRAL INSTRUCTIONS

1. Please collect the Answer Sheets (OMR) from the invigilator.
2. Please Write your Student ID, Name, Class, and School Name on the OMR Sheet.
3. This question paper contains 50 Questions, duration is 60 minutes.
4. Answer all the questions in OMR sheet only. And please do sign on it.
5. Use only Black or Blue Ball Point Pen to answer the question in OMR sheet.
6. Indicate the correct answer by darkening on the 4 responses provided.
7. After successful completion of the test please submit the OMR answer sheet to the invigilator.

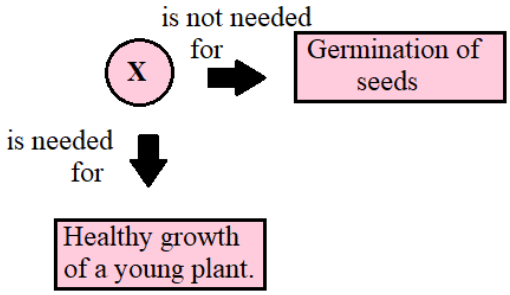
1. Two glasses of milk were taken. One glass was at 40 ℃ and other was at 60 ℃. The two glass of milk were mixed together in a bowl. What will be the temperature of milk after some time?

A. 30 ℃. B.40 ℃.
C.60 ℃. D. Between 40 ℃ and 60 ℃.

2. The given chart shows the development of X into Y after undergoing process P right before fertilization. Identify the option that correctly represents X, Y and P.

A. X- Flower, P- Pollination, Y- Seed. B. X- Pollination, P- Flower, Y- Seed.
C. X- Seed, P- Flower, Y- Pollination. D. X- Seed, P- Pollination, Y- Flower.

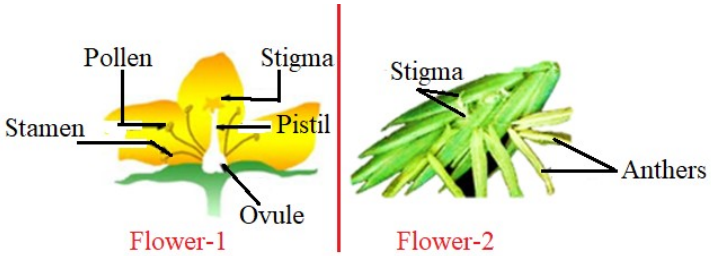
3. What is X in the given flowchart:



A. Vitamins. B. Air.
C. Sunlight. D.Minerals.

4. A student took stigmas of two different flowers and recorded her observations as:

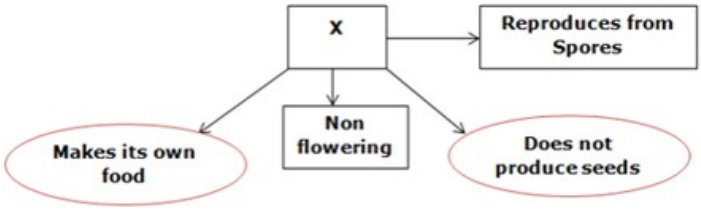
FLOWER 1	Stigma is sticky.
FLOWER 2	Stigma is feathery.



What is the purpose of a sticky or feathery stigma?

A. To produce seeds.
B. To produce pollen grains.
C. To receive pollen grains.
D. To make food.

5. The flowchart shows certain characteristics of X. Identify X.



A. Fern.
B. Apple.
C. Begonia.
D. Pineapple.

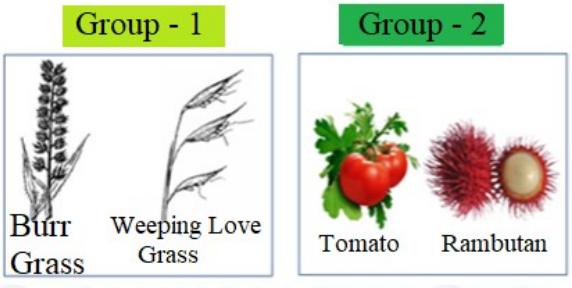
6. A student dropped an angsana fruit from a height of 5 m and it took T1 time to reach the ground. Next, he cut the outer layer of the angsana fruit and dropped it from the same height of 5 m. This time the fruit took T2 time to reach the ground. He made certain observations. Which of the following observations is correct?

Time taken = T1

Time taken = T2

A. T1 > T2.
B. T2 > T1.
C. T1 = T2.
D. Both A and B.

7. Group 1 and Group 2 contain the fruits and seeds of plants which are dispersed by animals. In what way are the two groups different?



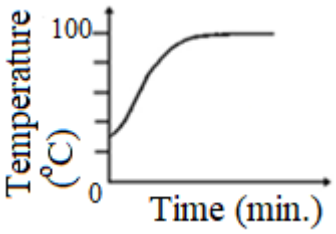
A. Group 1 contains fruits having no seeds and Group 2 contains seeds.
B. Group 1 contains poisonous fruits and Group 2 contains non-poisonous fruits.
C. Group 1 contains fruits that have not developed from flowers and Group 2 fruits have developed from flowers.
D. Group 1 contains fruits with stiff hair and Group 2 contains juicy and fleshy fruits.

8. The table below shows the parts of a flower along with their functions. Which of the following is not arranges correctly?

FLOWER-PART	NAME	FUNCTION
1	Ovule	Contains pollen grains
2	Ovary	Protects the ovules.
3	Petals	Attracts insects.
4	Stigma	Receives the pollen grains

A. Part 1. B. Part 2.
C. Part 3. D. Part 4.

9. The given graphs denote the changes in the temperature of water. Identify the graph in which water is in all three states.

A.


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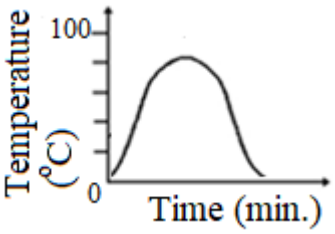
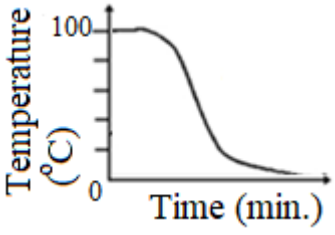
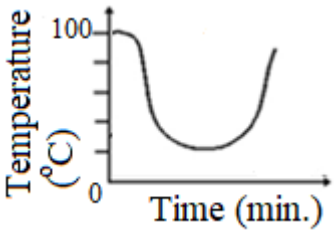
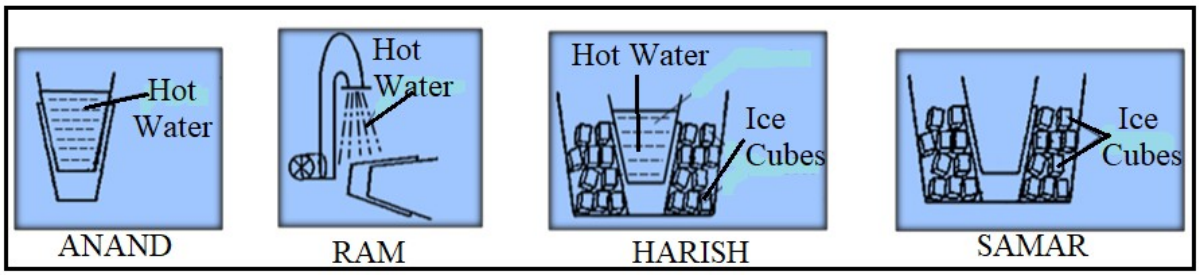


C.


D.


10. Two metal cups are stuck as shown in the diagram:

A group of friends suggested the following strategies to separate the glasses:

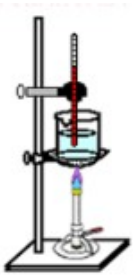


Whose suggestion will be most effective?

A. Anand. B. Ram.

C. Harish. D. Samar.

11. In an experiment, a student filled a beaker with some water. He added two teaspoonful of sugar into the beaker and stirred it well. He put the flames on and recorded boiling point of the solution of the beaker using a thermometer. He repeated the same experiment again but with salt instead of sugar. Choose the correct observation at the end of the two experiments.



A. The boiling point is same in both the cases of adding sugar and salt to the water.

B. Adding the salt decreases the boiling point of the water.

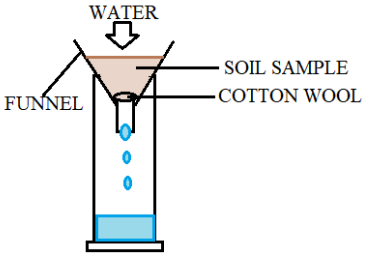
C. Adding both salt and sugar increases the boiling point of water.

D. Adding the sugar decreases the boiling point of the water.

12. Class 7 students carried out an experiment in order to check how fast water (100 $c\,m^3$) can pass through four different types of soil. The given table shows the recordings of time taken by water to pass through the four types of soil.

TYPES OF SOIL	1	2	3	4
TIME TAKEN(seconds)	72	51	61	29

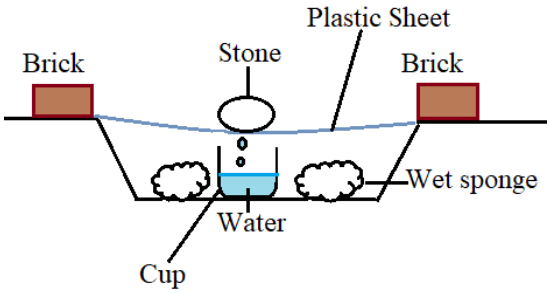
Identify the type of soil most suitable for growing plants well in dry and sandy habitat.



A. Type 1. B. Type 2.

C. Type 3. D. Type 4.

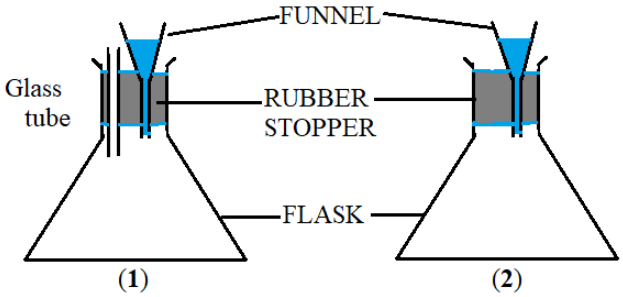
In order to demonstrate water cycle to students, a teacher took them to the garden area, dug a hole in the ground and created the set up as shown below.



13. Which component represents the water bodies in this representation of water cycle?
    A. Wet sponge. B. Bricks.
    C. Cup. D. Stone.

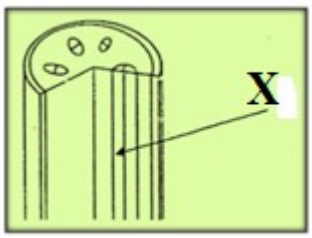
14. Which component represents the clouds in this representation of water cycle?
    A. Wet sponge. B. Bricks.
    C. Cup. D. Plastic sheet.

15. Observe the given setup and identify the correct statement about the level of water in the two funnels.



    A. Water in funnel 1 will flow down but not in funnel 2.
    B. Water in funnel 2 will flow down but not in funnel 1.
    C. Water in both funnels will flow down.
    D. Water will not flow down in either of the two funnels.

16. The cross section of a celery stalk is shown below. Identify the correct statement about the part X of the cross section.



    A. X is the phloem tube of the plant that transports food made in the leaves
    B. X is the xylem tube of the plant that transports food made in the leaves
    C. X is the phloem tube of the plant that transports water and mineral salts
    D. X is the xylem tube of the plant that transport water and mineral salts.

17. An ant stung David. He looked for baking soda in the kitchen but couldn't find it. What other substance can he use from the kitchen to treat the ant-sting?

A. Spinach juice. B. Curd.

C. Lemon juice. D. Washing soap.

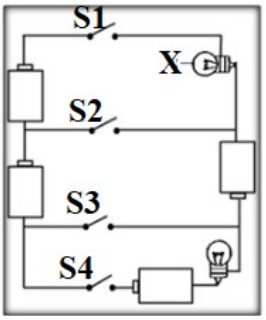
18. In chemistry lab, Suman mixed two different substances in the beaker and obtained a solution as shown.

What could possibly be the two substances she mixed?

A. China rose + warm water. B. Vinegar + blue litmus.

C. Soap solution + turmeric paste. D.HCl + China rose.

19. For the following circuit, Chose the correct option that will result in bulb X being the brightest.

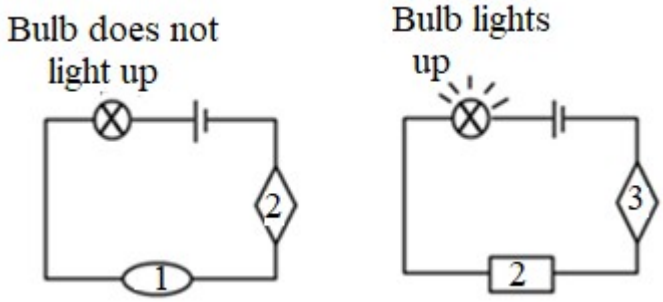


	S1	S2	S3	S4
1	CLOSE	CLOSE	OPEN	OPEN
2	CLOSE	OPEN	OPEN	CLOSE
3	CLOSE	OPEN	CLOSE	OPEN
4	OPEN	CLOSE	CLOSE	OPEN

A. 1 B. 2

C. 3 D. 4

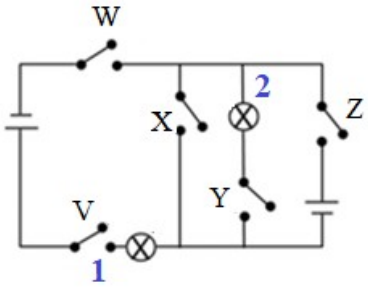
20. The given circuit shows the connection objects 1, 2 and 3 to a bulb and a battery. Identify the object which acts as the conductor of electricity in the circuits.



A. 1 only. B. 2 and 3 only.

C. 1 and 2 only. D. 2 only.

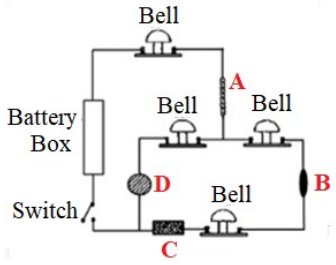
21. In order to switch on the bulbs A and B at the same time, which of the following Switches should be kept open and which of the switches should be kept closed?



	Switch V	Switch W	Switch X	Switch Y	Switch Z
1	CLOSED	CLOSED	OPEN	CLOSED	OPEN
2	OPEN	OPEN	CLOSED	OPEN	OPEN
3	OPEN	OPEN	CLOSED	OPEN	CLOSED
4	CLOSED	CLOSED	OPEN	OPEN	CLOSED

A. 1. B. 2.
C. 3. D. 4.

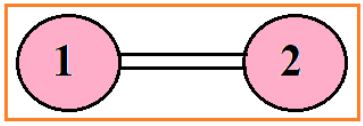
22. A setup is created using objects A, B, C and D as shown. Only three bells rang in the circuit when the switch was closed. Identify the electric insulator.



A. Object A B. Object B
C. Object C D. Object D

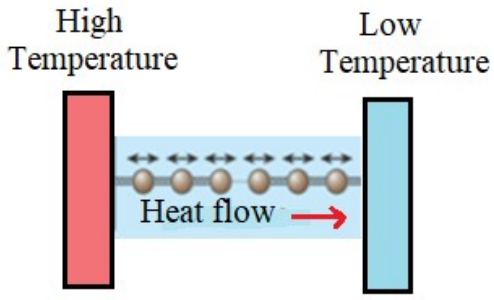
23. When a substance is heated the particles gain energy and creates more volume as they spread out. On heating a substance, what happens to its mass?
A. mass increases B. mass decreases
C. mass remains unchanged D. mass is lost

24. 1 and 2 are two bodies are at same temperature of 70 degrees and are connected together with a metal rod.



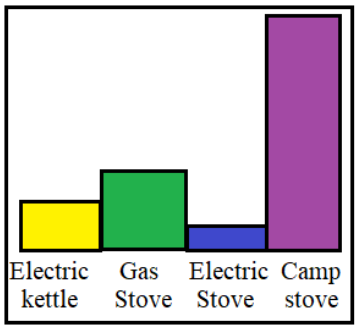
A. Temperature of 1 becomes 100 degrees centigrade.
B. Temperature of 2 will become 100 degrees centigrade.
C. There will not be any temperature change
D. Temperature of both will become 100 degrees centigrade.

25. The diagram shows the flow of heat from the body with higher temperature to the body with lower temperature. When will this conduction of heat stop?



A. When one body is at higher temperature.
B. When both are at lower temperature as compared to original temperature.
C. When both attain same temperature
D. When both are at higher temperature as compared to their original temperature.

26. This graph below represents the cost of heating water for cooking. The height of the graph represents cost. Each device transfers thermal energy to the water and hence water gains thermal energy. Which appliance will prove the most inexpensive to use for cooking?

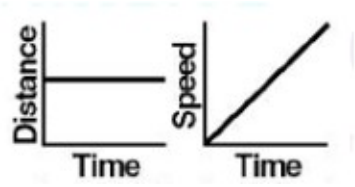


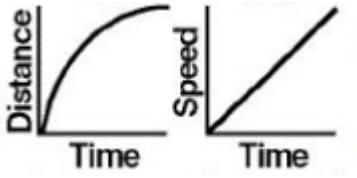
A. Electric kettle.
B. Gas stove.
C. Electric stope.
D. Camp stove.

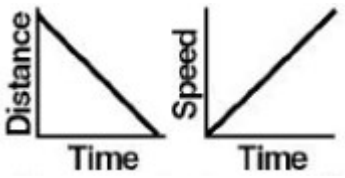
27. Four containers were heated on a flame. Which one will absorb the greatest amount of heat.

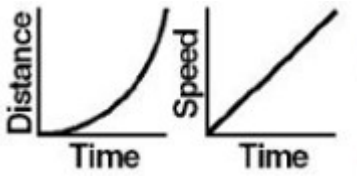
A. 1
B. 2
C. 3
D. 4

28. Identify the pair of graphs that represents the same motion?

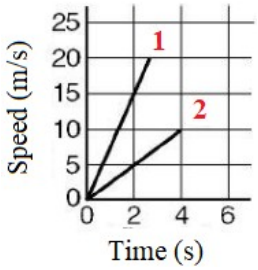
A. 

B. 

C. 

D. 

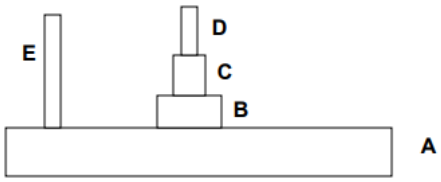
29. The graph below shows the relationship between speed and time for two objects, 1 and 2.



Compared with the acceleration of object 2, the acceleration of object 1 is

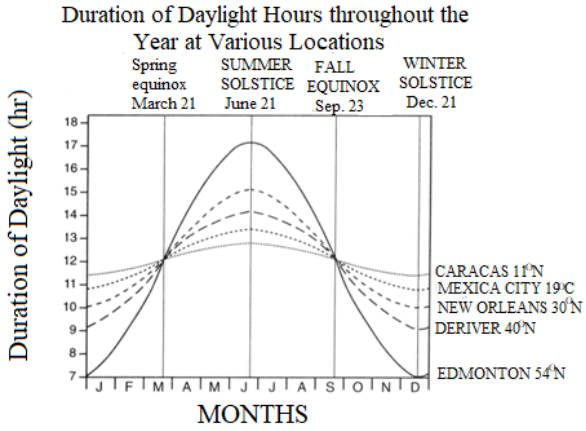
A. Three times as great.
B. the same
C. one-third as great
D. twice as great

30. The given diagram denotes a typical biomass pyramid structure. If A represents a primary producer, then what is E most likely to be?



A. photo-litho-heterotroph.
B. chemo-organo-heterotroph.
C. chemo-litho-autotroph.
D. Photo-organo-heterotroph.

31. The graph below shows the duration of daylight hours for five cities located in the Northern Hemisphere throughout the year.



Chose the city that experiences the greatest variation in daylight hours during one year?

A. Caracas. B. Mexico city.
C. Denver. D. Edmonton.

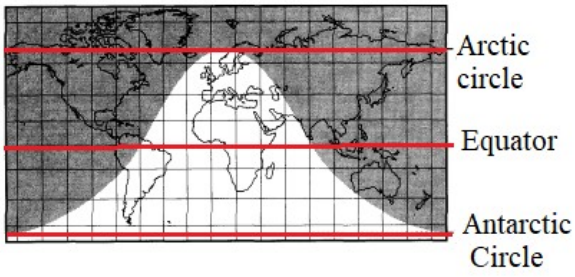
32. How many degrees per day does Earth revolve in its orbit around the Sun (Approximately)?

A. 1 degrees B. 24 degrees.
C.15 degrees. D. 23.5 degrees.

33. For an observer in New York State, during which month does the Sun appear to rise farthest north of due east?

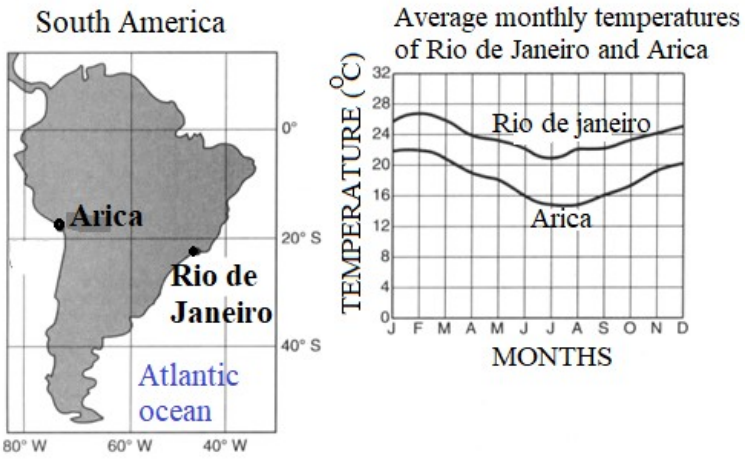
A. January. B. June.
C. October. D. July.

34. In the given map, the shaded portion indicates areas of night and the unshaded portion indicates areas of daylight. What day of the year is represented in the map?



A. September 23. B. March 21.
C. December 21. D. June 21.

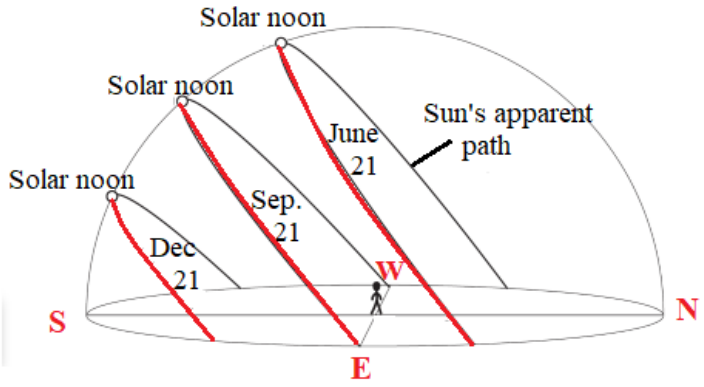
35. Observe the map and graph given below. On the map, two cities- Arica and Rio de Janeiro, located on opposite coasts of South America are shown. Both cities are located near the sea level. The average monthly temperatures for the cities is shown in the graphs.



When does the summer season at Arica and Rio de Janeiro occurs from tentatively?

A. December 21 through March 20.
B.Mar 21 through Jun 20
C.Jun 21 through Sep 20
D.Sep 21 through Dec 20

36. The given diagram represents the Sun's apparent paths and the solar noon positions for an observer at 42° N latitude on December 21, September 23, and June 21. On June 21, in which direction will sunrise occur?



A. South of due west.
B. North of due west.
C. South of due east.
D. North of due east.

37. An observer travels due north from the Equator. As he moves further, how does the position of Polaris appear to change?

A. The angle of Polaris decreasesabove the northern horizon.
B. The angle of Polaris increasesabove the northern horizon.
C. Polaris appears to move westward.
D. Polaris appears to move eastward.

38. The diagrams below represent photographs of Venus at four different positions in its orbit, as taken from Earth.At which position is Venus closest to Earth?

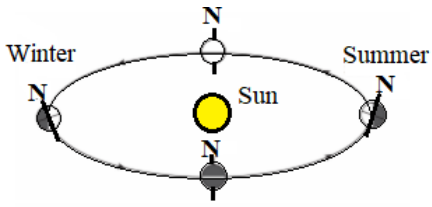
A. B. C. D.

39. During a 12-hour period to what number of degrees does the Earth rotate on its axis?

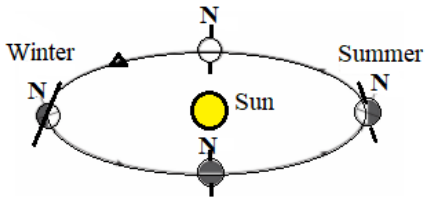
A. 180 degrees. B. 30 degrees.
C. 360 degrees. D. 15 degrees.

40. Identify the diagram that best represents the tilt of Earth's axis that causes the Northern Hemisphere seasons. (Diagrams are not drawn to scale.)

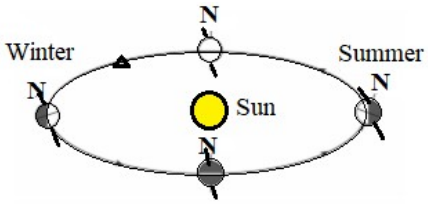
A.



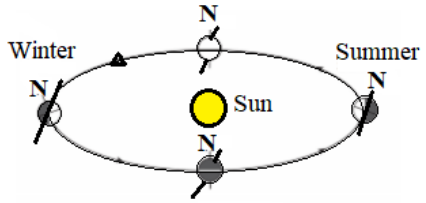
B.



C.



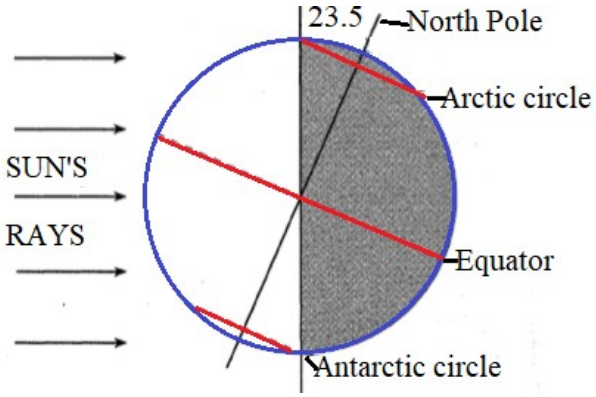
D.



41. Which object orbits Earth in both the Earth-centred and heliocentric models of our solar system?

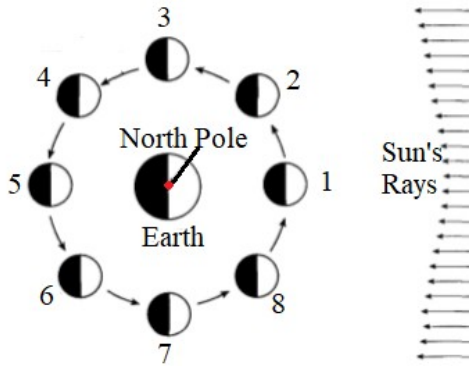
A. Polaris. B. Venus.
C. The sun. D. The moon.

42. The view of Earth as seen from space is shown under. Which season is beginning in the Northern Hemisphere?



A. spring B. summer
C. fall D. winter

43. The diagram shows Moon at eight different positions in its orbit as viewed from space above the North Pole.

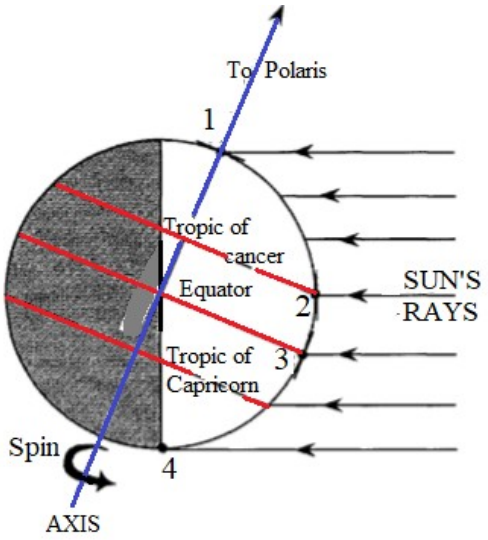


Identify the two positions of the Moon where an eclipse of the Sun or Moon is possible?

A. 1 and 5 B. 2 and 6

C. 3 and 7 D. 4 and 8

44. The given diagram represents the Earth's position in orbit around the Sun, the Sun's rays at solar noon, and the direction to Polaris. The different positions on the Earth's surface are marked with numbers from 1 to 4. Which position on Earth is receiving the Sun's rays from directly overhead at solar noon?



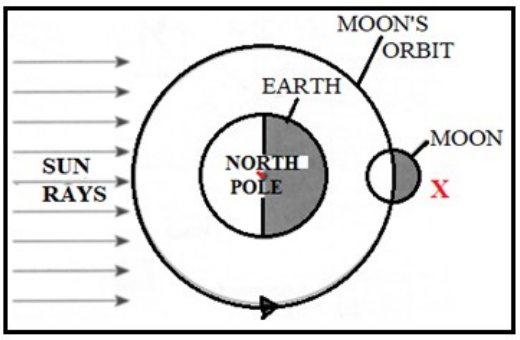
A. 1 B. 2

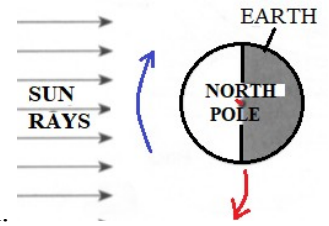
C. 3 D. 4

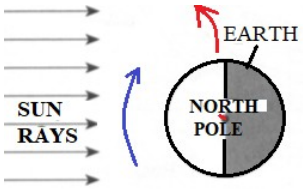
45. A camera was placed outside at night at a location in the Northern Hemisphere with its lens pointing straight up. The shutter was left open for four hours, resulting in the star trails, as shown below. At which latitude were these star trails observed?

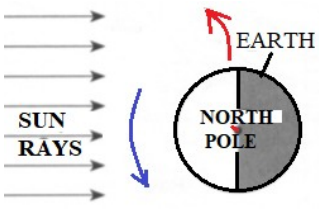
A. 1° N
B. 30° N
C. 60° N
D. 90° N

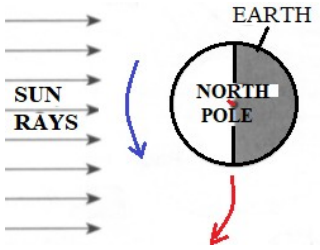
46. The diagram below shows the Moon, Earth, and the Sun's rays as viewed from space. Letter X indicates a certain position of the Moon in its orbit.
Which diagram correctly shows the direction of Earth's rotation (blue arrow) and revolution (red arrow)?



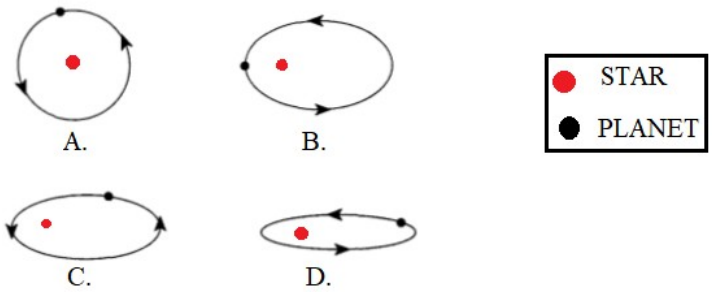
A.


B.


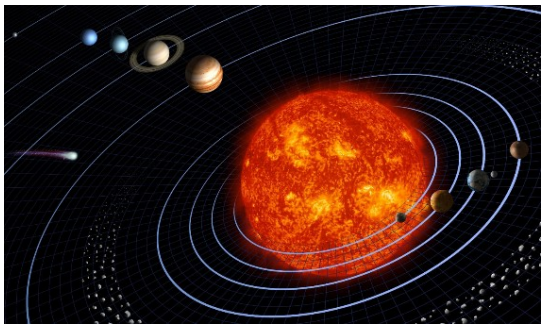
C.


D.


47. Out of the given diagrams, identify the planet with the least eccentric orbit?



48. The diagram below shows a portion of the solar system.



What is theactual orbits of the planets?

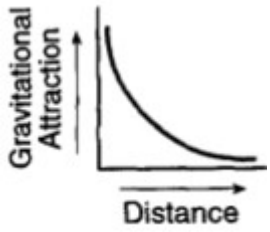
A. elliptical having Earth at one of the foci.
B. elliptical, with the Sun at one of the foci.
C. circular, with Earth at the center.
D. circular, with the Sun at the center.

49. Identify the correct option indicating planetary wind pattern present in many areas of little rainfall?

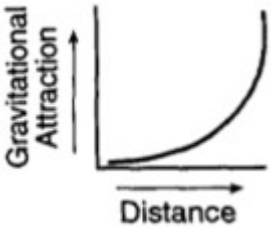
A. Winds converge and air sinks.
B. Winds converge and air rises.
C. Winds diverge and air sinks.
D. Winds diverge and air rises.

50. The gravitational attraction of two objects and their distance from each other is best shown by which graph?

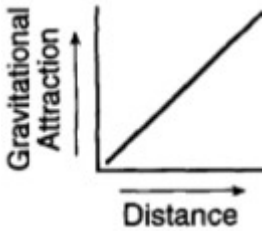
A.



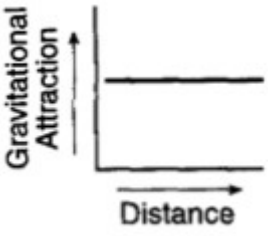
B.



C.



D.



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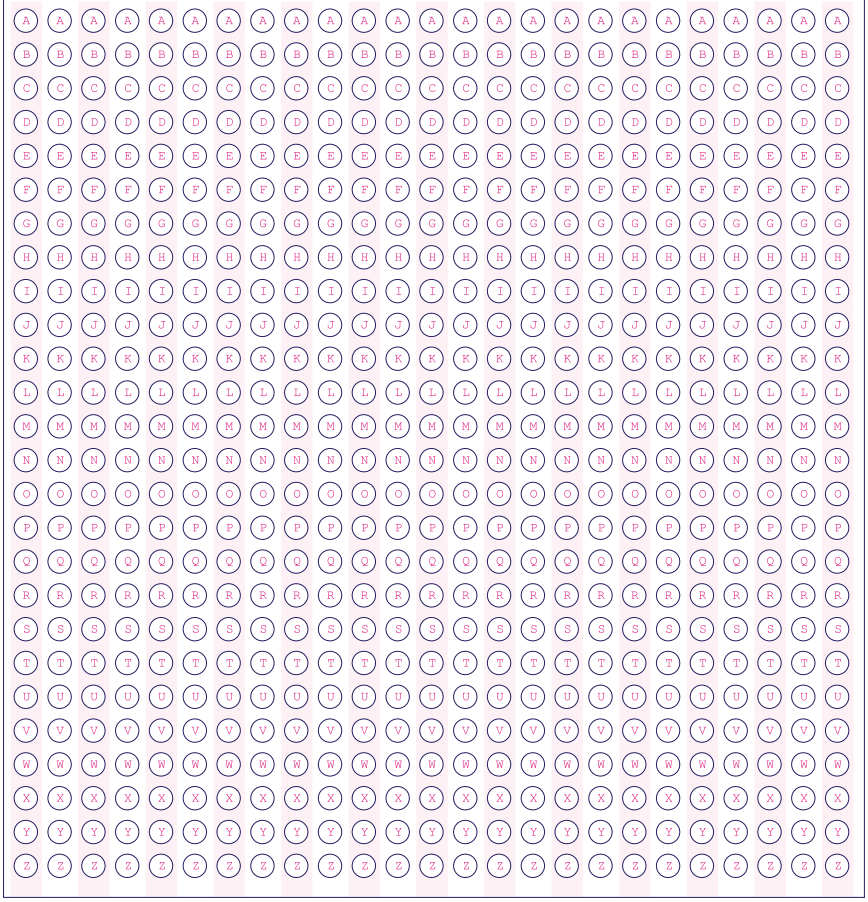
NASO
NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

ANSWER SHEET

National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

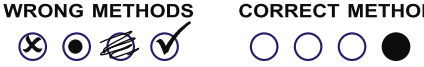
Candidate's Name



INSTRUCTIONS FOR FILLING THE SHEET

1. This sheet should not be folded or crushed.
2. Use only blue/black ball point pen to fill the circles.
3. Use of pencil is strictly prohibited.
4. Circles should be darkened completely and properly
5. Cutting and erasing on this sheet is not allowed.
6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS **CORRECT METHOD**



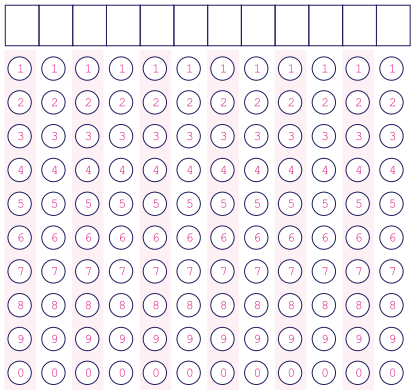
Grade

2nd 3rd 4th 5th 6th 7th 8th 9th 10th

Gender

Male ○
Female ○

RollNo.



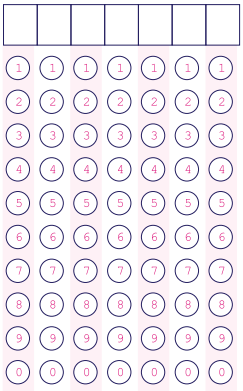
Father's Name

School Name

E-mail Id

City

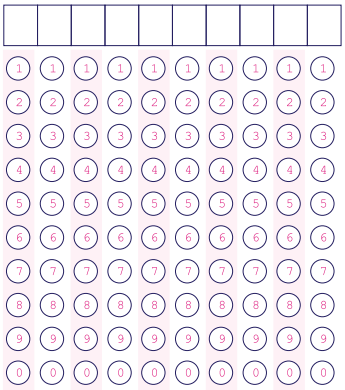
School Code



MARK YOUR ANSWERS HERE

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	○	○	○	11	○	○	○	○	21	○	○	○	○	31	○	○	○	○	41	○	○	○	○
2	○	○	○	○	12	○	○	○	○	22	○	○	○	○	32	○	○	○	○	42	○	○	○	○
3	○	○	○	○	13	○	○	○	○	23	○	○	○	○	33	○	○	○	○	43	○	○	○	○
4	○	○	○	○	14	○	○	○	○	24	○	○	○	○	34	○	○	○	○	44	○	○	○	○
5	○	○	○	○	15	○	○	○	○	25	○	○	○	○	35	○	○	○	○	45	○	○	○	○
6	○	○	○	○	16	○	○	○	○	26	○	○	○	○	36	○	○	○	○	46	○	○	○	○
7	○	○	○	○	17	○	○	○	○	27	○	○	○	○	37	○	○	○	○	47	○	○	○	○
8	○	○	○	○	18	○	○	○	○	28	○	○	○	○	38	○	○	○	○	48	○	○	○	○
9	○	○	○	○	19	○	○	○	○	29	○	○	○	○	39	○	○	○	○	49	○	○	○	○
10	○	○	○	○	20	○	○	○	○	30	○	○	○	○	40	○	○	○	○	50	○	○	○	○

Mobile No.



Candidate's Signature

Invigilator's Signature

NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

CLASS 7

Duration : 60 Minutes

GENRAL INSTRUCTIONS

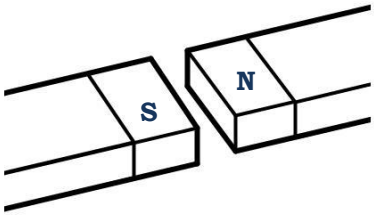
1. Please collect the Answer Sheets (OMR) from the invigilator.
2. Please Write your Student ID, Name, Class, and School Name on the OMR Sheet.
3. This question paper contains 50 Questions, duration is 60 minutes.
4. Answer all the questions in OMR sheet only. And please do sign on it.
5. Use only Black or Blue Ball Point Pen to answer the question in OMR sheet.
6. Indicate the correct answer by darkening on the 4 responses provided.
7. After successful completion of the test please submit the OMR answer sheet to the invigilator.

SECTION-I

1. Look at the picture of two magnets.

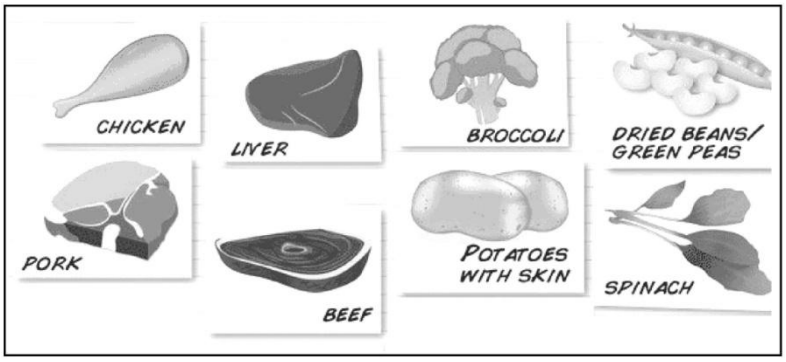
What happens when the two poles of the magnets meet?

a. They attract one another.
b. They repel one another.
c. They push one another apart.
d. They stretch and grow longer.



2. The following food contains an important nutrient. Deficiency of this nutrient will result in anemia. What is the central role of this nutrient?

a. Nucleic acid replication.
b. Bone formation.
c. Haemoglobin structure & oxygen transport.
d. Protein synthesis.

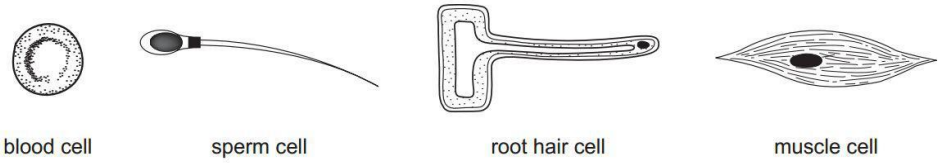


3. The handle of the piston below was initially at the 5 cm mark (dotted line). Assuming that the temperature of the air inside the cylinder is constant and that no air is able to escape from the cylinder, what is the pressure in the cylinder if the piston is pulled to the 20 cm?

a. Four times its initial pressure.
b. Three times its initial pressure.
c. Reduced to third of its initial pressure.
d. Reduced to a quarter of its initial pressure.

4. Which of the following types of cells provide a large surface area for it to function efficiently?

I II III IV



blood cell sperm cell root hair cell muscle cell

a. I and II b. I and III c. II and IV c. III and IV

5.

a. I and II b. II and III c. III and IV d. I and IV

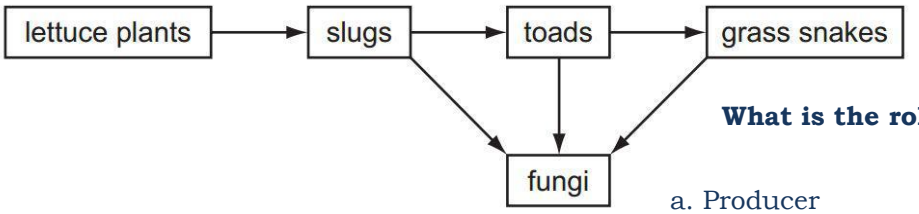
The diagrams above show image of household soap. What is the process of preparing soap?

a. Neutralization
b. Saponification
c. Recrystallization
d. Precipitation.

6. Which systems in the human body work together in a reflex response when the fingers touch a hot kettle filled with boiling water?

a. Immune system
b. Skeletal system
c. Muscular system
d. Circulatory system

7. The diagram shows a food chain.

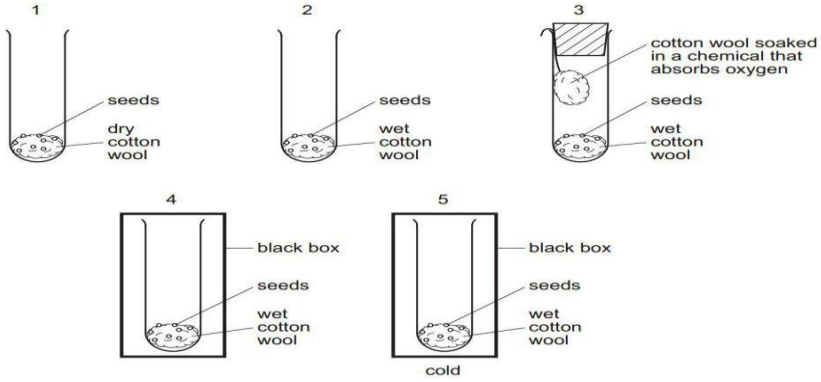


What is the role of fungi?

a. Producer c. Consumer
b. Decomposer d. Detritivore

FUNGI

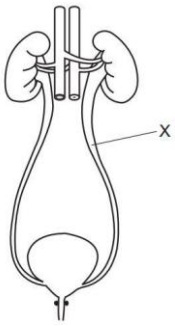
8: The experiment shown in the diagram was set up to see what conditions are needed for seeds to germinate. All tubes are kept at room temperature except for tube number 5.



In which tubes are the seeds most likely to germinate?=

a. 1 and 3 b. 1 and 5 c. 2 and 4 d. 3 and 4

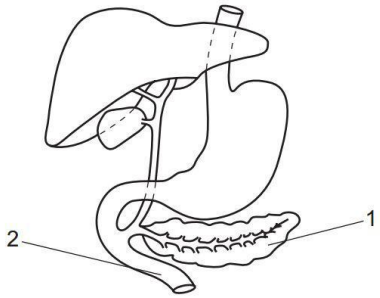
9. The diagram below shows the human urinary system



Which of the following substance is NOT found in the liquid at X in a healthy person?

a. Salt
b. Toxins
c. Urea
d. Glucose

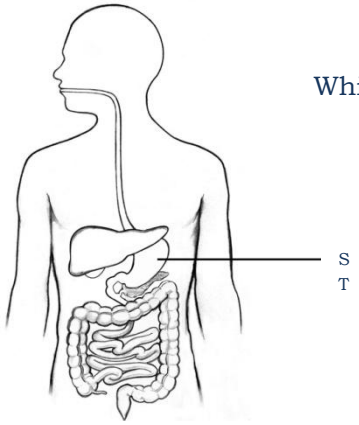
10. The diagram shows part of the digestive system.



What is the function of the liquid produced by part 1 and released into part 2?

a. To prevent further digestion of starch.
b. To digest proteins to amino acids.
c. To increase the surface area of fat droplets.
d. To acidify the contents of part 2.

11. The diagram below shows the digestive system of a human body.



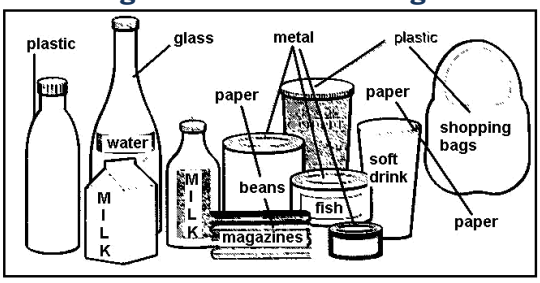
Which of the following takes place at the organ labelled S?

a. Mixture of food is churned into a thick liquid called chyme.
b. Digestion of food is completed and nutrient absorption begins.
c. Water is absorbed from the undigested food.
d. Moisten the food and break food into smaller Particles.

12. In a container, water and ice are found to exist together. What is most likely to be the temperature of the container?

a. Less than 0 °C b. Around –4 °C c. 4 °C d. Exactly 0 °C

13. To recycle waste, things must be sorted into groups according to what they are made of. Here is a drawing of some of the things found in a recycling bin.



Below are different ways of sorting these things. Which method of sorting would group these items for *recycling*?

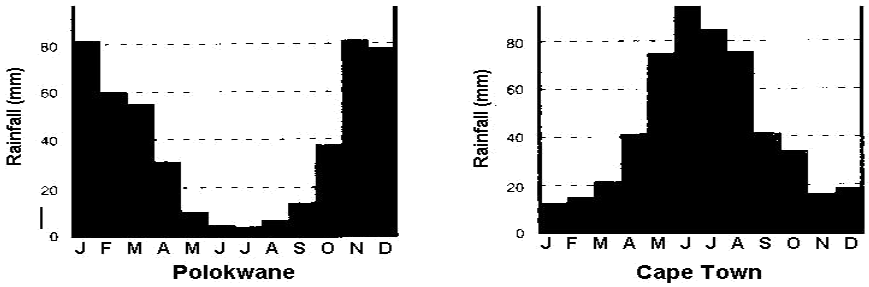
a. Large containers, small containers, flat containers, round containers
b. Plastic containers, glass containers, paper bundles, metal containers
c. Large containers, small containers, paper bundles, metal containers
d. Plastic containers, glass containers, flat bundles, round bundles

14. Roopa was hungry one afternoon and rushed to the pot on the stove to dish some food. The boiling pot had a metal spoon in it and Roopa burnt her hand. Why did she get burnt?

a. The metal spoon chemically reacted with Roopa hand.
b. The metal spoon conducted heat to Roopa hand.
c. The metal spoon conducted electricity to Roopa hand.
d. The metal spoon insulated Roopa hand.

15. A group of students are building a model of an ecosystem. Which of the following organisms should they use to act as a decomposer?

16. The following graphs show average monthly rainfall in *Polokwane* and *Cape Town*.



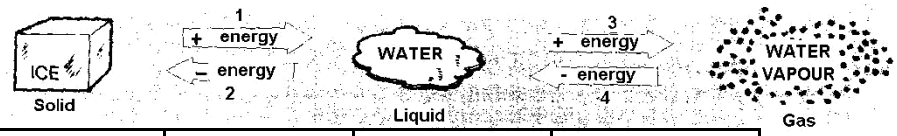
Based on these graphs, which of the following statements are true?

(i) Cape Town gets most of its rain in winter.
(ii) June and July are the driest months in Polokwane
(iii) In Cape Town, the average rainfall is similar for April and September.
(iv) Polokwane usually has a dry summer.

Choose the option that shows the true statements.

a. (i) (iv)
b. (ii) (iii) (iv)
c. (i) (iii) (iv)
d. (i) (ii) (iii)

17. The diagram below represents phase changes of water. Each of the numbers (1 – 4) represents a process of change. Choose the option below that gives the correct names for all four processes.



	1	2	3	4
a.	melting	freezing	evaporation	condensation
b.	dissolving	solidifying	evaporation	precipitation
c.	dissolving	freezing	boiling	precipitation
d.	melting	solidifying	boiling	crystallisation

18. The chemical equation for the process of photosynthesis is:

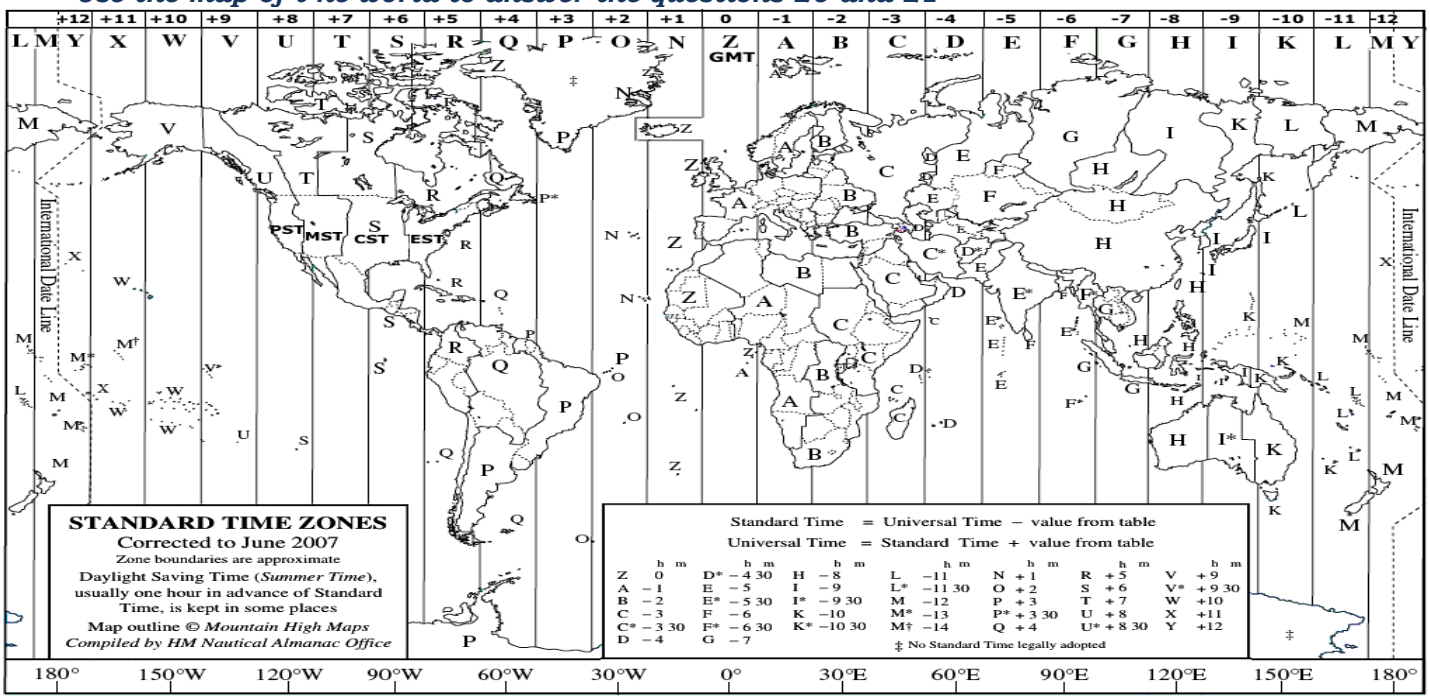
a. $H_2O + CO_2$ $CH_{12}O_6 + O_2$
b. $6\ H_2O + CO_2$ + (light energy) $C_6H_{12}O + 6O_2$
c. $6\ H_2O + 6CO_2$ + (light energy) $C_6H_{12}O6 + 6O_2$
d. $4\ H_2O + 4\ CO_2$ $C_4H_{12}O_4 + 4O_2$

19. Use the table to calculate the age a person would be on Mercury if on Earth the person is 12 years old

Planet	Year length (days)	Time taken to do one orbit in Earth years
Mercury	88	0,24
Venus	225	0,6
Earth	365 1/4	1
Mars	686	1,9
Jupiter	4 329	12
Saturn	10 767	29,5
Uranus	30 660	84
Neptune	59 860	165
Pluto	90 410	248

a. 1 056 years
b. 2, 88 y ears
c. 50 years
d. 0,136 years

Use the map of t he world to answer the questions 20 and 21



WORLD MAP OF TIME ZONES

20. If it is 17:00 on Wednesday in Cape Town, what time is it in Perth, Australia (geographical coordinates: 31° 56' 0" South, 115° 50' 0" East)?

a. 23:00 on Wednesday
b. 23:00 on Thursday
c. midnight on Wednesday
d. midnight on Thursday

21. If it is 07:00 on Friday in San Diego, Chile (geographical coordinates:33° 22' 0" South,70°24' 0"West),what time is it in Cape Town?

a. 13:00 on Friday
b. 01:00 on Friday
c. 13:00 on Saturday
d. 01:00 on Saturday

22. Which of the following is not a unit of time?

a. A light year
b. Second
c. Micro second
d. Nano second

23. When a ship crosses the International Date Line from East to West:

a. It loses one day
c. It loses half a day
b. It gains one day
d. It gains half a day

24. Which waves have the highest frequency?

a. gamma rays
c. ultraviolet rays
b. infrared rays
d. radio waves

25. Examples of a eukaryotic cells_____?

a. Bacterial cells
b. virus cells
c. cytoplasm
d. plant cells

SECTION-II

26. Water is found as a solid, liquid, and gas on ____.

a. Earth b. Mercury c. Mars d. Venus.

27. How many years does it take Pluto to orbit around the sun?

a. 3 b.15 c. 97 d. 248

28. Which planet is not a terrestrial planet?

a. Saturn b. Earth c. Mars d. Venus

29. The 'Pole star' is_____?

a. **North star** b. South star c. East star d. West star

30. The following planet is considered as 'Earth's-twin'

a. Mars b. Mercury c. Venus d. Saturn

31. Which of the following planets has a diameter that is smaller than the diameter of the Earth?

a. Neptune b. Uranus c. Saturn d. Venus

32. Which of the following is true of the Earth as a planet?

I. The Earth revolves around the Sun.
II. The Earth is the third planet from the Sun.
III. The Earth is the smallest planet in our solar system.
IV. The Earth is the only planet that is orbited by exactly one moon.

a. I, II, and IV only
b. I, II, III, and IV
c. II and IV only
d. I and III only

33. Which planet in our solar system has the shortest year?

a. Venus
b. Earth
c. Mercury
d. Mars

34. Many events that occur on Earth and in the solar system are related to the fact that most objects in the solar system move in regular and predictable patterns.

What causes objects in the solar system to move in these regular and predictable patterns?

a. Nuclear forces
b. Frictional forces
c. Electrical forces
d. Gravitational forces

35. Where is the Sun located?

a. Directly in the center of our galaxy
b. Millions of light years above our galaxy's disk of stars
c. On our galaxy's disk of stars, about halfway out from the center
d. Near the center of the galaxy, below the galactic disk of other stars

36. Which planet has a storm that has been raging for centuries?

a. Mars
b. Mercury
c. Jupiter
d. Earth

37. The closer a planet is to the Sun, the _____ the gravitational force between them and the _____ the planet's orbital speed.

a. Weaker; slower
b. Stronger; slower
c. Stronger; faster
d. Weaker; faster

38. Which of the following statements about planetary satellites is true?

a. All planetary satellites are as large as our moon or bigger.
b. All planetary satellites are relatively small, typically having a radius of no more than 20 kilometres.
c. Planetary satellites vary greatly in size, but none are larger than any of the planets in the solar system.
d. Planetary satellites vary greatly in size, from very small, to some that are larger than some planets.

39. In 1801, the Italian astronomer Giusseppe Piazzi discovered a large, rocky body orbiting the Sun. The body was surrounded by other similar rocky bodies that traveled in the same orbit. What did Piazzi most likely discover?

a. A moon
b. A comet
c. A planet
d. An asteroid

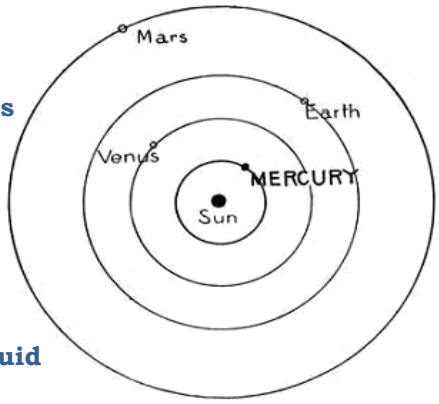
40. Suppose an astronomer discovers a large, spherical-shaped body orbiting the Sun. The body is composed mostly of rock, and there are no other bodies sharing its orbit. What is the best way to categorize this body?

a. Planet
b. Comet
c. Moon
d. Asteroid

41. Asteroids are made mostly of stone, _____ and nickel.

a. Copper
b. Water
c. Iron
d. Gas

42. Examine the diagram below. It shows the relative positions of the inner planets and their orbits.



Which inner planet would have the longest year?

a. Earth
b. Mars
c. Mercury
d. Venus

43. Which of the following moons is most likely to contain liquid water and possibly life?

a. IO b. Ganymede c. Europa d. Triton

44. How many objects in the solar system have been confirmed to currently support life?

a. Four b. Three c. One d. Two

45. Which of the following planets has a shorter year than Earth, as measured in Earth days?

a. Saturn b. Jupiter c. Neptune d. Mercury

46. A piece of solar system debris that passes through Earth's atmosphere and strikes the ground is a/an _____.

a. Meteorite b. Asteroid c. Meteoroid d. Meteor

47. What tool is commonly used to help see more details about the universe?

a. Periscope b. Microscope c. Stethoscope d. Telescope

48. Where Was Rocket Invented?

a. India b. China c. USA d. Russia

49. What does the moon lack?

a. Atmosphere b. Central Core c. Gravitational Force d. Crust

50. Which Planet has great Red spot on its Surface?

a. Saturn b. Jupiter c. Neptune d. Pluto

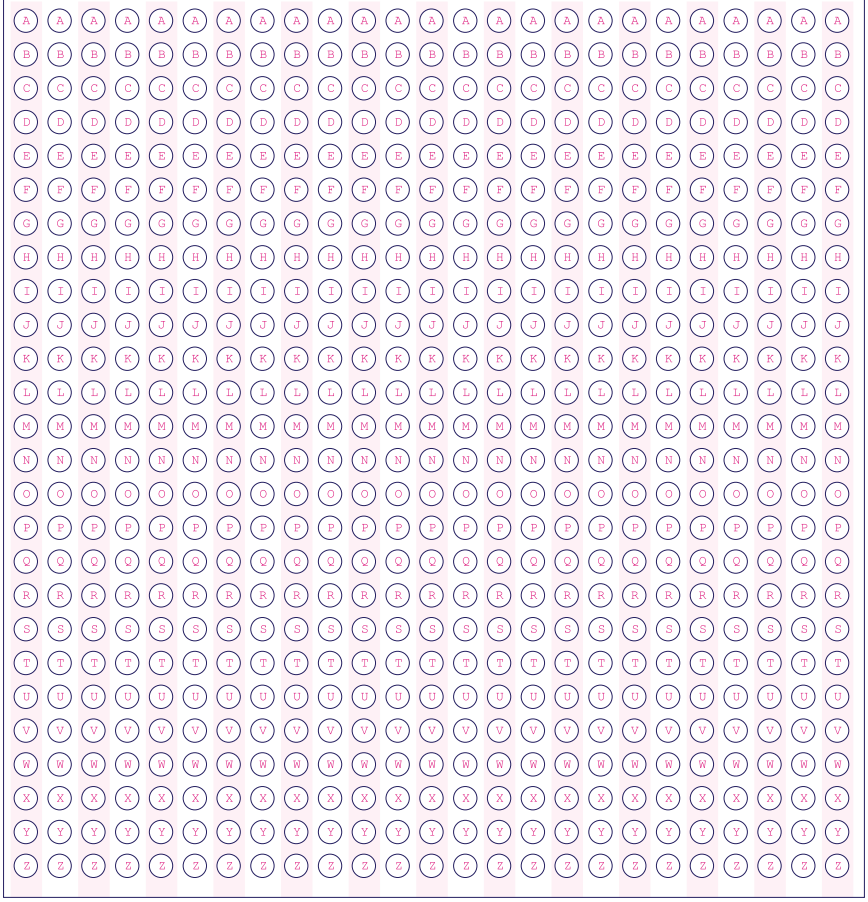
NASO
NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

ANSWER SHEET

National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

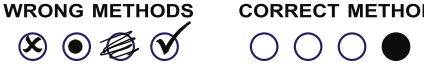
Candidate's Name



INSTRUCTIONS FOR FILLING THE SHEET

1. This sheet should not be folded or crushed.
2. Use only blue/black ball point pen to fill the circles.
3. Use of pencil is strictly prohibited.
4. Circles should be darkened completely and properly
5. Cutting and erasing on this sheet is not allowed.
6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS **CORRECT METHOD**



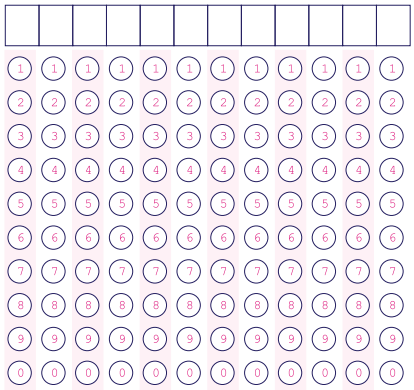
Grade

2nd 3rd 4th 5th 6th 7th 8th 9th 10th

Gender

Male ○
Female ○

RollNo.



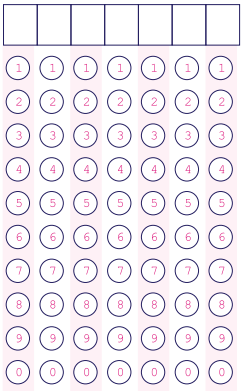
Father's Name

School Name

E-mail Id

City

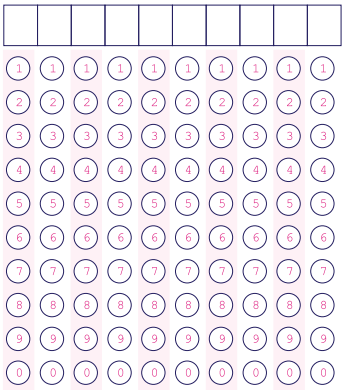
School Code



MARK YOUR ANSWERS HERE

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	○	○	○	11	○	○	○	○	21	○	○	○	○	31	○	○	○	○	41	○	○	○	○
2	○	○	○	○	12	○	○	○	○	22	○	○	○	○	32	○	○	○	○	42	○	○	○	○
3	○	○	○	○	13	○	○	○	○	23	○	○	○	○	33	○	○	○	○	43	○	○	○	○
4	○	○	○	○	14	○	○	○	○	24	○	○	○	○	34	○	○	○	○	44	○	○	○	○
5	○	○	○	○	15	○	○	○	○	25	○	○	○	○	35	○	○	○	○	45	○	○	○	○
6	○	○	○	○	16	○	○	○	○	26	○	○	○	○	36	○	○	○	○	46	○	○	○	○
7	○	○	○	○	17	○	○	○	○	27	○	○	○	○	37	○	○	○	○	47	○	○	○	○
8	○	○	○	○	18	○	○	○	○	28	○	○	○	○	38	○	○	○	○	48	○	○	○	○
9	○	○	○	○	19	○	○	○	○	29	○	○	○	○	39	○	○	○	○	49	○	○	○	○
10	○	○	○	○	20	○	○	○	○	30	○	○	○	○	40	○	○	○	○	50	○	○	○	○

Mobile No.



Candidate's Signature

Invigilator's Signature

CLASS
7

NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

Duration: 60 Minutes **Max Marks: 50**

GENRAL INSTRUCTIONS

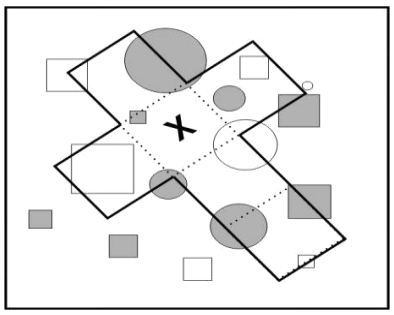
- Please collect the Answer Sheets (OMR) from the invigilator.
- Please Write your Student ID, Name, Class, and School Name on the OMR Sheet.
- This question paper contains 50 Questions, duration is 60 minutes.
- Answer all the questions in OMR sheet only. And please do sign on it.
- Use only Black or Blue Ball Point Pen to answer the question in OMR sheet.
- Indicate the correct answer by darkening on the 4 responses provided.
- After successful completion of the test please submit the OMR answer sheet to the invigilator.

SECTION-I

1. **A RED coloured object in GREEN light looks BLACK because it absorbs all the green light. In BLUE light, how would a YELLOW object look?**

   a. Red
   b. White
   c. Magenta
   d. Black

2. A box is made by cutting and folding a thick sheet having a pattern drawn on it as shown. How many faces of the cube will have a complete circle?



   a. 0
   b. 1
   c. 2
   d. 3

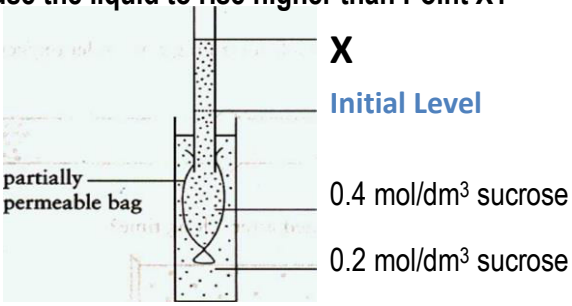
3. **The unit of distance is metres. The unit of time is seconds. Hence the speed of a person who walks 100 metres in 50 seconds is 100m divided by 50 seconds which is 2 m/s or 2 metres per second**.

To find out the speed of gas moving through a large gas pipeline, Oil Company measures that 10 kg of gas flows every 10 seconds. The mass flow rate is obtained by dividing the distance covered by the time taken to cover it. Then, the mass flow rate in the pipeline is 1 _____.

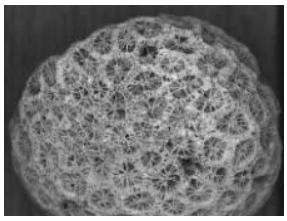
   a. m/s
   b. Kg/m
   c. kg/s
   d. s/kg

4. **The diagram shows the results of an experiment. The liquid in the glass tube rose to point X after 3 hours. In a second experiment, what change could be made to cause the liquid to rise higher than Point X?**

   a. A larger beaker with the same volume of liquid.
   b. A smaller beaker with the same volume of liquid.
   c. Water in the bag with the same beaker size.
   d. Water in the Beaker with the same bag.



5. **This is a picture of a living creature found in seas and oceans. It secretes rock-like deposits that form beautiful reefs. Identify it.**



a. A type of coral
b. A type of fungus
c. A type of cactus
d. A type of mushroom

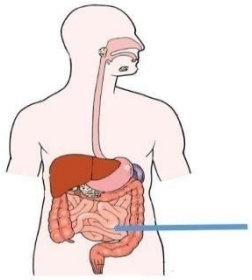
6. **The temperature in the Stratosphere increases with height as compared to Troposphere because:**

a. Both contain Ozone but concentration of ozone is higher in Stratosphere than in Troposphere
b. Sun is closer to stratosphere compared to troposphere.
c. Clouds are present in Troposphere which cool the later.
d. None of the above.

7. **How much of the earth's air is found in the atmosphere inner most layer (troposphere)?**

a. 75 %
b. 65 %
c. 80 %
d. 57 %

8. **The diagram below shows digestive system. Which is INCORRECT about X?**



x

a. X removes solid wastes from the body.
b. Internal lining of X has finger-like projections called villi.
c. Cecum, colon, rectum and anus are parts of X.
d. X helps in water reabsorption into the body

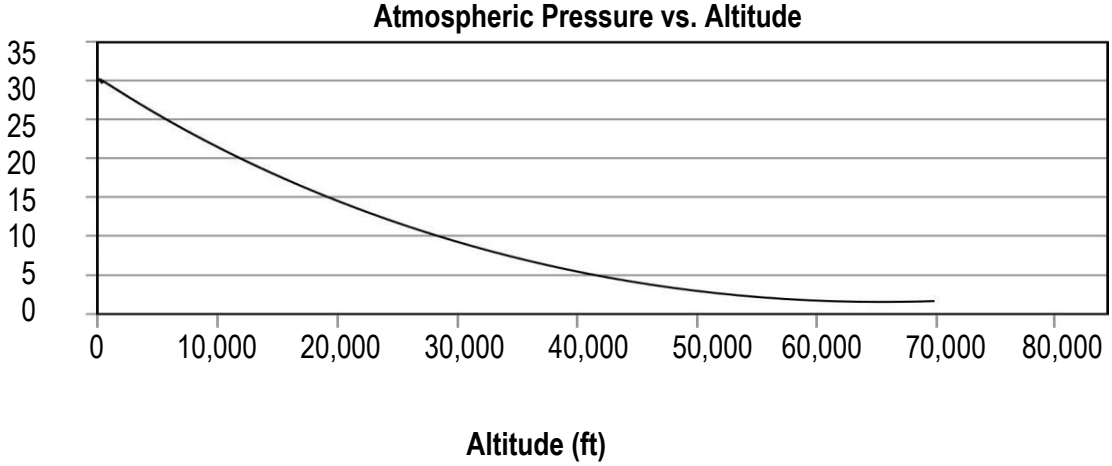
9. **Which health concern is most associated with areas containing a high density of factories and vehicles with gas-burning engines?**

a. increased sensitivity to solar radiation
b. bacterial infections in the digestive tract
c. asthma and other breathing-related issues
d. weakened resistance to infections and viruses

10. **Some arctic species of mammals grow white fur only in winter.. How does this seasonal response most likely help these arctic mammals survive?**

a. It helps them keep warm.
b. It helps them find a mate.
c. It helps them reduce their overall energy needs.
d. It helps them avoid being seen by predators and prey

Use the graph below to answer question 11.



11. **Based on the graph, which statement best describes the relationship between atmospheric pressure and altitude?**

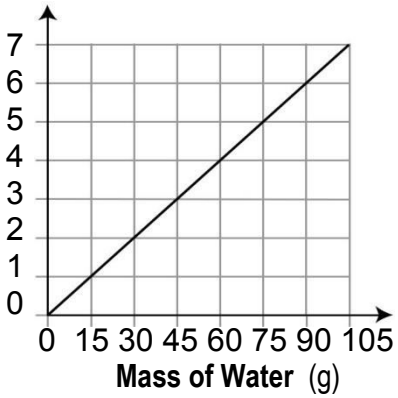
a. Atmospheric pressure controls altitude.
b. Atmospheric pressure is equal to altitude.
c. Atmospheric pressure increases as altitude increases.
d. Atmospheric pressure decreases as altitude increases.

12. In 1901, the SS *Port Morant* became the world's first refrigerated banana ship. It was equipped with carbon dioxide refrigeration. It could carry 23,000 bunches of bananas from Jamaica to England at a controlled temperature. What impact did cargo ship refrigeration systems have on the banana industry?

a. It made transportation of bananas to overseas markets quicker.
b. It made bananas ripen by the time they arrived at their destination.
c .It made bananas sweeter than bananas transported without any cooling.
b. It made shipment of bananas to faraway ports possible with little spoilage.

Use the graph below to answer question 13.

Changes to a Solution



13. The graph shows the relationship between two characteristics of a saltwater solution. Which ratio describes the changes in these two characteristics?

a. 1:7
b.1:15
c. 90:7
d. 105:15

Use the data table below to answer question 14.

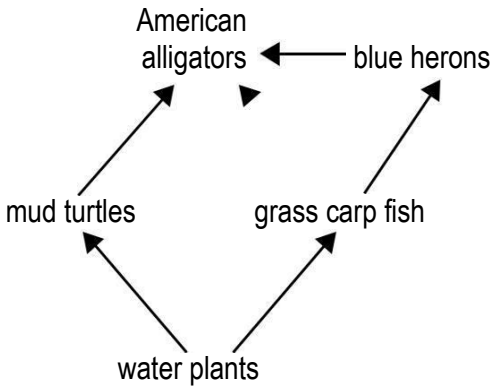
Trial	Time (seconds)		
	Mouse 1	Mouse 2	Mouse 3
1	58	52	67
2	54	50	65
3	53	49	61
4	47	48	57
5	42	46	55

14. **A researcher placed three mice in a maze and recorded the time it took each mouse to complete the maze. Which relationship is best supported by the data collected by the researcher?**

a. More practice resulted in faster maze completion times for each mouse.
b. More practice had no effect on the maze completion times for each mouse.
c. More practice had the greatest effect on Mouse 3's final maze completion time.
d. More practice reduced each mouse's maze completion time by more than 10 seconds.

Use the food web below to answer question 15.

Food Web



15. Which statement **best** describes one way energy flows through this food web?
    a. Energy flows from American alligators to mud turtles to water plants.
    b. Energy flows from American alligators to blue herons to grass carp fish.
    c. Energy flows from water plants to mud turtles to American alligators to grass carp fish.
    d. Energy flows from water plants to grass carp fish to blue herons to American alligators.

Use the chemical equation below to answer question 16.

Formation of Carbon Dioxide

$$C + O_2 \longrightarrow CO_2$$

16. Which statement **best** describes the chemicals in the reaction?

    a. C and O_2 are reactants, and CO_2 is a product.

    b. C and O_2 are products, and CO_2 is a reactant.

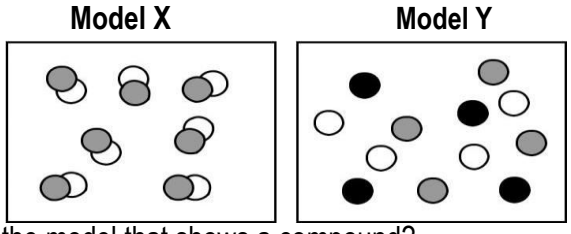
    c. C and CO_2 are products because they contain carbon.

    d. C, O_2, and CO_2 are all reactants because they are involved in a reaction.

17. Which statement best explains the importance of fossils to scientists?

a. Fossils show how animals viewed their surroundings, so scientists know more about past animals.
b. Fossils show what color animals once were, so scientists know more about what they ate.
c. Fossils show where animals once lived, so scientists know more about the environment and how it has changed.
d. Fossils show that animals lived in the same location today as they once did, so scientists know more about today's environment.

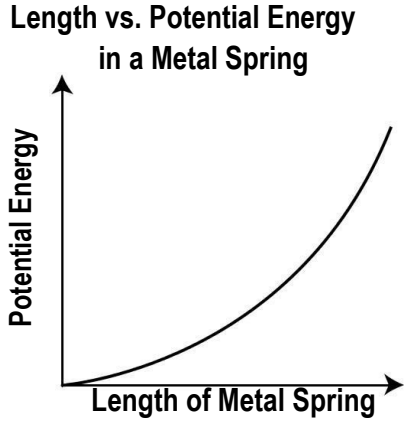
Use the diagrams below to answer question 18.



18. Which statement **best** describes the model that shows a compound?

a. Model X shows a compound because there are two different types of atoms.
b. Model X shows a compound because two different atoms are chemically bonded together.
c. Model Y shows a compound because there is more than one type of atom.
d. Model Y shows a compound because each pair of matching atoms can form a chemical bond.

Use the graph below to answer question 19.



19. Which statement **best** describes the relationship between the length of a metal spring and its potential energy as shown in the graph?

a. Increased potential energy in the spring forces it to extend.
b. Increased potential energy in the spring forces it to contract.
c. As the length of the spring increases, its potential energy increases.
d. As the length of the spring increases, its potential energy decreases.

20. Which of the following animal can breathe through skin as well through lungs?

a. Fish b. Mammal c. Cockroach d. Frog

21. During Inspiration or Inhalation, what happens inside lungs?

a. Volume decreases pressure increases
b. Volume increases pressure decreases
c. Volume decreases pressure decreases
d. Volume increases pressure increases

22. **When a ray of light enters a glass, and moves out of it. Ray before it entered and ray after it left glass are__?**

a. Perpendicular b. Parallel c. At a certain angle d. At critical angle

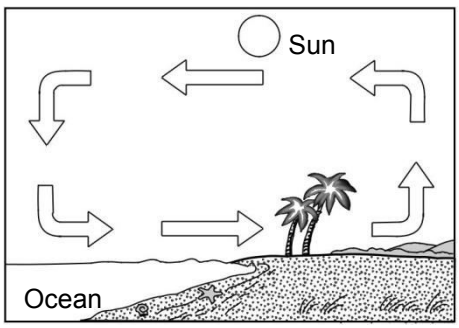
23. **The dew point is 15°C. What is the wet-bulb temperature on a sling psychrometer if the dry-bulb temperature is 18°C?**

a. 16°C b. 2°C c. 3°C d. 20°C

24. Equal masses of basalt, granite, iron, and copper received the same amount of solar energy during the day. At night, which of these materials cooled down at the fastest rate?

a. Basalt b. Granite c. Iron d. Copper

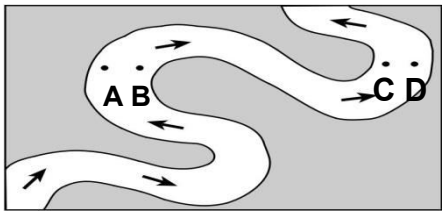
25. Arrows in the diagram below represent the daytime flow of air over a coastal region.



Which process primarily transfers heat by moving air?

a. Conduction c. Radiation
b. Convection d. transpiration

26. The map below shows a stream. Letters *A*, *B*, *C*, and *D* represent locations on the stream surface. Arrows represent the direction of stream flow.



Which two locations have the greatest stream velocities?

(a) *A* and *B* (c) *C* and *D*
(b) *B and C* (d) *D and A*

27. **Clouds most likely form as a result of_____?**

a. moist air rising, compressing, and warming
b. moist air rising, expanding, and cooling
c. dry air rising, compressing, and warming
d. dry air rising, expanding, and cooling

28. **When we inhale_____?**

a. The diaphragm is pushed up and the rib cage is pushed downwards
b. The diaphragm is pulled down and the rib cage is pushed downwards
c. The diaphragm is pulled down and the rib cage is pulled upwards
d. The diaphragm is pushed upwards and the rib cage is pulled upwards

29. **When an electric current is forced through a conductor against resistance, electrons collide with atoms of conductor, which makes them_____?**

a. Hot b. Vibrate Faster c. Cold d. Collide more

30. **After root has grown downwards, a small shoot grows up towards light, this shoot is known as_____?**

a. Radicle b. Stem c. Plumule d. Cotyledon

SECTION-II

31. Consider the following statements. Identify the right ones.

I. The most popular argument regarding the origin of the universe is the Big Bang Theory.
II. It is also called expanding universe hypothesis because universe is expanding by accelerating speed.

a. I only c. II only
b. Both d. None

32. **Hubble's Law enables astronomers to estimate the distance to a galaxy if they can determine the galaxies?**

a. Velocity of recession. c. Mass.
b. Spectral type. d. Temperature.

33. **The ecliptic plane is _____?**

a. The plane in which the comets orbit the Sun. c. The plane in which the planets orbit the Sun.
b. The plane in which the Moon orbits the Earth.
d. The plane in which the satellite Dactyl orbits the asteroid Ida

34. **Galileo found that the Ptolemaic system cannot explain____?**

a. Lunar phases. c. His observations of parallax.
b. The retrograde motions of the planets. d. His observation of the phases of the planet Venus

35. **The main sequence is primarily a sequence in stellar _____?**

a. Size. c. Mass.
b. Age. d. Composition.

Use the drawing below to answer question 36.

951 Gaspra

36. **The drawing shows the asteroid 951 Gaspra as seen by the Galileo spacecraft as it passed through the asteroid belt. How is this asteroid different from a moon?**

    a. Unlike a moon, Gaspra has a gravitational force.
    b. Unlike a moon, Gaspra is made of solid materials.
    c. Gaspra would be classified as a moon if it were close to a planet.
    d. Gaspra would be classified as a moon if it began orbiting a planet.

37. **If the plane of the earth's equator were not inclined to the plane of the earth's orbit,**

    a. The year would be longer
    b. There would be no change of seasons
    c. The winters would be longer
    d. The summers would be warmer

38. **First artificial satellite sent in space was_____?**

    a. Sputnik 1 b. Explorer 1 c. Sputnik 2 d. Explorer 2

39. **Which planet has a density that is *less* than the density of liquid water?**

    a. Mercury b. Earth c. Mars d. Saturn

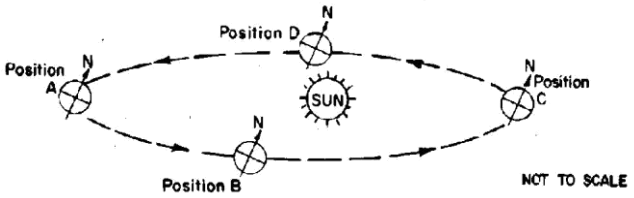
40. **Which statement best explains why stars viewed from the Northern Hemisphere appear to revolve around *Polaris*?**

    a. *Polaris* rotates on its axis.
    b. *Polaris* revolves around Earth.
    c. Earth rotates on its axis.
    d. Earth revolves around *Polaris*.

41. **Earth's rate of revolution is approximately _____?**

    a. 1° per day b. 15° per day c. 23.5° per day d. 360° per day

Base your answers to questions **42** through **45** on the diagram below which shows four positions of the Earth in its orbit around the Sun. The diagram indicates relative positions of the Earth to the Sun, but the diagram has *not* been drawn to scale.



42. **When the Earth is at position *A*, where will the Sun appear to rise anywhere in New York State?**

    a. Due west b. North of due east c. Due east d. South of due east

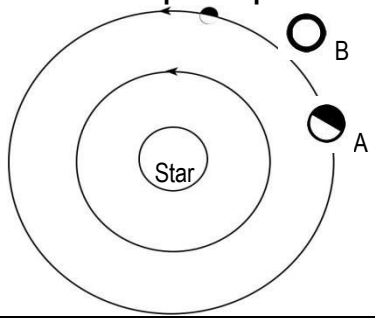
43. **In which position would New York State receive the maximum insolation?**

    a. A **b. B** **c. C** **d. D**

44. **As the Earth moves from position *B* to position *C*, its orbital velocity will_____?**

    a. Decrease b. Increase c. Remain the same d.Slight change

45. **The diagram below represents two planets of equal mass, *A* and *B*, revolving around a star. The planets are represented at specific positions in their orbits.**



When both planets are at the positions represented, planet *B*

a. Can be seen at night from planet *A*, and planet *B* is moving faster in its orbit
b. Can be seen at night from planet *A*, and planet *B* is moving slower in its orbit
c. Cannot be seen at night from planet *A*, and planet *B* is moving faster in its orbit
d. Cannot be seen at night from planet *A*, and planet *B* is moving slower in its orbit

46. **The diagram below represents a model of the size of the Sun and indicates the color of the Sun.**

Yellow star

Which diagram best represents the relative size and indicates the color of *Polaris* compared to the Sun?

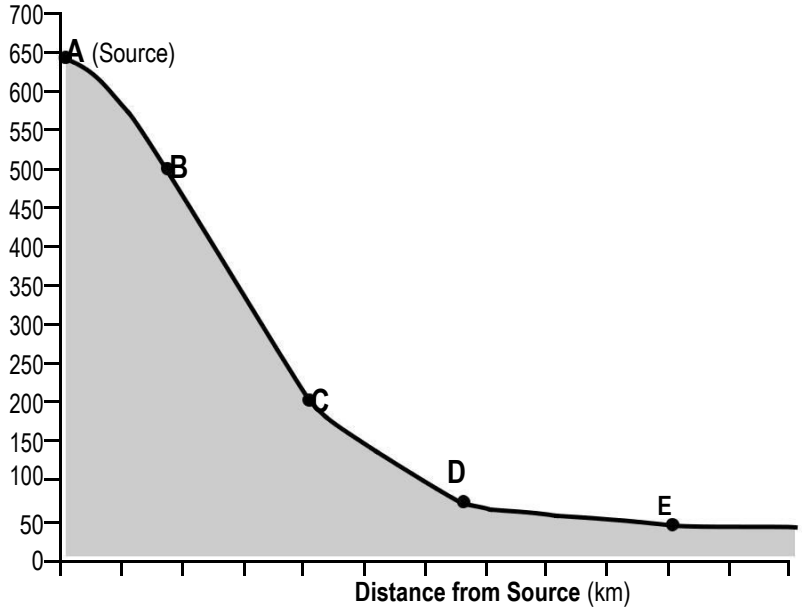
Red Star (a) Red Star (b) Yellow Star (c) Yellow Star (d)

47. **Compared to terrestrial planets, Jovian planets have_____?**

a. Smaller equatorial diameters and shorter periods of revolution
b. Smaller equatorial diameters and longer periods of revolution
c. Larger equatorial diameters and shorter periods of revolution
d. Larger equatorial diameters and longer periods of revolution

Base your answers to questions 48 through 50 on the cross section and data table below and on your knowledge of Earth science. The cross section shows the profile of a stream that is flowing down a valley from its source. Points *A* through *E* represent locations in the stream. The data table shows the average stream velocity at each location. The volume of water in the stream remains the same at all locations.

Stream Profile



Location in Stream	Average Stream Velocity (cm/s)
A	10
B	110
C	130
D	20
E	15

48. **The average stream velocity at each location is controlled primarily by the?**

a. Elevation above sea level
b. Slope of the land
c. Sediment carried by the stream
d. Distance from the stream's source

49. **What is the largest type of sediment that could be transported at location *B*?**

a. Silt b. Sand c. Pebbles d. Cobbles.

50. **Which features could be formed by the stream between locations *D* and *E*?**

a. Meanders b. Kettle lakes c. barrier islands d. drumlins

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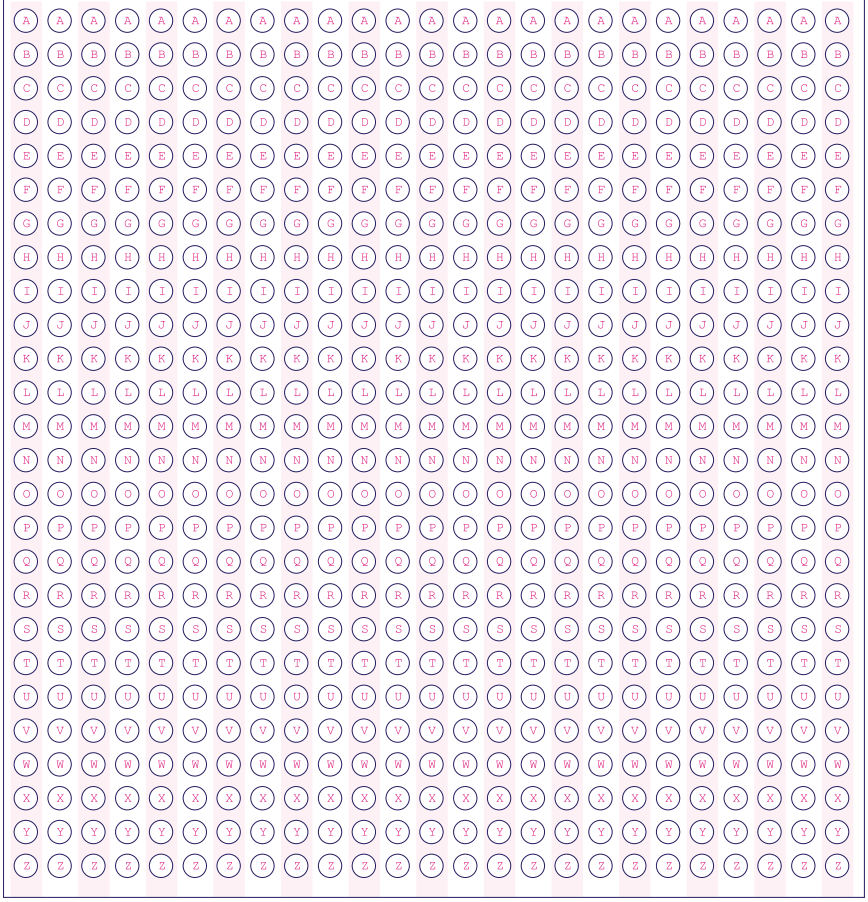
ANSWER SHEET

National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

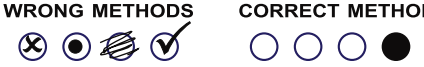
Candidate's Name



INSTRUCTIONS FOR FILLING THE SHEET

1. This sheet should not be folded or crushed.
2. Use only blue/black ball point pen to fill the circles.
3. Use of pencil is strictly prohibited.
4. Circles should be darkened completely and properly
5. Cutting and erasing on this sheet is not allowed.
6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS **CORRECT METHOD**



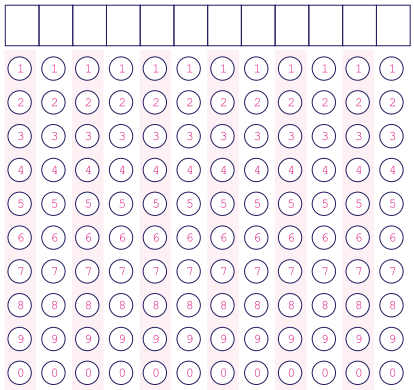
Grade

2nd 3rd 4th 5th 6th 7th 8th 9th 10th

Gender

Male ○
Female ○

RollNo.



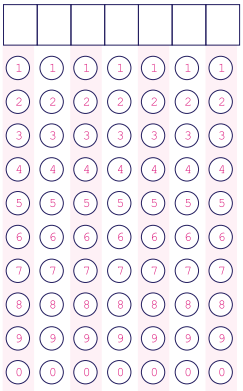
Father's Name

School Name

E-mail Id

City

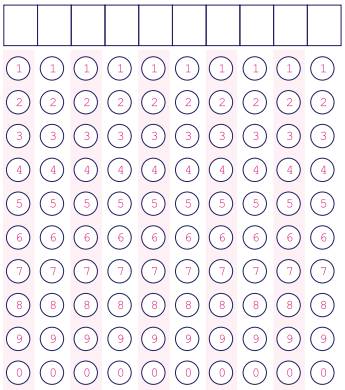
School Code



MARK YOUR ANSWERS HERE

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	○	○	○	11	○	○	○	○	21	○	○	○	○	31	○	○	○	○	41	○	○	○	○
2	○	○	○	○	12	○	○	○	○	22	○	○	○	○	32	○	○	○	○	42	○	○	○	○
3	○	○	○	○	13	○	○	○	○	23	○	○	○	○	33	○	○	○	○	43	○	○	○	○
4	○	○	○	○	14	○	○	○	○	24	○	○	○	○	34	○	○	○	○	44	○	○	○	○
5	○	○	○	○	15	○	○	○	○	25	○	○	○	○	35	○	○	○	○	45	○	○	○	○
6	○	○	○	○	16	○	○	○	○	26	○	○	○	○	36	○	○	○	○	46	○	○	○	○
7	○	○	○	○	17	○	○	○	○	27	○	○	○	○	37	○	○	○	○	47	○	○	○	○
8	○	○	○	○	18	○	○	○	○	28	○	○	○	○	38	○	○	○	○	48	○	○	○	○
9	○	○	○	○	19	○	○	○	○	29	○	○	○	○	39	○	○	○	○	49	○	○	○	○
10	○	○	○	○	20	○	○	○	○	30	○	○	○	○	40	○	○	○	○	50	○	○	○	○

Mobile No.



Candidate's Signature

Invigilator's Signature

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Grade 7

Set- B

Total Questions : 50
Time : 1 hr.

DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

Name :.....

Class :..... Section :..... Roll No .:.....

Contact No.....

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INSTRUCTIONS

- Please collect the Answer Sheets (OMR) from the invigilator.
- Please Write your Student ID, Name, Class, and School Name on the OMR Sheet.
- This question paper contains 50 Questions, duration is 60 minutes.
- Answer all the questions in OMR sheet only and please do sign on it.
- Use only Black or Blue Ball Point Pen to answer the questions in the OMR sheet.
- Indicate the correct answer by darkening one of the 4 responses provided.
- After successful completion of the test, please submit the OMR answer sheet to the invigilator.

1. During sexual reproduction cycle of the plant, the butterfly on the flower helps in which process?

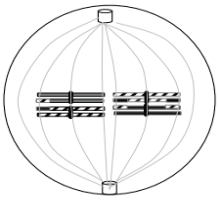
A) Pollination. B) Fertilization. C) Germination. D) Photosynthesis.

2. In an experiment, the students exhaled air in lime water through a straw. They noticed bubbling. Why was that?
   A) CO_2 exhaled in air. B) Unwanted particles exhaled in the air.
   B) O_2 Exhaled in air. D) Both CO_2 and O_2 are exhaled in air.

3. Which of the given diagrams make good use of any kind of periodic motion?
   A) Sun dial and table clock.
   B) Table clock and wall clock.
   C) Wall clock and sundial.
   D) All of them



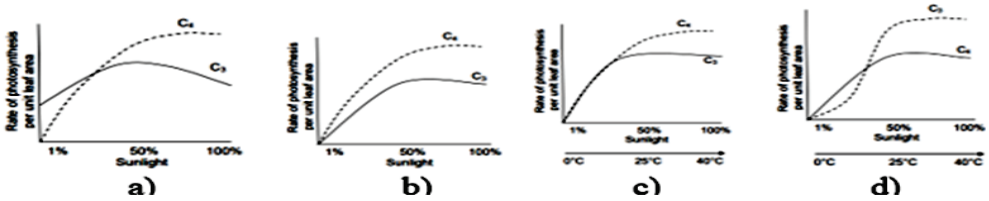
4. The figure shows a particular type of cell division. What does this stage of cell division shows?
   A) Meiotic metaphase I with n = 4
   B) Meiotic metaphase II with n = 4
   C) n = 8, Meiotic metaphase II.
   D) n = 2, Meiotic metaphase I.



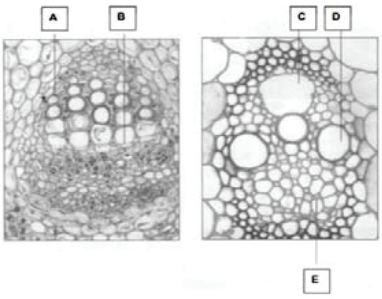
5. In a suspension of red blood cells (RBC), urea, ethyl urea, and dimethyl urea were added separately in equal concentrations.What will be the relative order of rates of diffusion of these molecules into RBCs?
   A) 1 > 2 > 3 B) 1 > 2 = 3 C) 3 > 2 > 1. D) 3 = 2 > 1

6. Red Oak is such a plant species that can tolerate even the severe drought over a long period of time without affecting its process of photosynthesis.
   Which adaptation can be responsible for this ability of Red Oak?
   A) Stomata closure B) Large negative leaf water potential.
   C) Kranz leaf anatomy D) Root surface area increases because of fibrous root system

7. C3 and C4 denotes the path of different plants' photosynthesis process. Choose from the given graphs the one that correctly represents the photosynthetic efficiencies of C3 and C4 plants.



8. In an experiment, a lily plant was placed in water tinted with red ink. The purpose was to monitor the movement of water through its stem. Obtained results show two transverse sections of stems, as given below. In which of the labeled structures would you expect the red color of the ink?
   A) A B) B
   C) C D) D



9. There are various animals that can survive both on land and in water. Which of the following 3 points discusses the advantage of breathing in air over breathing in water?
I. Less energy is required to move air over respiratory surfaces as air is less dense than water.
II. Oxygen diffuses slower in water than it does through air.
III. For a given amount of volume, the oxygen content of air is greater than that of water.

A) Only I and II. B) Only I and III.
C) Only II and III. D) I, II and III.

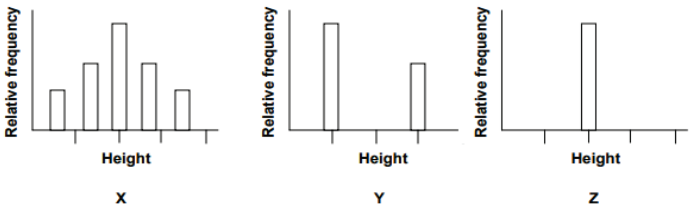
10. Rajiv found a starfish in the beach one morning. He was able to tell that it is an echinoderm. Which characteristics do you think allowed him to declare the starfish found on the beach as an echinoderm?
A) Radial symmetry, with presence of spines and tube feet.
B) Radially symmetric adults with dorsal hollow notochord.
C) Exoskeleton with pharyngeal gill-slits and tube feet.
D) Radially symmetric adults with mantle cavity.

11. A population is drinking water contaminated with a modified bisphenol-A. This is not degraded in the body. As a result, there are measurable levels of this compound in the blood. Consider the case when modified bisphenol-A acts as an oestrogen-mimicking compound. What would be the result then?
A. Males sperm production would have decreased.
B. Males would have elevated levels of follicle-stimulating hormone.
C. Females would have elevated levels of gonadotropin-releasing hormone.
D. Males would have elevated levels of blood testosterone.

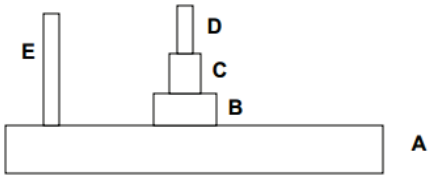
12. Let us say if a molecule of carbon dioxide released in your left foot into the blood and managed to travel out of your nose. It must have passed through various parts of the body, except the_____?
A. Right atrium B. Pulmonary vein. C. Alveolus D. Bronchus

13. A mink breeder discovers that he is making less money when he sold fur of his minks. 9% of his minks, on an average, have rough fur because he allows random mating among his minks. So he decides not to allow minks with rough fur to mate so as to focus upon smooth fur. An autosomal recessive allele is responsible for this rough fur feature. What percentage of minks of next generation will he obtain that will have rough fur?
A. 7.3 B. 5.3 C. 25 D. 23

14. The phenotypes of three experimental populations of plants are shown in the following graphs.
What does the three populations X, Y and Z represent, respectively:
A. F1, F2 and F3 generations
B. P, F1 and F2 generations
C. F2, P and F1 generations
D. F3, F1 and F2 generations



15. The given diagram denotes a typical biomass pyramid structure. If A represents a primary producer, then what is E most likely to be?



A. Photo-litho-heterotroph.
B. Chemo-organo-heterotroph.
C. Chemo-litho-autotroph.
D. Photo-organo-heterotroph.

16. Identify the physical principle which is used in the case of working of chimneys of furnaces.

A) Convection in water. B) radiation in heat.
C) Convection in air. D) Conduction in air.

17. Animals can use their circadian clocks to determine direction from the position of the sun. In a particular experiment conducted in Iceland, a bird, kept in a cage open to the sky, was trained to seek food on the western side. Its circadian rhythm was phase shifted and was delayed by 6 hours. At 12.00 noon real time, the bird was returned to its open cage. Then its area of food search was observed. In which direction do you think the bird will go to seek food?

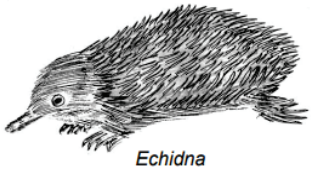
A. North. B. South. C. East. D. West

18. Which of the following makes vascular system in a plant?

A) Xylem and leaves. B) Phloem and leaves.
C) Xylem and phloem. D) Phloem and roots.

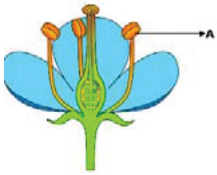
19. Echidna has been classified as a mammal although it lays eggs. It is because of the presence of mammary glands. Given are a few additional features. Identify those features that support its inclusion in the class Mammalia?

I. Body hair.
II. Pituitary and thyroid gland.
III. A 4-chambered heart.
IV. A diaphragm.
V. Enucleated red blood cells..


Echidna

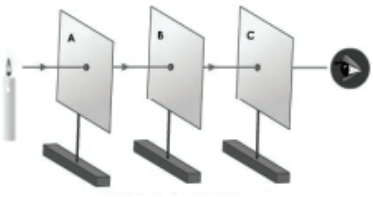
A. III and II. B. I, IV and V C. Only I and IV D. I, IV and V

20. The cross section of an insect pollinated flower is shown here. Identify the function of Part a.



A) It produces pollen grains. B) Fertilization.
C) It receives pollen grains. D) It produces egg cells.

21. Given diagram shows a set-up of three cardboard sheets with symmetric holes on them and a candle at of the ends. An observer is peeking through the holes. Which property of light is shown in this set-up?

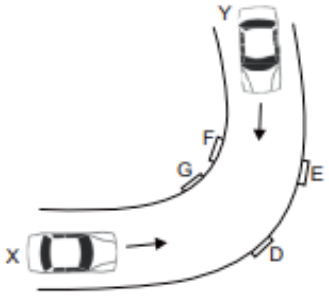


A) That light can bend when it changes mediums.
B) Light gets reflected back into same medium.
C) Light travels in a linear path.
D) All of these

22. One of the Abiotic components present in the environment is air. The air is majorly made up of Nitrogen, Oxygen, Argon, and Carbon dioxide. The given options show schematic order of percentage of each of these components. Identify the correct arrangement in decreasing order.
A) Oxygen < Nitrogen < Argon < Carbon dioxide
B) Nitrogen > Oxygen > Argon > Carbon dioxide
C) Nitrogen < Argon = Oxygen < Carbon dioxide
D) Carbon dioxide = Oxygen > Nitrogen > Argon

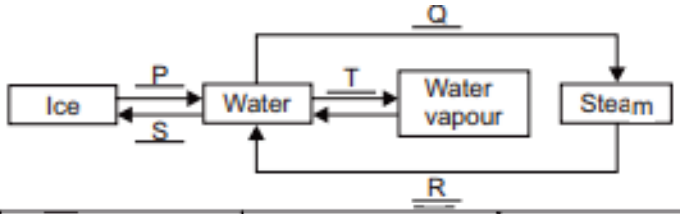
23. A red car covers the distance 200 m in 20 seconds and a blue car covers the distance 20 km in 20 minutes. Which car has the greater speed?
A) Red car B) Blue car C) Both have equal speed. D) All of these

24. Two cars X and Y are travelling in opposite directions on a narrow road as shown here. Four possible position for placing a mirror are labelled D, E, F and G. At what position will you suggest a mirror could be placed in order to avoid an accident?
A) E B) D C) G D) F



25. Three glasses P, Q and R having equal amount of water were taken and equal amount of salt was added to each one of them. Certain activities were done on the three glasses: P was cooled, Q was heated and R was not disturbed. In which of the glasses the water will now tastes most salty?
A) P B) Q C) R D) All will taste the same

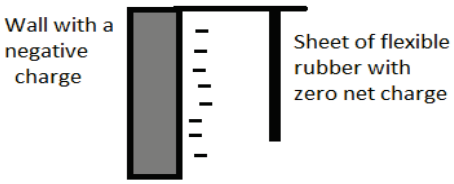
26. Observe the given diagram carefully and fill in the blanks.



	P	Q	R	S	T
(A)	Freezing	Boiling	Condensation	Melting	Evaporation
(B)	Freezing	Evaporation	Boiling	Melting	Condensation
(C)	Melting	Boiling	Condensation	Freezing	Evaporation
(D)	Melting	Evaporation	Condensation	Freezing	Boiling

27. Neutral insulator P is rubbed with neutral insulator Q. Insulator P becomes positively charged after the rub. Which of the following statements is correct?
A) P loses some electrons to insulator Q.
B) Q loses some electrons to insulator P.
C) P gains positive charge from insulator Q.
D) Q gains positive charge from insulator P.

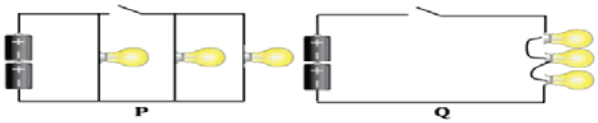
28. A non-conducting wall is given a negative net charge. A sheet of very flexible rubber is suspended from the ceiling, near the charged wall. This sheet has zero net charge of its own.What will be the effect on the rubber sheet?



A) Since rubber is an insulator, the rubber sheet will not be affected by the charges on the wall.
B) As the rubber sheet has zero net charge hence it cannot be affected by the charged wall.
C) The rubber sheet will bend away from the wall due to the electrical repulsion.
D) The rubber sheet will bend towards the wall due to the polarization of the rubber molecules by the charged wall.

29. Raj was trying to charge his laptop while suddenly there was a short circuiting in the plug. Soon, there was a fire outbreak into the plug. He ran to fetch a bucket of water from his bathroom to turn-off fire. But his mother stopped him instantly from doing so. She said using water is not a good idea. What can Raj do instead?
A. He should put out fire by blowing air to it.
B. He should put out fire by using a dry blanket.
C. He should put out fire using some sand.
D. He should put out fire by sprinkling some petrol to it.

30. The two electrical circuits given here consist of similar bulbs and dry cells. Which of the following statements about the given circuits is correct?



A. All the bulbs in circuit P will not light up when the switch is open.
B. At least one bulb will still be able to light up in case the middle bulb in circuit Q blows.
C. One bulb in circuit P will light up when the switch is open.
D. The bulbs in circuit Q are brighter than those in circuit P when all the switches are closed.

31. The unit on a graph paper is changed in scale from 1 cm to 1 inch. By what % will that change the area of the unit cell?
A) 84% B) 254% C) 545% D) 645%2.

32. It is confirmed that Jupiter has 79 moons in total. It has four Galilean moons, so called because it is discovered by Galileo Galilei. Out of these Galilean Moons, which is the farthest from Jupiter?
A) Adrastea B) Ganymede C) Megacite. D) Callisto.

33. All the planets in our solar system have some portion of gases in different proportions and components. Differentiation of these gases can be based on a number of principles, like -the principle that different _____ gases have different. What will go in the blank?

A) Colors. B) Odor. C) Boiling Points D) Molecular mass.

34. There are a number of constellations in our universe and some of them are even visible from earth. Identify out of the given options, the constellation that is visible during the summer?
A. Delphinus B. Taurus C. Monoceros D. Eridanus.

35. International Astronomical Union recognizes 88 complete constellations. There are several small groups of stars that does not make up into these 88 constellations. These are called asterism. One example is Winter Triangle asterism, which is approximately an equilateral triangle, with three stars on the three vertices. Which stars make up the Winter Triangle asterism?
A.Regulus, Spica, Arcturus B.Sirius, Procyon, Betelgeuse
C.Vega, Altair, Deneb D.Alpheratz, Algenib, Markab

36. The position of the moon at a mean solar time- 8:00 pm, is at its upper culmination at 8pm. Estimate the phase of the moon.
A) Waning Gibbous B) Waning Crescent C) Waxing Gibbous D) Waxing Crescent

37. Arrange the following stages of the life cycle of a star of one solar mass in chronological order - Red-giant branch, Planetary nebula, White dwarf, Main sequence star, Helium Flash.
A) White dwarf, Main sequence star, Red-giant branch, Helium Flash, Planetary nebula
B) Main sequence star, White dwarf, Helium Flash, Red-giant branch, Planetary nebula.
C) Main sequence star, Red-giant branch, Helium Flash, Planetary nebula, White dwarf
D) Helium Flash, Main sequence star, Red-giant branch, White dwarf, Planetary nebula

38. The James Webb Space Telescope is to be sent to the second Lagrange point of the Earth-Sun system. What is the significance of doing so?
A) To maintain its orbit B, a little more energy of the telescope would be expenditure.
B) The telescope will be shielded by Earth from the intense solar radiation
C) The telescope will be shielded by the Moon from the solar radiation
D) None of the above.

39. There are a huge number of known and unknown exoplanets in our universe. Scientists use a series of methods to detect them. Which of the following is/are possible method of detecting exoplanets?
A) To observe the gravitational influence – caused wobbling of the parent star.
B) In order to observe the Parent planet's emission of Doppler shift of light.
C) So as to observe the periodic dips in the brightness of the parent star.
D) All the above methods are valid.

40. Approximately how much higher is the limiting magnitude of a telescope than that of the human eye? Let us say the aperture of telescope is 200mm and 5 mm is the diameter of the human iris. (A magnitude difference of 5 corresponds to a 100-fold difference in luminosity).
A) 1 B) 4. C) 8 D) 20.

41. An Alt-az mount telescope has an additional arrangement that moves the optics in altitude or azimuth. What could be the possible advantage of using an Equatorial telescope mount as compared to an Alt-az mount?
A. It provides a more stable viewing platform because of reduced vibrations.
B. It is more convenient for tracking the diurnal motion of the stars
C. It can be folded into more compact as compared to an Alt-az mount.
D. It is less complex.

42. Consider a meteor orbiting around the sun with point of closest approach as 1AU. On a parabolic orbit around the sun, what would be the maximum speed of a meteor?
A. 42.1 km/s B. 58.4 km/s
C. 77.1 km/s D. 92.8 km/s

There are many ways to send a spacecraft to mars. One of those would be to employ an orbit in the shape of eclipse with Earth at its perihelion and Mars at its aphelion. Let us assume that Mars revolves around the Sun in a circular orbit of radius 1.52 AU.

Answer Q43 and Q44

43. How much time does the spacecraft take to reach Mars?
A) 0.3 yrs. B) 0.7 yrs. C) 0. 1 yrs. D) 3.7 yrs.

44. Let the spacecraft is launched in the prograde direction, which is in the same direction as that of the orbits of the planets with its aim to reach its destination. Find the elongation angle of mars. The elongation angle of mars is the angle between the Sun and mars as observed from the earth is called elongation angle.
A) 50- 90 degrees. B) 80- 100 degrees. C) 0-45 degrees. D) Cannot determine.

45. The density at which the gravitational attraction of matter within the universe is balanced with its expansion is called critical density of the Universe. It is in such a way that neither will ultimately prevail. What will happen if the density of the universe were lower than this critical density?
A. Expansion will continue indefinitely. B. Universe will contract.
C. Universe will remain the same. D. None of the above is true.

An observer recorded that a star culminated at 02:54 and set at 05:45 on September 8. Avoid the effects of irregularities of the horizon.

46. What will the time be when the star rises on September 9, 2013?
A. 15:00. B. 23:55 C. 10:00 D. 12:00

47. To see the rising of the star, in which direction (approximately) do you need to wait for the rising of the star? Choose one of the alternatives:
A. N B. NE C. SE D. NW.

48. Raghu says that - All stars except pole star rise in the east and set in the west. Ravi knows that Raghu is not completely correct. Help Ravi find a correct explanation for his answer:
A. Several stars around pole star would never go below horizon.
B. Pole star is at the pole.
C. Pole star is the brightest.
D. None of these.

49. The path taken by MOM was essentially part of an elliptic orbit around the Sun, after leaving the sphere of influence of the Earth. Which famous law determines the time taken by Mars Orbiter Mission (Mangalyaan) from the moment it left the Earth's orbit till it was captured by the gravity of Mars?
A. law of gravitation. B. Kepler's law.
C. Newton's first law. D. None of the above.

50. A spaceship sends a proton beam in the plane of the Earth's magnetic equator that emits around 1.6×10^7 A number of protons per second. 1.28×105 km. is the closest distance of the beam to the center of the earth. The magnetic field at the midpoint of the separation between the proton beam and the center of the earth is zero.At what position will an observer on the ship will see the Earth?
A. The Earth would be seen on the right side.
B. The Earth would be seen on the left side
C. The Earth would be seen straight.
D. The Earth would be seen on the back side.

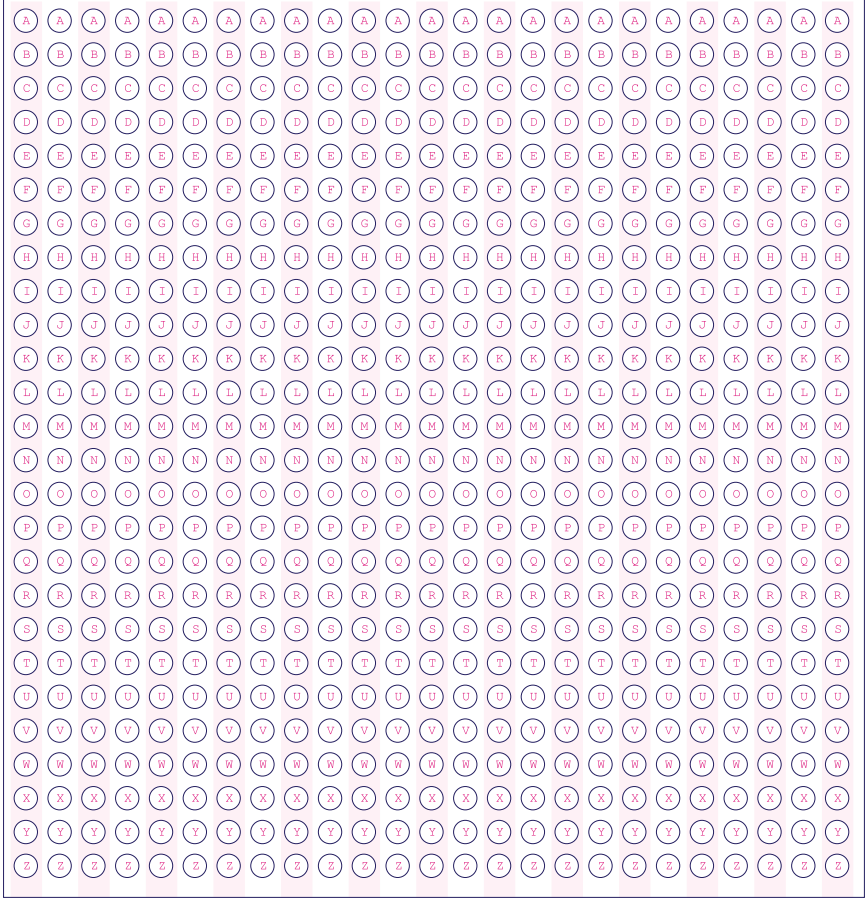
NASO
NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

ANSWER SHEET

National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

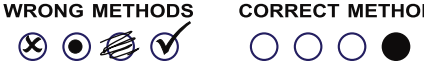
Candidate's Name



INSTRUCTIONS FOR FILLING THE SHEET

1. This sheet should not be folded or crushed.
2. Use only blue/black ball point pen to fill the circles.
3. Use of pencil is strictly prohibited.
4. Circles should be darkened completely and properly
5. Cutting and erasing on this sheet is not allowed.
6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS **CORRECT METHOD**



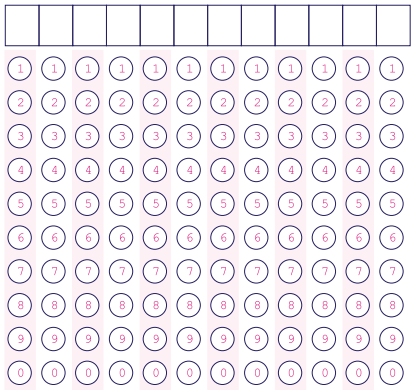
Grade

2nd 3rd 4th 5th 6th 7th 8th 9th 10th

Gender

Male ○
Female ○

RollNo.



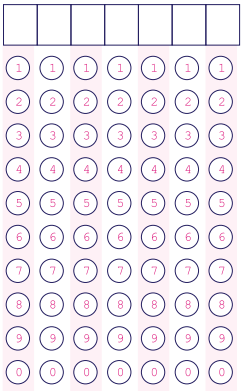
Father's Name

School Name

E-mail Id

City

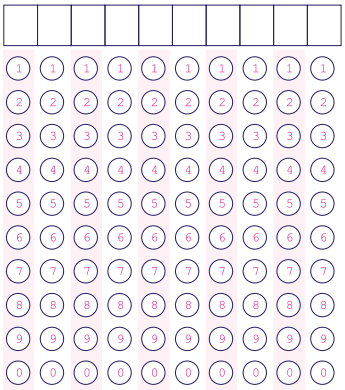
School Code



MARK YOUR ANSWERS HERE

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	○	○	○	11	○	○	○	○	21	○	○	○	○	31	○	○	○	○	41	○	○	○	○
2	○	○	○	○	12	○	○	○	○	22	○	○	○	○	32	○	○	○	○	42	○	○	○	○
3	○	○	○	○	13	○	○	○	○	23	○	○	○	○	33	○	○	○	○	43	○	○	○	○
4	○	○	○	○	14	○	○	○	○	24	○	○	○	○	34	○	○	○	○	44	○	○	○	○
5	○	○	○	○	15	○	○	○	○	25	○	○	○	○	35	○	○	○	○	45	○	○	○	○
6	○	○	○	○	16	○	○	○	○	26	○	○	○	○	36	○	○	○	○	46	○	○	○	○
7	○	○	○	○	17	○	○	○	○	27	○	○	○	○	37	○	○	○	○	47	○	○	○	○
8	○	○	○	○	18	○	○	○	○	28	○	○	○	○	38	○	○	○	○	48	○	○	○	○
9	○	○	○	○	19	○	○	○	○	29	○	○	○	○	39	○	○	○	○	49	○	○	○	○
10	○	○	○	○	20	○	○	○	○	30	○	○	○	○	40	○	○	○	○	50	○	○	○	○

Mobile No.



Candidate's Signature

Invigilator's Signature

NASO
NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

Navars Edutech

- Total Questions : 50
- Time 1 Hour

7 CLASS

INSTRUCTIONS

- Please Write your Student ID, Name, Class, and School Name on the OMR Sheet.
- This question paper contains 50 Questions, duration is 60 minutes.
- Answer all the questions in OMR sheet only and please do sign on it.
- Use only Black or Blue Ball Point Pen to answer the questions in the OMR sheet.
- Indicate the correct answer by darkening one of the 4 responses provided.
- After successful completion of the test, please submit the OMR answer sheet to the invigilator.
- ★ Marked Questions are HOT's or Critical Type Questions.

1. Raman ate a lot of junk food at a friend's birthday party. He soon started to feel uneasy due to acidity. His mother suggested ENO, after drinking which he felt better. What component in ENO cured acidity?

a) Salt
a) Sugar
a) Base
a) Acid.

2. In an experiment, a student took some lime juice and poured a small amount over some turmeric. This changes the colour of the turmeric to……

a) Blue b. Green c. Black d. Red

3. There are certain types of blood groups possessed by human beings. How many types of blood groups have been discovered by scientists so far?

a) One type- O b. Two types- O, A c. Three types- A, B and O. d. Four types- O, AB, A and B.

4. A soldier is the one who fights to protect his country. Which of the following options of human body parts can be best compared to a soldier?

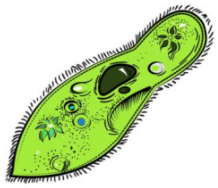
a) Lungs
b) Veins.
c) Red blood cells.
d) White blood cells.

5. Read the table and identify the option which best suits for the structures given in column Y.

a) Sensory receptors.
b) Excretory systems.
c) Structures used for gas exchange.'
d) Structures needed for anaerobic respiration.

ORGANISM	COLUMN 1
X	Gills and capillaries
Y	Moist skin
Z	Spiracles and tracheal tubes

6. A paramecium is an organism that absorbs materials from its surrounding environment and circulates throughout its cytoplasm. Which of the following life function is described by these activities?

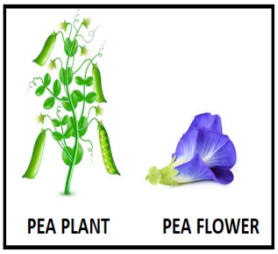


a) Transport.
b) Synthesis.
c) Respiration.
d) Reproduction.

7. Strong winds push water towards the shore causing huge water waves, even when the cyclone is far off. What should you watch out for an impending cyclone?

a) Rains accompanied by lightening.
b) High temperature and humidity.
c) Cool breeze and rains.
d) Powerful water waves.

8. After the course of fertilization, what happens to the ovules of pea flower

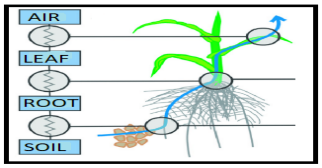


a) Ovules develop into pea fruit.
b) Ovules develop into seeds.'
c) Ovules develop into new flower.
d) Ovules wither and fall off.

9. Simran is visiting Africa. She bought the following two fruits. In what ways are the Kapok fruit and the African tulip fruit similar?

a) Seed pods of both the fruits split open explosively when ripe and disperse the seeds by force.
b) seeds are both fruits are dispensed by water.
c) Seeds of both fruits are dispersed by water.
d) Cotton fibres surround the light seeds of both the fruits.

10. In a plant, water moves upwards against gravity. What is the ultimate cause which enables this to happen ?

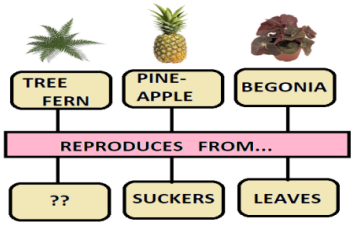


a) Imbibitions.
b) Osmosis.
c) Photosynthesis.
d) Transpiration.

11. In an experiment, a student dissected a frog. He cut out his heart from the body and kept it in a solution. What observations will he make about the heart?

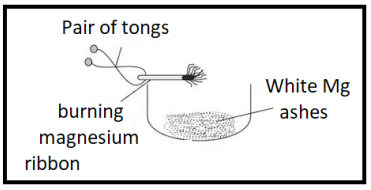
a) It continued beating for a long time.
b) It continued beating for a short time.
c) It stopped beating immediately.
d) It stopped beating immediately but resumed after around 10 minutes.

12. Study the flowchart carefully and identify the correct entry in place of '**??**'.



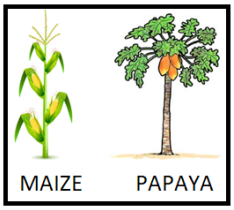
a) Spores.
b) Underground Stem.
c) Roots.
d) Flowers

13. In an experiment, Simran burnt a magnesium ribbon and dissolved its ashes in water. Identify the substance formed and its nature.



a) Magnesium oxide, Basic.
b) Magnesium hydroxide, Basic.
c) Magnesium, Metallic.
d) Magnesium oxide, Neutral.

14. What is similar in the flowers of a maize plant and a papaya plant?



a) Flowers do not develop into fruits.
b) Flowers are unisexual.
c) Flowers are bisexual.
d) Male and female flowers are produced in the same plant.

15. Raman is an athlete who went through a hard workout. His coach advised him to take a hot shower after his heavy workout. Why do you think the coach advised so?

a) To enhance carbon dioxide supply.
b) To improve blood circulation.
c) To decrease glucose breakdown.
d) To reduce pulse rate.

16. Study the chart below carefully and identify the processes marked as **X** and **Y**.

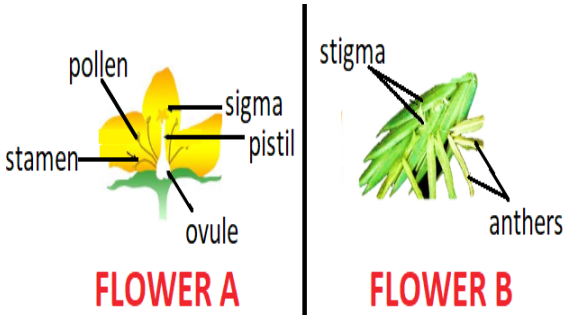
a) **X:** Pollination, **Y:** Germination.
b) **X:** Germination, **Y:** Seed dispersal**.**
c) **X:** Seed dispersal**, Y:** Germination**.**
d) **X:** Seed dispersal**, Y:** Pollination.

17. The stigmas of two flowers were observed and results were recorded as:

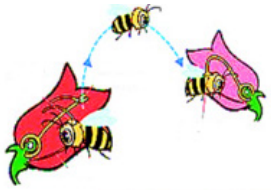
FLOWER A	FLOWER B
Stigma is sticky.	stigma is feathery.

Why a flower does have a sticky or feathery stigma?

a) Usually to receive pollen grains
b) Usually to produce pollen grains.
c) Usually to produce egg cells.
d) Usually to trap insects as food supplement.



18. Look at the given diagram and identify the process represented here.



a) Pollen grains are transferred from stigma of one flower to anther of another flower.
b) Pollen grains are transferred from anthers of one flower to stigma of another flower.
c) Pollen grains are transferred from style of one flower to filament of another flower.
d) Pollen grains are transferred from stigma of one flower to ovary of another flower.

19. Observe the given diagram and identify the correct option from the table that follows.

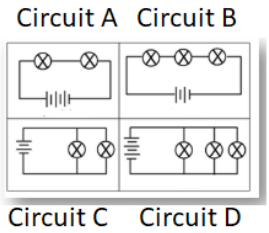
1	Hydrochloric acid + china rose
2	Soap solution + turmeric paste
3	Warm water + china rose paste
4	Vinegar +blue litmus

a) Hydrochloric acid + china rose.
b) Soap solution + turmeric paste.
c) Warm water + china rose.
d) Vinegar + blue litmus.

20. What happens to the breathing rate, if the Carbon dioxide concentration in the blood increases?

a) Breathing rate increases.
b) Breathing rate decreases.
c) There is no change in breathing rate.
d) Breathing rate stops.

21. The diagram below shows four different circuits A, B, C and D using identical batteries, bulbs and wires. In which of these circuits do the bulbs glow most brightly?

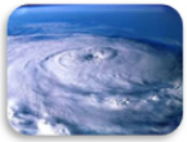


a) Circuit A.
b) Circuit B.
c) Circuit C.
d) Circuit D.

22. Which of the following animals use tentacles to catch its prey?

a) Hydra. b. Amoeba. c. Paramecium. d. Grasshopper.

23. The eye of the cyclone is the centre of it. What can we say about the winds at the eye of the cyclone?

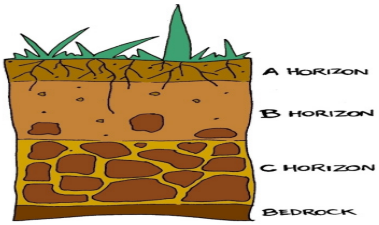


a) Unstable
b) Frantic.
c) Calm.
d) Fast.

24. There are certain fundamental parts of a given place that constitute its nature. Which component of a place gradually changes inevitably?

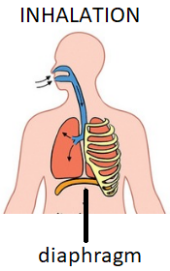
a) Soil structure. b. Vegetation. c. Weather. d. Climate.

25. Soil is composed of various layers that possess different properties. Which layer of the soil provides shelter for many living organisms?



a) A-Horizon.
b) B- Horizon.
c) C- Horizon.
d) D- Bedrock.

26. What is the ribs and diaphragm's movement during inhalation?

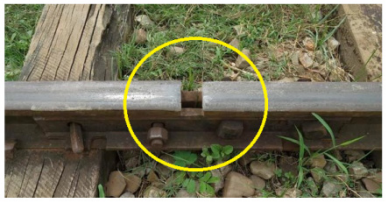


a) Upward, outward.
b) Downward, inward.
c) Upward, inward.
d) Outward, downward.

27. There is a device inserted in the dash board of a car to measure the distance it covers. Which device is that?

a) Anemometer.
b) Odometer.
c) Speedometer.
d) Nano meter.

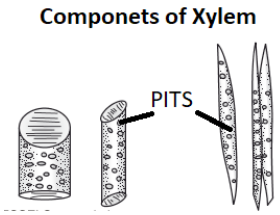
28. Why gaps are given in the railway tracks?



a) In summers, these gaps give the space to the tracks to expand.
b) Gaps hold the tracks firmly.
c) Produce rhythmic sound when the train moves.
d) No specific reason.

29. Xylem is made up of four different types of cells, tracheid, vessels, xylem fibres and xylem parenchyma. Of these only two are involved in the transport of water minerals. Choose the correct option.

a) Tracheid and vessels.
b) Tracheid and xylem fibres.
c) Xylem fibres and xylem parenchyma.
d) Tracheid and xylem parenchyma.

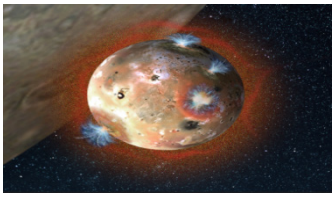


30. Which of the following processes is not correct in respect to soil formation?

a) It is a very slow process.
b) Tiny rock particles are mixed with humus.
c) Rocks are breakdown by the action of heat, wind and water.
d) Plant roots do not play any role in the formation of soil.

31. A certain moon orbits one of the planets in our Solar System where there are active volcanoes. Answer the following two questions (Q-31 and Q-32)for the same moon:

What is the name of this moon?



a) Calypso
b) Ganymede
c) Titan
d) Io.

32. Around which planet the moon mentioned above orbits?

a) Saturn. B. Earth c. Uranus d. Jupiter.

33. Different planets have different lengths of days because they take different amounts of time to make one complete rotation on their axis. Which of the following is the correct order of planets arranged from longest to shortest time?

a) Venus, Mercury, Mars, Earth
b) Mercury, Venus, Earth, Mars
.c) Mercury, Mars, Venus, Earth
d) Venus, Mercury, Mars, Earth

34. There is a certain planet in our solar system where a year equals 225 Earth days, while a day equals 243 Earth days. This means that a day on this planet is 18 days longer than its year. Identify the planet with its year shorter than its day?

a) Pluto. B. Venus c. Earth d. Mercury.

35. What do we call the area that separates the inner planets from the outer ones?

a) Kuiper belt. B. Oort belt c. Asteroid belt d. Terrestrial belt.

36. Which of the following planets in our Solar System has the most number of natural satellites?

a) Earth. B. Saturn c. Uranus d. Jupiter.

37. Which of the following facts about the Earth is incorrect?

a) The direction and angle of the Earth's tilt do not change
b) Its tilt of the angle causes seasons.
c) For six months of the year the southern hemisphere is tilted towards the Sun
d) It is the fifth largest planet of the outer planets.

38. Seema drew an imaginary line so as to divide the world into eastern and western hemispheres. She labelled the line as well. What should be the correct labelling?

a) Prime Meridian
b) Tropic of Capricorn
c) Equator
d) Tropic of Cancer

39. Our Sun is as old as 4.5 billion years. So far, it has already used up about half of its nuclear fuel (hydrogen). Sooner or later, the sun will begin to die. What will our sun become at the end of its life as a star?

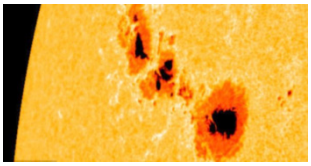
a) Supernova b. Black hole c. Black dwarf d. Neutron star

40. Whenever a person looks at the moon from the Earth, he always sees the same side of the Moon. Why is that so?

a) The rotation rate on its axis is the same as its orbital period around the Earth
b) The Moon goes around the Earth that also goes around the Sun
c) The Moon is the Earth's only natural satellite
d) The Moon is not rotating at all

41. Scientists observe changes on the Sun by watching sunspots. What causes these sunspots?

a) Rotation of the Sun
b) Rotation of the Earth
c) Strong magnetic fields
d) Strong electric fields.



42. Let us assume that a scientist is traversing in a space shuttle with the average speed same as the speed at which the Earth goes around the Sun. What would be the shuttle's speed?

a) 29.8 km/s b. 39.8 m/s c. 29.8 m/s d. 39.8 km/s

43. Let us assume that a scientist is traversing in a space shuttle with the average speed same as the speed of the Moon's revolution around the Earth. What would be the shuttle's speed?

a) 9.80 km/h b. 9.80 m/h c. 3.68 m/h d. 3.68 km/h

44. One can estimate the surface temperatures of stars by the spectrum emitted by the star. Identify the correct arrangement which represents colors of stars from hottest to coolest?

a) Blue; white; yellow; orange; red
b) Red; orange; yellow; white; blue
c) White; yellow; orange; red; blue
d) Orange; yellow; blue; white; red

45. Raman wants to study in detail about the Sun's eruptions. Which type of instrument should he opt for?

a) Monet.
b) Electric and sonar instruments
b. Square Kilometre Array
d. Magnetic and helioseismic instruments.

46. Teacher presented two queues for the students to identify the part of the sun.

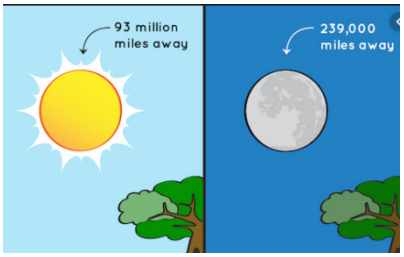
1st queue: Its the coolest part of the Sun.
2nd queue: It produces the light visible from earth.
Which part is the teacher talking about?

a) Exosphere
b. Corona
c. Chromosphere
d. Photosphere.

47. The distance between Proxima Centauri and Earth is approximately 4.22 light years. What is this distance in Kms, given that 1 light year = 9.46 x km?

a) 2.241 x
b) 29.92 x
c) 2.241 x
d) 3.992 x

48. The Moon appears the same size in the sky as the Sun, despite their variation in actual distances. Which of the given options correctly describes the causing factors?



a) Its size and distance from the Earth
b) Its size and colour from the Earth.
c) Its movements around the Earth and the Sun.
d) Its appearance and shape

49. We know that on Earth the Sun rises in the east and sets in the west. What can we say about sun setting and rising as seen from Venus?

a) Because of the planet's thick atmosphere, we will never know from where the Sun sets and rises on Venus
b) The Sun on Venus rises in the east and sets in the west just like on Earth.
c) The Sun rises in the west and sets in the east
d) Venus does not rotate around its axis, so there is no sunrise or sunset.

50. If someone asks you to differentiate a planet from a star without using a telescope during a sky viewing session, how will you do that?

a) A star will be brighter and bigger than a planet.
b) A planet will be brighter and bigger than a star.
c) A star will appear to twinkle whilst a planet will not.
d) A star will reflect light and show some colour but a planet will not.

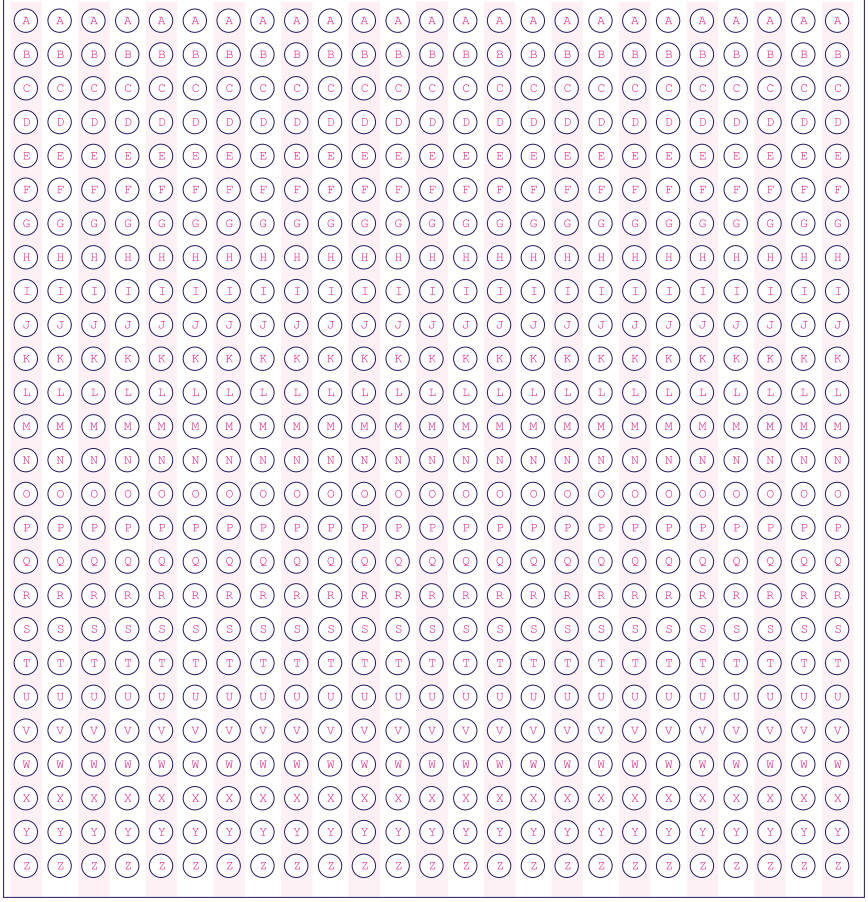
NASO
NATIONAL ASTRONOMY & SCIENCE OLYMPIAD

ANSWER SHEET

National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

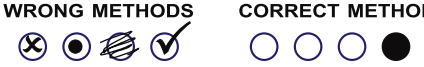
Candidate's Name



INSTRUCTIONS FOR FILLING THE SHEET

1. This sheet should not be folded or crushed.
2. Use only blue/black ball point pen to fill the circles.
3. Use of pencil is strictly prohibited.
4. Circles should be darkened completely and properly
5. Cutting and erasing on this sheet is not allowed.
6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS **CORRECT METHOD**



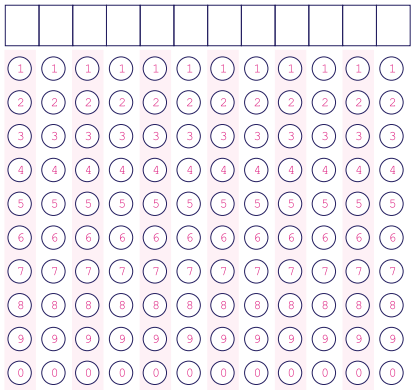
Grade

2nd 3rd 4th 5th 6th 7th 8th 9th 10th

Gender

Male ○
Female ○

RollNo.



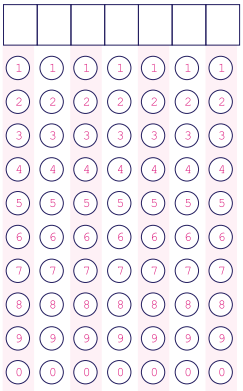
Father's Name

School Name

E-mail Id

City

School Code



MARK YOUR ANSWERS HERE

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	○	○	○	11	○	○	○	○	21	○	○	○	○	31	○	○	○	○	41	○	○	○	○
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9	○	○	○	○	19	○	○	○	○	29	○	○	○	○	39	○	○	○	○	49	○	○	○	○
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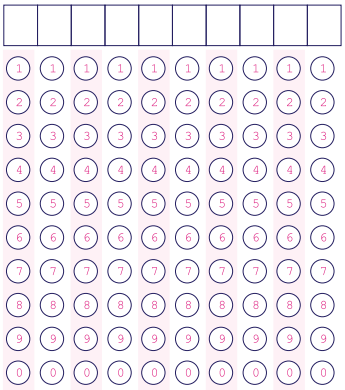


Candidate's Signature

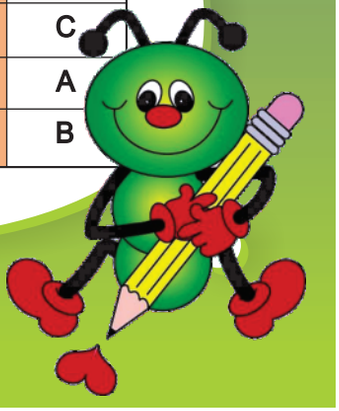
Invigilator's Signature

2015 QUESTION PAPER - ANSWER KEY

QUESTION NO.	1	2	3	4	5	6	7	8	9	10
ANSWER	D	A	C	C	A	B	D	A	C	B
QUESTION NO.	11	12	13	14	15	16	17	18	19	20
ANSWER	C	D	A	D	A	D	D	A	B	B
QUESTION NO.	21	22	23	24	25	26	27	28	29	30
ANSWER	A	D	C	C	C	C	B	D	A	B
QUESTION NO.	31	32	33	34	35	36	37	38	39	40
ANSWER	D	A	B	C	A	D	B	A	A	C
QUESTION NO.	41	42	43	44	45	46	47	48	49	50
ANSWER	D	D	A	B	D	C	A	B	C	A

2016 QUESTION PAPER - ANSWER KEY

1.	A	11.	A	21.	A	31.	D	41.	B
2.	C	12.	D	22.	A	32.	A	42.	C
3.	D	13.	B	23.	B	33.	C	43.	C
4.	B	14.	B	24.	A	34.	D	44.	B
5.	B	15.	B	25.	D	35.	C	45.	D
6.	B	16.	D	26.	A	36.	B	46.	A
7.	B	17.	A	27.	D	37.	B	47.	D
8.	C	18.	C	28.	A	38.	D	48.	C
9.	A	19.	C	29.	A	39.	D	49.	A
10.	B	20.	C	30.	C	40.	A	50.	B



2017 QUESTION PAPER - ANSWER KEY

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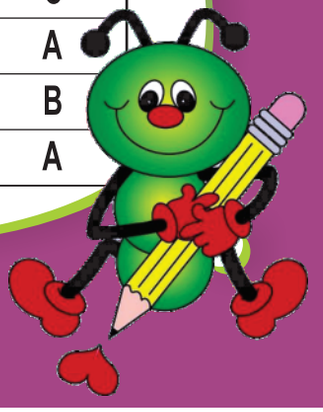
3	C	13	C	23	A	33	C	43	A
4	D	14	A	24	D	34	D	44	B
5	A	15	D	25	B	35	C	45	B
6	B	16	A	26	D	36	D	46	D
7	A	17	C	27	B	37	B	47	D
8	B	18	B	28	C	38	A	48	B
9	C	19	C	29	B	39	D	49	C
10	D	20	B	30	C	40	C	50	A

2018 QUESTION PAPER - ANSWER KEY

1	A	11	A	21	D	31	C	41	B
2	A	12	B	22	B	32	D	42	A
3	D	13	B	23	B	33	C	43	B
4	D	14	C	24	B	34	A	44	B
5	C	15	B	25	B	35	B	45	A
6	B	16	C	26	C	36	C	46	B
7	A	17	A	27	A	37	C	47	C
8	D	18	C	28	D	38	A	48	A
9	D	19	D	29	C	39	D	49	B
10	A	20	A	30	C	40	C	50	A



2019 QUESTION PAPER - ANSWER KEY

1	C	11	A	21	D	31	D	41	C
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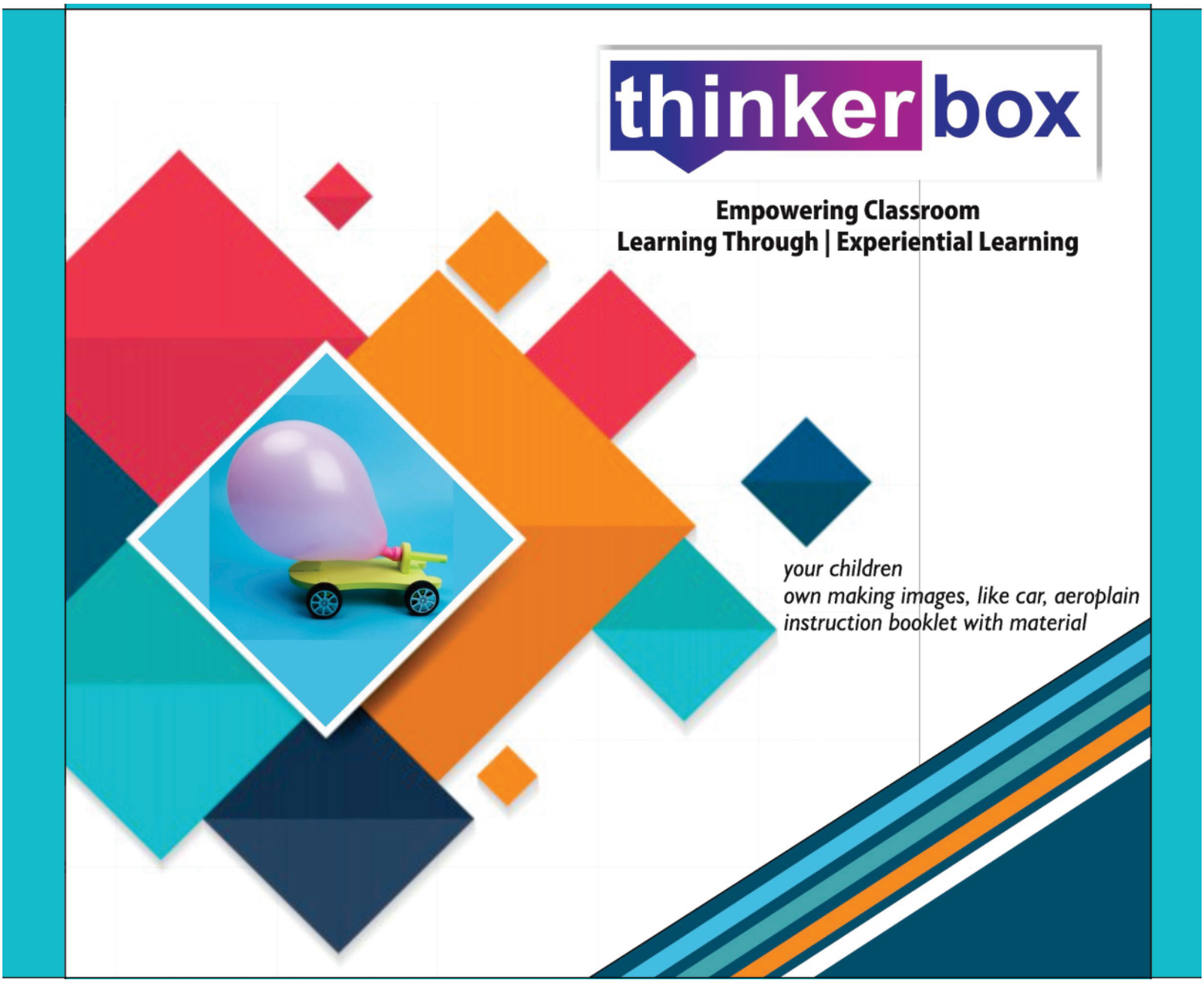
3	D	13	B	23	C	33	B	43	D
4	D	14	B	24	C	34	B	44	B
5	C	15	B	25	A	35	C	45	D
6	A	16	C	26	D	36	D	46	D
7	D	17	A	27	B	37	C	47	D
8	B	18	B	28	A	38	A	48	A
9	C	19	C	29	A	39	B	49	C
10	D	20	A	30	D	40	A	50	B

REVISION QUESTION PAPER - ANSWER KEY

Not Given the Answers

Thinker Box Add Page



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