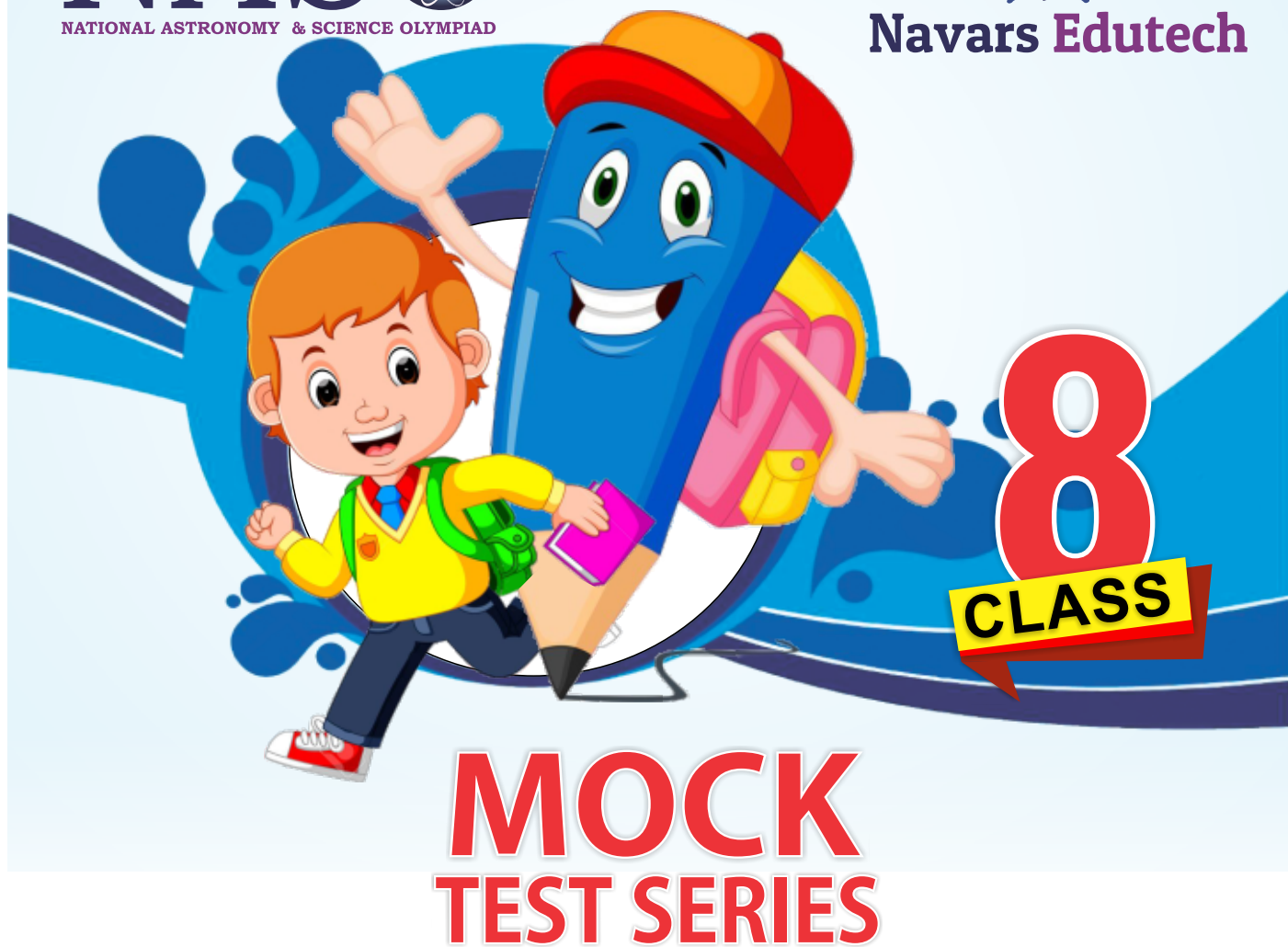




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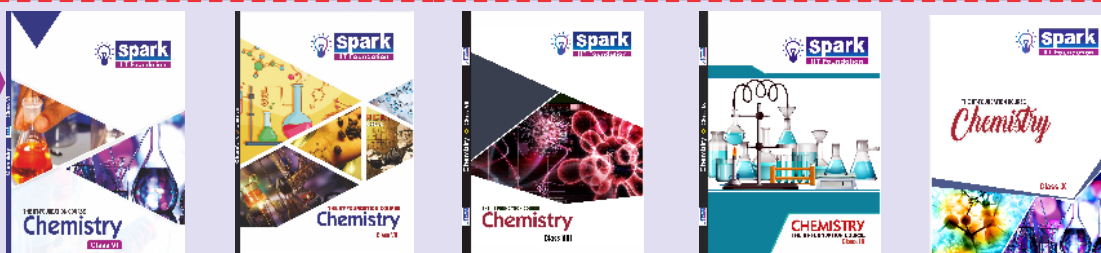


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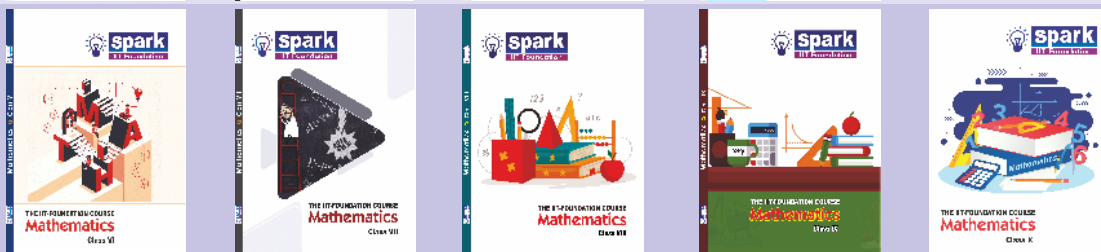


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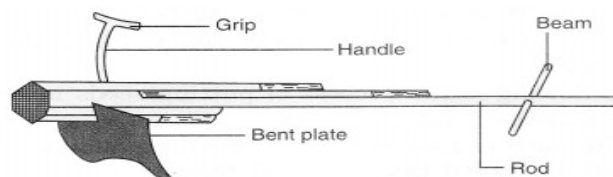
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1. Pesticides are chemical substances that control pests. They include_____?

- A. Herbicides and insecticides.
- B. Insecticides only.
- C. Insecticides and rodenticides.
- D. Fungicides, herbicides, insecticides, rodenticides and nematicides.

2. The given figure represents an agricultural tool which is used for removing weeds and for loosening the soil. It has a long rod of wood or iron. A strong broad and bent plate of iron is fixed to one of its ends and works like a blade. It is pulled by animals. Identify it?



- A. Combine.
- B. Hoe.
- C. Cultivator.
- D. Seed drill.

3. Pests are the organisms which attack and damage the crops. Which of the following is not a pest?



4. What does the given figure signify?

- A. Life cycle of a plant.
- B. Jhum cultivation.
- C. Crop rotation.
- D. Mixed cropping.

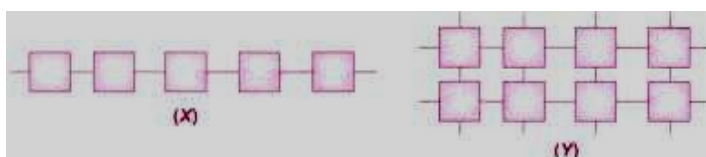


5. Match column I with column II and select the correct option from the codes given below?

Column I	Column II
(a) Wheat	(i) Blue green algae
(b) Flagellum	(ii) Bacillus
(c) Nostoc	(iii) Spirogyra
(d) Rod shaped	(iv) Rust
(e) Multi cellular	(v) Euglena

- A. (a) - (v), (b) - (iv), (c) - (ii), (d) - (i), (e) - (iii)
 B. (a) - (ii), (b) - (v), (c) - (i), (d) - (iii), (e) - (iv)
 C. (a) - (iv), (b) - (v), (c) - (i), (d) - (ii), (e) - (iii)
 D. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv), (e) - (v)

6. See the figure given below and select the correct statements regarding polymers?

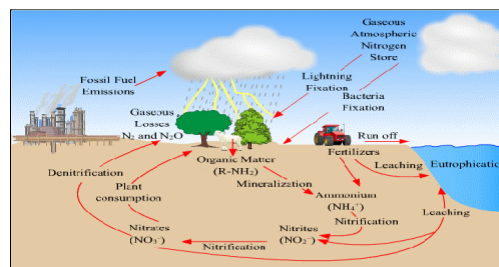


1. Figure (X) shows structure of a monomer while figure (Y) shows structure of a polymer.
 2. Small boxes in the structure represent monomers which are joined to give a polymer.
 3. Figure (X) shows structure of a linear polymer while (Y) shows structure of a cross-linked polymer.

- A. 1 and 2 B. 1 and 3 C. 2 and 3 D. All are correct.

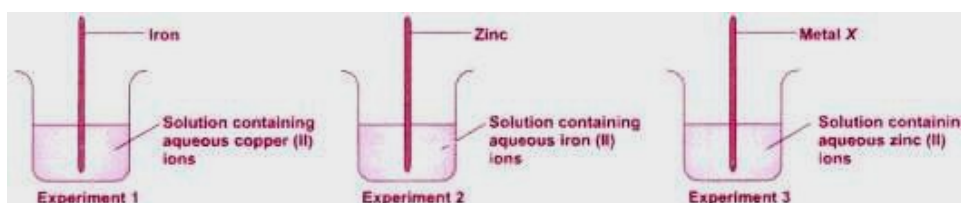
7. Pre-weighed pieces of cloth of nylon, cotton, silk and wool of equal measurements are taken and soaked in a beaker filled with water. After a few minutes, the cloth pieces were taken out of the beaker and weighed again. Which of the following options correctly represents the order of water absorption capacity?

- A. Wool > Silk > Nylon > Cotton
 B. Cotton > Silk > Nylon > Wool
 C. Silk > Wool > Cotton > Nylon
 D. Wool > Cotton > Silk > Nylon



8. A student investigated the reactivity of four metals, iron, copper, zinc and an unknown metal X. He arranged three experimental set up as shown in the diagram. The student observes that reaction occurred in all the three experiments. Identify the metal X.

- A. Cu
 B. Mg
 C. Fe
 D. Au



9. Read the given statements and select the correct option.

Statement 1: Lemon pickle can be stored in an aluminum jar.

Statement 2 Aluminum jars enhance the flavor of the pickle

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
- C. Statement 1 is true and statement 2 is false
- D. Both statements 1 and 2 are false.

10. Sumit conducted an experiment by taking a candle and a steel spoon. He put the spoon in the middle of the yellow part of the candle flame for a few seconds. He observed black deposition on the spoon. What did he conclude from this experiment?



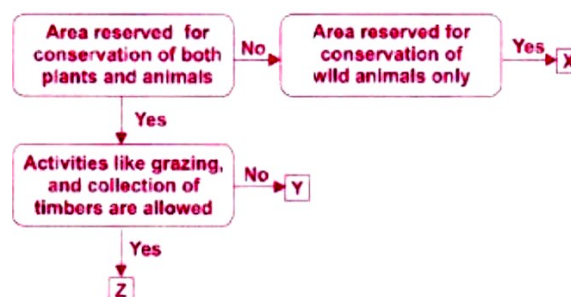
- A. Wax is inflammable hence it burns with a smoky flame.
- B. Un burnt carbon particles produce smoke (soot) which gets deposited on the spoon.
- C. Yellow region of the flame is the hottest, hence it produces smoke.
- D. Out of the three colours (blue, black and yellow) of the flame, black being darkest is deposited on the spoon.

11. Liquids and gaseous fuels have more advantages over solid fuels. Some of the advantages are_____?

- (i) Calorific value of liquid and gaseous fuels is higher than the solid fuels.
- (ii) Liquids and gaseous fuels have higher ignition temperatures than the solid fuels.
- (iii) Liquids and gaseous fuels are easier to store since solid fuels occupy lot of space.
- (iv) Liquids and gaseous fuels burn completely not leaving any residue.

- A. (i), (ii) and (iii)
- B. (i), (iii) and (iv)
- C. (ii), (iii) and (iv)
- D. (i), (ii) and (iv)

12. Refer the given flowchart and identify X, Y and Z.



Option	Column-X	Column-Y	Column-z
A.	Biosphere reserve	Sanctuary	National park
B.	Biosphere reserve	National park	sanctuary
C.	sanctuary	National park	Biosphere reserve
D.	National park	Biosphere reserve	sanctuary

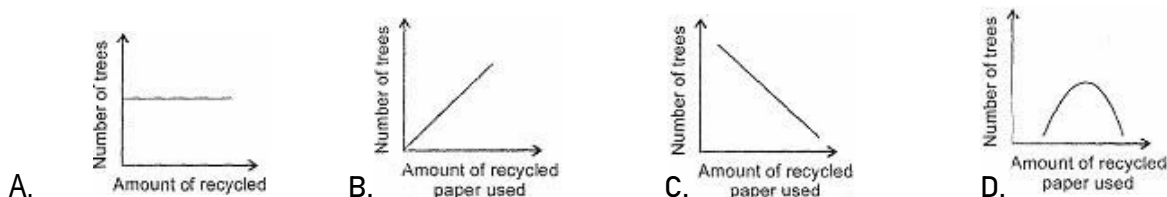
A. A

B. B

C. C

D. D

13. Trees take many years to reach maturity. Paper is made from wood pulp. As more people use recycled paper, fewer trees are cut down. Which of the following shows the result after a few years of carrying out this act of conservation?



14. Match the following and select the correct option from the codes given below.

Column I	Column II
(A) I am an Indian Gazelle.	(i) I am protected by Bhishnois of Rajasthan 
(B) I am protected by the Indian wild life	(ii) act because I am endangered 
(C) The last member of my species was	(iii) killed in 1914 
(D) I am an endemic Indian species	(iv) I was protected in forest 

- A. (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii) B. (a) - (iv), (b) - (ii), (c) - (i), (d) - (iii)
 C. (a) - (ii), (b) - (iii), (c) - (i), (d) - (iv) D. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)

15. Refer the given figure and select the incorrect option

- (i) The part labeled 'P' is found in plant cell only.
 (ii) The part labeled 'Q' is a green colored plastid
 (iii) The part labeled 'R' is the controlling centre
 (iv) The part labeled 'R' gets its shape from part labeled 'P'

- A. (iv) only B. (i) & (iv) C. (ii) & (iii) D. (iii) only

16. What is one major difference between a human skin cell and a human egg cell?

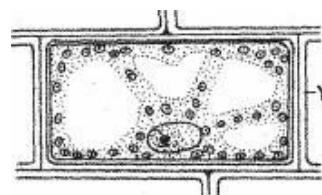
Match the following and select the correct option from the codes given below

Column I	Column II
(a) Term for component present in the cytoplasm	(i) Organelle
(b) The living substance in the cell	(ii) Protoplasm
(c) This is necessary for photosynthesis	(iii) Chlorophyll
(d) Empty structure in the cytoplasm	(iv) Tissues
(e) A group of cells	(v) Organs
	(vi) Vacuole

- A. (a) - (i), (b) - (ii), (c) - (iii), (d) - (vi), (e) - (iv) B. (a) - (ii), (b) - (i), (c) - (iii), (d) - (vi), (e) - (iv)
 C. (a) - (i), (b) - (ii), (c) - (iii), (d) - (vi), (e) - (v) D. (a) - (ii), (b) - (i), (c) - (iii), (d) - (v), (e) - (iv)

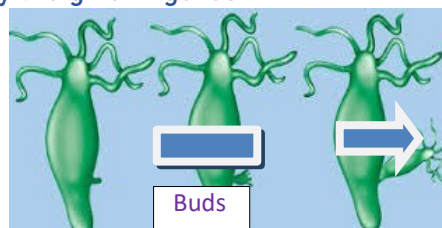
17. Look at the given cell carefully. Identify the function of the part marked 'Y'

- A .It controls the movement of materials in and out of the cell
 B .It controls all the activities of the cell
 C .It contains many cell parts
 D .It provides protection to the cell



18. Which of the following conditions is represented by the given figures?

- (i) Asexual reproduction in Hydra
 (ii) Reproduction by budding in Hydra
 (iii) Sexual reproduction in Hydra
 (iv) Reproduction by binary fission in Hydra



- A. (i) and (ii) B. (i) and (iv) C. (ii) only D. (iii) only

19. A wooden block floats in a beaker of water. The block is near the wall of the beaker as shown in the figure. If P₁, P₂ and P₃ be the pressure at the three points A, B and C respectively at the bottom of the container, then

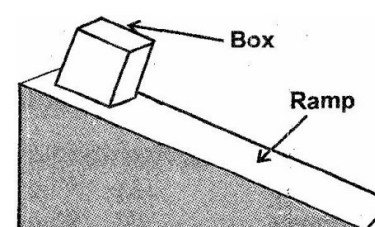
- A. P₁=P₂>P₃ B. P₁=P₂<P₃
 C. P₁>P₂>P₃ D. P₂=P₃>P₁



20. A cube was placed on a ramp as shown below.

The box remains on the ramp and does not slide down. This is because _____

- A. The box is too heavy to slide down
 B. The box does not have enough energy to slide down the ramp
 C. The force of gravity cannot act on the box while it stands at the top of the ramp
 D. The pull of gravity cannot overcome the force of friction acting between the box and the ramp.



ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	D	Pest control can be achieved by chemical control or by biological control. For chemical control of pests, chemicals like Malathion, parathion, BHC (Benzene hexachloride) etc. are used. These chemicals are called pesticides. They kill the pests, their eggs and larvae but do not harm the plants if used in small quantity. The pesticides used to kill insect pests are called insecticides, while those that kill rodents are called rodenticides. Fungicides are chemicals used to destroy fungi harmful to crops. Herbicides and nematocides are used to kill herbs and nematodes.
QUESTION-2	B	The simple tool used for removing weeds and for loosening the soil is called HOE. It has a long rod made of wood or iron and a strong, broad and curved blade is fixed to one of its ends. The process of loosening and turning of the soil is called tilling or ploughing.
QUESTION-3	D	A pest is any animal or plant detrimental to humans or human concerns, including crops, ... Animals are considered pests or vermin when they damage crops,
QUESTION-4	C	Crop rotation is defined as the practice of growing different crops on a piece of land in a pre-planned succession. During crop rotation, leguminous crops are grown in rotation with non-leguminous crops. Leguminous plants have the ability to fix up atmospheric nitrogen and enrich the soil with nitrogenous compounds. This helps in restoring the soil fertility without using nitrogenous fertilizers.
QUESTION-5	C	The codes matches with column-1 are Rust , Euglena ,Blue green algae, Bacillus, Spirogyra
QUESTION-6	C	Small boxes in the structure represent monomers which are joined to give a polymer and Figure (X) shows structure of a linear polymer while (Y) shows structure of a cross-linked polymer.
QUESTION-7	D	Wool, cotton and silk are natural fibers. Among these, wool has maximum and silk has least water absorption capacity. Nylon is a synthetic fibre which does not absorb water. Higher the water absorption capacity more will be the final weight. Thus the correct order of their final weights will be Wool > Cotton > Silk > Nylon.
QUESTION-8	B	Metal X should be more reactive than Zn to displace Zn from ZnSO ₄ solution. Among the metals given, Mg is more reactive than Zn while Cu, Fe and Au are less reactive than Zn.
QUESTION-9	D	Aluminium is a metal and lemon is acidic. The acids react with metals to give out hydrogen which would spoil the food and render it unfit to eat. So lemon pickle should not be stored in an aluminium jar.
QUESTION-10	B	Black soot is observed due to the deposition of unburnt carbon particles present in the yellow luminous zone of the flame.
QUESTION-11	B	The advantages of solid fuels are Calorific value of liquid and gaseous fuels is higher than the solid fuels, Liquids and gaseous fuels are easier to store since solid fuels occupy lot of space, Liquids and gaseous fuels are easier to store since solid fuels occupy lot of space.

QUESTION-12	C	The flow chart says that X- sanctuary, Y- National park ,Z- Biosphere reserve
QUESTION-13	B	Number of trees will increase with an increase in the use of recycled paper.
QUESTION-14	A	The correct codes are I was protected in forest, killed in 1914, killed in 1914, act because I am endangered
QUESTION-15	B	The part labelled P is vacuole. It is found not only in plant cells, but is also found in animal cells. The part labelled R (nucleus) has its own shape. Its shape is not dependent on the shape of vacuole although its position may depend upon the vacuole. Q is cell wall which provides rigidity to plant cell.
QUESTION-16	A	The correct codes are Organelle, Protoplasm, Chlorophyll, Vacuole , Tissues
QUESTION-17	D	The part labelled 'Y' in the figure is cell wall. It is found in plant cells, algal cells, fungal cells etc. It forms a protective covering outside the cell membrane. It provides rigidity to the cell and protects the internal structures and cell membrane of the cell.
QUESTION-18	A	In <i>Hydra</i> asexual reproduction takes place by budding.
QUESTION-19	A	Pressure exerted by a liquid at a point inside it is directly proportional to its depth. Also, all points at the same depth in a liquid are under the same pressure. So here pressure at A is equal to pressure at B, which are greater than pressure at C i.e. $P_1 = P_2 > P_3$.
QUESTION-20	D	In this process The pull of gravity cannot overcome the force of friction acting between the box and the ramp

ANSWER SHEET
National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

Candidate's Name

[illegible]

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.

[illegible]

Father's Name

[illegible]

School Name

[illegible]

E-mail Id

[illegible]

City

[illegible]

School Code

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MARK YOUR ANSWERS HERE

WHAT YOUR ANSWERS WERE																			
A B C D					A B C D					A B C D					A B C D				
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Mobile No.[illegible][illegible]

Candidate's Signature

Invigilator's Signature

1. The period of crop harvesting is celebrated with great joy and happiness in all parts of India. Special festivals are associated with the harvest season. Among the following mentioned festivals which festival is not associated with harvest season?

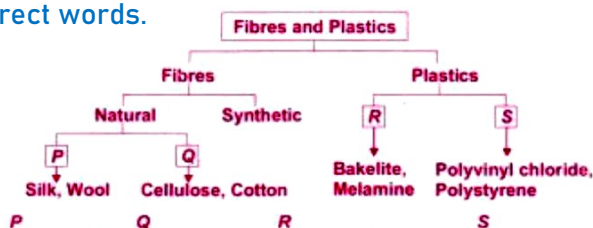
A. Holi B. Diwali C. Nabanya D. Eid

2. Which of the following is a carrier?

A. Housefly B. Female Anopheles mosquito

C. Female Aedes mosquito D. All of these

3. Nimit prepared a flowchart to show classification of fibers and plastics. He left few columns blank. Fill in the blanks by choosing the option with correct words.



Option	Column-P	Column-Q	Column-R	Column-S
A.	Plant fibers	Animal fibers	Theemoplastics	Thermosetting
B.	Animal fibers	Plant fibers	Thermosetting	Theemoplastics
C.	Rayon	Animal fibers	Bio degradable	Non-bio degradable
D.	Animal fibers	Plant fibers	Non-bio degradable	Bio degradable

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

4. Ravina took few synthetic and natural fibers to study the effect of their burning. She took nylon, cotton, wool, polyester and silk threads and burnt them one by one with a burning matchstick. After the experiment what did she observe?

A. Cotton and wool burn to form a residue.
 B. Nylon and polyester melt on burning.
 C. Wool and silk burn with smell of burning hair
 D. All the observations were correct.

5. Fibre 'X' is used in the uniform of fireman for the protection of human body from heat hazards as it is a renowned fire retardant plastic. It is also used in airplanes, buses etc. in order to block the spread of fire. Identify 'X'.

- A. Teflon.
- B. Nylon.
- C. Kevlar.
- D. Rayon.



6. Read the given statements and select the correct option.

Statement 1: Lemon pickle can be stored in an aluminum jar.

Statement 2 Aluminum jars enhance the flavor of the pickle

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
- C. Statement 1 is true and statement 2 is false.
- D. Both statements 1 and 2 are false.

7. Anitha took a burning candle and covered it with an empty glass by putting it upside down. She observed that the candle burns for some time before it finally goes off. What was the reason for this?

- A. The candle keeps burning for some time as long as the air present in the glass is available to it and then it goes off.
- B. The ignition temperature of the candle becomes low due to glass cover hence it goes off.
- C. The candle keeps burning as long as the complete wax melts away and then goes off.
- D. Oxygen is produced when the candle burns. This oxygen keeps the candle burning for some time and then it goes off



8. Good fuels have_____?

- A. Low ignition temperature and high calorific value
- B. Low ignition temperature and low calorific value
- C. High ignition temperature and high calorific value
- D. High ignition temperature and low calorific value

9. Which of the following is an incorrect match?



Endemic



Extinct



Threatened



Endangered

10. The organization which protects the trade in endangered species at international level

A. IBWL

B. CITES

C. WHO

D. WWF

11. Which of the following is correct about X?

A. It helps in uterine lining to slough off

B. It is the product of ovulation

C. It helps in uterine lining to produce thin mucus

D. It is immature product released from ovary

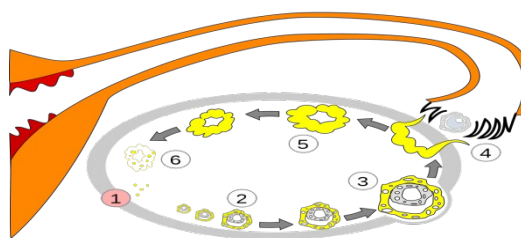


Fig: Ovary

12. Which of the following is a mismatched pair

Endocrine gland Hormone

A.A

B.B

C.C

D.D

(A) Ovaries	-	Oestrogen
(B) Testes	-	Testosterone
(C) Pancreas	-	Calcitonin
(D) Adrenal glands	-	Corticosteroids

13. A boy set up an experiment as shown in the diagram. As he slid the magnet across the wooden board, the ball bearing followed the magnet's movement and direction. What does the experiment show?

A. Magnetic force can be seen.

B. Friction and gravity help to move the ball bearing.

C. The ball bearing is made of magnetic substance.

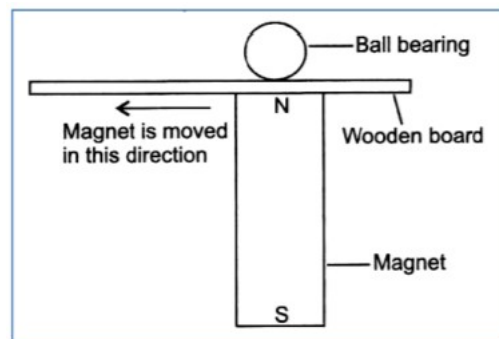
D. Magnetic force can pass through the wooden board

A. (i) & (ii)

B. (iii) & (iv)

C. (i), (iii) & (iv)

D. (ii), (iii) & (iv)



14. The contact force exerted by one body on another body is equal to the normal force between the bodies. It can be said that_____?

A. The surface must be frictionless

B. The force of friction between the bodies is zero

C. The bodies may be rough but they do not slip on each other

D. None of these

15. Read the given statements and select the correct option.

Statement 1: Coal, petroleum and natural gas cannot be prepared in the laboratory.

Statement 2: Their formation is a slow process and the required conditions cannot be created in the laboratory

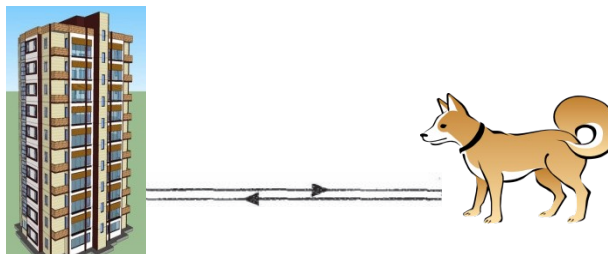
A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1

B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1

C. Statement 1 is true and statement 2 is false

D. Both statements 1 and 2 are false

16. A dog barks in a park and hears its echo after 0.5 seconds. If the sound of its bark got reflected by a nearby building. The speed of sound in air is 346 m/s. The distance between the dog and the building is



- A. 86.5 m
- B. 80.6 m
- C. 75 m
- D. 8.65 m

17. Why is the switch for any electrical appliance always fitted on to the live wire?

- A. No current flows in the neutral wire.
- B. There will be a short circuit if the switch is in the earth lead.
- C. The device can never be switched off if the switch is in the neutral lead.
- D. The device can only be isolated if the switch is in the live lead.

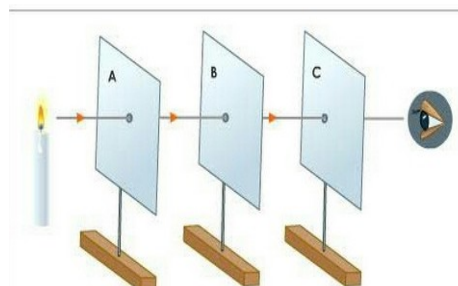
18. Which of these things would you do if you live in the earthquake prone area?

- A. You would keep an emergency kit always ready
- B. You would have only open book shelves and open cupboards in your house
- C. You would fix the cupboards to the walls
- D. You would not keep breakable items on the upper shelves

- A. Only (iii) is correct
- B. Both (i) and (ii) are correct
- C. All are correct
- D. (i), (iii) and (iv) are correct

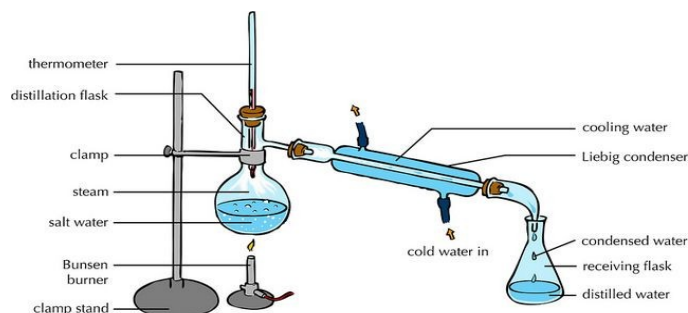
19. The experiment in the diagram shows that

- A. Light rays are very thin
- B. A beam of light is made up of lots of light rays
- C. Light rays travel in straight lines
- D. The eye can see through the card boards



20. The given figure shows a process in which water is purified. Name the process___?

- A. Reverse osmosis
- B. Decantation
- C. Distillation
- D. Disinfection



ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	D	At harvest time, the sight of golden fields of standing crop, laden with grain fills the hearts of farmers with joy and a sense of well-being. The period of harvest is of great joy and happiness in all parts of India. Men and women celebrate it with great enthusiasm. Special festivals associated with the harvest season re Pongal, Baisakhi, Holi, Diwali, Nabanya and Bihu.
QUESTION-2	D	A carrier is an organism that harbours a particular disease causing microorganism (pathogen) without itself getting affected and can transmit this microorganism to others. Housefly is a carrier of bacteria causing cholera, typhoid, etc. Female <i>Anopheles</i> mosquito is a carrier of protozoan causing malaria. Female <i>Aedes</i> mosquito is a carrier of virus causing dengue.
QUESTION-3	B	Silk is derived from silkworms. Wool is derived from the fur of sheep's. So, silk and wool are animal fibers. Cellulose is derived from plants, vegetables and fruits. Cotton is derived from seeds of cotton plants. So, cellulose and cotton are plant fibers. Thermosetting plastics are those plastics which when molded once, cannot be softened by heating, <i>e.g.</i> ; Bakelite and melamine. Thermoplastics are those plastics which get deformed easily on heating and can be bent easily, <i>e.g.</i> ; polythene, PVC and polystyrene.
QUESTION-4	D	Cotton and wool burn to form a residue Nylon and polyester melt on burning Wool and silk burn with smell of burning hair.
QUESTION-5	C	Fire fighters wear suits made of Nomex or Kevlar. Both are fire-resistant materials which help to protect the firefighter.
QUESTION-6	D	Aluminum is a metal and lemon is acidic. The acids react with metals to give out hydrogen which would spoil the food and render it unfit to eat. So lemon pickle should not be stored in an aluminum jar.
QUESTION-7	A	For combustion, air is necessary. The flame finally goes off because the air is not available.
QUESTION-8	A	Good fuel should have low ignition temperature (the lowest temperature at which a substance catches fire) and high calorific value (the amount of heat energy produced on complete combustion of 1 kg of a fuel).
QUESTION-9	B	The extinct animals are those that do not exist anymore on the earth and Cheetah (option B) is not an extinct animal as it is found in our country. Options (A), (C) and (D) respectively represent alligator, one-horned rhinoceros and reindeer.
QUESTION-10	B	The World Wide Fund for nature (WWF) is an international non-governmental organization working on issues regarding the conservation, research and restoration of the environment. Giant Panda is the logo of this organization.
QUESTION-11	B	The correct statement of x was it is a product of ovulation.

QUESTION-12	C	Pancreas secretes insulin that controls the level of glucose in the blood. Lack of insulin secretion causes diabetes. Calcitonin is secreted by thyroid. It lowers the level of calcium and phosphate in the blood.
QUESTION-13	B	The experiment shows that Friction and gravity help to move the ball bearing.
QUESTION-14	B	Detailed Answer:: it can be said that The force of friction between the bodies is zero
QUESTION-15	A	Coal, petroleum and natural gas were formed from the slow process of decomposition of dead remains of living organisms (fossils) under high pressure and high temperature.
QUESTION-16	A	The echo is heard when the sound wave travels a distance $2x$. As distance = speed $\times$ time $\therefore 2x = 346 \times 0.5$ $A = \frac{346 \times 0.5}{2} = 86.5m$
QUESTION-17	C	The purpose of electric switch is to make and break the circuit as per our requirements. So it should be fitted on to the live wire. If the switch is in the neutral lead, the device can never be switched off.
QUESTION-18	C	All of them are correct
QUESTION-19	C	The experiment shows that light rays travel in straight lines
QUESTION-20	C	It is the distillation process.

ANSWER SHEET
National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

Candidate's Name

[illegible]

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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.

[illegible]

Father's Name

[illegible]

School Name

[illegible]

E-mail Id

[illegible]

City

[illegible]

School Code

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MARK YOUR ANSWERS HERE

WHAT YOUR ANSWERS WERE																			
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Mobile No.

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Candidate's Signature

Invigilator's Signature

1. Which of the following is/are incorrect statement(s) regarding manure?

- (i) Manure enhances the water holding capacity of the soil.
- (ii) Manure is nutrient specific i.e. supply a particular desired nutrient.
- (iii) Manure decreases the number of friendly microbes.
- (iv) Manures improve the texture of the soil.
- (v) Manure is prepared by the decomposition of dead plant and animal matter.

- A. (i), (iii) and (v) B. (ii), (iii), (iv) and (v)
C. (ii) and (iii) D. All of the above

2. The microorganisms that cause diseases are known as pathogens or germs. Microorganisms also cause diseases in animals and plants other than human beings. Select the incorrect statement from the following

- A. Anthrax is caused by bacteria and it affects humans and cattle
B. Rust of wheat is a fungal disease
C. Citrus canker is a viral disease that affects citrus fruits
D. Yellow vein mosaic is a viral disease, spread by insects and it affects vegetables

3. Read the following statements carefully and identify X, Y and Z respectively.

- (i) X reacts violently with cold water.
- (ii) Y reacts with boiling water.
- (iii) Z reacts with steam

- A. Na, Mg, Cu. B. Na, Zn, Fe. C. Cu, Zn, Na. D. Zn, Cu, Na.

4. A spoon is kept in contact with ice cubes for some time. Later, the same spoon was held over the flame of a small lighter. The figure shows the observation. What do you infer from the given figure?

- A. Spoon is an inflammable substance.
B. Burning of candle is a spontaneous process.
C. CO₂ is a product of combustion.
D. Water vapors is a product of combustion.



5. The plant in the picture is a wild, medicinal plant. It is a threatened species due to over collection. A drug obtained from this plant is widely used in homeopathy. What is the name of this plant?

- A. Aconitum
B. Lantana.
C. Partheniurn.
D. Water hyacinth.



6. What is one likely function of a centriole?

- A. To hold the fibers of spindle
B. To send messages to the nucleus to divide
C. To divide the cytoplasm
D. To cause the chromosomes to become shorter and thicker

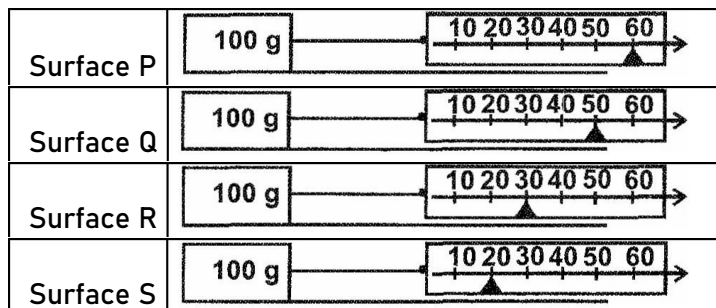
7. Read the given statements and select the correct option.

Statement 1: In humans the gamete contributed by the male determines whether the child produced will be male or female.

Statement 2: Sex in humans is dependent upon X-chromosome or Y-chromosome of the father.

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement.
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement.
C. Statement 1 is true and statement 2 is false.
D. Both statements 1 and 2 are false.

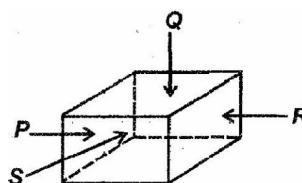
8. The above figures show the forces required to move a 100 g object over different surfaces. The friction is greatest at ___?



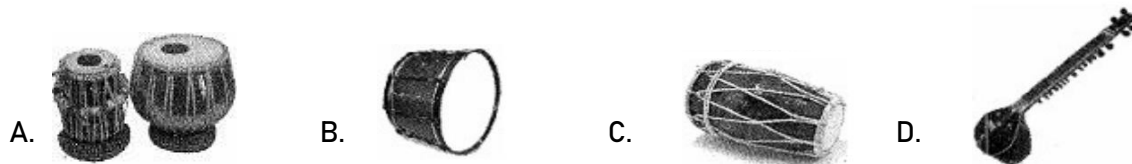
- A. Surface P
B. Surface Q
C. Surface R
D. Surface S

9. When friction is acting in the direction of P, in which direction do you think the force is applied?

- A. P
B. Q
C. R
D. S



10. Observe the following musical instruments and select the odd one___?



11. Adding common salt to distilled water makes it_____?

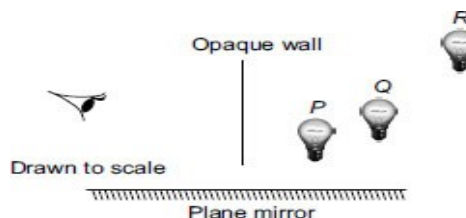
- A. Good conductor
- B. Insulator
- C. Can't say
- D. None of these.

12. The Instrument used to record the earthquake is called the_____?

- A. Epinograph
- B. Animometer
- C. Seismograph
- D. None of these.

13. Three light bulbs are concealed from an observer by an opaque wall as shown. Without shifting the positions of the observer and the bulbs, the images of which of the bulbs can the observer see from the plane mirror?

- A. P and R
- B. P and Q
- C. Only P
- D. Q and R



14. 'Y' denotes a common trait of activity 1, 2 and 3. Identify 'Y'.

ACTIVITY 1	A body floating on water.
ACTIVITY 2	A kite held stationary in the sky.
ACTIVITY 3	A wooden block floating on the surface of the water.

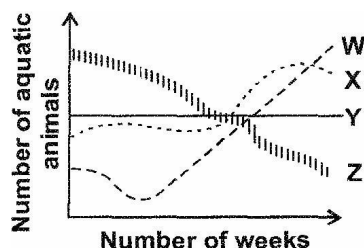
- A. The total force experienced is zero.
- B. The total force experienced is not zero.
- C. The total force experienced is negative.
- D. The total force experienced is infinite.

15. A planet which is called born sister of Earth is___?

- A. Mercurey
- B. Venus
- C. Mars
- D. Jupiter

16. Study the graph. W, X, Y and Z represent the number of aquatic animals found in four different ponds over a fixed period of time. The river likely to have been most polluted is river_____

- A. W
B. X
C. Y
D. Z



17. Read the given statements and select the correct option.

Statement 1: Algal bloom is the rapid population growth of algae in water bodies due to the presence of excessive nitrates and phosphates.

Statement 2 : Nitrate and phosphate fertilizers get washed away by rain water into the water bodies and act as nutrients for algae.

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
C. Statement 1 is true but statement 2 is false.
D. Both statements 1 and 2 are false.

18. Cultivation of crops involves several activities undertaken by farmers over a period of time. These activities are referred to as agricultural practices. Given below are few agricultural practices. Select the option which shows correct sequence of activities that are followed to grow a crop

- A. Sowing, adding manure, protecting from weeds, soil preparation, harvesting, storage
B. Soil preparation, sowing, adding manure, irrigation, protection from weeds, harvesting, and storage
C. Soil preparation, irrigation, adding manure, sowing, harvesting, and storage
D. Irrigation, sowing, manure, protection from weeds, harvesting, storage.

19. When a body is moving on a surface, the force of friction is called_____?

- A. Static friction
B. Dynamic friction
C. Limiting friction
D. Rolling friction

20. The tail of a the comet points away from the sun due to_____?

- A. Centrifugal force
B. Electrical repulsion
C. Attraction of comet due to other planets
D. Radiation pressure

ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	D	Manures are organic substances that supply almost all the nutrient elements required by plants and are obtained from dead and decaying organic matter. Manures enhance the water holding capacity of soil, make the soil porous due to which exchange of gases becomes easy, increase the number of friendly microbes and improve the texture of the soil. Manures do not supply a specific nutrient in specific quantity, thus manures are not nutrient specific.
QUESTION-2	C	Disease that affects citrus fruits and is caused by the bacterium <i>Xanthomonas</i> species. Infection causes lesions on the leaves, stems and fruit of citrus trees <i>e.g.</i> lemon, oranges and grapes. While not harmful to humans, canker significantly affects the vitality of citrus trees causing premature leaf and fruit fall.
QUESTION-3	B	Sodium reacts vigorously with water, giving off a lot of heat so, it is stored in kerosene. Phosphorus catches fire on exposure to air and hence stored under water. Iron reacts with steam.
QUESTION-4	D	Water droplets are observed at the lower surface of spoon (shown in figure). These water droplets are formed as a result of condensation of water vapours (product of combustion) on coming in contact with the cold surface of spoon.
QUESTION-5	A	The plant is an aconitum
QUESTION-6	A	Centrioles, located near nucleus, play important role in cell division by holding spindle fibres. They are present only in animal cells and are absent in plant cells.
QUESTION-7	B	All human beings have 23 pairs of chromosomes in the nuclei of their cells. Two chromosomes out of these are the sex chromosomes, named X and Y. A female has two X chromosomes, while a male has one X and one Y chromosome. The gametes (egg and sperm) have only one set of chromosomes. The unfertilized egg always has one X chromosome. But sperms are of two kinds. One kind has an X chromosome, and the other kind has a Y chromosome. When a sperm containing X chromosome fertilizes the egg, the zygote would have two X chromosomes and develop into a female child. If the sperm contributes a Y chromosome to the egg (ovum) during fertilization, the zygote would develop into a male child. Thus, sex chromosomes of the father determine the sex of an unborn baby.
QUESTION-8	A	The force required to move a 100 g mass on surface <i>P</i> is maximum. This means surface <i>P</i> offers maximum friction.
QUESTION-9	C	The force is applied in R
QUESTION-10	D	Tabla, drum and dholak are percussion instruments where as sitar is a stringed instrument.
QUESTION-11	A	When impurities like salts are dissolved in water, they dissociate to form ions. It is these ions that make it possible for electric current to flow. Hence, it becomes a good conductor of electricity.

QUESTION-12	C	Seismograph is the device used to record earthquake. The characteristics of an earthquake wave can be recorded on the screen of seismograph.
QUESTION-13	B	Bulbs <i>P</i> and <i>Q</i> lies on the plane of incidence of mirror while bulb <i>R</i> does not. Thus, only the images of the bulbs <i>P</i> and <i>Q</i> can be seen by the observer from the plane mirror.
QUESTION-14	A	
QUESTION-15	B	The Earth and Venus are called sister planets because Venus is very close to the Earth and nearly of same size and density as Earth and the chemical makeup is also very similar.
QUESTION-16	D	Mostely populated river is Z
QUESTION-17	A	Algal bloom is the rapid population growth of algae in water bodies due to the presence of nutrients like nitrates and phosphates, brought in by sewage, agricultural wastes and fertilizers. A thick layer of algae covering the entire water surface results in a reduction in the oxygen level of water which is harmful for aquatic animals.
QUESTION-18	B	The following to grow a crop Soil preparation, sowing, adding manure, irrigation, protection from weeds, harvesting, storage
QUESTION-19	B	Force of friction which comes in to play while an object is moving on a surface is dynamic friction. The frictional force that comes into play when one body tends to move over the surface of another, but the actual motion yet not started is called static friction. Limiting friction is the maximum opposing force that comes into play, when one body is just at the verge of moving over the surface of the other body. The opposing force that comes into play when one body is actually rolling over the surface of the other body is called rolling friction.
QUESTION-20	D	A comet is a heavenly body made of gas and dust particles. Due to solar radiations, these gas and dust particles are pushed outwards, as the comets approach the sun. These gases which move out are said to form a tail which points away from the sun.

ANSWER SHEET
National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

Candidate's Name

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WRONG METHODS



CORRECT METHOD



Grade

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

Gender

Male ☐

Female ☐

RollNo.

[illegible]

Father's Name

[illegible]

School Name

[illegible]

E-mail Id

[illegible]

City

[illegible]**School Code**

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MARK YOUR ANSWERS HERE

WHAT YOUR ANSWERS WERE																			
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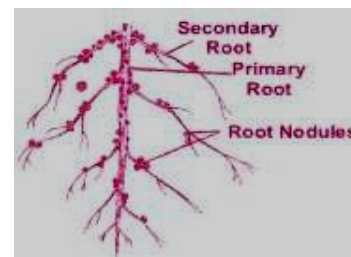
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Candidate's Signature

Invigilator's Signature

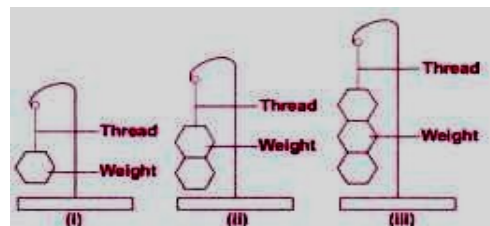
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C. atnbrdociags D. giownwin

- A. The root nodules contain N₂-fixing bacteria such as Rhizobium which perform biological N₂-fixation.
 - B. Association between the leguminous plants and N₂-fixing bacteria is referred to as symbiosis.
 - C. The N₂-fixing bacteria convert atmospheric free nitrogen into nitrogenous compounds such as nitrates.
 - D. Examples of leguminous plants are maize, rice, cotton, peas, beans etc.
- 
- A microscopic image showing root nodules, which are small, rounded, and reddish-brown structures attached to plant roots. These nodules are formed by the symbiotic association of leguminous plants and nitrogen-fixing bacteria like Rhizobium.



- A. Drying and dehydration
B. Sterilization
C. Saltation and sweetening
D. All of these

- A. Thread in fig (i) is nylon, (ii) is wool and (iii) is cotton.
B. Thread in fig (i) is cotton, (ii) is wool and (iii) is nylon.
C. Thread in fig (i) is wool, (ii) is cotton and (iii) is nylon.
D. Thread in fig (i) is nylon, (ii) is cotton and (iii) is wool.



5. Read the given statements and select the correct option.
 Statement 1: A material is said to be plastic if it can be moulded or formed into different shapes.
 Statement 2 : Careless disposal of plastic materials can prove to be harmful for man and environment
- Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
 - Both statement 1 and 2 are true but statement 2 is not the correct explanation of statement 1
 - Statement 1 is true and statement 2 is false
 - Both statements 1 and 2 are false
6. Rajesh organised a quiz in the class. He asked few questions to guess the name of the non-metals. Which of the answer was right?
- Non-metals used in fertilisers - K, Cl.
 - Non-metal used in water purification process-Br.
 - Non-metal used in crackers-N.
 - Non-metal used as an antiseptic -I.
7. Recognise the process shown in the figure and also the plant for which this process is used?
- Transplantation - paddy
 - Levelling - rice

- Irrigation - tea
 - Manuring - tomatoes
- 
8. Read the paragraph and answer
 Manures are organic substances obtained from dead plants and animal wastes. X is made from crops grown specifically to be ploughed into the soil while still green to improve the fertility of the soil. Animal manure consists of animal wastes. Y is manure obtained by decomposition of dead plants and animal waste. What is X?
- Fallow manure
 - Grass manure
 - Organic manure
 - Green manure
9. Which of the following is an incorrect match?
- Alexander Fleming - Penicillin
 - Louis Pasteur -. Fermentation
 - Edward Jenner - Vaccination
 - Anton von Leeuwenhoek - Sterilization
10. Which of the following groups represents the bacterial disease?
- Cholera, tuberculosis, malaria, measles
 - Small pox, tuberculosis, malaria, typhoid
 - Cholera, tuberculosis, typhoid, measles
 - Cholera, anthrax, tuberculosis, typhoid
11. Match different terms in column I with their related description in column II and select the correct option from the codes given below.
- | Column - I | Column - II |
|----------------|--|
| (a) Weeding | (i) Loosening and turning of soil |
| (b) Threshing | (ii) Removing weeds from a field |
| (c) Tilling | (iii) Cutting and gathering of mature crop |
| (d) Harvesting | (iv) Separation of grain from the chaff |
- (a) - (i), (b) - (iii), (c) - (ii), (d) - (iv)
 - (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)
 - (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii)
 - (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)

12. Select the incorrect statements among the following.

- (i) Bitumen is used for metalling the roads.
- (ii) Some inexhaustible natural resources like coal, petroleum and natural gas formed from the dead remains of living organisms are known as fossil fuels.
- (iii) Many useful substances are obtained from coal (commercial importance), so it is also called as 'Black gold'.
- (iv) Natural gas is used as a starting material for the manufacture of a number of chemicals and fertilisers.

- A. (i) and (ii) B. (i) and (iii) C. (ii) and (iv) D. (i), (ii) and (iv)

13. Acid rain is very harmful for crops, buildings and soil. It is the main reason for decolouration of Taj Mahal over years. Which among the following is the main cause of acid rain?

- A. Incomplete combustion of fuels releases carbon monoxide which dissolves in rain water to give acid rain.
- B. Carbon particles which are released in the atmosphere dissolve in rain water to give acid rain.
- C. Oxides of sulphur and carbon released during combustion of fuels dissolve in rain water to give acid rain.
- D. Wood when burnt in open releases methane and other gases which cause acid rain.

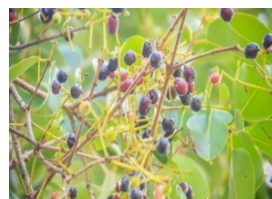
14. Given below are figures of flora and fauna. Which of the following can be seen at Panchmarhi Biosphere Reserve?



(i) cheetah
A. (i) & (ii)



(ii) leopard
B. (i) & (iii)



(iii) jamun tree
C. (i), (ii) & (iv)



(iv) wild mango tree
D. All of these

15. Which of the following is incorrect about the given figures?



A. **Amoeba**



B. **Paramecium**

- A. Both are unicellular eukaryotic organisms
- B. 'a' is unicellular, while 'b' is multicellular organism
- C. Both are capable of independent
- D. Existence Both (B) & (C)

16. Which of the following statements is incorrect regarding metamorphosis?

- A. It is the process of transformation of larva into an adult through drastic changes
- B. In human beings, metamorphosis does not occur because the young ones resemble the adult at the time of birth.
- C. Life cycle of butterflies is completed in the four stages involving egg, larva, pupa, adult.
- D. A tadpole that hatches out of the egg resembles the adult frog in almost all respects.

17. Read the statements carefully and mark the correct option.

Statement 1: Inertia is the property by virtue of which the body is unable to change by itself the state of rest.

Statement 2: The bodies do not change their state unless acted upon by an unbalanced external force.

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
- C. Statement 1 is true and statement 2 is false.
- D. Both statements 1 and 2 are false.

18. A box is given a push across the floor. It comes to a stop shortly after. Which one of the following reasons explains why this happens?

- A. Gravity is acting on the box in the direction opposite to the box's movement
- B. Friction is acting on the box in the same direction of the box's movement
- C. Friction is acting on the box in the direction opposite to the box's movement
- D. The heat produced by the box's movements slows down the box

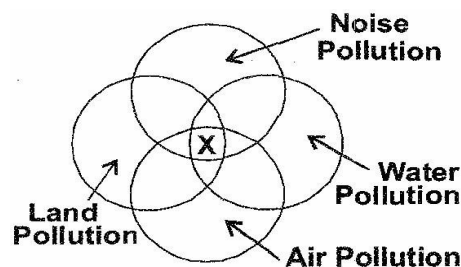
19. Match the two columns and select the correct option from the codes given below

Column I	Column II
(a) CFLs	(i) Electric circuit
(b) Closed path	(ii) Contain toxic mercury
(c) Solution of distilled water and salt	(iii) Conducts current

- A. (a) - (ii), (b) - (i), (c) - (iii)
- B. (a) - (iii), (b) - (ii), (C) - (i)
- C. (a) - (i), (b) - (iii), (c) - (ii)
- D. (a) - (i), (b) - (ii), (c) - (iii)

20. Study the Venn diagram below. X is likely to be _____

- A. A group of people smoking cigarettes
- B. Youngsters dancing in a disco
- C. A farmer spraying pesticides
- D. Construction work going on at a building site



ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	C	Broadcasting is a method of sowing seeds by scattering them with hands. This results in an unequal distribution of seeds.
QUESTION-2	D	Maize, rice and cotton are not leguminous plants. Examples of leguminous plants are peas, beans, etc.
QUESTION-3	D	Food preservation is the process of treating and storing food to prevent its spoilage either by killing the microbes or inhibiting their growth and making them inactive. Different food items need different methods of preservation. Some of these methods are preservation by drying and dehydration, by common salt, by sugar, by pickling, by chemicals, by sterilization, by deep freezing, etc.
QUESTION-4	B	Tensile strength or elasticity of the fibers follow the order: Nylon > Wool > Cotton. Synthetic fibers are more elastic than natural fibers.
QUESTION-5	B	Both statement 1 and 2 are true but statement 2 is not the correct explanation of statement 1
QUESTION-6	D	Non-metals used in fertilisers-N, P; in water purification process-Cl; in crackers-S, P.
QUESTION-7	A	This process is used for the transplantation for paddy
QUESTION-8	D	The X is the green manure
QUESTION-9	D	Anton von Leeuwenhoek observed the first free living cells.
QUESTION-10	D	Cholera, anthrax, tuberculosis and typhoid are bacterial diseases. Malaria is a protozoan disease. Small pox and measles are viral diseases.
QUESTION-11	C	The codes should be arranged as Removing weeds from a field, Separation of grain from the chaff, Loosening and turning of soil, Cutting and gathering of mature crop
QUESTION-12	B	Coal, petroleum and natural gas are exhaustible natural resources as they are limited in nature and can be exhausted by human activities. Coal is called 'Black gold' because of its usefulness and it is the main source of energy. It is used in blast furnaces, steamships and also used as domestic fuel and as a raw material in many industries.
QUESTION-13	C	Oxides of sulphur, nitrogen and carbon produced by burning of coal, diesel and petrol cause acid rain which is harmful for crops, buildings and soil.
QUESTION-14	D	Panchmarhi Biosphere Reserve all of these .
QUESTION-15	B	a' is unicellular, while 'b' is multicellular organism
QUESTION-16	D	A tadpole that hatches out of the egg is quite different from the adult frog.
QUESTION-17	A	Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
QUESTION-18	C	When we push a box across the floor, a force of friction comes into play in the direction opposite to the applied force and opposes The motion of the box. Hence, the box comes to stop shortly.
QUESTION-19	A	The codes are Contain toxic mercury, Electric circuit, Conducts current
QUESTION-20	D	X likely to be Construction work going on at a building site

ANSWER SHEET
National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

Candidate's Name

[illegible][illegible]

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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.

[illegible][illegible]

Father's Name

[illegible]

School Name

[illegible]

E-mail Id

[illegible]

City

[illegible]

School Code

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8	8	8	8	8	8	8
9	9	9	9	9	9	9
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MARK YOUR ANSWERS HERE

A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D				
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5	☐	☐	☐	☐	10	☐	☐	☐	☐	15	☐	☐	☐	☐	20	☐	☐	☐	☐

Mobile No.

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Candidate's Signature

Invigilator's Signature

1. X is a simple tool which is used for removing weeds and for loosening the soil. It has a long rod of wood or iron. A strong broad and bent plate of iron is fixed to one of its ends and works like a blade. It is pulled by animals. What is X?

A. Plough
C. Cultivator

B. Hoe
D. Seed drill

2. Which is the class of organism, living in the body of termites that digests wood cellulose converting it to soluble carbohydrates?

A. Algae
C. Protozoa

B. Bacteria
D. Nematode

3. Which of these fibers is made from a raw material obtained from plants?

A. Rayon
C. Terylene

B. Nylon
D. Polyester

4. Match the column I with column II and select correct option from the codes given below?

Option	Column-1	Option	Column-2
A.	A non-metal essential for respiration	(i)	Carbon
B.	A non-metal which is a source of energy in sun	(ii)	Silicon
C.	A non-metal which is good conductor of electricity	(iii)	Oxygen
D.	A non-metal used in semi conductors	(iv)	hydrogen

A. (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)
C. (a) - (ii), (b) - (iii), (c) - (i), (d) - (iv)

B. (a) - (i), (b) - (ii), (c) - (iv), (d) - (iii)
D. (a) - (iv), (b) - (i), (c) - (ii), (d) - (ii).

5. Your mother takes out an old copper pan and finds that it has become dull and green in color. What do you think the green color is due to?

A. Cu(OH)_2
C. $\text{Cu(OH)}_2 + \text{CuCO}_3$

B. CuCO_3
D. $\text{CuO} + \text{CuCO}_3$

6. In the oil wells, natural gas forms the top most layers, followed by oil and finally water. This is because_____?

- A. Oil and gas are heavier than water
- B. Oil and gas are lighter than water
- C. Oil and gas stick to each other
- D. None of these

7. Mark the correct statement(s) among the following.

- I. Water is a very good fire extinguisher as it cools down the fuels such as wood below itsignition temperature.
- II. Water is a very good fire extinguisher for burning oils and electrical equipments since it covers the surface of oils.
- III. Sand and soil may act as a good fire extinguisher for burning oils.

- A. I B. II C. III D. I and III

8. Which of the following statements is incorrect?

- A. Cell wall is a semi-permeable membrane, which allows only certain selective substances to pass through it.
- B. Endoplasmic reticulum helps in the transport of substances within the cell.
- C. Mitochondria carries out the function of cellular respiration.
- D. Vacuole helps in osmoregulation.

9. Read the following statements and select the correct option.

- (i) A daughter receives X-chromosome from her mother only.
- (ii) Human beings possess 22 pairs of autosomes and 1 pair of sex chromosome.
- (iii) An embryo is made up of a single cell.
- (iv) A new human individual develops from a cell called gamete.
- (v) Pituitary gland produces thyroid-stimulating hormone (TSH), which stimulates the thyroid to produce thyroxine.
- (vi) A zygote is formed as a result of fertilization.

- A. Statements (i), (iii) and (iv) are false, while statements (ii), (v) and (vi) are true.
- B. Statements (i) and (iii) are false, while statements (ii), (iv), (v) and (vi) are true.
- C. Statements (iii) and (iv) are false, while statements (i), (ii), (v) and (vi) are true.
- D. Statements (iii) and (v) are false, while statements (i), (ii), (iv) and (vi) are true.

10. John carried out an experiment to find out how different surfaces (P, Q, R and S) effect the distance a car travelling at 50 km/h needed to stop once the brakes are applied. The results are shown below:

Type of road surfaces	P	Q	R	S
Stopping distance(m)	18	15	19	27

Which type of road will provide the most friction for the car to stop?

- A. P B. Q C. R D. S

11. Which of the following materials can sound travel through?

- A. Glass of water B. Balloon full of air
C. Iron bar D. Vacuum

- A. (i) & (ii) B. (i) & (iii) C. (i), (ii) & (iii) D. All of these

12. In an experiment to measure the speed of sound in air, a boy stands 40 m from a wall and bangs two pieces of wood together. At the instant he hears the echo, he bangs them together again. He does this activity 50 times. The time taken for 50 bangs is 12 s. Which calculation gives the speed of sound in air?

- $$\frac{12}{40 \times 50}$$

$$\frac{B. 40 \times 50}{12}$$

$$\frac{C. 40 \times 2 \times 50}{12}$$

$$\frac{D. 40 \times 2 \times 12}{50}$$

13. A cell converts_____?

- A. Electrical energy into chemical energy
B. Chemical energy into electrical energy
C. Magnetic energy into electrical energy
D. Electrical energy into mechanical energy

14. When two bodies are rubbed against each other?

- A. They acquire equal and similar charges.
B. They acquire equal and opposite charges.
C. They acquire different charges but in different amounts depending upon their masses.
D. They do not acquire any charge.

15. The _____ is the point on the surface of the earth directly above the focus of the earthquake_?

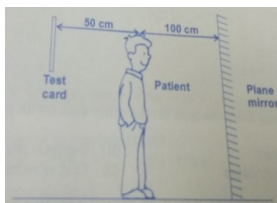
- A. Stress. B. Fault lines. C. Epicenter. D. None of these.

16. A parallel beam of light is incident on a converging lens parallel to its principal axis. As one moves away from the lens on the other side on its principal axis, the intensity of light?

- A. Remains constant
- B. Continuously increases
- C. Continuously decreases
- D. First increases then decreases

17. An optician holds a test card 50 cm behind a patient. The patient then looks in the plane mirror which is 100 cm away. How far away from the patient's eyes is the image of the test card?

- A. 100 cm
- B. 150 cm
- C. 200 cm
- D. 250 cm



18. To an astronaut, the outer space appears_____?

- A. Dark blue.
- B. White.
- C. Black.
- D. Dark red.

19. Gases in the Earth's atmosphere prevent heat from going out into space and in this way they keep the Earth warm. When a forest is burnt, more of these gases are released into the atmosphere. This may lead to_____?

- (i) Global warming.
- (ii) Flooding of coastal areas.
- (iii) Plants to stop making food.
- (iv) Changes in weather patterns.

- A. (i) and (ii)
- B. (i) and (iii)
- C. (i), (ii) and (iii)
- D. (i), (ii) and (iv)

20. Which of the following statements is incorrect?

- A. Suspended particulate matter can lead to respiratory problems like bronchitis and asthma.
- B. Acid rain is mainly constituted by SO_2 and NO_2 .
- C. CNG is called a cleaner fuel as it burns completely.
- D. Major Green houses gases are CFCs and hydrocarbons.

ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	B	The x is the hoe.
QUESTION-2	C	The major energy source for termites is cellulose that is present in their diet as plant or wood fibers. Termites rely primarily upon symbiotic protozoa <i>Trichonympha</i> and others present in their gut to digest cellulose for them.
QUESTION-3	A	Rayon or artificial silk is made from pure cotton or wood pulp.
QUESTION-4	A	The codes are oxygen, hydrogen, carbon, silicon
QUESTION-5	C	The equation is $\text{Cu(OH)}_2 + \text{CuCO}_3$
QUESTION-6	B	In oil wells, the layer containing petroleum oil and gas is above that of water, because oil and gas are lighter than water and do not mix with it.
QUESTION-7	D	Water works as a fire extinguisher by taking out the heat from the fire. It is never used in laboratories and electrical stores and in case of burning of oils because it will worsen the fire. Only the fire of paper, wood, or other ordinary materials can be extinguished by water. Sand can be used in laboratories fire, electrical fire and in burning of oils as it cuts off the oxygen supply.
QUESTION-8	A	Cell wall is rigid layer surrounding a cell, located external to the cell membrane. It provides structural support, protection and a filtering mechanism. Cell wall is fully permeable <i>i.e.</i> it allows all the substances to pass through it. Plasma membrane is the semi-permeable membrane, which allows only certain selective substances to pass through it.
QUESTION-9	A	A daughter receives one X-chromosome from her mother and one X-chromosome from her father. An embryo is made up of many cells. A new human individual develops from a cell called zygote.
QUESTION-10	B	The road <i>Q</i> provides the maximum friction, since the stopping distance on <i>Q</i> is the lowest.
QUESTION-11	C	Sound requires medium to travel which can be solid, liquid or gas. It cannot travel through vacuum.
QUESTION-12	C	Total/total time taken Speed =
QUESTION-13	B	A cell converts chemical energy into electrical energy. It has an electrolyte and electrodes of different metals. When the electrodes are connected through an external circuit, electric current flows in the circuit. For example, voltaic cell, dry cell.
QUESTION-14	B	By rubbing two bodies one loses some charge and other gains an equal amount of charge. So the bodies acquire equal and opposite charges.
QUESTION-15	C	The point on the earth's surface vertically above the focus is called the epicenter of the earthquake.

QUESTION-16	C	In the given situation, the intensity of light decreases continuously with increase in distance.
QUESTION-17	D	Object distance = 150 cm Image distance = 150 cm (As in plane mirror object distance is always equal to the image distance) The patient is 100 cm away from the mirror So, the distance between the patient's eyes and the image = 100 cm + 150 cm = 250 cm
QUESTION-18	C	The sky appears black to an astronaut because there is no atmosphere in the outer space that can scatter the sunlight.
QUESTION-19	D	Plants will not stop making food in response to gases released by burning forest.
QUESTION-20	D	The gases which trap the solar radiation and partially reflect back long wave heat radiations are called green house gases. Green house gases are essential for keeping the earth warm and hospitable. But, if concentration of green house gases starts increasing in the atmosphere, it results in global warming. The various green house gases are CO ₂ , CH ₄ , chlorofluorocarbons (CFCs), nitrous oxide, water vapors etc.

ANSWER SHEET
National Astronomy & Science Olympiad

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Candidate's Name

[illegible]

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WRONG METHODS



CORRECT METHOD



Grade

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

Gender

Male ☐

Female ☐

RollNo.

[illegible]

Father's Name

[illegible]

School Name

[illegible]

E-mail Id

[illegible]

City

[illegible]

School Code

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MARK YOUR ANSWERS HERE

WHAT YOUR ANSWERS WERE																			
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Candidate's Signature

Invigilator's Signature

1. Take a beaker and fill half of it with water. Put some wheat seeds in it, stir it and wait for some time. Which of the following holds true regarding the observation and inference of this experiment

A. Healthy seeds being lighter float on the surface of water.
B. Damaged seeds being lighter float on the surface of water.
C. Some healthy seeds and some damaged seeds float on the surface of water.
D. Damaged seeds being heavier settle down at the bottom.

2. Read the given statements and select the correct option.

Statement 1: Biofertilizers are the living organisms that enrich the nutrient quality of the soil.

Statement 2: N₂ fixing bacteria, N₂-fixing cyanobacteria and mycorrhizae act as important biofertilizers.

A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of Statement 1
C. Statement 1 is true and statement 2 is false.
D. Both statements 1 and 2 are false.

3. Beer and wine are both alcoholic drinks which are produced from different sources. Select the correct statement regarding the production of each_____?

A. Wine is prepared by fermentation of grapes and beer by decantation of barley
B. Wine is prepared by fermentation of sugar in grapes and beer by fermentation of sugar in germinating barley.
C. Wine is prepared by fermentation of sugar in barley and beer by fermentation of sugar in grapes
D. None of the above.

4. Read the given statements and select the correct option.

Statement 1: The chemical substances produced by microorganisms which in low concentration are antagonistic to the growth of other microorganisms are called as antibiotics.

Statement 2: A preparation of a dead or attenuated pathogen, which when injected into a healthy person, provides immunity against a number of diseases, is called as vaccine.

A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
C. Statement 1 is true but statement 2 is false.
D. Both statements 1 and 2 are false.

5. Choose the correct option for the given statements.

- I. Plastics are generally good conductors of electricity.
 II. Ropes made by Bakelite are used in cranes and elevators.
 III Teflon is a special plastic on which oil and water do not stick.
 IV. Plastic is non-biodegradable, hence not environment friendly.

	I	II	III	IV
(A)	True	True	False	False
(B)	False	False	True	True
(C)	True	False	True	False
(D)	False	True	False	True

- A. A B. B C. C D. D

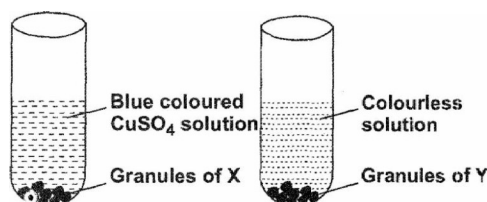
6. Study the table carefully and select the appropriate option.

Sample	Conductor of electricity	Malleability
I	Yes	No
II	No	No
III	No	Yes
IV	Yes	Yes

- A. I is copper; II is sulphur B. II is sulphur; III is coal
 C. III is iron; IV is copper D. II is sulphur; IV is copper.

7. In the figure, X and Y respectively are

- A. Zn and ZnSO_4
 B. ZnSO_4 and Zn
 C. Zn and CuSO_4
 D. Zn and Cu



8. Coal tar can be used as a starting material for manufacturing of which of the following?

- (i) Drugs (ii) Photographic materials
 (iii) Cookwares (iv) Explosives

- A. (i) only B. (ii) and (iv) C. (i), (ii) and (iv) D. (ii), (iii) and (iv)

9. Why doesn't a matchstick burn by itself, even though it is a combustible substance?

- A. It gets ignited due to the heat of friction
 B. A combustible substance cannot catch fire below its ignition temperature
 C. Both (A) & (B)
 D. None of the above

10. Manju read a story about a tree that had been growing in a forest. Some monkeys and many insects and birds had lived in the tree. A man cuts down the tree. After that some dead monkeys and dead insects were found around the tree stump. Manju wrote the outline of the story as shown below

Which of the following ends the story?

A tree provides food and shelter for many animals



Man cuts down the tree to built



?

- A. All the animals died
- B. All the animals found a new home
- C. Some of the animals found a new home
- D. Some of the animals found a new home and some died

11. In a biology lecture, the teacher was dictating the organelles of a cell as endoplasmic reticulum, mitochondria, nucleus, ribosome, centriole and centrosome. Which cell was she referring?

- A. Prokaryotic cell.
- B. Plant cell.
- C. Animal cell.
- D. It is not possible to predict from the given data.

12. Thyroxine controls _____ in frogs and the development of _____ and _____ during embryonic development of other vertebrates. Thyroxine production requires the presence of _____ in diet. Select the correct sequence of words to complete the above passage.

- A. Development, Circulatory system, Muscles, Iodine
- B. Metamorphosis, Circulatory system, Muscles, Calcium
- C. Development, Bones, Nervous system, Iron
- D. Metamorphosis, Bones, Nervous system, Iodine.

13. A man sharpens his knife as shown in figure. Which of these properties of friction are in use?

- (i) Friction helps us to hold objects
- (ii) Friction acts in the opposite direction of motion
- (iii) Friction causes the surfaces in contact to wear away
- (iv) Friction produces heat energy



- A. (i) & (ii)
- B. (i), (iii) & (iv)
- C. (iii) & (iv)
- D. All of the above

14. You see lightning before you hear the thunder because_____?

- A. Lightning is much brighter than thunder
- B. Thunder is heavier than lightning
- C. Light can travel through air but sound cannot
- D. Sound travels slower than light

15. Which of the following statements is not correct?

- A. Conductors have more charge than insulators
- B. Conductors allow charge to flow through them more easily than insulators.
- C. Non metals are good conductors.
- D. Electrical wires are usually covered by insulators.

16. A lightning conductor installed in a building_?

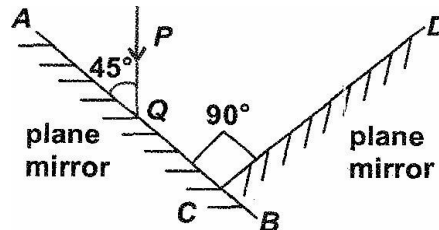
- A. Does not allow the lightning to fall on the building
- B. Repels the lightning
- C. Forces the lightning to fall in an area where there is no building
- D. Conducts electric charge to the ground when lightning strikes the building.

17. An earthquake is caused by_____?

- A. Shaking of the earth's surface
- B. Tides in ocean
- C. The movement of earth's plate
- D. All of these

18. Two plane mirrors AB and CD are placed at right angles to one another. A ray of light PQ hits AB at Q making an angle of 45° as shown in the diagram. This ray will be reflected from mirror BD at An angle

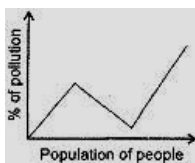
- A. 20°
- B. 35°
- C. 45°
- D. 60°



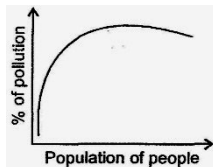
19. The unit for measuring astronomical distances is_____?

- A. Light year
- B. Kilometer
- C. Meter
- D. Fermi

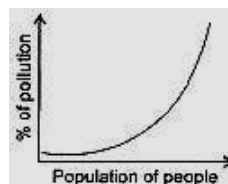
20. Which one of the following graphs shows the likely relationship between the changes in the percentage of pollution to the activities carried out by man in a particular town?



A.



B.



C.



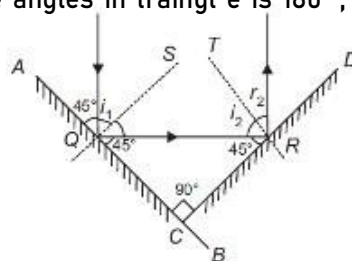
D.

ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	B	Damaged seeds are light in weight as they are hollow and thus float on the surface of water.
QUESTION-2	B	As Biofertilizers are the living organisms that enrich the nutrient quality of the soil and N ₂ -fixing cyanobacteria and mycorrhizae act as important biofertilizers
QUESTION-3	B	Wine is prepared by fermentation of grapes and beer by fermentation of germinating barley with the help of yeast.
QUESTION-4	B	The chemical substances produced by microorganisms which in low concentration are antagonistic to the growth of other microorganisms are called as antibiotics, and preparation of a dead or attenuated pathogen, which when injected into a healthy person, provides immunity against a number of diseases, is called as vaccine.
QUESTION-5	B	Plastics are poor conductors of electricity. Ropes made by nylon and polyesters are used in cranes and elevators.
QUESTION-6	D	Metals show malleability and are good conductors of heat and electricity. While non metals are not malleable but are brittle and are bad conductors of heat and electricity. So, II is a non-metal and IV is a metal.
QUESTION-7	D	Zinc is more reactive than copper so, Zn displaces Cu from its blue CuSO ₄ solution and forms colourless ZnSO ₄ solution.
QUESTION-8	C	Coal tar is used as starting material for manufacturing various substances like synthetic dyes, drugs, explosives, perfumes, plastics, paints, photographic materials, roofing materials, etc.
QUESTION-9	C	The lowest temperature at which a substance catches fire is called its ignition temperature. Though, matchstick is a combustible substance, but cannot catch fire or burn as long as its temperature is lower than its ignition temperature. Thus matchstick starts burning on rubbing it on the side of the matchbox.
QUESTION-10	C	As the tree was cut down by man, Some of the animals found a new home and some died.
QUESTION-11	C	The teacher was referring to an animal cell. Animal cell has all the organelles mentioned in the question. Prokaryotic cell lacks nuclear membrane around its genetic material and also it does not have membrane bound organelles. Plant cell does not have centriole and centrosome.
QUESTION-12	D	The correct sequence of word sentence is metamorphosis, Bones, Nervous system, Iodine.
QUESTION-13	D	All the given properties of friction are used while sharpening a knife.
QUESTION-14	B	The speed of sound in air is 340 m s^{-1} whereas the speed of light in air is $3 \times 10^8 \text{ m s}^{-1}$. That is why light reaches us instantaneously whereas we hear the thunder after some time.
QUESTION-15	C	Non metals are insulators not conductors.
QUESTION-16	D	Lightning conductor is fixed on tall buildings to protect it from the damage done by lightning. Lightning conductor consists of a metal rod which conducts electric charge to the ground when lightning strikes the building.
QUESTION-17	C	Movement of earth's plate is one of the causes of earthquake.

QUESTION-18

- C Q Sum of all the three angles in triangle is 180° , QTR is the normal to the mirror BD



QUESTION-19

- A A light year is the distance that light travels in one year.
1 light year = 9.5×10^{12} km

QUESTION-20

- C As the population of people increases, pollution will also increase.

ANSWER SHEET
National Astronomy & Science Olympiad

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Candidate's Name

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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.

[illegible]

Father's Name

[illegible]

School Name

[illegible]

E-mail Id

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City

[illegible]

School Code

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5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
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MARK YOUR ANSWERS HERE

WHAT YOUR ANSWERS WERE																			
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Mobile No.

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Candidate's Signature

Invigilator's Signature

1. Which one of the following is correct match?

- A. Rabi - sowing (June-July), harvesting (Sep-Oct)
- B. Kharif - sowing (June-July), harvesting (Sept-Oct)
- C. Rabi - sowing (Oct-Dec), harvesting (June-July)
- D. Both (B) & (C)

2. Our atmospheres has 78% nitrogen gas. Nitrogen is one of the essential constituent of all living organisms as part of proteins, chlorophyll, nucleic acid and vitamins. Select the correct statement related to nitrogen

- A. Not useful for plants
- B. Important for growth of plants, and is taken by all plants from the air
- C. Important for growth of plants, but only some plants absorb the nitrogen present D in the air
- D. Directly Important for growth of plants, but no plant can absorb the nitrogen present in the air directly.

3. The microorganism in the given figure is_____?

- A. Phase in the life cycle of bacteria
- B. Bacteria that eats other bacteria
- C. Virus that uses bacteria as a host
- D. None of the above



4. Read the given statements and select the correct option.

Statement 1: Plastics lying on the road side and floating in the water bodies cause health hazards and are harmful to the environment.

Statement 2: Plastics produce toxic gases when burnt.

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
- C. Statement 1 is true and statement 2 is false.
- D. Both statements 1 and 2 are false.

5. Match both the columns and select the correct option from the codes given below.

Column I	Column II
(a) Magnesium	(i) Blood
(b) Iron	(ii) Coal
(c) Oxygen	(iii) Chlorophyll
(d) Carbon	(iv) Respiration

- A. (a) - (ii), (b) - (iii), (c) - (i), (d) - (iv) B. (a) - (iii), (b) - (i), (c) - (iv), (d) - (ii)
 C. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv) D. (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)

6. One word answers are given for few statements. Mark the answer which is not correct.

- A. Resources which will either never run out or are replaced within a reasonable period of time renewable resources.
 B. Wise and careful use of resources by not wasting them – Conservation.
 C. Conversion of wood into coal over millions of years due to high temperature and pressure under the earth – Carbonisation.
 D. A black viscous liquid extracted from the rocks which is a source of hydrocarbons – Coal tar.

7. Liquefied petroleum gas (LPG) burns with a___?

- A. Non-luminous flamme B. Luminous flamme
 C. Yellow flamme D. Yellow and smoky flame

8. Fill in the blanks by choosing the correct option. The flame of a Bunsen burner is _____ when the air hole is open and _____ when the air hole is closed.

- A. Blue, green B. Yellow, blue C. Yellow, green D. Blue, yellow

9. Chipko movement was started in Tehri-Garhwal district of_____?

- A. Uttarakhand B. M.P. C. Assam D. Kerala

10. Correct the given statements by replacing the underlined words and select the correct option.

- (i) The viscous fluid present in the nucleus is called cytoplasm.
 (ii) Vacuoles are rod shaped structures which oxidize food to provide energy.
 (iii) Mitochondria contain green pigment chlorophyll and take part in photosynthesis.
 (iv) Lysosomes take part in synthesis of proteins.

Option	Column-1	Column-2	Column-3	Column-4
A.	Nucleoplasm	Lysosomes	Plastids	Centrosome
B.	Protoplasm	Bibosomes	Centrosome	Golgi bodies
C.	Nucleoplasm	Mitochondria	Chloroplasts	Ribosomes
D.	Protoplasm	Plastids	Endoplasmic reticulum	ribosomes

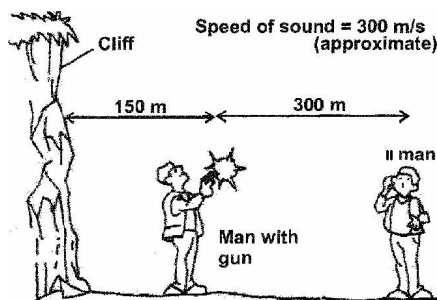
- A. A B. B C. C D. D

11. A wooden block is floating in water contained in a beaker. During the free fall of the beaker, the up thrust on the block will be

- A. Equal to the weight of the block. B. Slightly more than weight of the block.
C. Slightly less than the weight of the block. D. Zero.

12. A man fires a gun 150 m from a cliff. A second man who is standing 300 m further away from the cliff hears the gun 1 second after he sees the flash. The second man will hear the echo from the cliff

- A. 1 second after seeing the flash
B. 2 seconds after hearing the gun
C. 2 seconds after seeing the flash
D. 4 seconds after hearing the gun



13. Match the two columns and select the correct answer from the codes given below_____?

COLUMN -I	COLUMN-II
(a) Insulator	(i) Prevents rusting
(b) Closed path	(ii) Rubber
(c) Electroplating	(iii) Electric current

A	(a) - (i), (b) - (ii), (c) - (iii)
B	(a) - (ii), (b) - (iii), (c) - (i)
C	(a) - (iii), (b) - (i), (c) - (ii)
D	(a) - (ii), (b) - (i), (c) - (iii)

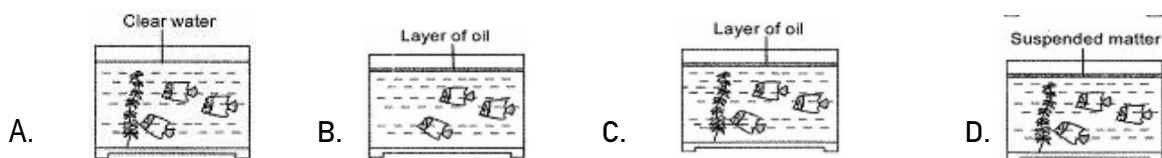
14. The shaking of earth is called_____?

- A. Tsunami B. Volcano C. Earthquake D. None of these

15. Splitting of light into these constituent colours is known as_____?

- A. Scattering B. Absorption C. Dispersion D. Reflection

16. Which of the containers below will continue to have healthy fish and plants at the end of a week?



17. An oil spill covered a larger area of water in an ocean. The marine life in that area was badly affected. A lot of the marine animals were found dead and were floating on the surface of the water. This is because _____

- (i) They drank the water that was contaminated by the oil.
- (ii) The fish swallowed the oil and were poisoned.
- (iii) They breathed in the oil fumes near the water surface and were suffocated.

A. only (i) B. (i) & (ii) C. (ii) & (iii) D. All of these

18. The 'green house effect' refers to the _____?

- A. Building up of pollution in the atmosphere
- B. Gradual warming of the Earth's atmosphere
- C. Hole in the ozone layer
- D. Increase in human population on Earth

19. Match column I with column II and select the correct option from the codes given below.

Column I	Column II
(a) SPM	(i) Poisoning of bald eagles
(b) Typhoid	(ii) Green house gas
(c) Carbon monoxide	(iii) Vehicle exhaust
(d) Carbon dioxide	(iv) Smoke inhalation
(e) DDT	(v) Pathogens in polluted water

- A. (a) - (iii), (b) - (v), (c) - (iv), (d) - (ii), (e) - (i)
- B. (a) - (iv), (b) - (iii), (c) - (ii), (d) - (v), (e) - (i)
- C. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv), (e) - (v)
- D. (a) - (ii), (b) - (iii), (c) - (iv), (d) - (v), (e) - (i)

20. Select the pair of diseases that are caused by contaminated water.

- A. Cholera and typhoid
- B. Diarrhea and common cold
- C. Pneumonia and typhoid
- D. Malaria and pneumonia

ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	B	Kharif crops are grown during rainy season in June/July and harvested in September/ October. They include paddy (rice), maize, jowar, bajra, groundnut, pulses, soyabean, cotton, etc. Rabi crops are sown in October/November and harvested in March/April. Therefore, rabi crops are called winter crops. These include wheat, gram, peas, mustard etc.
QUESTION-2	B	Important for growth of plants, and is taken by all plants from the air
QUESTION-3	C	The given figure is of a bacteriophage, a virus that uses bacteria as a host.
QUESTION-4	B	Plastics They are non-biodegradable. It takes several years to decompose them. Not only the plastics produce toxic gases on burning but unburnt plastics also cause environmental pollution.
QUESTION-5	B	Chlorophyll, Blood, Respiration, Coal
QUESTION-6	D	A black viscous liquid extracted from the rocks which is a source of hydrocarbons is bitumen.
QUESTION-7	A	LPG burns with blue, non-luminous flame as it undergoes complete combustion in the presence of sufficient air.
QUESTION-8	D	The air holes open means more efficient reaction with oxygen and thus better combustion of fuel occurs giving a blue colour flame. When the air hole is closed, supply of air (oxygen) is insufficient which results in incomplete combustion and hence the flame is yellow coloured.
QUESTION-9	A	Chipko movement in Tehri-Garhwal district of Uttarakhand was started by Sunder Lal Bahuguna. It helped in saving trees in the area. The women of village Reni embraced the trees and prevented contractors from cutting the trees.
QUESTION-10	C	The correct options are Nucleoplasm, Mitochondria, Chloroplasts, Ribosomes
QUESTION-11	D	The wooden block is floating in water. During free fall of beaker, there is no up thrust on the beaker or block.
QUESTION-12	C	Echo will be heard when the sound of the gun gets reflected from the cliff. Thus the total distance travelled by the sound of gun.
QUESTION-13	B	Rubber, Electric current, Prevents rusting
QUESTION-14	C	The shaking of the ground caused by sudden movements in Earth's crust is called earthquake.
QUESTION-15	C	The colour is Dispersion
QUESTION-16	A	In figures (B), (C) and (D), presence of layer of oil and suspended matter interferes with the entry of oxygen into water. Thus the plants and the fish will not get sufficient oxygen for respiration and also get badly affected by the chemicals present in oil. They ultimately die because of suffocation. In figure (A), presence of clear water supplies sufficient amount of oxygen to the organisms and hence they would survive.
QUESTION-17	D	They drank the water that was contaminated by the oil. The fish swallowed the oil and were poisoned. They breathed in the oil fumes near the water surface and were suffocated

QUESTION-18	B	Warming of earth's surface due to trapping of heat radiations by CO ₂ and other green house gases present in earth's atmosphere is called as green house effect.
QUESTION-19	A	Vehicle exhaust, Pathogens in polluted water, Smoke inhalation, Green house gas, Poisoning of bald eagles
QUESTION-20	A	Contaminated water is responsible for a number of infectious diseases <i>e.g.</i> , cholera and typhoid.

ANSWER SHEET
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Candidate's Name

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WRONG METHODS



CORRECT METHOD



Grade

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

Gender

Male ☐

Female ☐

RollNo.

[illegible]

Father's Name

[illegible]

School Name

[illegible]

E-mail Id

[illegible]

City

[illegible]

School Code

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MARK YOUR ANSWERS HERE

MARK YOUR ANSWERS HERE																			
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Candidate's Signature

Invigilator's Signature

1. Which of the following statements is correct about weeds?

- A. Weeds cannot be removed manually
- B. Cochineal insects are used to eradicate weed Opuntia
- C. Weeds adversely affect plant growth as they compete with the crop plant for nutrients, space, water and light.
- D. Both (B) and ©

2. The types of bacteria shown in the figure are_____?

- A. Bacillus
- B. Coccus
- C. Spirillum
- D. Vibrio



3. Match different organisms in column - I with their related characteristics in column - II and select the correct option from the codes given below.

Coulumn-1	Column-2
(a) Entamoeba histolytica	(i) an alga which carries out photosynthesis
(b)Bacteriophage	(ii) A protozoan that causes disease in human beings By living in the large intestine of humans
(c) Rhizopus	(iii) A virus which infects a bacterial cell
(d)Chlamydomonas	(iv) A common black bread mould

- A. (a) - (ii), (b) - (iii), (c) - (iv), (d) - (I)
- B. (a) - (iii), (b) - (ii), (c) - (iv), (d) - (I)
- C. (a) - (ii), (b) - (i), (C) - (iii), (d) - (iv)
- D. (a) - (iv), (b) - (ii), (c) - (i), (d) - (iii)

4. Why is it not advisable to wear clothes made up of synthetic fibers in hot and humid weather?

- A. Synthetic fibers catch fire very easily
- B. Synthetic fibers do not absorb sweat
- C. Synthetic fibers stick to the body
- D. Both (B) & (C)

5. The same gas is evolved when Al reacts with H₂SO₄ and NaOH. The gas is_____?

- A. N₂
- B. O₂
- C. H₂
- D. None of these

6. Earlier 'it' was used for street lightning. Now 'it' is used as a source of heat rather than light. 'It' is___?

- A. Coal gas B. Coal tar C. Coal D. Coke

7. Read the given statements and select the correct option.

Statement 1: Combustion is a chemical process in which a substance reacts with oxygen to give off heat and at times light.

Statement 2: Heat and light produced in sun are due to combustion

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
C. Statement 1 is true and statement 2 is false
D. Both statements 1 and 2 are false

8. Read the given statements and mark the appropriate answer.

Statement 1: Kerosene oil and wood do not catch fire on their own at room temperature.

Statement 2: A combustible material cannot catch fire as long as its temperature is lower than its ignition temperature.

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
C. 1 is true and statement 2 is false.
D. Both statements 1 and 2 are false.

9. The problem of desertification and deforestation is the result of

- A. Overgrazing B. Indiscriminating felling of trees
C. Over exploitation of land resources D. All of these

10. Plant cells can usually be distinguished from animal cells because only plant cells possess

- A. Mitochondria and lysosomes B. Chloroplast and cell wall
C. Chromosomes and lysosomes D. Chloroplast and Golgi complex

11. A sharp knife enables us to cut through things more easily because

- A. The pressure exerted is lesser when the same force is used
B. The pressure exerted is greater when the same force is used
C. The sharp edge can pass through the material slowly
D. The sharp edge is not felt when cutting through the material

12. Choose the odd one out.

A. Shrillness

B. Pitch

C. Frequency

D. Loudness

13. The houses in the picture are right across the road in an industrial area. Which of the following shows the two kinds of pollution that the people living in these houses face every day?

A. Noise pollution and air pollution

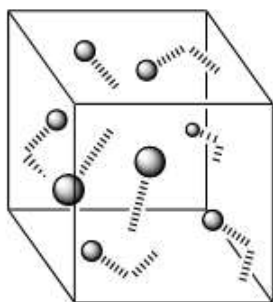
B. Land pollution and noise pollution

C. Land pollution and water pollution

D. Water pollution and air pollution



14. What state of matter best corresponds to the diagram given below?



A. Gas

B. Liquid

C. Amorphous solid

D. Crystalline solid

15. Study the table on “Pollution problem and solution”. Which of the following is correct?

Problem	Solution
(i) Air Pollution	Check and service vehicles regularly
(ii) Land Pollution	Burn refuse in incinerators
(iii) Noise Pollution	People should buy smaller television sets
(iv) Water Pollution	People should not dump rubbish into drains and rivers

A. (i) & (ii)

B. (i) & (iii)

C. (ii), (iii) and (i)

D. (ii) & (iv).

16. Air pollutants are harmful to living things. Which of the following shows their harmful effects?

(i) They form acid rain.

(ii) They cause breathing problems in animals.

(iii) They can interfere with photosynthesis in plants.

(iv) They cause diseases in the respiratory system of man and animals

A. (i) only

B. (i) & (ii) only

C. (i), (ii) & (iii)

D. All of the above

17. Why will marine organisms be affected when there is an oil spillage at sea?

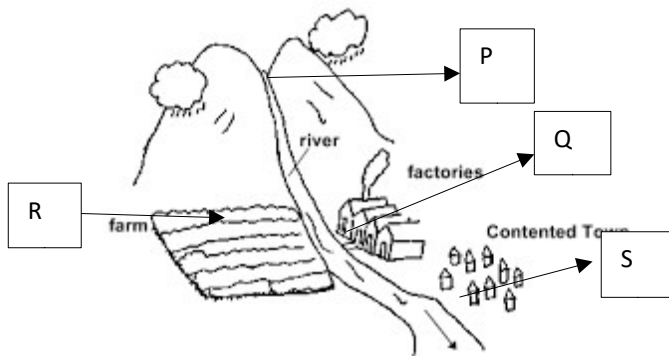
- A. There will be a shortage of light and heat in the water
- B. There will be a shortage of oxygen and excessive heat will be trapped in the water
- C. There will be a shortage of oxygen and the chemicals from the oil will affect marine organisms
- D. There will be a shortage of carbon dioxide and the poisonous substances will affect marine organisms

18. Which of the following are correctly matched?

Column-1(problem)	Column-2 (solution)
(i) Air pollution	Check and service vehicles regularly
(ii) land pollution	Burn refuse in incinerators
(iii) Noise pollution	People should buy the smaller television sets
(iv) water pollution	People should not dump rubbish into drains and rivers

- A. (i) and (ii)
- B. (i) and (iii)
- C. (i), (ii) and (iii)
- D. (i), (ii) and (iv)

19. The picture below shows a river flowing downstream towards the sea_____?



Situated near the river is a factory which occasionally discharges waste water into the river and a farm where pesticides are used. A water treatment plant which supplies water for home use is to be built. The water treatment plant treats water which is pumped into it from the point in the river that is nearest to it. Which position would be suitable for the treatment plant?

- A. P
- B. Q
- C. R
- D. S

20. A gardener who burns dry leaves and weeds is causing pollution. He should not burn them but instead dispose them by _____?

- A. Throwing them into the river
- B. Burying them in the garden
- C. Throwing into the sewers
- d. Dumping them into the sea

ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION -1	D	The unwanted plants that grow naturally along with crop plants are called weeds. Weeds can be removed manually by pulling them out by hand or by using a trowel. Weeds adversely affect the plant growth as they compete with the crop plant for nutrients, space, water and light. Cochineal insects are used to eliminate prickly pear (<i>Opuntia</i>) from the crop fields as the former is a parasite on the latter.
QUESTION -2	B	The figure shows that Coccus
QUESTION -3	A	The codes A protozoan that causes disease in human beings By living in the large intestine of humans, A virus which infects a bacterial cell, A common black bread mould, an alga which carries out photosynthesis.
QUESTION -4	D	They do not absorb water and do not allow the air to pass through. In hot and humid weather, these clothes stick to the body and make us feel uncomfortable.
QUESTION -5	C	the gas is H ₂
QUESTION -6	A	Coal gas was earlier used for domestic cooking and street lighting. It is used as an important industrial fuel as it produces a lot of heat on burning.
QUESTION -7	A	Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
QUESTION -8	A	Ignition temperature is the lowest temperature at which a combustible substance catches fire.
QUESTION -9	D	Desertification is a process by which fertile land turns into barren land or desert and deforestation is the act of cutting down large number of trees. Both are result of overgrazing, indiscriminate cutting of trees and over-exploitation of land resources.
QUESTION -10	B	Plant cells have chloroplast and cell wall whereas animal cells do not have. Mitochondria, lysosomes, chromosomes and Golgi complex are present in both animal and plant cells.
QUESTION -11	B	Force We have, Pressure = $\frac{\text{Force}}{\text{Area}}$ A sharp knife has lesser area of contact with things, so more pressure is exerted when the same force is used.
QUESTION -12	D	Pitch of the sound depends on the frequency. Higher is the frequency, higher will be the pitch. Pitch also decides the shrillness of the sound. However, loudness depends upon the amplitude of the vibrating source.
QUESTION -13	A	They faces the Noise pollution and air pollution
QUESTION -14	A	
QUESTION -15	D	The correct statements are(ii) burn refuse in incinerators (iv) people should not dump rubbish into drains and drivers.

QUESTION -16	D	In the given statement all are harmful effects for living things.
QUESTION -17	C	There will be a shortage of oxygen and the chemicals from the oil will affect marine organisms
QUESTION -18	B	The noise produced by television does not depend upon its size. Television causes noise pollution if it is at large volume.
QUESTION -19	D	The suitable position for treatment plant is s
QUESTION -20	B	It is the process of Burying them in the garden

ANSWER SHEET
National Astronomy & Science Olympiad

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Candidate's Name

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WRONG METHODS



CORRECT METHOD



Grade

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

Gender

Male ☐

Female ☐

RollNo.

[illegible]

Father's Name

[illegible]

School Name

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E-mail Id

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City

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MARK YOUR ANSWERS HERE

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Candidate's Signature

Invigilator's Signature

1. High yielding variety refers to a variety produced by crossing plants with desirable characters. These varieties mainly provide high yield and resistance to diseases and pests. Which of the following is the high yielding variety of wheat?

A. Jaya
C. IR-2H
B. Sonalika
D. Deccan-101

2. DPT vaccine is given to an infant to protect against which disease(s)/disorder(s)?

A. Diphtheria, pertussis, tetanus
C. Diphtheria, pertussis, typhoid
B. Diarrhoea, paralysis, trauma
D. None of these

3. Match column I with column II and select the correct match from the codes given below?

Column I	Column II
(a) Pathogen	(i) The carriers of diseases
(b) Vaccination	(ii) Arrests growth of micro organism
(c) Pasteurization	(iii) Microbes that cause diseases
(d) Vector	(iv) Gives immunity

A. (a) - (ii), (b) - (i), (c) - (iii), (d) - (iv)
C. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)
B. (a) - (iii), (b) - (iv), (c) - (ii), (d) - (I)
D. (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)

4. Match both the columns and mark the correct option from the codes given below?

Column I	Column II
(a) Polyester	(i) Prepared by using wood pulp
(b) Teflon	(ii) Used for making parachute and stockings
(c) Rayon	(iii) Used for making non-stick cook wares
(d) Nylon	(iv) Fabrics do not wrinkle easily

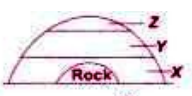
A. (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)
C. (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
B. (a) - (iv), (b) - (iii), (c) - (ii), (d) - (I)
D. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)

5. Why is it that we never find bells made up of wood?

A. Wooden bells are expensive
C. Wood is ductile
B. Wood is not sonorous
D. None of these

6. Petroleum and natural gas are often found together as large deposits deep inside the earth's crust. What is the correct order in which they are present in the earth?

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



	X	Y	Z
(A)	Water	Crude oil	Natural gas
(B)	Water	Natural gas	Crude oil
(C)	Crude oil	Water	Natural gas
(D)	Natural gas	Water	Crude oil

7. Which of the following statements are true?

- I. Yellow flames are ideal for heating.
II. The substances which vaporize during burning, give flames.
III. Luminous zone contains un burnt carbon particles.
IV. The non-luminous zone has highest temperature.

- A. I, II and III B. I, II and IV C. II, III and IV D. I, III and IV

8. Match column I and column II and select the correct option from the code given below?

Column I	Column II
(a) Invisible zone of candle flame	(i) Coal
(b) Product of fractional distillation	(ii) Dark zone
(c) Fossil fuel	(iii) Gasoline
(d) Coolest zone of candle flame	(iv) Non-luminous

- A. (a) - (i), (b) - (ii), (c) - (iv), (d) - (iii)
B. (a) - (iii), (b) - (ii), (C) - (i), (d) - (iv)
C. (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
D. (a) - (ii), (b) - (iii), (c) - (i), (d) - (iv)

9. Match the following and select the correct option from the codes given below

Column I	Column II
(a) Areas of protected land for conservation of wild life, plant and animal resources and traditional life of the tribals living in the area	(i) National Park
(b) Area reserved for wild life where they can freely use the habitats and natural resources	(ii) Biosphere Reserve
(c) Areas where animals are protected from any disturbance to them and their habitat	(iii) Sanctuary

- A. (a) - (ii), (b) - (i), (c) - (iii)
B. (a) - (ii), (b) - (ii), (c) - (iii)
C. (a) - (ii), (b) - (iii), (c) - (i)
D. (a) - (iii), (b) - (ii), (c) - (i)

10. Plant cells can usually be distinguished from animal cells because only plant cells possess

- A. Mitochondria and lysosomes
B. Chloroplast and cell wall
C. Chromosomes and lysosomes
D. Chloroplast and Golgi complex

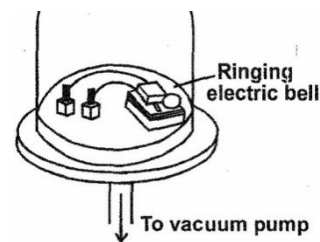
11. A box was pushed over an equal distance on four different surfaces. The force needed for each surface was recorded in the table below_?

Surface	Force needed (g)
P	550
Q	475
R	500
S	450

On which surface was the friction least?

- A. P B. Q C. R D. S
12. A scientist performed an experiment as shown in the figure here.
What do you think happened as air was pumped out of the jar and he rang the bell?

- A. The sound became louder
B. The sound became fainter first and then louder once all the air was pumped out
C. The sound could not be heard anymore
D. The sound was the same as before



13. In which one of the following situations does a conventional electric current flow due north?

- A. Protons in a beam are moving due south.
B. A water molecule is moving due north.
C. Electrons in a beam are moving due south.
D. Electrons in a wire connected to a battery ac move from south to north.

14. Suppose you are in a car and it is raining heavily with thunderstorms. Then what is the best way to protect yourself from a possible thunder storm fall?

- A. Remain in the car.
B. Get out of the car and take cover under the car.
C. Run to the nearby tree.
D. Get out and stand under an electric pole.

15. For the myopic eye, the defect is cured by_____?

- A. Convex lens B. Concave lens
C. Cylindrical lens D. None of these

16. A star which appears blue will be_____?

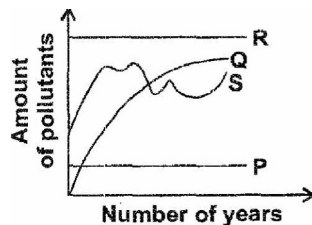
- A. As hot as Sun. B. Cooler than Sun.
C. Very cold indeed. D. Much hotter than Sun.

17. Why would a rise in temperature cause a rise in sea level?

- A. More water in the atmosphere would condense, so more rainfall will occur.
- B. Sea water would expand because of increased heating.
- C. Ice caps and glaciers would melt.
- D. The effect of the moon's gravity would be greater through the warmer thinner air.

18. The given graph shows the amount of pollutants in four rivers P, Q, R and S. The river that can continue to support the most number of aquatic plants and animals is river

A. P
B. Q
C. R
D. S



19. Frogs and toads seem to be disproportionately affected by pollution in comparison to many other animals, including other amphibians. What might explain this?

- A. They have to live in two environments, water and land, so they face two kinds of pollution.
- B. They tend to live in places throughout the world that are crowded with people.
- C. They have thin skin that does not protect them very well from environmental.
- D. Dangers they eat insects that are very dirty.

20. Trees are planted along the roadside to reduce pollution from motor vehicles. How do trees help to reduce pollution?

- (i) They absorb traffic noise.
- (ii) They take in carbon dioxide.
- (iii) They trap dust and soot from the exhaust pipes of vehicles

- A. (i) & (ii)
- B. (ii) & (iii)
- C. (i) & (iii)
- D. (i), (ii) & (iii)

ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	B	Sonalika, a special variety of wheat, is a semi-dwarf variety developed through plant breeding which is high yielding and disease resistant.
QUESTION-2	A	DPT is a combined vaccine against diphtheria, whooping cough (pertussis) and tetanus. It is given as a course of three doses in the first year of life, at two, three and four months of age.
QUESTION-3	B	The codes are microbes that cause diseases, gives immunity, gives immunity, the carriers of diseases
QUESTION-4	C	Polyester - Clothes made of them are crease proof (do not get wrinkled easily) and may be used as wash and wear clothes. Teflon - It is slippery and not affected by heat that is why used for making non-stick cook wares. Rayon - It is made from wood pulp. Nylon - Being very strong, nylon is used to make ropes, tents, nets, parachutes, etc. It has good elasticity and is, therefore useful for making socks and stockings.
QUESTION-5	B	Because of wood is not sonorous
QUESTION-6	A	The correct order is X-water,Y-crude oil,Z-Natural gas
QUESTION-7	C	Blue flame is much hotter than yellow flame. Yellow flame is not hot enough and it will leave blackish ring at the bottom of the thing you are heating.
QUESTION-8	D	The correct codes are to be arranged like dark zone,gasoline,coal,non-luminous.
QUESTION-9	A	The codes are biosphere Reserve, national Park, sanctuary
QUESTION-10	C	Plant cells have chloroplast and cell wall whereas animal cells do not have. Mitochondria, lysosomes, chromosomes and Golgi complex are present in both animal and plant cells.
QUESTION-11	D	The force required to push the box on surface <i>S</i> is least compared to surfaces <i>P</i> , <i>Q</i> and <i>R</i> . Therefore, surface <i>S</i> offers least friction.
QUESTION-12	C	The sound could not be heard because he has created a vacuum inside the jar and the sound cannot travel through vacuum.
QUESTION-13	C	Conventional electric current flow is taken in the opposite direction of flow of electrons.
QUESTION-14	A	The best way to protect yourself from a possible thunderstorm fall is to remain in the car and shut the windows of the car.
QUESTION-15	B	Myopia can be corrected by using spectacles with concave lenses of the required power.
QUESTION-16	D	The stars which are hotter than Sun appears blue. This is because most energy is emitted in the blue region of the spectrum.
QUESTION-17	C	A rise in temperature of the earth's atmosphere due to global warming results in melting of polar ice caps and glaciers, which would ultimately result in a rise in sea level.
QUESTION-18	A	The option P is supporting the most number of aquatic plants and animals.
QUESTION-19	C	It explains that They have thin skin that does not protect them very well from environmental
QUESTION-20	D	Plantation on road side, near industries and residential area is called green muffler. Plants absorb sound waves and pollution causing gases, thus reduce both noise pollution and air pollution.

Invigilator's Signature

1. Read the given statements and select the correct option.

Statement 1: Fertilizers are chemical substances.

Statement 2 : Manures are natural organic substances.

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
- C. Statement 1 is true but statement 2 is false
- D. Both statements 1 and 2 are false.

2. Amoebic dysentery is a disease caused by _____ whereas small pox is a disease caused by _____.

- A. Bacterium, Virus
- B. Virus, virus
- C. Protozoan, Virus
- D. Protozoan, Bacterium.

3. Micro organisms are used for the large scale production of alcohol, wine and acetic acid. X is used for commercial production of alcohol and wine. The process of conversion of sugar into alcohol is known as Y. What is Y?

- A. Decantation
- B. Fermentation
- C. Aerobic respiration
- D. Distillation

4. Smita was cooking on a gas stove wearing a nylon dress. Her father told her to change her dress and wear a cotton dress for working near the gas stove. Why do you think the nylon dress was not good for her?

- A. Nylon dress will get dirty and cannot be washed to remove the stains.
- B. It does not retain its shape when it gets heated near the gas stove.
- C. It catches fire easily, melts on heating and sticks to the body.
- D. It gets wet due to the heat near the gas stove.

5. Match both the columns and select the correct option from the codes given below_____?

Column I	Column II
(a) Mercury	(i) Acidic oxide
(b) CO ₂	(ii) Liquid metal
(c) Gold	(iii) Basic oxide
(d) MgO	(iv) Malleable

- A. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)
- B. (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)
- C. (a) - (iv), (b) - (ii), (c) - (iii), (d) - (i)
- D. (a) - (ii), (b) - (i), (c) - (iii), (d) - (iv)

6. The process in which the wood of the forests was converted into coal under to high temperature and pressure over millions of years is called_____?
- A. Destructive distillation B. Carbonisation
C. Pyrolysis D. Fermentation.
7. Read the given statements and select the correct option
Statement 1: Phosphorus burns in air at room temperature.
Statement 2: It is an example of rapid combustion
- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
C. Statement 1 is true and statement 2 is false
D. Both statements 1 and 2 are false
8. What is the principle of soda fire extinguisher?
- A. Carbon dioxide produced cuts off the supply of oxygen by covering the fire like a blanket.
B. Water produced cuts of the supply of oxygen by covering the fire.
C. Acid present in the container reacts with fire.
D. Nitrogen gas produced cuts off the supply of oxygen by covering the fire.
9. The adverse effects of deforestation are_____?
- (i) Reduced rainfall (ii) Soil erosion
(iii) Destruction of habitat (iv) Climatic changes
- A. (ii) & (iii) B. (ii) only C. (i), (ii) & (iv) D. All of these.
10. Which of the following sets contain unicellular organisms only?
- A. Amoeba, Onion, Yeast B. Euglena, Chlorella, Escherichia
C. Euglena, Yeast, Onion D. Rhizopus, Amoeba, Solanum
11. A body is at rest on the surface of the earth. Which of the following statement is correct?
- A.No force is acting on the body.
B.Only weight of the body acts on it net upward force.
C.Net downward force is equal to the
D.None of these
12. Statement 1: Sound would travel faster on a hot summer day than on a cold winter day.
Statement 2: Velocity of sound depends on temperature.
- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
C. Statement 1 is true and statement 2 is false.
D. Both statements 1 and 2 are false.

13. In an electric circuit containing a battery, the charge (assumed positive) inside the battery?

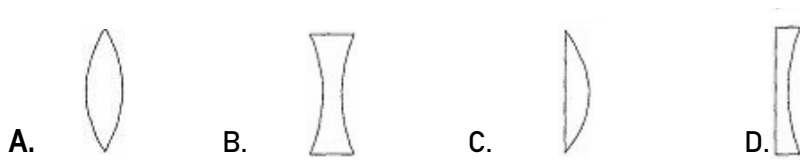
- A. Always goes from the positive terminal to the negative terminal
- B. May goes from the positive terminal to the negative terminal
- C. Always goes from the negative terminal to the positive terminal
- D. Does not move.

14. Which of the following scales are not linear in nature?

- (I) Decibel (II) Richter (III) Meter

- A. (i) only
- B. (ii) & (iii)
- C. (ii) only
- D. (i) & (ii)

15. Which type of lens is used by person suffering from hypermetropia?



16. Splitting of light into these constituent colours is known as_____?

- A. Scattering
- B. Absorption
- C. Dispersion
- D. Reflection

17. The star used to find direction is_____?

- A. Alpha Centuari
- B. Pole star
- C. Akash
- D. Kruthika.

18. A man is stranded in a jungle. He wanted to boil some water for drinking. He collected one sample of water from each of the three rivers, P, Q and R. Study his observations given below?

Sample taken	Does it have a colour?	Does it have taste?	Are there an living organisms?
P	No	Some	No
Q	No	No	Yes Some fishes
R	Yes	No	Yes Some fishes

Which of the rivers has/have water that is probably safe for drinking?

- A. P
- B. Q & R
- C. P & Q
- D. All of these.

19. Which one of the following shows the incorrect solution to the problem?

Problem	Solution
(i) To reduce harmful gases emitted by vehicles	Have the vehicles checked regularly to ensure that colourless and odourless gases are emitted
(ii) To dispose off rubbish	Burn in an incinerator built in a housing estate.
(iii) To prevent pollution of the sea	Educate the public not to throw litter or dump refuse into the sea
(iv) To get rid of human faeces	Have pipes leading from homes to the sea

A. (ii) only

B. (iii) only

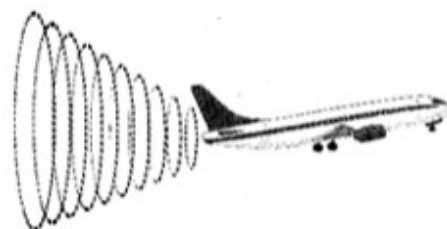
C. (i), (ii) & (iv)

D. All of these.

20. Complete the sentence:

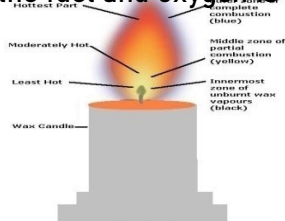
An airplane is travelling faster than the speed of sound. An observer is standing on the ground. When will the observer hear a sonic boom?

- A. When the plane breaks the sound barrier.
- B. As the plane is approaches the observer.
- C. When the plane is reaches directly overhead.
- D. After the plane has passed by.



ANSWER KEYS

QUESTION NO	ANSWER	SOLUTION
QUESTION-1	B	Fertilizer is an organic or inorganic material of synthetic origin that is added to the soil to supply one or more plant nutrients essential for the growth of plants. Manures are natural organic substances that are added to the soil to increase its fertility, thus providing nutrients for the growth of the plants.
QUESTION-2	C	Amoebic dysentery in humans is caused by <i>Entamoeba histolytica</i> (protozoan). The parasite is spread by food or water contaminated by infected faeces. Symptoms include diarrhoea, indigestion, loss of weight and anaemia. Small pox is a communicable disease caused by <i>Variola</i> virus and clinically characterized by a sudden onset of fever, headache, backache, vomiting followed by appearance of rash on third day of illness. Small pox is now an eradicated disease
QUESTION-3	B	The process of conversion of sugar into alcohol is called fermentation. Louis Pasteur discovered fermentation in 1857.
QUESTION-4	C	Nylon is a synthetic fiber and cotton is a natural fiber. Synthetic fibre catches fire easily than natural fiber.
QUESTION-5	B	Metals form basic oxides while non-metals form acidic oxides on reacting with oxygen.
QUESTION-6	B	Carbonisation is the slow process of conversion of dead vegetation into coal.

QUESTION-7	B	Phosphorous has very low ignition temperature (lower than the room temperature) so it burns rapidly in air at room temperature producing heat and light.
QUESTION-8	A	CO₂ being heavier than oxygen, covers the fire like a blanket. Since the contact between the fuel and oxygen is cut off, the fire is controlled.  The diagram illustrates the structure of a candle flame. It shows a cross-section of a lit candle with a wick. The flame is divided into several distinct zones. From the top down, the zones are: a small blue tip labeled 'Hottest Part' and 'Complete combustion (blue)'; a larger yellow region labeled 'Middle zone of partial combustion (yellow)'; and a black region at the base of the flame labeled 'Innermost zone of unburnt wax vapours (black)'. The wick itself is labeled 'Wax Candle'. The flame is also labeled 'Least Hot' at the base and 'Moderately Hot' in the middle zone.
QUESTION-9	D	Deforestation is clearing of forests for using the land for other purposes. Deforestation leads to increase in temperature, reduction in rainfall, soil erosion and destruction of habitat of wild life. These changes lead to climatic changes.
QUESTION-10	B	Unicellular organisms are those organisms that have single cell. Euglena, Chlorella and Escherichia are unicellular organisms.
QUESTION-11	C	If a body is at rest on the surface of earth, then the total downward force acting on the body must be equal to the total upward force acting on the body.
QUESTION-12	A	Velocity of sound increases with increase in temperature. So sound wave travel faster on a hot summer day than on a cold winter day.
QUESTION-13	B	Inside the battery which is connected to a electric circuit, positive charge move from positive terminal to the negative terminal.
QUESTION-14	D	A linear scale is a scale where the divisions between the units are equal in an additive sense. Out of the given options, only meter scale is linear.
QUESTION-15	A	It means the long sightedness
QUESTION-16	C	Constitute colour is known as dispersion
QUESTION-17	B	Pole star is used to find the direction because it appears to be stationary in the sky.
QUESTION-18	B	He can boil and drink Q & R water.
QUESTION-19	C	Vehicles should be checked regularly to ensure that harmful gases are emitted in fewer amounts. Rubbish should be disposed off by burying in the ground. To get rid of human faces, one should have proper sanitary system.
QUESTION-20	A	.

ANSWER SHEET
National Astronomy & Science Olympiad

Filling of all columns completely & accurately is important.

Candidate's Name

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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

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Gender

Male ☐

Female ☐

RollNo.

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Father's Name

[illegible]

School Name

[illegible]

E-mail Id

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City

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School Code

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MARK YOUR ANSWERS HERE

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Mobile No.[illegible][illegible]

Candidate's Signature

Invigilator's Signature



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