

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO



GRADE - 5

SCIENCE

## SAMPLE PAPER

# IOA SCIENCE OLYMPIAD – 2019 - 20

Test Booklet Series

Set - 0

DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

Roll No.:

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Student's Name:

Maximum Time: 75 Minutes

Maximum Marks: 100

### INSTRUCTIONS

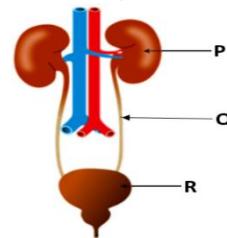
1. Please **DO NOT OPEN** the contest booklet until the proctor has given permission to start.
2. There are 36 questions in this paper. 2 points, 3 points will be awarded for each correct question in Foundation, and Exploration respectively. 1 point will be deducted for each incorrect answer, and no penalty for skipping a question.
3. All questions are compulsory. There is only ONE correct answer to each question.
4. No electronic devices capable of storing and displaying visual information are allowed during the exam.
5. Use of **calculator** is strictly prohibited in the exam.
6. Fill your **Name, Roll No., Grade and School Name** in the answer sheet.
7. To mark your choice of answers by darkening the circles in the Answer Sheet, use an HB Pencil or a **Blue/Black Ball Point Pen** only.
8. Shade your answer clearly as per the example is shown below:

CORRECT	INCORRECT
<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D	<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D

**Foundation: (2 POINTS)**

- Reflex actions are due to the message sent by the \_\_\_\_\_ to the body part.  
 (A) Joints                      (B) Brain                      (C) Heart                      (D) Spinal cord
- Select the correct statement.  
 (A) Roughage is avoided for the smooth functioning of digestive system  
 (B) Iron is essential for the formation of blood  
 (C) Fats give us less energy than carbohydrates  
 (D) Vitamins help the body to get rid of undigested food
- Identify the part labelled as P, Q, and R in the given figure and select the correct option for them.

- | P          | Q       | R               |
|------------|---------|-----------------|
| (A) Ureter | Kidney  | Urinary bladder |
| (B) Kidney | Ureter  | Urinary bladder |
| (C) Ureter | Kidney  | Urethra         |
| (D) Kidney | Nephron | Urethra         |



- Which of the following should be done in case of insect bite?  
 I. Wash the wound with soap and water  
 II. Meet a doctor  
 III. Eat fatty foods  
 (A) Only I                      (B) Only II                      (C) I and II                      (D) Only III

- Observe the picture shown below and choose the correct option regarding it.  
 Flat line in heart beat monitor shows \_\_\_\_\_

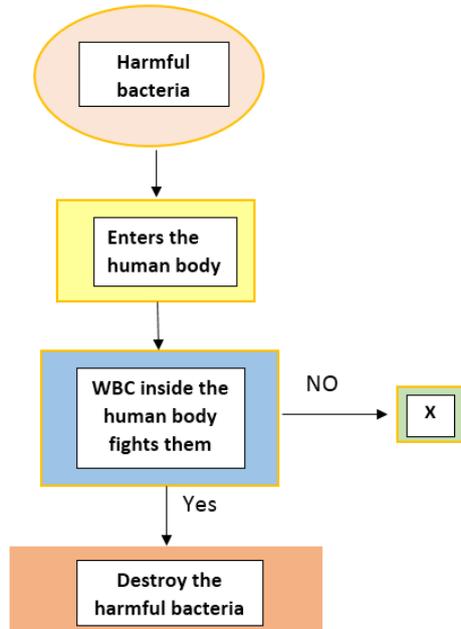
- (A) Heart is functioning properly  
 (B) Heart is not pumping blood to all body parts  
 (C) Heart is pumping only unpurified blood to all body parts  
 (D) Heart is carrying nutrients



- What is the benefit of fungus in pizza dough?  
 (A) It makes dough taste good                      (B) It makes dough rise  
 (C) It makes dough soft                      (D) Both b. and c.
- On an educational tour to milk plant, I saw workers adding Lactobacillus culture to milk because it  
 (A) Increases the flavor                      (B) Acts as an antibiotic  
 (C) Multiplies and promotes the formation of curd  
 (D) Prevents the milk turning sour

8. Which of the following are preservatives?  
 (A) Oil and vinegar (B) Salt and sugar  
 (C) Sodium benzoate and sodium nitrate (D) All of the above

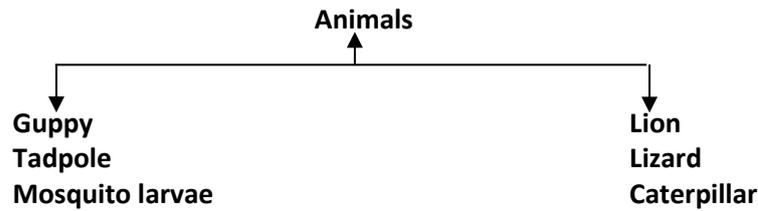
9. Read the flowchart shown below and answer the following question.



What is X in the above flowchart?

- I. Vaccines                      II. Antibiotics                      III. Fungi  
 (A) I and II                      (B) Only I                      (C) Only II                      (D) I, II and III
10. X is a bacterium that is used as a clot buster for removing clots from the blood vessels of the patients. X is \_\_\_\_\_.  
 (A) Streptococcus      (B) Lactobacillus      (C) Clostridium      (D) Zymomonas
11. What is correct about animals shown in the below given box?  
 (A) All of them are invertebrates  
 (B) All of them lives in soil  
 (C) All of them are marine invertebrates  
 (D) All of them have soft body covered by outer layer called mantle
- Sponges, corals, jellyfish, anemones and starfish
12. Which of the following organisms are not decomposers?  
 (A) Moulds and bacteria                      (B) Termites and millipedes  
 (C) Woodlice and earthworms                      (D) Caterpillar and algae
13. "I am the national symbol of New Zealand. I have long beak and plumb body. But now a day my species is vulnerable to extinction." Guess who am I?  
 (A) Kiwi                      (B) Ostrich                      (C) Kingfisher                      (D) Flamingo

14. Study the classification diagram shown below.



Here the animals are classified according to \_\_\_\_\_.

- (A) Where they live  
(B) What they eat  
(C) How they move  
(D) How they respond to changes

15. What makes a flying frog to glide on trees?

- (A) Square sticky pad on its toes  
(B) Webbed toes  
(C) Round sticky pad on its toes  
(D) Flaps of skin

16. Which form of energy is required to move object shown in the figure.

- (A) Mechanical energy  
(B) Solar energy  
(C) Wind energy  
(D) Heat energy



17. Name the force that helps us to walk on ground.

- (A) Muscular force  
(B) Elastic force  
(C) Mechanical force  
(D) Frictional force

18. When a music system is switched on, it converts \_\_\_\_\_.

- (A) Chemical energy into mechanical energy  
(B) Radiant energy into chemical energy  
(C) Electrical energy into sound energy  
(D) Electrical energy into mechanical energy

19. Match the following.

Column I	Column II
A. Knife	I. Lever
B. Lid of a jar	II. Pulley
C. Slide in the playground	III. Inclined plane
D. Top of a sea saw	IV. Screw
E. Well wheel	V. Wedge

- (A) A- IV, B- V, C- III, D- I, E- II  
(B) A- V, B- IV, C- III, D- I, E- II  
(C) A- V, B- IV, C- II, D- III, E- I  
(D) A- V, B- IV, C- III, D- II, E- I

20. If a stone is pushed with the force of 4N to a distance of 2 meter then the work done is \_\_\_\_\_.

- (A) 6 J  
(B) 8 J  
(C) 17 J  
(D) 16 J

**Exploration (3 POINT)**

21. When a jam jar cover is screwed on too tightly, a grooved sheet of rubber can be used to unscrew the cover. Why?
- (A) The rubber sheet lubricates the surface  
 (B) The friction between the rubber sheet and jar cover helps to provide a better grip  
 (C) The rubber sheet magnifies the force needed  
 (D) The rubber sheet gives air cushion support



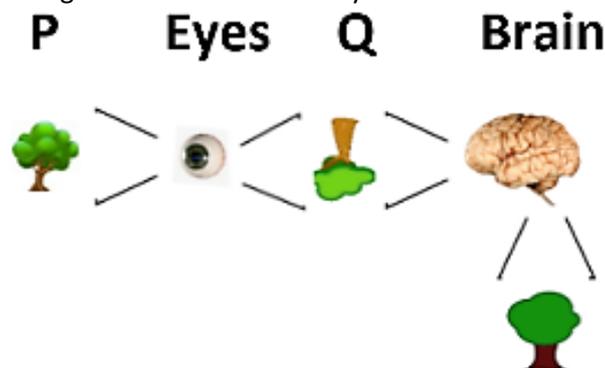
22. The camera's diaphragm works like the pupil in the human eye. What is the function of the pupil?
- (A) Focus on a view  
 (B) Arrange the amount of incoming light  
 (C) To get proper reflection  
 (D) To protect the eyes from dangerous object

23. In which of the following condition, you will not hear a sound?
- (A) A running music system inside a jar with no air in it  
 (B) A dog barking in a park  
 (C) A striking bell in an open area  
 (D) All of them

24. What is correct about the object shown in the figure?
- (A) This is a prism  
 (B) Dispersion of light  
 (C) It breaks the beam of visible light into seven colours  
 (D) All of the above



25. The given figure shows how image is formed in human eyes.



At which point (P, Q and R) the actual image and final image is formed?

- (A) Actual image\_ P, Final image- R                      (B) Actual image – Q, Final Image- R  
 (C) Actual image- P, Final image- Q                      (D) Actual image- Q, Final image- P

26. Name the gas which is present in the object shown in the figure.

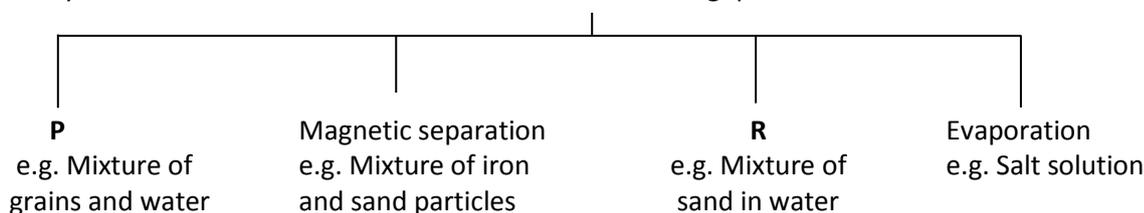
- (A) Carbon dioxide
- (B) Oxygen
- (C) Nitrogen
- (D) Helium



27. Which of the following cannot form a solution?

- (A) Mixture of salt and water
- (B) Mixture of sand and water
- (C) Mixture of sugar and orange juice
- (D) Mixture of baking soda and water

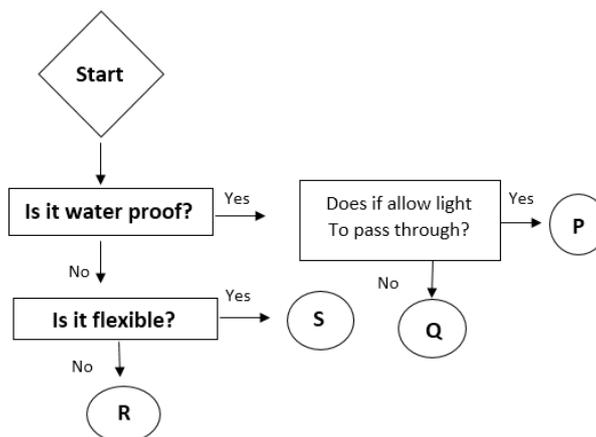
28. Study the flowchart shown below and answer the following question.



Choose suitable heading for P and R.

- |                                                                                                                                                              |                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>P</b></p> <ul style="list-style-type: none"> <li>(A) Condensation</li> <li>(B) Decantation</li> <li>(C) Decantation</li> <li>(D) Filtration</li> </ul> | <p><b>R</b></p> <ul style="list-style-type: none"> <li>Filtration</li> <li>Sedimentation</li> <li>Filtration</li> <li>Sedimentation/ Decantation</li> </ul> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|

29. Study the flowchart given below.



Identify the suitable option for correct name of P, Q, R and S

- |                   |             |             |             |
|-------------------|-------------|-------------|-------------|
| (A) Fish aquarium | Rubber band | Iron nail   | Rain coat   |
| (B) Iron nail     | Rain coat   | Window pane | Rubber band |
| (C) Fish aquarium | Rain coat   | Iron nail   | Rubber band |
| (D) Window pane   | Iron rod    | Plastic bag | Eraser      |

30. Identify the incorrect statement from the following.

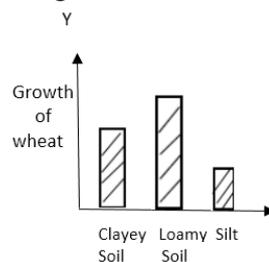
- (A) Rusting of iron is a chemical change
- (B) Growth from an infant to an adult is an irreversible change
- (C) Melting of wax is a chemical change
- (D) Digestion in human body is a chemical change

31. What will happen when magma shown in the given figure comes closer to the earth's surface?  
 (A) Volcanoes will occur (B) Boulders will form  
 (C) Pebbles will form (D) Lava will cool and harden to form sedimentary rock



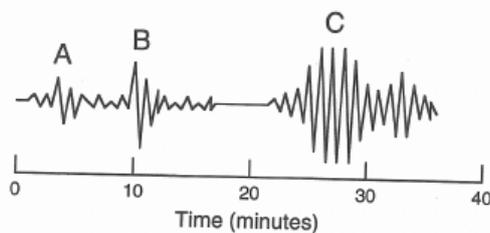
32. Chambal valley in Madhya Pradesh (India) is unfit for farming because  
 (A) Running water makes the soil of the Chambal valley infertile  
 (B) Heavy rain causes soil erosion in the Chambal valley  
 (C) Wind causes soil erosion in the Chambal valley  
 (D) Running water washes the top soil off the Chambal valley

33. The following graph shows the growth rate of wheat in three different soils



Which of the following statement is incorrect on the basis of above graph study?

- (A) Loamy soil is best suited for the growth of wheat  
 (B) Clayey soil is best suited for the growth of wheat  
 (C) Silt is not appropriate for the growth of wheat  
 (D) Loamy soil is well aerated and having the right water holding capacity, thus it is suitable for the growth of wheat
34. Which of the following correctly shows the difference between two rocks shown below?
- | <b>Shales</b>                                                        | <b>Mudstones</b>                |
|----------------------------------------------------------------------|---------------------------------|
| (A) A very fine grained rock composed of clay sized particles        | Composed of sand                |
| (B) It splits readily into thin, flat layers                         | It may exhibit fissility        |
| (C) It breaks into thin chips with roughly parallel tops and bottoms | It breaks into chunks or blocks |
| (D) It is made of ancient mud                                        | It is made of fossil fuels      |
35. What causes the up-and down wiggles on the seismogram show in the given figure?



- (A) Variations in air pressure  
 (B) Ground vibrations  
 (C) Tsunami waves  
 (D) Electromagnetic pulses

36. Which of the following is/are after affects of earthquake?

- (A) Collapsing of communication system
- (B) Crack on roads
- (C) Damage of building
- (D) All of them

37. Following table shows two columns – A and B with their examples. Give suitable heading to A and B.

A	B
Migration of living beings poor rainfall Lowering of water table Meteorological department	Vibrations deep inside the Earth seismologist Loss of life and property Evacuation announcements

- (A) A- Drought
- (B) A- Drought
- (C) A- Volcano
- (D) A- Tidal waves
- B- Tidal waves
- B- Earthquake
- B- Drought
- B- Earthquake

38. Which of these conditions will lead to higher evaporation?

- (A) Drying of clothes under a tree
- (B) Drying of clothes inside a closed room
- (C) Drying of clothes in the sunlight
- (D) Drying of clothes in the basement of the house

39. Which of the following correctly represents the difference between boiling and evaporation of water?

Boiling	Evaporation
I. A liquid is changed to a gas	A gas is changed to a liquid
II. Cannot occur below 100 <sup>0</sup> c	Can occur below 100 <sup>0</sup> c
III. Heat is absorbed from the surroundings	Heat is released from the surroundings
IV. Produces steam	Does not produce steam

- (A) I only
- (B) II only
- (C) III and IV
- (D) I, II, III and IV

40. Joseph breathed out through his mount, onto his palm and felt warm. He breathed out on the mirror and he noticed mist on it. What could you say about joseph's observations?

- (A) The air he breathed out was warmer than the air he breathed in
- (B) The air he breathed in contains moisture
- (C) The mirror was colder than the surrounding air
- (D) He should not breathe through his mouth