

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



GRADE – 6

SCIENCE

SAMPLE PAPER

IOA SCIENCE OLYMPIAD – 2019 - 20

Test Booklet Series

Set - 0

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Roll No.:

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Student's Name:

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Maximum Time: 75 Minutes

Maximum Marks: 100

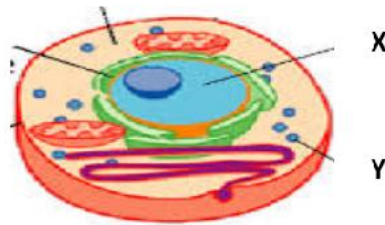
INSTRUCTIONS

1. Please **DO NOT OPEN** the contest booklet until the proctor has given permission to start.
2. There are 40 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)**

- Jiya observed a cell under microscope. She saw a transparent jelly – like substances in the cell. What was that substance?  
 (A) Cytoplasm      (B) Nucleus      (C) Cell membrane      (D) Vacuole
- The shape of the shadow does not depend upon \_\_\_\_\_.  
 (A) The shape of the object      (B) The position of the source of light  
 (C) The size of the object      (D) The size of the source of light
- What is the function of cell part labeled as X and Y?



X

Y

- |   |   |
|---|---|
| <p>(A) The main control center for the cell<br/>         (B) It makes ribosome<br/>         (C) It makes protein<br/>         (D) None of the above</p> | <p>Makes protein<br/>         Makes protein<br/>         It makes nucleus</p> |
|---|---|
- The chemical used to avoid drying of the material for temporary mount is  
 (A) Wax      (B) Oil      (C) Glycerin      (D) Alcohol
  - A biology lab teacher is covering the leaf with black paper as shown in the diagram, before testing the leaf for the presence of starch. Choose appropriate reason for this.
    - The black paper blocks the sunlight due to which the leaf will be unable to prepare food
    - This will remove already stored starch in the leaf
    - It has no effect on starch test

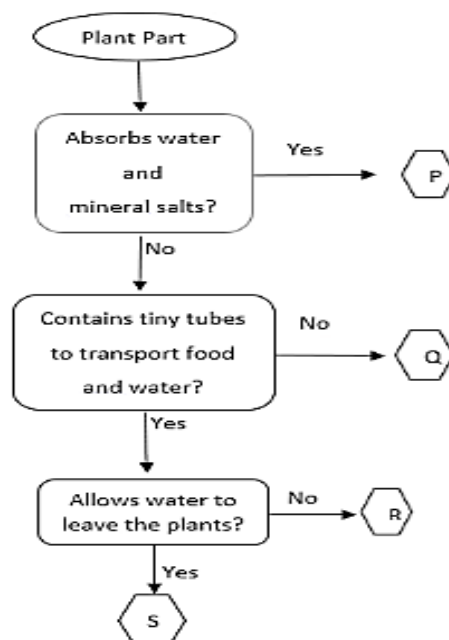
(A) Only I      (B) Only II  
 (C) Only III      (D) All of them
  - Which of the following is a single or simple flower?
 

I. Chrysanthemum	II. Marigold	III. Sunflower	IV. Petunia
(A) I and II	(B) IV	(C) II and IV	(D) III and IV
  - During a thunderstorm, a strong wind caused a young plant to break as shown in the in the figure. Which of the following statement(s) is/are correct about this plant?
    - The plant will die after one weeks because the tiny tubes transporting from the roots have been broken
    - Its leaves do not have to carry out photosynthesis
    - If new leaves do not grow the bottom half of the plants will also die
    - The plant will not die because it contains tiny tubes transporting food from the leaves

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



8. The flow chart shown here describes some plants part. Choose suitable option for P, Q R and S.



- (A) P-flower, Q- root, R- stem, S- leaf
- (B) P- root, Q- flower, R- stem, S- leaf
- (C) P- stem, Q- flower, R- root, S- leaf
- (D) P- root, Q- leaf, R- stem, S- flower

9. One of the two thicker wires, which provide support to the filament, is connected directly to \_\_\_\_\_.

- (A) The metal case at the base of the bulb and the other to the metal tip at the center of the base
- (B) The positive terminal of the electric cell and the other to the negative terminal of the electric cell
- (C) The positive terminal of the electric portable generator and the other to the negative terminal
- (D) Both the positive and negative terminals of the electric sockets

10. Which of the following statement is correct about a switch?

- I. Because of it only, we are able to turn on or off any electrical appliance
  - II. When the switch is in 'on' mode, the circuit gets complete and thus, an electric current will flow through the circuit
  - III. When it is in 'off' mode, the circuit gets breaks and thus, an electric current will not flow through the circuit
- (A) I, II and III      (B) II and III      (C) Only I      (D) None of the above

11. Identify the safety rules to be observed while handling an electrical appliance.

- I. Do not connect many electrical appliance to one power point
  - II. Do not use electrical appliances with damaged insulating materials of exposed wires
  - III. Switch on or off the electrical appliances with wet hand
- (A) I and III      (B) I and II      (C) I, II and III      (D) None of the above

12. Which of the following shows correct classification of the items shown in the table?

Rubber Shoe	Copper Jug	Wet cotton gloves
Plastic Plate	Wooden table	Glass tray
Steel cable	Aluminium stripe	Leather jacket

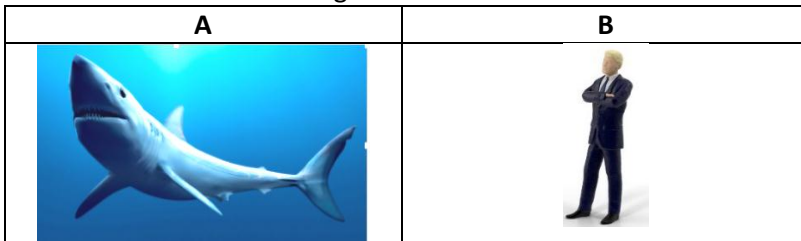
	Conductors of electricity	Non-conductors of electricity
A.	Plastic plate	Wooden table
B.	Steel cable	Plastic spoon
C.	Wet cotton glove	Glass tray
D.	Rubber shoe	Aluminium strip

13. Identify the adaptation feature present in the animal shown here.



- I. It has strong back legs
  - II. It has webbed feet
  - III. It cannot move on land
  - IV. It has a very short neck
- (A) I and II                      (B) II and III                      (C) II and IV                      (D) I and IV

14. The living organisms A and B shown in the figure both being mammals respire through lungs. However A can hold itself in water for a long time but B cannot.



Choose correct reason for this.

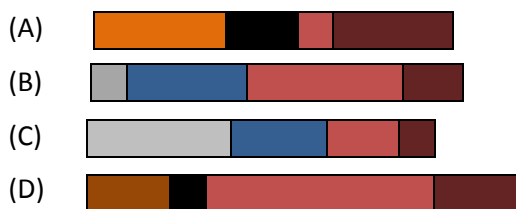
- (A) A respire under water                      (B) A can take more oxygen at a time than B  
 (C) B can take more oxygen at a time than A                      (D) A have one more organ for respiration

15. What adaptation does a grasshopper has which helps it to avoid being caught by its predator?

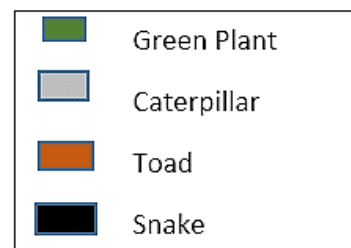
- I. Its taste bud
  - II. It can hop away quickly
  - III. It can camouflage itself in the grass
  - IV. It has poisonous stings
- (A) I and II                      (B) II and III                      (C) I and IV                      (D) I, II, III and IV

16. Look at the food chain shown below. Identify the graph that best represents a balanced food relationship?

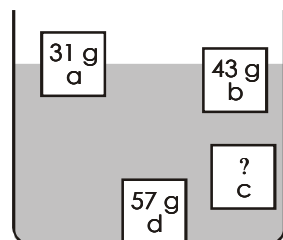
Green plant → Caterpillar → Toad → Snake  
 (The graph below shows the population size of each organism.)



Key



17. Four objects a, b, c and d, of the same volume but different masses, are put into a tank of water as shown below:



Which of the following is most likely to be the mass of object c?

- (A) 35 g                      (B) 28 g                      (C) 51 g                      (D) 80 g

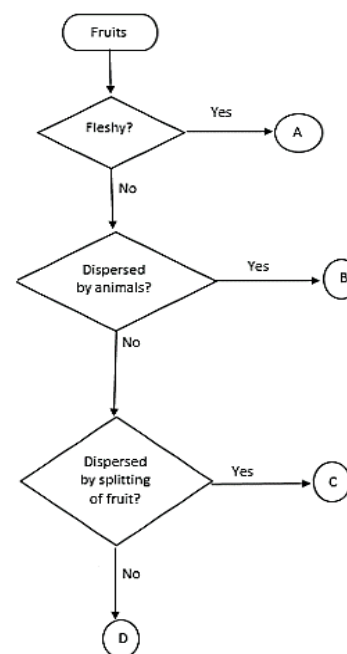
18. Arrange the following steps showing the process of pollination in correct sequence.
- I. Insects get attracted by the colour and smell of flowers
  - II. Pollination is the process in which pollens are transferred from the anther to the stigma of flower
  - III. During this process, pollen-grains stick to their body and wings and are transferred to stigma of different flowers, when insects visit them.
  - IV. Insects go and sit on the flower to suck nectar
- (A) I, II, III, IV      (B) I, III, II, IV      (C) II, I, IV, III      (D) II, III, IV, I

19. Mr and Mrs Edwards have a daughter, Samy. The table below summarize some of their features:

Features	Mr Edwards	Mrs Edwards	Samy
Eyes Colour	Brown	Blue	Blue
Hair	Short, straight, blond hair	Long, curly, brown hair	Long, curly, blond hair
Ability to roll tongue	Yes	No	No

Based on the description above, determine which of the following statements are true?

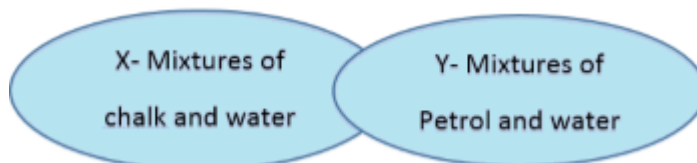
- (A) The genes responsible for Samy's blue eyes can be found in the nucle-Us of Mrs Edward's egg cell
  - (B) Samy inherited her mother's long hair
  - (C) The genes responsible for Samy blond hair can be found in the tail of Mr. Edward's sperm cell
  - (D) Mr. Edwards can teach Samy how to roll her tongue
20. Refer to the flowchart shown below and choose appropriate answer for fruit B and fruit C regarding their dispersal.



- (A) Fruit B has hooks that cling to the fur of animals and helps in their dispersal
- (B) Fruit C splits open with an explosive force scattering the seeds inside them in different direction
- (C) Fruit B attracts insects as it is colorful
- (D) Both A and B

### Exploration (3 POINT)

21. Identify the correct method of separation of two mixtures (X and Y).



- (A) X- Filtration, Y- Separating Funnel
- (B) X- Decantation, Y- Separating Funnel
- (C) X- Condensation, Y- Churning
- (D) X- filtration, Y- Evaporation

22. Following classifications have been made on the basis of solubility of substance. Identify the group resembling all water soluble substance.
- (A) Glucose, potassium permanganate and wax (B) Common salt, cough syrup and sugar  
(C) Ink, carbon monoxide and cooking oil (D) Sugar, nitrogen and baking soda

23. The given figure shows boiling rice in a container. Give reason why the water above rice level has become opaque.
- I. The dust and soil get temporarily suspended in water  
II. Rice leaves colour in water  
III. The water used was not clean
- (A) Only II (B) I and III (C) Only I (D) I and II



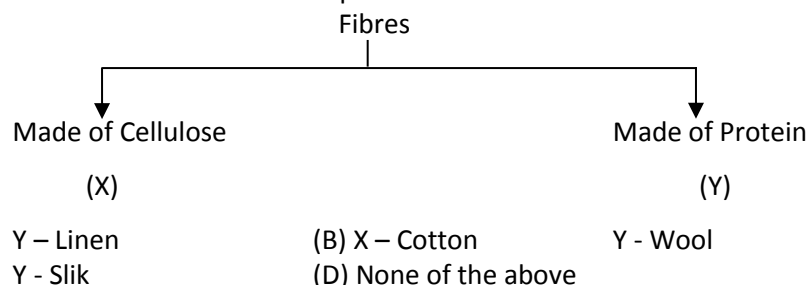
24. Which of the following statement is correct?  
The hand-picking method is used to separate the components of mixture when
- I. The size of unwanted substance is same as of useful ones  
II. The shape of unwanted substance is same as of useful ones  
III. The colour of unwanted substance is same as of useful ones  
IV. The unwanted material is present in small quantify
- (A) Only I (B) Only IV (C) Both I and III (D) Both III and IV

25. Which one of the following is not prepared by weaving?  
(A) Shirt (B) Saree (C) Sweater (D) Dhoti

26. What is correct about the instrument shown in the given figure?
- (A) It is used for unwinding the silk fibre from cocoons  
(B) It is used for shearing  
(C) It is used for processing of animal's skin  
(D) All of the above

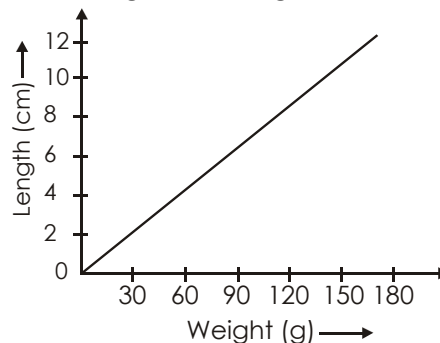


27. Read the classification chart and choose correct option for X and Y.



28. "X is the process of arranging two sets of yarn together to make fabrics"  
"Y is the process in which a single yarn is converted into fabric"  
What is X and Y in above statements?
- (A) X – Knitting      Y – Spinning      (B) X – Weaving      Y - Knitting  
(C) X – Retting      Y – Ginning      (D) X – Ginning      Y - Retting

29. The graph shows the variation of the length of a spring when different weights are hung from it. The spring extends by \_\_\_\_\_ when a 120 g weight is hung from it.



- (A) 4 cm
- (B) 6 cm
- (C) 8 cm
- (D) 10 cm

30. Which type of force is experienced when a south pole of a magnet is brought near to the north pole of another magnet?

- (A) Force of attraction
- (B) Force of repulsion
- (C) No force is experienced
- (D) Both A and B

31. Lines of magnetic force

**P.** Never cross over **Q.** Always go from north to south **R.** Are closer together when the magnetic field is weak.

- (A) P, Q and R are true
- (B) P and Q are true
- (C) P and R are true
- (D) Only P is true

32. The needle of the compass is made of magnet because

- I. Gets deflected when a magnet is brought near to it
- II. Attracts the metal
- III. Comes to rest in east-west direction
- IV. Comes to rest in north-south direction

Which of the following is correct?

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

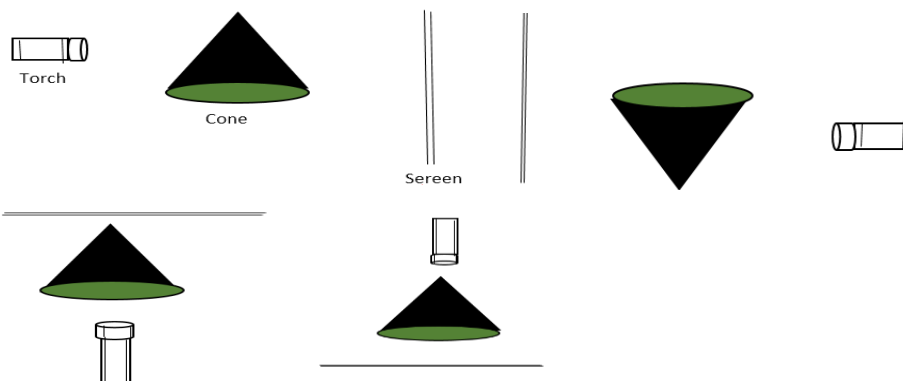
33. Which of the following absorbs the most light?

- (A) Green crayon
- (B) White crayon
- (C) Red crayon
- (D) Black crayon

34. Which of the following is/are the properties of a real image?

- (A) A real image can be focused on a screen
- (B) A real image is always upright
- (C) A real image is always inverted
- (D) All of the above

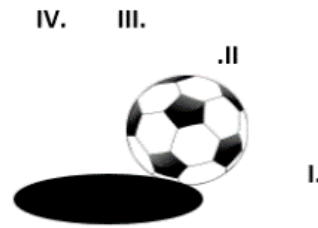
35. A torch was used to shine at an opaque cone from four different directions as shown in the diagrams below.



How many different kinds of shadow were formed on the screen in the situations shown above? (Ignore the Different in size)

- (A) 1
- (B) 2
- (C) 3
- (D) 4

36. A soccer ball is placed in an open field on sunny day. The shadow of the ball is cast on the ground as shown below. Which position is the sun most likely to be?



- (A) Only I                      (B) Only II                      (C) Only III                      (D) Only IV
37. Which of the following is correct about papier Mache?
- I. It is the paste of clay, paper and some rice husk
  - II. It is used in making beautiful handicrafts.
  - III. It is used to support articles made of delicate frameworks.
- (A) I, II and III                      (B) Only II                      (C) Only I                      (D) Only III
38. 'X' products should be avoided while preparing the vermicomposting pit. What holds true for 'X' here?
- (A) It encourages growth of pathogenic microbes
  - (B) It encourages growth of useful microbes
  - (C) It encourages farm animal to investigate the pit
  - (D) It encourages dogs to dig the pit
39. "Farmers burn dried leaves and crop wastes to clear their fields". Which of these statement(s) is/are true for the above statement?
- I. Burning of these produces harmful smoke
  - II. This burning in winters can lead to formation of smog and respiratory problems even in far off places
  - III. This waste is biodegradable and can be converted into manure instead of burning
  - IV. All of these
- (A) I and II                      (B) II and III                      (C) III and IV                      (D) All of the above
40. What is the purpose of magnetic separator at an incineration plant?
- I. It is used to separate iron and steel from the ashes
  - II. It is used to separate paper and plastics from the ashes
- (A) Only I                      (B) Only II                      (C) Both I and II                      (D) None of the above