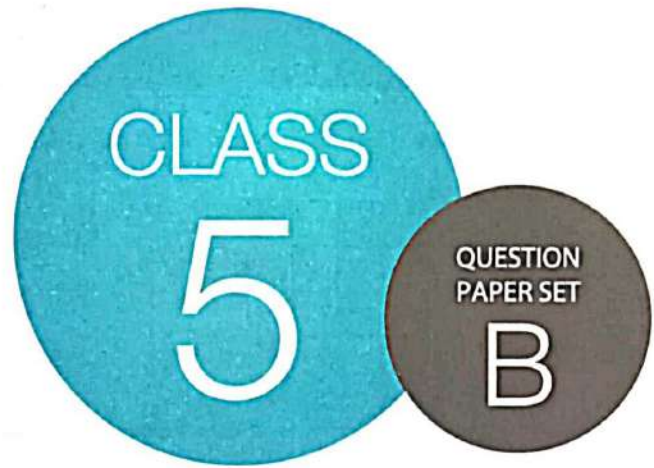


**SOF NATIONAL SCIENCE  
OLYMPIAD 2022-23**



**DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO**

Total Questions: 50 | Time: 1 hr.

**Guidelines for the Candidate**

1. You will get additional ten minutes to fill up information about yourself on the OMR Sheet, before the start of the exam.
2. Write your **Name, School Code, Class, Roll No.** and **Mobile Number** clearly on the **OMR Sheet** and do not forget to sign it. We will share your marks / result and other information related to SOF exams on your mobile number.
3. The Question Paper comprises three sections:  
**Logical Reasoning** (10 Questions), **Science** (35 Questions) and **Achievers Section** (5 Questions)  
Each question in Achievers Section carries 3 marks, whereas all other questions carry one mark each.
4. All questions are compulsory. There is no negative marking. Use of calculator is not permitted.
5. There is only ONE correct answer. Choose only ONE option for an answer.
6. To mark your choice of answers by darkening the circles on the OMR Sheet, use **HB Pencil** or **Blue / Black ball point pen** only. E.g.  
Q. 16: Raj goes to school on a bicycle. Which of these safety rules he should follow?  
A. He should give signals before taking turns.                      B. He should keep to the right of the road.  
C. He should cross the road by using zebra crossing.              D. All of these  
As the correct answer is option A, you must darken the circle corresponding to option A on the OMR Sheet.
7. Rough work should be done in the blank space provided in the booklet.
8. Return the OMR Sheet to the invigilator at the end of the exam.
9. Please fill in your personal details in the space provided on this page before attempting the paper.



Name:.....

SOF Olympiad Roll No.:..... Contact No.:.....

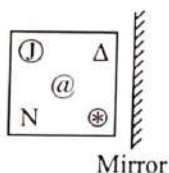
## LOGICAL REASONING

1. How many line(s) of symmetry is/are there in the given figure?



- A. 0  
B. 1  
C. 2  
D. None of these

2. Select the correct mirror image of the given figure.



- A. B.   
C. D.

3. Find the missing number, if same rule is followed in all the three figures.

15	25
8	

18	42
12	

36	14
?	

- A. 10  
B. 12  
C. 15  
D. 5

4. Select the odd one out.

- A. 135  
B. 243  
C. 158  
D. 405

5. How many minimum number of straight lines are required to draw the given figure?



- A. 14  
B. 11  
C. 15  
D. None of these

6. If all the numbers are removed from the given arrangement, then which of the following is second to the right of fifth element from the left end?

J 7 @ 3 M 2 © 4 W # N K ? T I R S

- A. W  
B. ©  
C. K  
D. N

7. Navya's summer vacation starts from first Wednesday of June 20XX. If her vacation ends on 28<sup>th</sup> June, 20XX, then find the number of days of her summer vacation.

JUNE 20XX						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

- A. 26  
B. 28  
C. 29  
D. 25

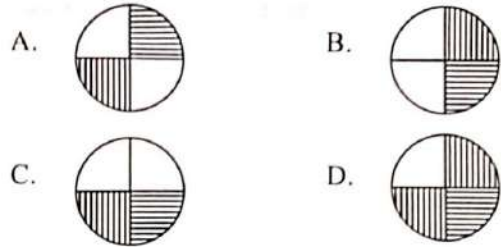
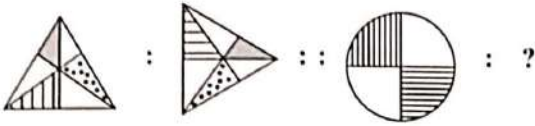
8. In a certain code language, if TORCH is coded as 7#@84 and SHARP is coded as 54©@6, then how will PATCH be coded in the same code language?

- A. 4©875  
B. 6#8©@  
C. 5@874  
D. 6©784

9. Arrange the given words as they occur in a dictionary and select the correct option.

1. Create                      2. Correct  
3. College                    4. Crime  
5. Camera
- A. 5, 1, 2, 3, 4  
B. 5, 3, 2, 1, 4  
C. 4, 1, 3, 5, 2  
D. 2, 1, 5, 3, 4

10. There is a certain relationship between the pair of figures on either side of ::. Identify the relationship on the left pair and find the missing figure.

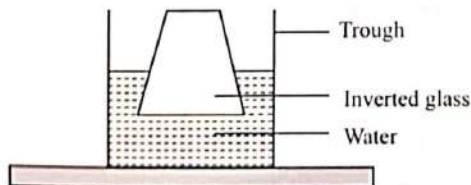


## SCIENCE

11. Complete the given analogy and select the option that correctly identifies X.

Sundari tree : Marshy areas :: X : Coastal areas

- A. *Opuntia*  
 B. Fir  
 C. Black pepper plant  
 D. Cedar tree
12. Select the incorrect match.  
 A. Evergreen tree – Neem  
 B. Coniferous tree – Deodar  
 C. Deciduous tree – Elm  
 D. None of these
13. Select the incorrect statement about vertebrates.  
 A. They all have backbone.  
 B. Some of them can live both on land and in water.  
 C. All vertebrates have hair as their body covering.  
 D. Some vertebrates have hollow or air filled bones.
14. Which among the following is a marsupial?  
 A. Snake  
 B. Goat  
 C. Scorpion  
 D. Kangaroo
15. Rohan held an inverted glass into a trough of water as shown in the given figure.



What conclusion can be drawn from this figure?

- A. Water has weight.  
 B. Air does not dissolve in the water.  
 C. Air has weight.  
 D. The air present inside the glass occupies space.

16. Aman took part in a race. He drank glucose just before the race began. This means that glucose

- A. Makes our bones stronger  
 B. Helps to build muscles  
 C. Gives energy instantly  
 D. Helps to repair worn out tissues.

17. Why do we keep naphthalene balls in between layers of clothes while storing them?

- A. Naphthalene makes the clothes brighter  
 B. Naphthalene protects the clothes from insects  
 C. Naphthalene gives a better colour to the clothes  
 D. Both A and C

18. \_\_\_\_\_ must be applied in case of ant bite.

- A. Paste of baking soda  
 B. *Amla* juice  
 C. Hot oil  
 D. Red chilli paste

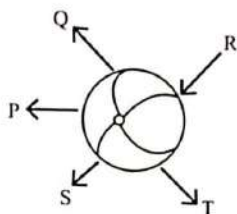
19. Match the columns and select the correct option.

Column I	Column II
(a) Incisors	(i) Grinding teeth
(b) Canines	(ii) Cutting teeth
(c) Premolars	(iii) Tearing teeth
A. (a) - (i), (b) - (ii), (c) - (iii)	
B. (a) - (ii), (b) - (i), (c) - (iii)	
C. (a) - (iii), (b) - (ii), (c) - (i)	
D. (a) - (ii), (b) - (iii), (c) - (i)	

20. A basketball has a maximum volume capacity of 450 mL. It is filled with 430 mL of air. An air pump is used to pump another 50 mL of air into the basketball. What will be the final volume of air inside the basketball without bursting it?

- A. 430 mL  
 B. 450 mL  
 C. 480 mL  
 D. 500 mL

21. In which direction is the ball most likely to move if a force is applied at R?

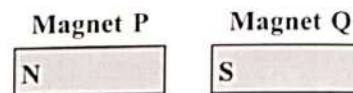


- A. P  
B. Q  
C. S  
D. T
22. Radha pushed a wall but failed to move it. This shows that
- A. Energy is not spent but work is done  
B. Energy is spent but work is not done  
C. Energy is not spent and work is not done  
D. Energy is spent and work is done.
23. Which of the following activities will not have a negative impact on the environment?
- A. Burning of fossil fuels  
B. Planting trees in a nature reserve  
C. Using pesticides in a crop field  
D. Increasing the use of chlorofluorocarbons (CFCs)
24. Select the option that correctly arranges Sun, Earth and Moon in ascending order of their size.
- A. Sun, Moon, Earth  
B. Sun, Earth, Moon  
C. Moon, Earth, Sun  
D. Moon, Sun, Earth
25. If an earthquake occurs, which of the following you should do?
- A. If you are indoors, stay in and get under a desk or a table.  
B. If you are outdoors, stay away from trees and buildings.  
C. If you are on a beach, get into the sea.  
D. Both A and B
26. A compass works with the help of
- A. Solar energy  
B. Moon's gravity  
C. Earth's magnetic field  
D. Earth's gravity.

27. In \_\_\_\_\_, we leave sand-water mixture in a jar undisturbed for sometime so that sand gets settled at the bottom. Clear water is then slowly poured into another jar. This is called \_\_\_\_\_.
- A. Sedimentation, Filtration  
B. Decantation, Evaporation  
C. Sedimentation, Decantation  
D. Condensation, Filtration

28. Select the activity that is an example of chemical change.
- A. Melting of ice-cream  
B. Rusting of iron nails  
C. Making curd from milk  
D. Both B and C

29. The magnets shown here will



- A. Attract each other  
B. Repel each other  
C. Will not show any kind of interaction  
D. Cannot say.
30. Refer to the given figure.



Which of the following agricultural practices is being done by the person?

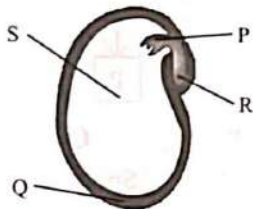
- A. Threshing  
B. Harvesting  
C. Irrigation  
D. Ploughing
31. Select the incorrect match.
- A. Air – Influenza  
B. Direct contact – Diabetes  
C. Contaminated food and water – Cholera  
D. Insect – Plague
32. Select the correct match.
- A. Garba – Rajasthan  
B. Ghoomar – Gujarat  
C. Chhau – West Bengal  
D. Lavani – Punjab

33. Read the given paragraph where few words are italicised and select the correct option regarding them.

Bones are majorly made up of minerals like *calcium* and *potassium*. They contain a *hard* tissue called bone marrow where blood cells are *destroyed*.

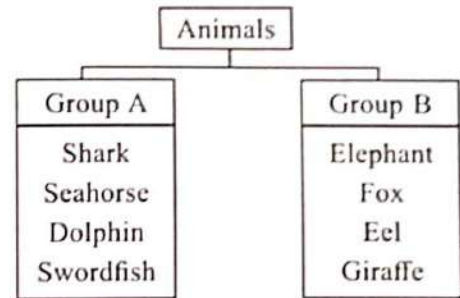
- A. *Calcium* must be changed to *sodium*.  
 B. *Potassium* must be changed to *phosphorus*.  
 C. *Hard* must not be changed as it is correctly mentioned.  
 D. *Destroyed* must be replaced with *decomposed*.
34. What will happen if the small intestine is removed from the digestive tract?
- (i) The food will not be churned.  
 (ii) Digestion will not be completed.  
 (iii) Absorption of the digested food will not take place.
- A. (ii) only  
 B. (ii) and (iii) only  
 C. (i) and (iii) only  
 D. (i), (ii) and (iii)

35. Which labelled part of the given seed helps to provide stored food to a baby plant to live and grow until it develops its own leaves?



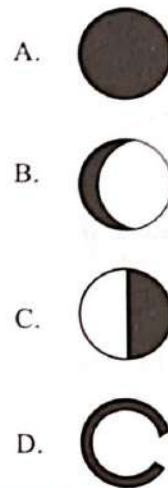
- A. P  
 B. Q  
 C. R  
 D. S
36. Diesel is obtained by refining
- A. Kerosene  
 B. Petroleum  
 C. Coal  
 D. Metallic minerals.
37. Which among the following is an active volcano?
- A. Mauna Loa  
 B. Mount Everest  
 C. Mauna Kea  
 D. None of these

38. Study the given classification chart on the basis of the habitat of animals.



Which among the given animals is grouped wrongly?

- A. Seahorse  
 B. Eel  
 C. Dolphin  
 D. Elephant
39. Which of the following shapes does the Moon never take?



40. A brick is placed at a height of 10 metre above the ground. If the brick is placed at a greater height of 15 metre from the ground, then the potential energy of the brick will \_\_\_\_\_.
- A. Increase  
 B. Decrease  
 C. Remain same  
 D. Cannot say

41. Select the correct statement regarding the given animal.



Locust

- A. It breathes through skin.  
 B. It moves in swarms.  
 C. It is one of the most destructive migratory insects.  
 D. Both B and C

42. In which of the following pairs the two components are miscible with each other?

- A. Water, Orange juice
- B. Water, Carbon dioxide
- C. Water, Milk
- D. All of these

43. Select the option that identifies monocot and dicot seeds correctly.

Monocot	Dicot
A. Rice	Pea
B. Wheat	Corn
C. Pea	Rice
D. Corn	Wheat

44. Select the correct statement.

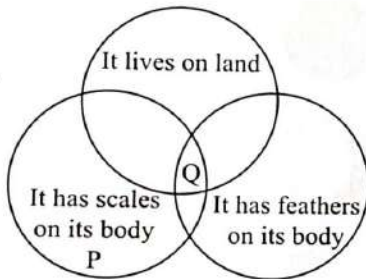
- A. Increased UV rays cause acid rain.
- B. Increased CO<sub>2</sub> content in air causes global warming.
- C. Decreased carbon dioxide content of atmosphere can cause depletion of ozone layer.
- D. Increased oxygen content of atmosphere causes rise in temperature of atmosphere.

45. Which of the following is hard, opaque and lustrous?

- A. Wooden log
- B. Sponge
- C. Copper spoon
- D. Rubber tyre

### ACHIEVERS SECTION

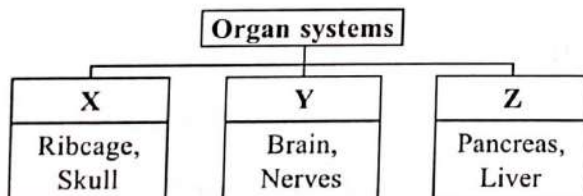
46. Refer to the given Venn diagram.



Which of the following animals best represents P and Q?

P	Q
A. Frog	Goose
B. Carp	Pigeon
C. Hilsa	Butterfly
D. Prawn	Housefly

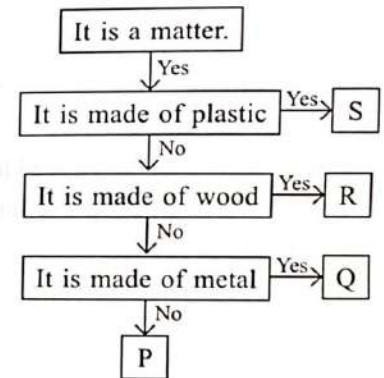
47. Study the given classification chart carefully.



Where can we place pelvic girdle and spinal cord?

Pelvic girdle	Spinal cord
A. Z	X
B. X	Y
C. Z	Y
D. Y	Z

48. Study the given flow chart carefully and select the option that correctly identifies P, Q, R and S.





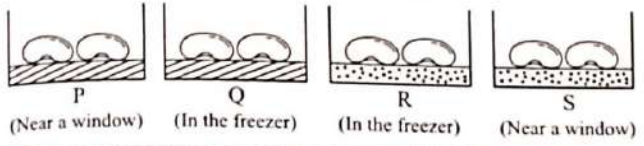
P	Q	R	S
A. Table cloth	Spectacles	Balloon	Chopstick
B. Handkerchief	Cooking pot	Toothpick	Bucket
C. Tyre	Safety pin	Balloon	Toy
D. Knife	Wire	Polybag	Nail

49. Select the option that fills any two of the given blanks correctly.

- (i) The paintings in Ajanta caves, Maharashtra show the life of \_\_\_\_\_.
  - (ii) Cheraw dance, also known as bamboo dance is a famous folk dance form of \_\_\_\_\_.
  - (iii) Five Jantar Mantars were built in India by \_\_\_\_\_.
  - (iv) There are \_\_\_\_\_ storeys in the Qutub Minar.
- A. (i)-Mahavira, (ii)-Nagaland
  - B. (ii)-Mizoram, (iii)-Maharaja Jai Singh II
  - C. (i)-Buddha, (iv)-Seven
  - D. (iii)-King Narasimhadeva, (iv)-Five

50. Nitisha took four similar containers P, Q, R and S and placed two seeds in each one of them, as shown in the given picture.

 Damp cotton wool  
 Dry cotton wool



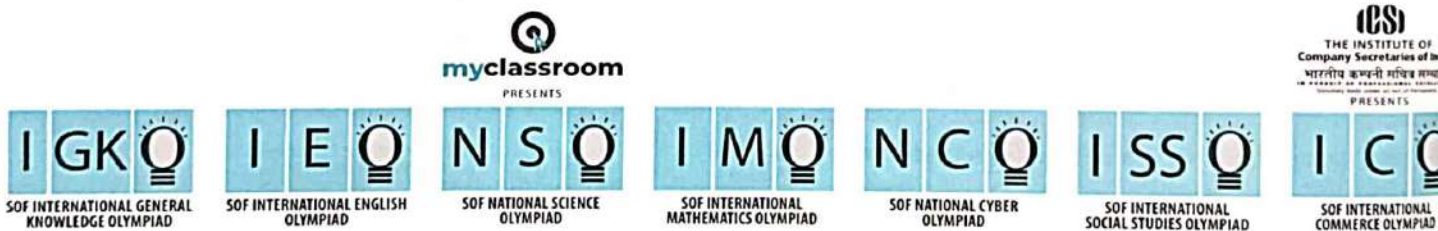
Now, select the correct statement regarding it.

- A. One seed will germinate in each of the containers P and S.
- B. One seed will germinate in each of the containers Q and R.
- C. Both the seeds in container P will germinate.
- D. Both the seeds in container R will germinate.

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK

"myclassroom" platform caters to foundation programs in Science and Maths for middle and senior school students and helps them to secure admission in top academic institutions including AIIMS, NITs, Government medical colleges, central universities, and top colleges across India. "myclassroom" with its presence across 15 states of India believes that every student has a different learning style and its proprietary AI / ML based adaptive learning platform can bring out the best in every student.



For latest updates & information, please like  our Facebook page ([www.facebook.com/sofworld](http://www.facebook.com/sofworld)) or register on <http://www.sofworld.org/subscribe-updates.html>

For Level 1 and Level 2 preparation material / free sample papers, please log on to [www.mtg.in](http://www.mtg.in)



**National Office:** Plot 99, First Floor, Sector 44 Institutional area, Gurugram -122 003 (HR) India  
**Email:** [Info@sofworld.org](mailto:Info@sofworld.org) | **Website:** [www.sofworld.org](http://www.sofworld.org)  
**Regd. Office:** 406, Taj Apt., Ring Road, New Delhi-110 029  
**Note:** Please address all communication to the National Office only.