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<b>ICO</b> INTERNATIONAL CYBER OLYMPIAD	<b>NISO</b> NATIONAL INTERACTIVE SCIENCE OLYMPIAD	<b>NIMO</b> NATIONAL INTERACTIVE MATHS OLYMPIAD	<b>NBTO</b> NATIONAL BIOTECHNOLOGY OLYMPIAD	<b>IEO</b> INTERNATIONAL ENGLISH OLYMPIAD	<b>IGO</b> INTERNATIONAL G.K. OLYMPIAD	<b>BIFO</b> BSE INTERNATIONAL FINANCE OLYMPIAD	<b>NIPO</b> NATIONAL IIT-PMT OLYMPIAD
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**Level - 1** : All Level-1 successful\* participants will get certificate, aptitude report and online subscription, and school toppers will be eligible for school hero medals.

**Level - 2** : School toppers\* will be selected for level-2-National level - online computer based interactive test held at exam centres all over India. Besides selection for level-3, winner will get merit certificate, medals, educational CDs, laptop, scholarship and other prizes. There is no level 2 in Art, Cricket, Cyber, NIPO and Biotech.

**Level - 3** : Toppers will qualify# for level 3-International level-where you will compete with students globally. Get selected for EHF's International Olympiad training camp. Only Indian organization giving students exposure to global competitions. Represent India & win laurels. Guidance by top scientists. Prizes ranges from cash (millions of \$), gadgets, foreign trips, publicity, fame, scholarships, Internships, conference participation and more.

\* # See prospectus/website for details

1. You are allowed additional 10 minutes to fill the required details in the **RESPONSE SHEET (OMR)**.
2. The question paper is made as per syllabus guidelines & pattern given in the information Booklet. The Question Paper for Classes 1 to 6 contains 25 Questions each to be answered in 40 minutes. The Question paper for classes 7 to 12 contains 50 Questions each to be answered in 60 minutes. All questions are compulsory. Further instructions are given in the instruction letter to the teacher.
3. Use the response sheet to mark your responses by darkening the required circle. The response sheet has to be returned to the foundation, duly filled in. **THE STUDENT CAN RETAIN THE QUESTION PAPER.**

**NATIONAL  
BIOTECHNOLOGY  
OLYMPIAD**

**N B T O**

**10  
Class**

**A1  
Paper  
Code**

**L E V E L - 1**

## GENERAL KNOWLEDGE

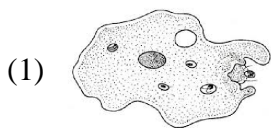
1. The strategic oil and gas bearing region called "Yamala Peninsula" is located in which country?  
(1) Russia (2) Norway  
(3) Vietnam (4) None of these
2. Widespread resistance of malarial parasite to drugs like chloroquine has prompted attempts to develop a malarial vaccine to combat malaria. Why is it difficult to develop an effective malaria vaccine?  
(1) Malaria is caused by several species of Plasmodium.  
(2) Man does not develop immunity to malaria during natural infection  
(3) Vaccines can be developed only against bacteria  
(4) None of these

3. Biodiversity forms the basis for human existence in the following ways:  
(a) Soil formation (b) Prevention of soil erosion  
(c) Recycling of waste (d) Pollination of crops  
(1) (a), (b) and (c)  
(2) (b), (c) and (d)  
(3) (a), (b), (c) and (d)  
(4) None of these
4. Polythene is industrially prepared by the polymerization of  
(1) Methane (2) Styrene  
(3) Ethylene (4) None of these
5. In forensic science which of the following is used?  
(1) Bacterial cloning (2) DNA foot printing  
(3) DNA finger printing (4) None of these

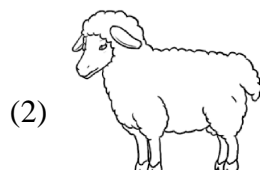
6. Which of the following microbe is widely used in the removal of industrial wastes
- (1) Trichoderma sp
  - (2) Aspergillus niger
  - (3) Pseudomonas putida
  - (4) None of these
7. Which species of fauna are found in an area separated by natural or geographical barriers?
- (1) Rare
  - (2) Extinct
  - (3) Endemic
  - (4) None of these
8. Which of the following represents maximum number of species among global biodiversity?
- (1) Algae
  - (2) Lichens
  - (3) Fungi
  - (4) None of these
9. Which of the following was the reason for forests disappearing near railway tracks?
- (1) Wood was used to make railway sleepers
  - (2) 'Scorched earth' policy of imperial troops
  - (3) Indiscriminate cutting of trees by contractors
  - (4) None of these
10. The main objective of social forestry is
- (1) Management of forests by Co-operative societies.
  - (2) Growing and Management of useful plants on underutilized land
  - (3) Growing one type of tree on crop land
  - (4) None of these
11. Which carries oxygenated blood from lungs to left auricle?
- (1) Vena cava
  - (2) Pulmonary vein
  - (3) Aorta
  - (4) None of these
12. Which carries oxygenated blood from lungs to left auricle?
- (1) Vena cava
  - (2) Pulmonary vein
  - (3) Aorta
  - (4) None of these
13. A farmer floods his field everyday thinking that watering in this manner will result a better yield of his wheat crop. What will be the result of this action of the farmer?
- (1) Plants will die
  - (2) Plants grow well
  - (3) Plants grow very fast
  - (4) None of these
14. Science that deals with life processes is known as-
- (1) Phycology
  - (2) Physiology
  - (3) Oncology
  - (4) None of these
15. The seat of intelligence and voluntary action in the brain is
- (1) Diencephalon
  - (2) Cerebrum
  - (3) Cerebellum
  - (4) None of these
16. How many pairs of spinal nerves arise from spinal cord?
- (1) 21
  - (2) 31
  - (3) 32
  - (4) none of these
17. All multicellular organisms, except \_\_\_\_\_, have well-developed nervous system.
- (1) porifera
  - (2) mammals
  - (3) arthropoda
  - (4) none of these

## LIFE SCIENCE

11. Which of the following organisms can live without oxygen of air.



Amoeba



Sheep



Yeast

(4) None of these

18. Which of the following is incorrect about self pollination?

- (1) Repeated self pollination leads to loss of vigour and vitality of species
- (2) New varieties cannot be obtained by self pollination
- (3) The genetic drifts of the breed can be removed
- (4) None of these

19. While digging fossils are found at deeper layers of the earth, we can conclude

- (1) fossil is the most recent.
- (2) fossil is very old may be more than thousand years.
- (3) fossil may be recent or old, its position is irrelevant.
- (4) None of these

20. Mendel observed 7 pairs of contrasting characters in *Pisum sativum*. One of the following is not a part of that. Find out.

- (1) Tall and dwarf
- (2) Yellow and green seed colour
- (3) Smooth and rough stem
- (4) None of these









21. Links between organisms that show branching pattern of evolutionary relationships are shown by \_\_\_\_\_.





- (1) living fossils
- (2) comparative embryology
- (3) phylogenetic trees
- (4) None of these

22. People living in coastal areas suffer less from goiter. This is because

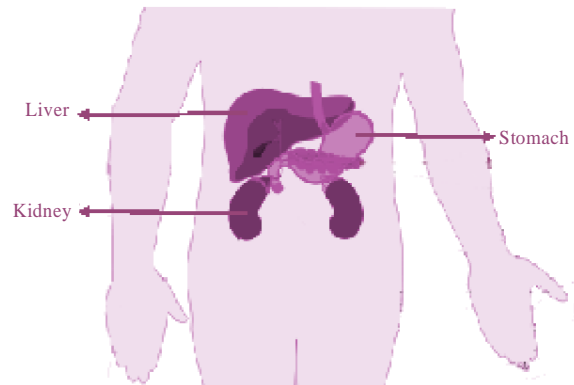
- (1) They eat sea food
- (2) They drink sea water
- (3) They bathe in sea water
- (4) None of these

23. Identify the proper food chain

- (1)  →  →  → 
- (2)  →  →  → 

- (3)  →  →  → 
- (4) None of these

24. By which of the following bile is secreted in human digestive system?



- (1) Liver
- (2) Kidney
- (3) Stomach
- (4) None of these

25. The embryo gets nutrition from the mother's blood with the help of a special tissue called:

- (1) zygote
- (2) uterus only
- (3) placenta
- (4) None of these

26. In case of severe respiratory problem the patient is kept on the instrument-

- (1) Ventilator
- (2) Electrocardiograph
- (3) Oxygen mask
- (4) None of these

27. Which blood cells are called 'Soldiers' of the body?

- (1) WBC
- (2) Platelets
- (3) RBC
- (4) None of these

28. In an experiment, the sponge is squeezed through silk cloth and allowed to stand undisturb in an appropriate medium. It is performed to prove that

- (1) the sponges are multicellular.
- (2) the cells are loosely arranged.
- (3) the sponges are non-living.
- (4) none of these

29. In dough, the starch is digested into sugar through

- (1) amylase
- (2) protease
- (3) maltase
- (4) none of these

30. Due to accident the patella shows a hair-line fracture. Which part of the body is most affected?

- (1) Ankle
- (2) Hip
- (3) knee
- (4) None of these

31. Chronic asthma and bronchitis are caused by

- (1) exposure to  $\text{SO}_2$  and  $\text{H}_2\text{SO}_4$
- (2) exposure to asbestos
- (3) exposure to silica particles
- (4) none of these

32. Which of the agricultural challenges below cannot be solved with transgenic techniques?

- (1) crops are damaged by frost
- (2) crops are killed by a virus
- (3) public preference for organic vegetables
- (4) none of these

33. A coconut milk in combination with gibberillic acid is highly suitable for the growth of \_\_\_\_\_.

- (1) shoot apices
- (2) root tip
- (3) stem
- (4) none of these

34. If RBC's are placed in distilled water, they will

- (1) Shrink and Collapse
- (2) Stick together
- (3) Increase in volume and burst
- (4) None of these

35. The difference between blood and lymph is

- (1) blood has WBC while lymph has RBC.
- (2) blood has dissolved salt while lymph has no cells.
- (3) blood has RBC and WBC while lymph has only WBC.
- (4) none of these

36. Which one of the following pairs is not correctly matched?

- (1) Vitamin  $\text{B}_{12}$  – Pernicious anaemia
- (2) Vitamin  $\text{B}_1$  – Loss of appetite
- (3) Vitamin  $\text{B}_2$  – Pellagra
- (4) None of these

37. In mammals, mastication of the food is done by-

- (1) premolars
- (2) incisors
- (3) molars
- (4) none of these

38. Which tissue makes up the husk of coconut?



- (1) Sclerenchyma
- (2) Collenchyma
- (3) Parenchyma
- (4) None of these

39. Where do the breakdown of pyruvate takes place to give carbon dioxide, water and energy?

- (1) Cytoplasm
- (2) Mitochondria
- (3) Chloroplast
- (4) None of these

40. Aging affects connective tissues in which of the following ways?

- (1) Loss of pliability and resiliency
- (2) Decreased efficiency in tissue repair and wound healing
- (3) Both (1) and (2)
- (4) None of these

## INTERACTIVE SECTION

41. Study the four statements (I-IV) given below and select the two correct ones out of them

- (I) A lion eating a deer and a sparrow feeding on grain are ecologically similar in being consumers.

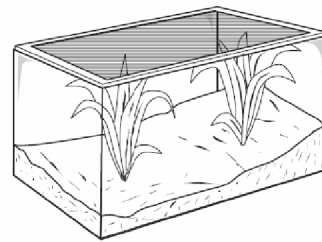
- (II) Predator star fish pisaster helps in maintaining species diversity of some invertebrates.
- (III) Predators ultimately lead to the extinction of prey species.
- (IV) Production of chemicals such as nicotine, strychnine by the plants are metabolic disorders.

The two correct statements are:

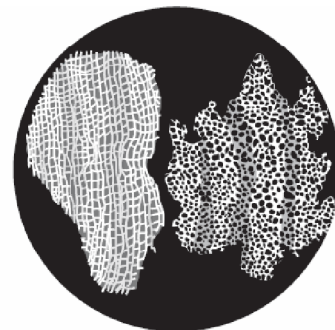
- (1) I and II
  - (2) II and III
  - (3) III and IV
  - (4) None of these
- 42.** A person with unknown blood group under ABO system, has suffered much blood loss in an accident and needs immediate blood transfusion. His one friend who has a valid certificate of his own blood type, offers for blood donation without delay. What would have been the type of blood group of the donor friend?
- (1) Type A
  - (2) Type B
  - (3) Type O
  - (4) None of these
- 43.** Rahul was absent in the class because of muscle pain which he claims to be due to excess physical exercise he had done yesterday. This pain is due to
- (1) Formation of lactic acid
  - (2) Formation of acetic acid
  - (3) Formation of pyruvic acid
  - (4) None of these
- 44.** Assume that you are the president of a plant biotechnology company and you want to offer your customers a new variety of cucumber that tastes great, lasts longer on the shelf, and is less susceptible to insect damage. Which method will be the most precise and produce plants with the desired characteristics quicker?
- (1) Traditional plant breeding
  - (2) Genetic modification through genetic engineering
  - (3) Neither, the president wants too much!
  - (4) None of these

- 45.** Blood analysis of a patient reveals an unusually high quantity of carboxyhaemoglobin content. Which of the following conclusions is most likely to be correct? The patient has been inhaling polluted air containing unusually high content of

- (1) Carbon disulphide
  - (2) Chloroform
  - (3) Carbon monoxide
  - (4) None of these
- 46.** A student constructs several terrariums like the one shown. Each terrarium is exposed to a different amount of sunlight each day. In order to determine the ideal amount of sunlight, which of the following variables must be held constant?

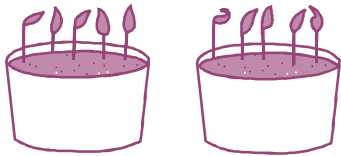


- (1) Amount of sunlight received
  - (2) Growth rate of plants
  - (3) Type of plants
  - (4) None of these
- 47.** In 1665 Robert Hooke observed a thin slice of cork under a microscope and presented a drawing similar to the one shown. Hooke called the structures he observed-

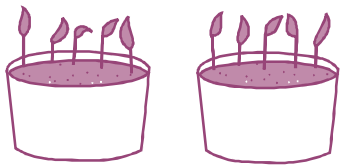


- (1) root hairs
- (2) chloroplasts
- (3) cells
- (4) none of these

48. Twenty cuttings were taken from one plant and planted in four containers of sand. Two containers had a pH of 6.0 and two had a pH of 8.0. When the cuttings matured, all of those grown in a pH of 6.0 had pink flowers, and all of those grown in a pH of 8.0 had blue flowers. One explanation for these results is that the sand at one pH contained a dye that changed the flower color. The best alternative explanation for these results is that-



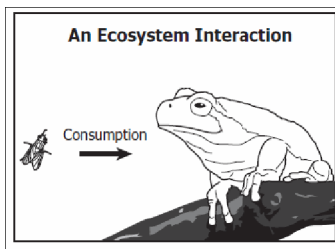
Cuttings in sand with pH 6.0



Cuttings in sand with pH 8.0

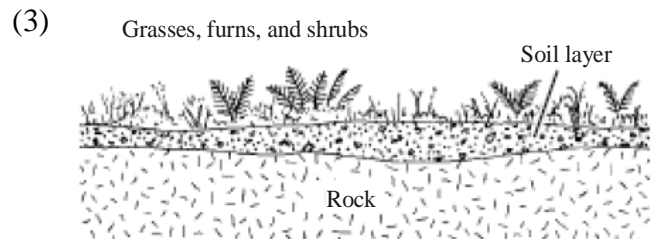
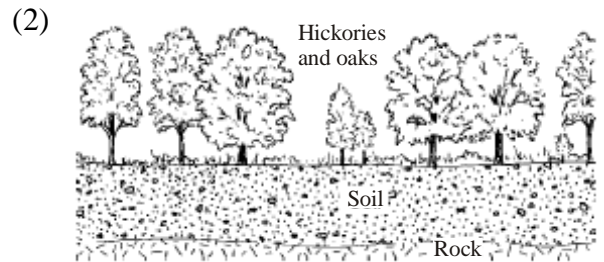
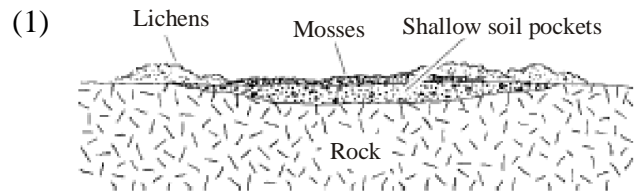
- (1) by mistake, the scientist took some cuttings from the wrong plant
- (2) the difference in pH caused the genes for flower color to be expressed differently
- (3) by random chance, different flower colors developed on the plants grown at different pH
- (4) none of these

49. The interaction picture represents-



- (1) herbivory and decomposition
- (2) growth
- (3) energy and nutrient transfer
- (4) none of these

50. Each drawing represents different stages in community succession within the state of Virginia. Which of the following drawings represents the climax community in this succession pattern?



- (4) None of these



END OF THE EXAM