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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

9
Class

A1
Paper
Code

L E V E L - 1

GENERAL KNOWLEDGE

1. Brass gets discoloured in air because of the presence of which of the following gases in air?

- (1) Oxygen (2) Hydrogen Sulphide
(3) Carbon dioxide (4) None of these

2. Which of the following gases is not known as green house gas?

- (1) Methane (2) Nitrous oxide
(3) Hydrogen (4) None of these

3. The chemical (ethyl mercaptan) added to the otherwise odourless LPG cooking gas for imparting a detectable smell to the gas is a compound of

- (1) bromine (2) flourine
(3) sulphur (4) none of these

4. Entomology is the science that studies

(1) Behaviour of human beings

(2) Insects

(3) The origin and history of technical and scientific terms

(4) None of these

5. Exposure to sunlight helps a person improve his health because

(1) the infrared light kills bacteria in the body

(2) resistance power increases

(3) the ultraviolet rays convert skin oil into Vitamin D

(4) none of these

6. Which of the following is most likely to cause a rise in the average temperature of earth's atmosphere in future?

(1) Atomic warfare (2) CO₂ from fossil fuels

(3) Dust clouds from volcanoes

(4) None of these

7. The accumulation of stress along the boundaries of lithospheric plates results in which of the following?

- (1) Earthquakes
- (2) Magnetic reversals
- (3) Hurricanes
- (4) None of these

8. Persons with which blood group are called universal donors?

- (1) AB
- (2) A
- (3) O
- (4) None of these

9. Biological Oxygen demand (BOD) is used as a standard measure of

- (1) Oxygen level in forest System
- (2) Oxygen level in animals
- (3) Oxygen level in water system
- (4) None of these

10. A flowering plant lily has _____ more DNA than humans.

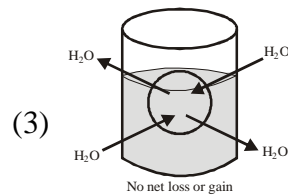
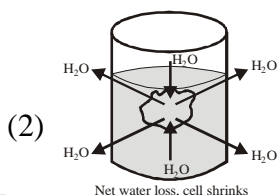
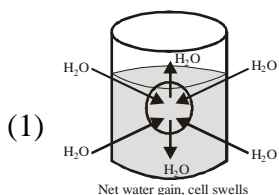
- (1) 10 times
- (2) 15 times
- (3) 18 times
- (4) none of these

LIFE SCIENCE

11. The barrier between the protoplasm and the other environment in an animal cell-

- (1) Cell wall
- (2) Nuclear membrane
- (3) Plasma membrane
- (4) None of these

12. What will happen to the cell if it is placed in hypertonic solution?



(4) None of these

13. A person met with an accident in which two bones of hand were dislocated. Which among the following may be the possible reason?

- (1) Tendon break
- (2) Break of skeletal muscle
- (3) Ligament break
- (4) None of these

14. Which muscles act involuntarily?

- (i) Striated muscles
- (ii) Smooth muscles
- (iii) Cardiac muscles
- (iv) Skeletal muscles

- (1) (i) and (ii)
- (2) (ii) and (iii)
- (3) (iii) and (iv)
- (4) None of these

15. If the tip of sugarcane plant is removed from the field, even then it keeps on growing in length. It is due to the presence of

- (1) cambium
- (2) apical meristem
- (3) intercalary meristem
- (4) none of these

16. You are given 2 slides- parenchyma and sclerenchyma. Sclerenchyma can be identified by

- (1) location of nucleus
- (2) size of cells
- (3) thickness of cell wall
- (4) None of these

17. Which group correctly shows dicot plants?

- (1) Coconut, banana, date, palm
- (2) Neem, maize, apple
- (3) Neem, apple, banyan
- (4) None of these

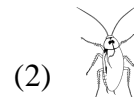
- 18.** What is the scientific name of the National bird of India?
- (1) *Psittacula eupatra*
 - (2) *Passer domesticus*
 - (3) *Pavo cristatus*
 - (4) None of these
- 19.** Two adjacent filaments of *spirogyra affinis* each 10 cells participating in reproduction. How many new *spirogyra* plants are produced during sexual reproduction?
- (1) 5
 - (2) 10
 - (3) 20
 - (4) none of these
- 20.** The husk of the isabgol seed with water produces relief from ____ .
- (1) malaria
 - (2) jaundice
 - (3) diarrhoea
 - (4) none of these
- 21.** Xerophthalmia is caused due to the deficiency of _____ .
- (1) Vitamin A
 - (2) Vitamin B
 - (3) Vitamin C
 - (4) None of these
- 22.** You are aware of Polio Eradication Programme in your city. Children are vaccinated because
- (1) vaccination kills the polio causing micro-organisms
 - (2) prevents the entry of polio causing organism
 - (3) it creates immunity in the body
 - (4) none of these
- 23.** With different chemical arrangements and formation of complex molecules, the life emerges on the level of the:
- (1) Cells
 - (2) Tissues
 - (3) Organs
 - (4) None of these
- 24.** On the basis of collected facts and figures, a scientist

formulates a putative statement called:

- (1) Observation
 - (2) Research work
 - (3) Hypothesis
 - (4) None of these
- 25.** Which one of the following pairs correctly matches a hormone with a disease resulting from its deficiency?
- (1) Luteinizing hormone- Failure of ovulation
 - (2) Insulin - Diabetes insipidus
 - (3) Thyroxine - Tetany
 - (4) None of these
- 26.** Which one of the following is the correct matching of a vitamin, its nature and its deficiency disease?
- (1) Vitamin A - Fat - soluble - Night blindness
 - (2) Vitamin K - Fat - soluble - Beri-beri
 - (3) Vitamin A - Fat - soluble - Beri-beri
 - (4) None of these
- 27.** Which of the following is a mammal?



- (1) Rabbit
 - (2) Spider
 - (3) Butterfly
 - (4) None of these
- 28.** Colourless, unicellular cell wall bound, spherical or rod-shaped micro-organism and lacking organized nucleus, is called
- (1) mycoplasma
 - (2) virus
 - (3) bacteria
 - (4) None of these
- 29.** In which animal, the nerve cell is present but brain is absent?



- (1)
- (2)
- (3)
- (4) none of these

30. Greenhouse effect refers to

- (1) Cooling of earth
- (2) trapping of UV rays
- (3) Warming of earth
- (4) None of these

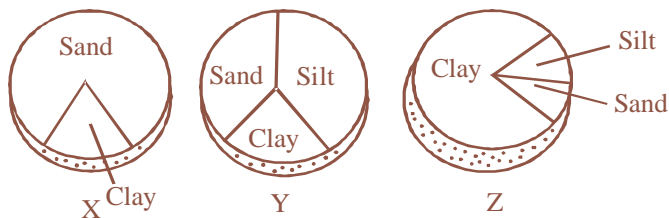
31.



These are useful because they

- (1) purify the atmosphere
- (2) are large in number
- (3) are used in fermentation
- (4) none of these

32. The given pie charts show the composition of three types of soil samples X, Y and Z.



- (1) X is used for pot making.
- (2) Y is best suited for cultivation.
- (3) Z provides good aeration to plant roots.
- (4) None of these

33. In the condition shown in the given figure, which of the following diseases is mostly likely to spread?

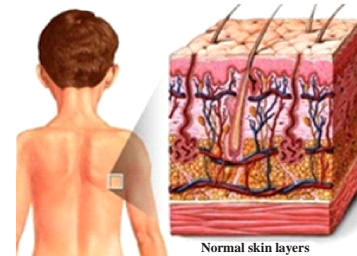


- (1) Typhoid
- (2) Tuberculosis
- (3) Malaria
- (4) None of these

34. A farmer grows paddy crop in his field for two consequent years. After second year, the yield of paddy crop decreased markedly. Which agricultural practice should be implemented to increase the yield?

- (1) field allow
- (2) manuring
- (3) crop rotation
- (4) none of these

35. Hairs present in the skin are



- (1) Epidermal in origin and made of dead cells
- (2) Epidermal in origin and made of living cells
- (3) Dermal in origin and made of living cells
- (4) None of these

36. Aditi observed following observations while looking into a permanent slide.

- (i) Cells are long and cylindrical.
- (ii) Light and dark bands are present.

It could be a slide of

- (1) striated muscle fibre
- (2) smooth muscle fibre
- (3) neuron
- (4) none of these

37. Which one is a true fish?

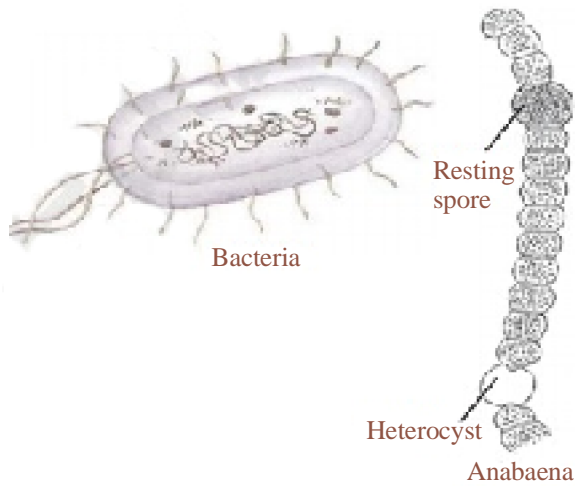
- (1) 
- (2) 

- (3) 
- (4) none of these

38. If a plant breeder wants to develop a disease resistant variety, what should he do first?

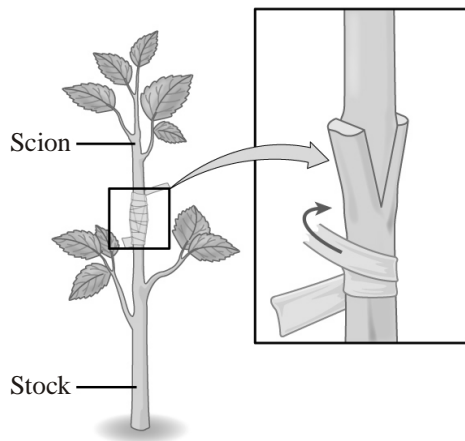
- (1) Mutation
- (2) Selection
- (3) Hybridization
- (4) None of these

39. The given animal belongs to Kingdom:



- (1) Protista (2) Monera
 (3) Fungi (4) None of these

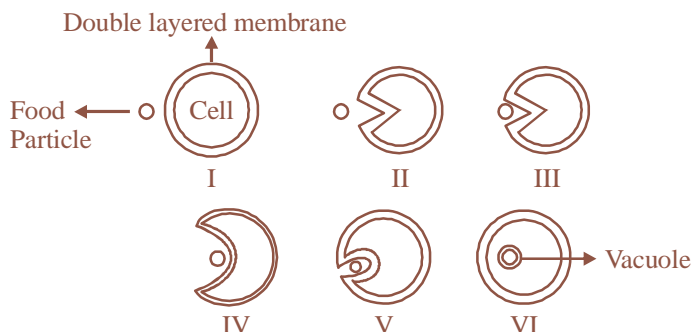
40. Identify the process shown in given diagram?



- (1) Mound layering (2) Aerial layering
 (3) Grafting (4) None of these

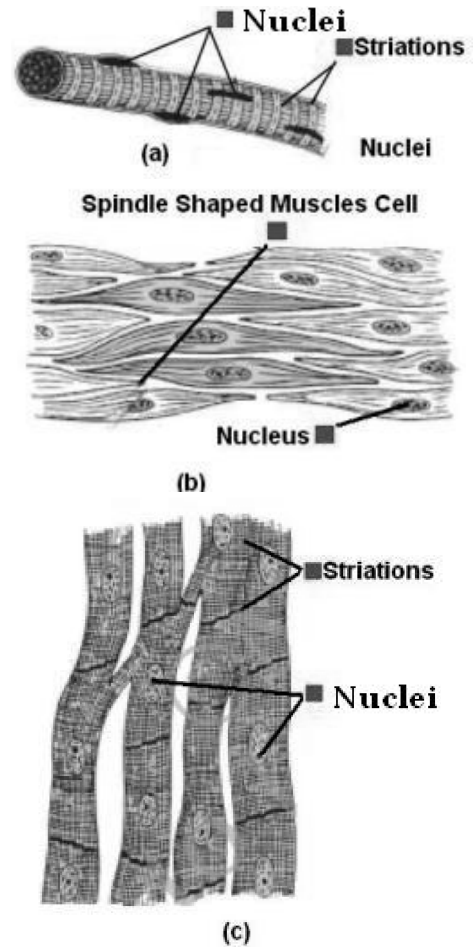
INTERACTIVE SECTION

41. Which process is seen in the given figure?



- (1) Exocytosis (2) Endocytosis
 (3) Both (1) and (2) (4) None of these

Based on figure answer the following (Q. No. 42 and 43)



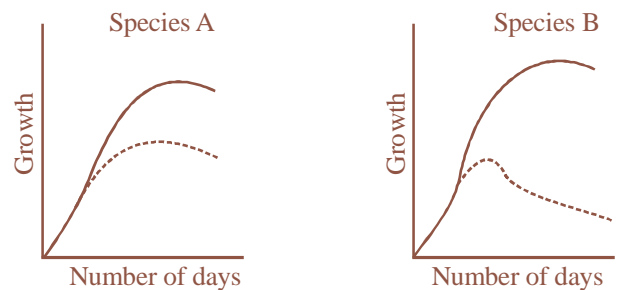
42. Which figure shows unstriated muscle fibre?

- (1) a (2) b
 (3) c (4) None of these

43. Which muscle controls the contraction and relaxation of the heart?

- (1) A (2) B
 (3) C (4) None of these

44. The graphs given below show the growth of two species A & B when grown separately (—) and together (-----). The graph indicates

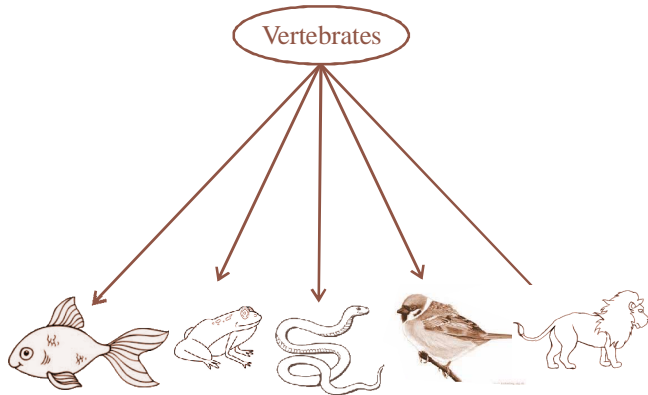


- (1) Competition (2) Synergism
 (3) Parasitism (4) None of these

45. Which of the following use their own metabolic energy to maintain a near constant body temperature?
- (i) fish (ii) birds
 (iii) reptiles (iv) amphibians
 (v) frog
- (1) i, ii, iii, iv and v (2) ii, iii, iv and v
 (3) ii and v (4) none of these

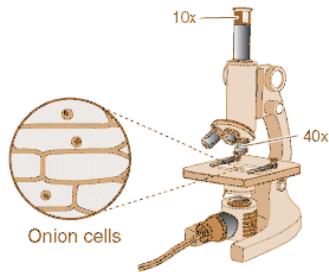
Based on following diagram answer the following questions (Q. No. 46 and 47):

Animals in Vertebrate are classified into five classes.



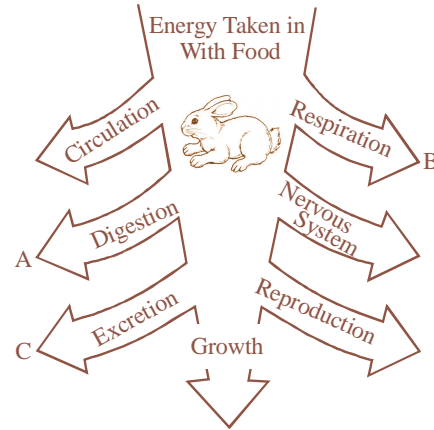
46. Which animal represents the class Pisces?
- (1) Fish (2) Frog
 (3) Bird (4) None of these
47. Bird represents
- (1) Class Mammalia (2) Class Reptilia
 (3) Class Aves (4) None of these

48. What is the total magnification used to view these onion cells through this microscope setup?



- (1) 40x (2) 400x
 (3) 50x (4) none of these
49. Rabbits have developed behavioral and physiological strategies to sustain them through periods of

environmental stress. Which of the numbered life processes below could be sacrificed without affecting an individual rabbit's survival in periods of extremely poor environmental conditions?



- (1) A (2) B
 (3) C (4) None of these

50. A company that produces Brand X flea shampoo claims to have the most effective shampoo for killing fleas. Which of these sets of data supports the Brand X claim?

(1)

	Brand X		Brand Y		Brand Z	
	Before	After	Before	After	Before	After
Number of Dogs With Fleas	25	5	25	1	25	4

(2)

	Brand X		Brand Y		Brand Z	
	Before	After	Before	After	Before	After
Number of Dogs With Fleas	25	10	25	4	25	12

(3)

	Brand X		Brand Y		Brand Z	
	Before	After	Before	After	Before	After
Number of Dogs With Fleas	25	2	25	12	25	5

- (4) None of these



END OF THE EXAM