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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, G.K. 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. Level 3 is in Maths, Science & Cyber only.

\*# See prospectus/website for details

- You are allowed additional 10 minutes to fill the required details in the **RESPONSE SHEET (OMR)**. **STUDENTS OF CLASS 1 & 2 HAVE TO UNDERLINE** THE CORRECT ANSWER IN THE QUESTION PAPER ITSELF. THEY ARE NOT REQUIRED TO USE THE RESPONSE SHEET (OMR). THEY HAVE TO FILL THEIR NAME, ROLL NUMBER, CLASS, SCHOOL NAME IN THE SPACE PROVIDED IN THE QUESTION PAPER.
- 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.
- 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 EXCEPT FOR CLASSES 1 AND 2.**

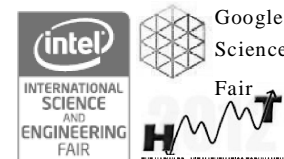
**EHF**  
NATIONAL  
**BIOTECHNOLOGY**  
**OLYMPIAD**

**N B T O**

**8**  
Class

**A1**  
Paper  
Code

**L E V E L - 1**



## GENERAL KNOWLEDGE

- Transmission of a gene from a male parent to a female child to male grand child is known as:
  - Holandric inheritance
  - Quantitative inheritance
  - Criss-cross inheritance
  - None of these
- Three percent of all the world's water is:
  - Salt water
  - Fresh water
  - Ice
  - None of these
- Which of the following is the best method to determine bacteriophages concentration in a sample?
  - Spectrophotometry
  - Plaque assay
  - Light microscopy
  - None of these

- The polymerase chain reaction (PCR):
  - Amplifies specific DNA sequences
  - Is used to transcribe specific genes
  - Is a method for sequencing DNA
  - None of these
- Food biotechnology is used for producing:
  - Tomatoes with delayed ripening traits that have better flavour
  - Soyabeans, cotton and potato plants that are protected from insects or tolerant of herbicides
  - Both (1) and (2)
  - None of these
- Bioremediation is a:
  - Waste management technique that involves the use of organisms to remove or neutralize pollutants from a contaminated site.

- (2) Process which utilizes normal microbes, enzymes and plants which are used to clean any pollutants or solve any environmental problem
- (3) Both (1) and (2)
- (4) None of these
7. Which company started the manufacturing and marketing of the first biosynthetic human insulin in 1982?
- (1) Johnson & Johnson
- (2) Eli Lilly and company
- (3) Glaxo Smithkline
- (4) None of these
8. First generation or conventional biofuels are made from:
- (1) Sugar (2) Cotton
- (3) Lemon grass (4) None of these
9. Which of the following has the same chemical properties as petroleum-based diesel?
- (1) Blue diesel (2) Green diesel
- (3) Red diesel (4) None of these
10. Methane produced by the process of anaerobic digestion of organic material by anaerobes is called:
- (1) Syngas (2) Biogas
- (3) LPG (4) None of these

## LIFE SCIENCE

11. Which of the following is a non-renewable resource?
- (1) Natural gas (2) Tides
- (3) Biomass (4) None of these
12. Which enzyme produced by biotechnology has been widely used in hard cheese production?
- (1) Pepsin (2) Papain
- (3) Rennet (4) None of these
13. Which of the following is a biological nitrogen fixing bacteria?
- (1) Blue green algae (2) Staphylococcus aureus
- (3) Escherichia coli (4) None of these
14. Hepatitis B is caused by:
- (1) Protozoa (2) Virus
- (3) Fungi (4) None of these

15. A group or class of animals having common characteristics that separate it from other groups is called:
- (1) Forest resources (2) Habitat
- (3) Species (4) None of these
16. Which of the following is an example for an extinct species?
- (1) Dodo (2) Blue whale
- (3) Leopard (4) None of these
17. Which one of the following eukaryotic cell structures does not contain DNA?
- (1) Nucleus
- (2) Mitochondria
- (3) Endoplasmic reticulum
- (4) None of these
18. In the nucleus of eukaryotic cells, the genetic material is complexed with protein and organized into linear structures called:
- (1) Centrioles (2) Chromosomes
- (3) Histones (4) None of these
19. The functional units of DNA that contain instructions for making one or more proteins are called:
- (1) Genes (2) Histones
- (3) Amino acids (4) None of these
20. The cell formed by the fission of male and female gametes:
- (1) Egg (2) Zygote
- (3) Embryo (4) None of these
21. Which of the following is not a green house gas?
- (1) Carbondioxide (2) Sulphurdioxide
- (3) Methane (4) None of these
22. Which cells help in fighting against germs and infection?
- (1) WBC (2) RBC
- (3) Platelets (4) None of these
23. Leguminous plants establish a symbiotic relationship with which bacteria?
- (1) Blue green algae (2) Rhizobium
- (3) Diatoms (4) None of these
24. Which synthetic fibre is used to make parachutes and ropes for rock climbing?
- (1) Rayon (2) Nylon
- (3) Terylene (4) None of these

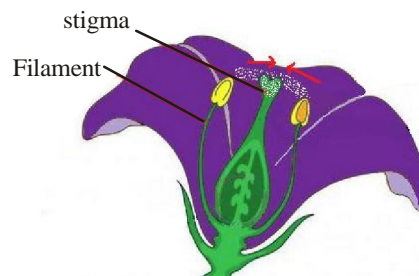
- 25.** Which chemical is added to well water and water tanks to kill harmful microorganisms and germs?
- (1) Sodium chloride
  - (2) Potassium permanganate
  - (3) DDT
  - (4) None of these
- 26.** Stomata are surrounded by:
- (1) Chloroplasts
  - (2) Ribosomes
  - (3) Guard cells
  - (4) None of these
- 27.** The process of transferring and combining of desirable characteristic features from one organism to another organism and multiplying them is called:
- (1) Plant breeding
  - (2) Genetic engineering
  - (3) Tissue culture
  - (4) None of these
- 28.** Which chemicals are mainly responsible for the depletion of ozone layer?
- (1) Carbondioxide
  - (2) Compressed natural gas
  - (3) Chlorofluorocarbons
  - (4) None of these
- 29.** Smallest functional unit of kidney:
- (1) Collecting tubules
  - (2) Glomerulus
  - (3) Nephron
  - (4) None of these
- 30.** Which organelles are responsible for shipping the goods created by the ER and ribosomes to the rest of the cell?
- (1) Golgi apparatus
  - (2) Chloroplasts
  - (3) Mitochondria
  - (4) None of these
- 31.** Which was the first commercially synthesized fibre?
- (1) Rayon
  - (2) Nylon
  - (3) Polyester
  - (4) None of these
- 32.** Which of the following is an example for a thermosetting plastic?
- (1) Bakelite
  - (2) PVC
  - (3) Polythene
  - (4) None of these
- 33.** Which disease is prevalent among the coal workers?
- (1) Asbestosis
  - (2) Black lung
  - (3) Byssinosis
  - (4) None of these
- 34.** Which are the secondary pollutants present in photochemical smog?

- (1) Methane and carbonmonoxide
- (2) Ozone and aldehydes
- (3) Sulphurdioxide and carbonmonoxide
- (4) None of these

- 35.** An amphibian in which metamorphosis occurs is:
- (1) Fish
  - (2) Frog
  - (3) Crocodile
  - (4) None of these
- 36.** A catalogue published by IUCN which keeps a record of all the endangered plants and animals:
- (1) Red information book
  - (2) Red data book
  - (3) Green data book
  - (4) None of these
- 37.** The study of fungi is called:
- (1) Mycology
  - (2) Phycology
  - (3) Botany
  - (4) None of these
- 38.** Which of the following is called 'milk sugar'?
- (1) Glucose
  - (2) Galactose
  - (3) Lactose
  - (4) None of these
- 39.** Which plough is mainly used for crops such as potatoes which are grown burried in ridges of soil?
- (1) Chisel plough
  - (2) Ridging
  - (3) Mole plough
  - (4) None of these
- 40.** Which pest is often called the 'shatter worm' because of the destruction it causes to corn foliage?
- (1) Cut worm
  - (2) Cabbage worm
  - (3) Fall army worm
  - (4) None of these

## INTERACTIVE SECTION

- 41.** A bee visits several flowers in succession on a single willow herb plant. In doing so, the bee transfers pollen from the younger flowers near the top of the inflorescence to the older flowers near the base of the inflorescence. This is an example for



- (1) Self-pollination
- (2) Cross-pollination
- (3) Both (1) and (2)
- (4) None of these

42. Remove the shell of an egg by dissolving it in dilute hydrochloric acid. Place the deshelled egg in water for five minutes. What will be your observation?

- (1) The egg shrinks because water passes out of the egg due to osmosis
- (2) The egg swells because water passes into it by osmosis
- (3) The egg cell shrinks away from the cell wall by plasmolysis
- (4) None of these

43. "Avoid plastics as far as possible". This is because:

- (1) Plastics are non-biodegradable and take a lot of time to decompose
- (2) Plastics are not eco-friendly. By burning plastics, poisonous fumes are released causing air pollution
- (3) Both (1) and (2)
- (4) None of these

44. Saucepan handles are made of thermosetting plastics because:

- (1) They are good conductors of heat and electricity
- (2) They bend or deform on heating
- (3) They are bad conductors of heat and electricity
- (4) None of these

45. A new plant breeding method that uses statistical modeling to predict how a plant will perform?

- (1) Genomic selection
- (2) Tissue culture
- (3) Gene mutation
- (4) None of these

46. Labrador retrievers are black, brown or yellow. In a cross of a black female with a brown male, the result can be all black puppies, 1/2 black to 1/2 brown puppies or 3/4 black to 1/4 yellow puppies. How many genes must be responsible for these coat colours in labrador retrievers?

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

47. Which is a bioindicator living on the surfaces of trees, rocks or soil and are very sensitive to toxins in the air?

- (1) Algae
- (2) Lichen
- (3) Chlamydomonas
- (4) None of these

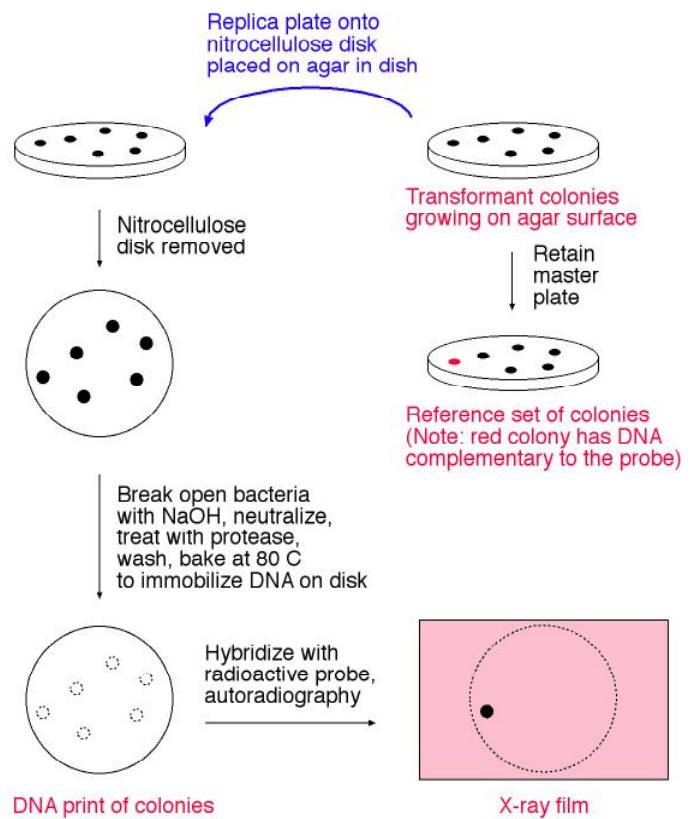
48. What is the function of the Genetic Engineering Approval Committee (GEAC)?

- (1) GEAC will make decisions regarding the validity of GM research and the safety of introducing GM organisms for public services
- (2) GEAC will make decisions regarding the introduction of GM crops and helping farmers in improving the agricultural products
- (3) GEAC will make decisions regarding the patent of molecular drugs and the safety of introducing them in the public sector
- (4) None of these

49. The first drug manufactured from the milk of a genetically modified goat was

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

50. Which is the given mentioned technique?



- (1) Genomic library construction
- (2) Transformation
- (3) Hybridization
- (4) None of these



END OF THE EXAM