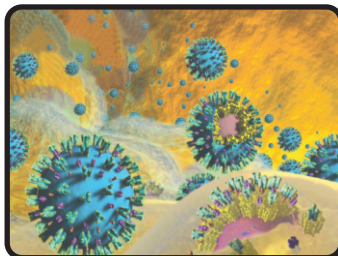


EtG

OLYMPIAD EXPLORER BIOTECHNOLOGY

EduHeal Foundation
Nationwide Biotechnology Olympiad
and other
National/International Biotechnology Olympiads/Talent Search Exams.



Class-6

EtG **BOOKS**

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(For additional science topics the child can also refer to science work books)

SYLLABUS GUIDELINES

CLASS - VI

Based on CBSE, ICSE & GCSE Syllabus & NCF guidelines devised by NCERT

Sources of food

What are the various sources of our food? What do other animals eat?

What role Biotechnology (Bt) played in birth of higher milk producing cows and buffaloes what is food biotechnology? what is fermentation? How is curd made?

How is bread made?

Components of food

What is our food made up of? Why do we eat a variety of food? How do we develop food with more nutrient value .e.g. a banana which protects against diseases or an almond with all necessary vitamins

Cleaning food

How do we separate the grains after harvesting the wheat /rice crop?

Materials of daily use

What are our clothes made of?How did people manage when there were no clothes?

Are some of our clothes made of materials obtained from plants? In what kinds of places do these plants grow? Which parts of the plants are used for making clothes?

What key role BT is playing in textile engineering?

Things around us Are all things around us living? What is the difference between living and non-living? Are all living things similar? Do all living things move?

Where do plants and animals live? Can we grow plants in the dark?*What living or organisms are used in BT to improve our living?*

The habitat of the living

How does habitat affect plants and animals? How do fish live in water?

Why should we know the flora and fauna of India. Why should we patent our neem and turmeric? What are our natural resources? which are unique to Indian subcontinent?

Plants form and function

What is the structure and function of various parts of the plants - stem, leaf and roots.?How do different flowers differ from one another? How does one study flowers?

How do we get blue rose? What are orchids & what role BT played in developing them?

Animals form and function

What is inside our bodies? How do animals move? Do all animals have bones in their bodies? How do fishes move? And birds fly? What about snakes, snails, earthworms?

Importance of water

What will happen to soil, people, domestic animals, rivers, ponds and plants and animals if it does not rain this year? What will happen to soil, people, domestic animals, plants and animals living in rivers and ponds, if it rains heavily ?

Importance of air

Why do earthworms come out of the soil when it rains?

Waste

Do you throw away fruit and vegetable peels and cuttings? Can these be re-used? If we dump them anywhere, will it harm the surroundings? What if we throw them in plastic bags? Why are plastic bags dangerous? What are bioplastics? How can Biotechnology be used in decreasing wastes or in biowaste management.



Chapter 1 FOOD : WHERE DOES IT COME FROM

- Q.1.** Which plant is grown for food?
(a) Cotton (b) Jute
(c) Rice (d) None of these
- Q.2.** Which is not part of salad?
(a) Bitter gourd and Pumpkin
(b) Radish and Carrot
(c) Cucumber and Onion
(d) None these
- Q.3.** Which of the following seeds can be eaten raw and are beneficial for health?
(a) Mustard seeds
(b) Papaya seeds
(c) sprouted seeds of moong
(d) None these
- Q.4.** Which part of tea plant is used for making refreshing drink?
(a) Stems (b) Leaves
(c) Seeds (d) None these
- Q.5.** Which element product is used in ayurvedic medicines?
(a) Honey (b) Meat
(c) Butter (d) None of these
- Q.6.** Which of the following is true?
(a) Ghee obtained from milk comes from animals
(b) We get sugar from plants
(c) Both (a) and (b)
(d) None of these
- Q.7.** We get spices from
(a) Animals (b) Plants
(c) Both (a) and (b) (d) None of these
- Q.8.** Find the odd one out
(a) Honey (b) Raddish
(c) Milk (d) None of these
- Q.9.** Which of the following is an edible root?

- (a) Carrot
- (b) Apple
- (c) Potato
- (d) None of these

Q.10. Which of the following is not an insectivore?

- (a) Frog
- (b) Lizard
- (c) Crocodile
- (d) None of these

Q.11. The fruit of which plant is used as spices in the food.

- (a) Chilly
- (b) Onion
- (c) Brinjal
- (d) None of these

Q.12. Flour, Maida and porridge can be derived from

- (a) Rice
- (b) Wheat flour
- (c) Wheat
- (d) None of these

Q.13. Omnivores eat

- (a) Only Animals
- (b) Only Plants
- (c) Both plants and animals
- (d) None of these

Q.14. Lion eats flesh of other animals and thus it is called

- (a) Carnivores
- (b) Omnivores
- (c) Herbivores
- (d) None of these

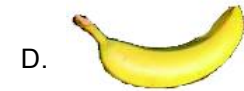
Q.15. Herbivores animals eat

- (a) Other animals
- (b) Plants
- (c) Both plants and animals
- (d) None of these

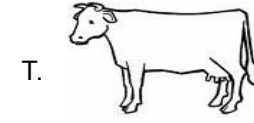
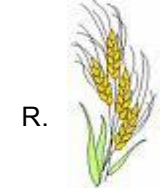
Match the following

- | Q.16. | Column I | Column II |
|--------------|----------------------|------------------|
| A. | Chana and moong | P. Vegetables |
| B. | Brinjal and Carrot | Q. Spices |
| C. | Pepper and Chilly | R. Pulses |
| D. | Kiwi and Strawberry | S. Salad |
| E. | Broccoli and Cabbage | T. Fruits |

Q.17. **Column I**



Column II



1. (c) 2. (a) 3. (c) 4. (b) 5. (a) 6. (c) 7. (b) 8. (b)
 9. (a) 10. (c) 11. (a) 12. (c) 13. (c) 14. (a) 15. (b)
 16. A-R, B-P, C-Q, D-T, E-S 17. A-T, B-R, C-S, D-Q, E-P



Chapter **2** **FOOD COMPONENTS**

- Q.1.** Glucose and fructose are type of
(a) Starch (b) Fats
(c) Sugar (d) None of these
- Q.2.** Hair and nails are made up of
(a) Protein (b) Carbohydrates
(c) Sugar (d) None of these
- Q.3.** Milk and milk products are good source of
(a) Calcium (b) Iron
(c) Iodine (d) None of these
- Q.4.** Calcium, Phosphorus, Sodium and chlorine are the examples of
(a) Roughage (b) Nutrients
(c) Minerals (d) None of these
- Q.5.** _____ is a water soluble vitamin.
(a) Vitamin E (b) Vitamin C
(c) Vitamin D (d) None of these
- Q.6.** Which of the following is fat soluble vitamin?
(a) Vitamin A (b) Vitamin C
(c) Vitamin B (d) None of these
- Q.7.** Which food component removes constipation?
(a) Vitamin (b) Carbohydrates
(c) Roughage (d) None of these
- Q.8.** Cellulose, Starch and sugar are example of
(a) Proteins (b) Carbohydrates
(c) Fats (d) None of these
- Q.9.** Wheat, rice and other cereal crops are rich source of
(a) Sugar (b) Cellulose
(c) Starch (d) None of these
- Q.10.** Excess intake of fats leads to
(a) Beri-Beri (b) Energy
(c) Goitre (d) None of these

- Q.11.** If contact of a food substance with paper, makes it oily and transparent, this shows the presence of _____.
(a) Starch (b) Carbohydrate
(c) Fats (d) None of these
- Q.12.** Name the test for checking protein in food.
(a) Biuret Test (b) Xanthoproteic test
(c) Both (a) & (b) (d) None of these
- Q.13.** When few drops of dilute iodine solution is added to any food substance containing starch, it will turn into
(a) Dark Blue (b) Colourless
(c) Red (d) None of these
- Q.14.** Sources of balanced diet are:
(a) Carbohydrates and Proteins
(b) Vitamins and Minerals
(c) Both (a) and (b)
(d) None of these
- Q.15.** Insufficient intake of nutrients leads to
(a) Balanced Diet (b) Malnutrition
(c) Under Nutrition (d) None of these
- Q.16.** Roughage helps in proper functioning of
(a) Respiratory System (b) Heart
(c) Digestive System (d) None of these
- Q.17.** Dehydration occurs in our body due to
(a) Excessive water (b) Excessive roughage
(c) Excessive loss of water
(d) None of these
- Q.18.** _____ are body building foods.
(a) Roughage (b) Proteins
(c) Fats (d) None of these
- Q.19.** Carbohydrates and fats are
(a) Energy giving food (b) Building block of food
(c) Body building food (d) None of these
- Q.20.** Building blocks of food are called _____.
(a) Carbohydrates (b) Proteins
(c) Nutrients (d) None of these

Match the following

Q.21. Match the diseases (Column I) with deficiency of vitamins (Column II)

Column I	Column II
A. Goiter	P. Iron
B. Anemia	Q. Iodine
C. Rickets	R. Vitamin A
D. Scurvy	S. Vitamin D
E. Beri – Beri	T. Vitamin C
F. Night Blindness	U. Vitamin B

☺☺☺

1. (c) 2. (a) 3. (a) 4. (c) 5. (b) 6. (a) 7. (c) 8. (b)
 9. (c) 10. (a) 11. (c) 12. (c) 13. (a) 14. (c) 15. (b) 16. (c)
 17. (c) 18. (b) 19. (a) 20. (b) 21. A-Q, B-P, C-S, D-T, E-U, F-R

☺☺☺

Chapter 3 FIBER TO FABRIC

- Q.1. The device in a loom which carries yarn back and forth arranged length wise
 (a) Warp (b) Weft
 (c) Both (a) and (b) (d) None of these
- Q.2. Cotton which is not spun is used
 (a) For filling mattresses (b) As an absorbent in hospitals
 (c) For designing sarees (d) None of these
- Q.3. On which part does the coconut plant has fibre
 (a) Leaf (b) Stem
 (c) Fruit (d) None of these
- Q.4. Compression of raw cotton fibre is called
 (a) Bailing (b) Ginning
 (c) Spinning (d) None of these
- Q.5. Cotton is a
 (a) Protein Fibre (b) Cellulose Fibre
 (c) Mineral Fibre (d) None of these
- Q.6. The fibre which is short, uneven, folded and rough to touch
 (a) Cotton (b) Silk
 (c) Jute (d) None of these
- Q.7. Flux is a kind of
 (a) Synthetic Fibre (b) Animal Skin
 (c) Plant (d) None of these
- Q.8. Why wool burns with the smell of burning hairs?
 (a) Because it is a natural fibre
 (b) Because it is a synthetic fibre
 (c) Because it is obtained from hair of sheep
 (d) None of these
- Q.9. Synthetic fibres are obtained from
 (a) Animals (b) Petroleum
 (c) Plants (d) None of these
- Q.10. Which of these is not a fibre?
 (a) Leather (b) Jute
 (c) Cotton (d) None of these

- Q.11.** Removing of wool from sheep is called
 (a) Sevicutting (b) Shearing
 (c) Ginning (d) None of these
- Q.12.** Which of the following are animal fibres?
 (a) Silk and Wool (b) Cotton and Wool
 (c) Silk and Jute (d) None of these
- Q.13.** A device used for spinning cotton yarn is called _____.
 (a) Takli (b) Charkha
 (c) Both (a) and (b) (d) None of these
- Q.14.** Jute is cultivated in _____ type of soils.
 (a) Black (b) Alluvial
 (c) Loamy (d) None of these
- Q.15.** Jute bags are preferred over plastic bags because
 (a) They do not emit toxic gases
 (b) They are biodegradable
 (c) Both (a) and (b)
 (d) None of these
- Q.16.** What is done with coconut fibre?
 (a) Weaving and Spinning
 (b) Weaving and Knitting
 (c) Ginning and Weaving
 (d) None of these
- Q.17.** The process by which cotton fibre are combed and straightened is called.
 (a) Ginning (b) Retting
 (c) Bailing (d) None of these
- Q.18.** A good yield of cotton needs
 (a) Warm humid climate and alluvial soil
 (b) Rainy season with loamy soil
 (c) Long summer season and black soil with ample water
 (d) None of these
- Q.19.** Jute is obtained from
 (a) Root of the plant (b) Stem of the plant
 (c) Seed of the plant (d) None of these
- Q.20.** The process by which jute fibre is obtained from the bark of jute plant is called
 (a) Retting (b) Spinning
 (c) Combing (d) None of these

- Q.21.** Which is not a synthetic fibre?
 (a) Acrylic (b) Wool
 (c) Polyester (d) None of these
- Q.22.** Which part of cotton plant yields cotton balls?
 (a) Flower (b) Leaf
 (c) Fruit (d) None of these
- Q.23.** Cotton, Jute, Silk and Wool are
 (a) Man made Fibres (b) Artificial Fibres
 (c) Natural Fibres (d) None of these



1. (b) 2. (a) 3. (b) 4. (b) 5. (b) 6. (b) 7. (b) 8. (c)
 9. (a) 10. (c) 11. (b) 12. (a) 13. (c) 14. (b) 15. (b) 16. (a)
 17. (b) 18. (a) 19. (b) 20. (b) 21. (a) 22. (a) 23. (c)



**NATIONWIDE BIOTECHNOLOGY
OLYMPIAD (NBTO)
SAMPLE PAPER**

Total duration : 40 Minutes

Total Marks : 25

GENERAL KNOWLEDGE

1. Toilet water consumes maximum water at home
(a) True (b) False
(c) Can't say (d) None of these
2. The blanket of air that envelops the earth is called
(a) Upper crust (b) Hydrosphere
(c) Limosphere (d) Atmosphere
3. Where do greenhouse gases trap energy?
(a) In the atmosphere (b) In the mountains
(c) In outer space (d) In the soil
4. Which of the following sources of energy is not renewable
(a) Petroleum (b) Biomass
(c) Hydropower (d) Solar power
5. Which of the following is not biodegradable
(a) Food refuse (b) Paper
(c) Sawdust (d) Styrofoam

LIFE SCIENCE

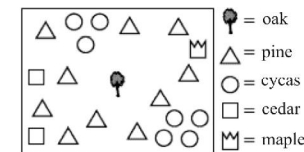
6. Which of the following about habitats is incorrect?
(a) desert animals live in burrows.
(b) Some plants growing on mountains have needle like leaves.
(c) The submerged plants in water have long, hollow and light stems.
(d) None of these
7. Lightening from a thunderstorm strikes a tree that falls to the forest floor and dies. During the next few years the dead tree undergoes many changes.
What organisms are most likely responsible for the biological and chemical changes to the tree?

- (a) Consumers (b) Decomposers
(c) Predators (d) Producers
8. Which of the following best describes the role of mushrooms in ecosystems?
(a) Capturing energy from sunlight
(b) Consuming living plant material
(c) Taking energy from animal hosts
(d) Breaking down dead plant material
9. Which of the following traditional biotechnology product is used almost daily in many houses
(a) Vegetable (b) Vaccine
(c) Curd (d) None of these
10. Which of the following is / are the technique(s) come(s) under biotechnology?
(a) Tissue culture (b) Genetic engineering
(c) Fermentation (d) All of these
11. A human being has
(a) 23 chromosomes (b) 46 chromosomes
(c) 76 chromosomes (d) None of these
12. Which of the following traits you inherited from your parents?
(a) Colour of your eyes
(b) Your liking for pet dogs
(c) Your hair style
(d) None of these
13. You have read in your biotechno-activity book that DNA follows some base pairing rule. Which is not true?
(a) A always pair with T
(b) G always pair with C
(c) T always pair with C
(d) None of these
14. The twisted ladder shape of DNA is called as
(a) Single helix (b) Double helix
(c) Triple helix (d) None of these
15. Which is the smallest unit in terms of heredity?
(a) Cell (b) Gene

- (c) DNA (d) Chromosome
16. 99% of DNA composition of human is found to be similar to
(a) Elephants (b) Chimpanzees
(c) Dogs (d) None of these
17. Which bacteria is used to make curd?
(a) *Escherichia coli* (b) *Lactobacillus*
(c) *Mycobacterium* (d) None of these
18. A chemical substance, often natural that inhibits or kills the growth of bacteria is called
(a) Antibiotic (b) Vaccine
(c) Alcohol (d) None of these
19. What are the three R's which are used to help in preservation of environment?
(a) Reduce, Refuse, Recycle
(b) Reduce, Reuse, Recycle
(c) Retain, Reduce, Recycle
(d) None of these
20. Which of the following technique can solve the child parent relationship issue?
(a) Traditional fingerprinting
(b) DNA fingerprinting
(c) Tissue culture
(d) None of these

INTERACTIVE QUESTIONS

21. The diagram below represents the distribution of trees in an area of a forest.



When squirrels move into the area, they gather fruit from one oak tree in this area and hide them in the ground over a wide area.

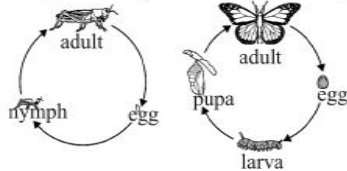
Which of the following best represents this same area of the forest 20 years later?

(a) (b)

(c) (d) None of these

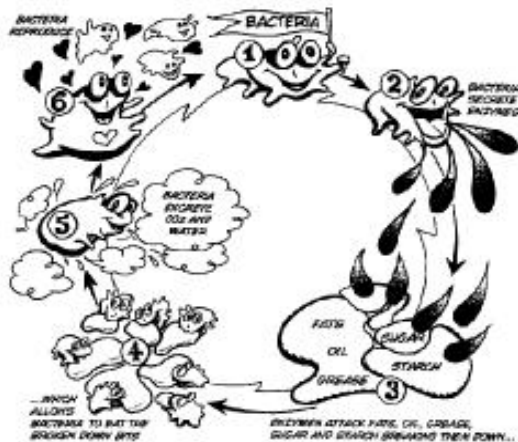
Legend:
 ○ = oak
 △ = pine
 □ = cypress
 M = maple

22. Grasshopper Life Cycle Butterfly Life Cycle



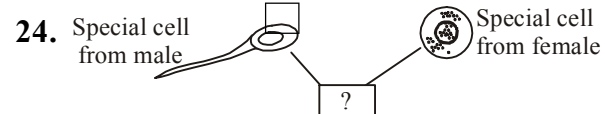
- Which statement correctly compares these life cycles?
- (a) Butterflies lay eggs and grasshoppers do not lay eggs.
 - (b) Butterflies have wings throughout their cycle and grasshoppers do not.
 - (c) Butterflies have more legs as adults than do grasshoppers as adults.
 - (d) Butterflies go through more body shape changes than do grasshoppers.

23.



The picture given above shows eating/cleaning of oil spills by bacteria. This process is called

- (a) Environmental cleaning
- (b) Fermentation
- (c) Bioremediation
- (d) None of these



- Cell formed at [?] is called
- (a) Egg
 - (b) Sperm
 - (c) Zygote
 - (d) None of these

25. Match the following:

- (i) Xerophyte A. Frog
 - (ii) Hydrophyte B. Monkey
 - (iii) Amphibian C. Cactus
 - (iv) Arboreal D. Lotus
- (a) (i) – B, (ii) – C, (iii) – D, (iv) – A
 (b) (i) – C, (ii) – D, (iii) – A, (iv) – B
 (c) (i) – D, (ii) – C, (iii) – A, (iv) – B
 (d) None of these

☺ END OF THE EXAM ☺

ANSWERS

- | | | | | |
|---------|---------|---------|---------|---------|
| 1. (a) | 2. (d) | 3. (a) | 4. (d) | 5. (d) |
| 6. (d) | 7. (b) | 8. (d) | 9. (c) | 10. (d) |
| 11. (b) | 12. (a) | 13. (c) | 14. (b) | 15. (b) |
| 16. (b) | 17. (b) | 18. (a) | 19. (b) | 20. (b) |
| 21. (c) | 22. (d) | 23. (c) | 24. (c) | 25. (b) |

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