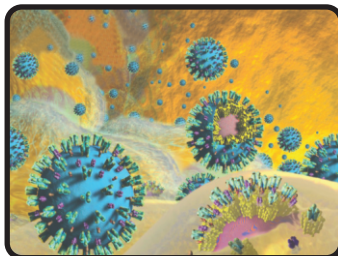


EtG

OLYMPIAD EXPLORER BIOTECHNOLOGY

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



Class-8

EtG **BOOKS**

103, Taj Apartment, Near VMMC, Ring Road,
New Delhi - 110029, Ph. 011-26197342, 26161014

E-mail : edusys.in@gmail.com

Website : www.edusys.in

Contents

| S.No. | Chapters | Page No. |
|--------------|--|-----------------|
| 1. | Crop Production and Management | 1 |
| 2. | Microorganisms : Friend and Foe | 5 |
| 3. | Synthetic Fibres and Plastics | 8 |
| 4. | Conservation of Plants and Animals | 12 |
| 5. | Cell Structure and Function | 16 |
| 6. | Reproduction in Animals | 21 |
| 7. | Pollution of Air and Water | 24 |
| 8. | Miscellaneous Questions | 27 |
| 9. | Revision Questions | 32 |
| 10. | NBTO Sample Paper | 38 |



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

SYLLABUS GUIDELINES

CLASS - VIII

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

Crop production

Crop production: How are different food crops produced?

What are the various foods we get from animal sources?

What role Biotechnology plays in crop improvement and breeding. What are high-yielding breeds of cow?

Microorganisms

What living organisms do we see under a microscope in a drop of water?

What helps make curd? How does food go bad?

How do we preserve food? *Why are microorganisms such as yeast so important in the yield of Biotechnology?*

Materials in daily life

Are some of our clothes synthetic?

How are they made?

Where do the raw materials come from?

Do we use other materials that are synthetic?

Where is Biotechnology useful in fabric production?

Do we use cloth (fabric) for purposes other than making clothes to wear? What kind of fabric do we see around us?

What are they used for?

Different kinds of materials and their reactions

Can a wire be drawn out of wood?

Do copper or aluminium also rust like iron?

What is the black material inside a pencil?

Why are electrical wires made of aluminium or copper?

How things change/react with one another

What happens to the wax when a candle is burnt? Is it possible to get this wax back?

What happens to kerosene / natural gas when it is burnt? Which fuel is the best? Why?

What is Biodiesel? Which plant is used for its production?

Why conserve

What are reserve forests/sanctuaries etc?

How do we keep track of our plants and animals? How do we know that some species are in danger of disappearing? What would happen if you continuously cut trees?

What role Biotechnology can play in forest conservation. What are gene banks?

The cell

What is the internal structure of a plant – what will we see if we look under the microscope?

Which cells from our bodies can be easily seen? Are all cells similar?

Why you should learn all about cell and its contents if you want to be good at Biotechnology. Where are genes located in a cell.

How babies are formed

How do babies develop inside the mother?

Why does our body change when we reach our teens?

Who looks after the babies in your homes?

Do all animals give birth to young ones?

What are designer babies? *How Biotechnology/Genetic engg. is useful to us. What are test tube babies?*

Idea of force

What happens when we push or pull anything?

How can we change the speed, direction of a moving object?

How can we shape the shape of an object?

Friction

What makes a ball rolling on the ground slow down?

Pressure

Why are needles made pointed?

Why does a balloon burst if too much air is blown into it?

Why does an inverted glass/bottle/pitcher resist being pushed down into water?

How can air / liquids exert pressure?

Sound

How do we communicate through sound?

How is sound produced?

What characterises different sounds?

Electric current and circuits

Why do we get a shock when we touch an electric appliance with wet hands?

What happens to a conducting solution when electric current flows through it?

How can we coat an object with a layer of metal?

Why do we need to electroshock a cell in process of cloning?

Rain, thunder and lightning

What is lightning?

What safety measures should we take against lightning strikes?

Light

What are the differences between the images formed on a new utensil and an old one?

Why is there this difference?

When you see your image in the mirror it appears as if the left is on the right – why?

Why don't we see images on all surfaces around us?

What makes things visible?

How do we see images of our back in a mirror?

Why do we sometimes see colours on oil films on water?

What is inside our eye that enables us to see?

Why are some people unable to see?

Night sky

What do we see in the sky at night?

How can we identify stars and planets?

Earthquakes

What happens during an earthquake?

What can we do to minimise its effects?

Man's intervention in phenomena of nature

What do we do with wood?

What if we had no wood?

What will happen if we go on cutting trees/grass without limit?

What do we do with coal and petroleum?

Can we create coal and petroleum artificially?


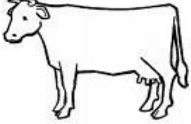
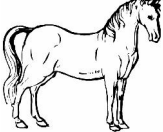
Pollution of air and water

What are the various activities by increasingly getting human beings that make air impure?

Does clear, transparent water indicate purity?



Chapter 1 CROP PRODUCTION AND MANAGEMENT

- Q.1.** The process of using the vapours of chemical to get rid of pests and infection is
(a) Irrigation (b) Pisciculture
(c) Fumigation (d) None of these
- Q.2.** Which among these is a milch animal?
(a)  (b) 
(c)  (d) None of these
- Q.3.** The process of cross breeding two plants having desirable characteristics to give high yield of superior quality is ———
(a) Mixed cropping (b) Crop Rotation
(c) Hybridization (d) None of these
- Q.4.** Rhizobium is an example of
(a) Nitrogen fixing bacteria
(b) Nitrogen fixing virus
(c) Calcium fixing bacteria
(d) None of these
- Q.5.** Which of the following is the disease of poultry birds?
(a) Anthrax (b) Ranikhet
(c) Pox (d) None of these
- Q.6.** Crops which are sown in November and harvested in month of April (next year) are
(a) Rabi crops (b) Fibre crops
(c) Kharif crops (d) None of these
- Q.7.** Which among the following is a Kharif/Crop?
(a) Wheat (b) Rice
(c) Peas (d) None of these
- Q.8.** Bees are raised in apiaries for
(a) Beeswax (b) Honey
(c) Both (a) and (b) (d) None of these
- Q.9.** Tick the correct order of soil formation
(a) Levelling, ploughing, Sowing, Manuring
(b) Ploughing, Levelling, Manuring, Sowing

- (c) Sowing, Ploughing, Leveling, Manuring
(d) None of these
- Q.10.** Excessive use of fertilizers may lead to
(a) Manuring (b) Crop Improvement
(c) Eutrophication (d) None of these
- Q.11.** NPK stands for
(a) Nickel, Potassium, Phosphorus
(b) Nitrogen, Phosphorus, Calcium
(c) Nitrogen, Phosphorus, Potassium
(d) None of these
- Q.12.** Which of these is used to frighten away birds in the field?
(a) Rifle (b) Scare crow
(c) Bow and arrow (d) None of these
- Q.13.** The Micro-Organism which supplies nutrients to plants
(a) Amaranthus (b) Anaerobic
(c) Biofertilizers (d) None of these
- Q.14.** Gundhi bug is a small insect that attacks
(a) Wheat (b) Sorghum
(c) Paddy (d) None of these
- Q.15.** The most common weed which grows along with every crops is
(a) Chenopodium (b) Amaranthus
(c) wild oat (d) None of these
- Q.16.** Transferring and combination of desirable characteristics features into plants and multiplying them is called_____?
(a) Genetic Engineering (b) Plant breeding
(c) eugenics (d) None of these
- Q.17.** Which of the following crops enrich the soil with nitrogen?
(a) Pea (b) Potato
(c) Apple (d) None of these
- Q.18.** Wilt is crop disease caused by
(a) Fungi (b) Virus
(c) Bacteria (d) None of these
- Q.19.** He is known for his pioneering efforts in promoting the green revolution in India
(a) Norman Borlaug (b) M.S. Swaminathan
(c) Albert Einstein (d) None of these
- Q.20.** The practice of keeping the fields free for a season to replenish the lost nutrients is called
(a) Field Fallow (b) Monocropping
(c) Crop Rotation (d) None of these

- Q.21.** The method which enables us to select better and healthy seedlings for cultivation is
(a) Spacing (b) Transplantation
(c) Broadcasting (d) None of these
- Q.22.** The instrument used to level the field is
(a) Seed Drill (b) Plough
(c) Leveller (d) None of these
- Q.23.** The term tillage is also referred as
(a) Ploughing (b) Irrigation
(c) Sowing (d) None of these
- Q.24.** The branch of agriculture which deals with growing fruit, vegetables, flowers and ornamental plant is
(a) Apiculture (b) Biology
(c) Horticulture (d) None of these
- Q.25.** Growing plants and rearing animals for food, clothing and other useful products is called
(a) Horticulture (b) Apiculture
(c) Agriculture (d) None of these

| |
|----------------------|
| TRUE OR FALSE |
|----------------------|

Write T For TRUE and F for FALSE in the given statement

- Q.26.** Rearing of animals on a large scale is called animal husbandry.
- Q.27.** Excess water in the field is known as water logging.
- Q.28.** When plants die and decay, they decompose naturally by the action of micro-organisms.
- Q.29.** Crops which are sown in June and July and harvested in October are called Rabi crops.
- Q.30.** Separation of grain or seeds from the husks and straws is called threshing.
- Q.31.** Weeds are unwanted plants that grow along with the main crops.
- Q.32.** Food grains are stored in godowns in plastic containers.
- Q.33.** Mustard, sunflower and groundnuts are all pulses.
- Q.34.** Broadcasting method of sowing seeds is a very efficient method.
- Q.35.** The atmosphere is the richest source of nitrogen.

Q. 36. Match the following

Agriculture task

- A. Ploughing
B. Irrigation
C. Weeding
D. Harvesting
E. Sowing Seeds

Implements Used

- (P) Sprinkler
(Q) Harvester/Combine
(R) wooden or iron plough
(S) Seed drill
(T) Khurpa/trowel/harrow



ANSWERS

1. (c) 2. (b) 3. (d) 4. (a) 5. (b) 6. (a) 7. (b) 8. (c)
9. (b) 10. (c) 11. (c) 12. (b) 13. (c) 14. (c) 15. (c) 16. (a)
17. (a) 18. (c) 19. (a) 20. (a) 21. (b) 22. (c) 23. (a) 24. (c)
25. (c) 26. (T) 27. (T) 28. (T) 29. (F) 30. (T) 31. (T) 32. (F)
33. (F) 34. (F) 35. (T) 36. (A-R, B-P, C-T, D-Q, E-S)



Chapter 2 MICROORGANISMS : FRIEND AND FOE

- Q.1.** _____ is an rich source of protein
(a) Agar (b) Chlorella
(c) Yeast (d) None of these
- Q.2.** The length of time a product may be stored such that it remains suitable for use or consumption is
(a) Food preservation (b) Shelf Life
(c) Both (a) and (b) (d) None of these
- Q.3.** Storing or preserving food in sterilized air tight cans is called
(a) Canning (b) Freezing
(c) Salting (d) None of these
- Q.4.** When it is too hot or too cold, euglena forms a protective covering called _____
(a) Capsule (b) Cyst
(c) Shell (d) None of these
- Q.5.** What structure is common for all five kingdoms of micro-organisms?
(a) DNA (b) Cell Wall
(c) Nucleus (d) None of these
- Q.6.** 'Agar' which is commonly used as a thickener in ice cream, jams and soup is
(a) A bacterium (b) an algae
(c) A virus (d) None of these
- Q.7.** Common cold is _____
(a) Viral Disease (b) Protozoa Disease
(c) Bacterial Disease (d) None of these
- Q.8.** Best method to eradicate polio is
(a) Eradicator of vector (b) Immunization
(c) Chemotherapy (d) None of these
- Q.9.** Genetic material in plant viruses is _____ and in animal viruses is _____
(a) DNA, RNA (b) RNA, DNA
(c) Both of these (d) None of these
- Q.10.** The process of conversion of sugar into alcohol is
(a) Fermentation (b) Infection
(c) Moulding (d) None of these
- Q.11.** Hepatitis B is caused by
(a) Protozoa (b) Virus

- (c) Bacteria (d) None of these
- Q.12.** The algae use for the manufacture of iodine is
 (a) Chlorella (b) Carotenoids
 (c) Laminaria (d) None of these
- Q.13.** Photosynthetic pigment in all classes of algae is _____
 (a) Chlorophyll-a (b) Carotenoids
 (c) Chlorophyll-b (d) None of these
- Q.14.** Which of the following characteristics is not seen in fungi?
 (a) Are saprophytes or parasites
 (b) Do not contain nucleus
 (c) Do not contain chlorophyll
 (d) None of these
- Q.15.** Thread like tube found in fungi is
 (a) Hyphae (b) Flagella
 (c) Cilia (d) None of these
- Q.16.** Mycology is a _____
 (a) Study of Protozoa (b) Study of Virus
 (c) Study of Fungi (d) None of these
- Q.17.** Bread mould is the common name of
 (a) Fusarium (b) Rhizopus
 (c) Agaricus (d) None of these
- Q.18.** The study of Algae is called
 (a) Phycology (b) Psychology
 (c) Mycology (d) None of these
- Q.19.** Spirogyra and Chlamydomonas are
 (a) Brown Algae (b) Red Algae
 (c) Green Algae (d) None of these
- Q.20.** Which is not a bacterial disease?
 (a) Influenza (b) Tetanus
 (c) Leprosy (d) None of these
- Q.21.** Escherichia coli is found in
 (a) Water (b) Milk
 (c) Human Intestine (d) None of these
- Q.22.** _____ is the smallest bacterium
 (a) Bacillus Butschilli (b) Pneumocytis Carnii
 (c) Mycobacterium (d) None of these
- Q.23.** There are three common shapes of bacteria. These are
 (a) Spiral, hexagonal and Spherical
 (b) Rods, Spiral and Spherical
 (c) Rods, Spiral and cube
 (d) None of these

- Q.24.** Bacteriochlorophyll is present in
 (a) Parasitic Bacteria (b) Autotrophic Bacteria
 (c) Saprophytic Bacteria (d) None of these
- Q.25.** The branch of science that deals with study of micro-organism is called
 (a) Microscopy (b) Anthropology
 (c) Microbiology (d) None of these

| |
|----------------------|
| TRUE OR FALSE |
|----------------------|

Write T for TRUE and F for FALSE in the given statement

- Q.26.** Sodium Benzoate and Potassium Metabisulphite are used as preservatives in squashes, sherbets and ketchups.
- Q.27.** AIDS is caused by HIV virus.
- Q.28.** Boiling food items increases the concentration of microbes.
- Q.29.** Oxygen is evolved during fermentation of sugar by yeast cell.
- Q.30.** The microscope was invented by Anton van Leeuwenhoek.

Match the following


- | Q.31. Column I | Column II |
|----------------|------------------|
| A. Curd | (P) Milk Protein |
| B. Idli | (Q) Edible fungi |
| C. Lactose | (R) Yeast |
| D. Casein | (S) Lactobacilli |
| E. Mushroom | (T) Milk Sugar. |



| |
|----------------|
| ANSWERS |
|----------------|

1. (b) 2. (b) 3. (a) 4. (b) 5. (a) 6. (b) 7. (a) 8. (b)
 9. (d) 10. (a) 11. (b) 12. (c) 13. (a) 14. (b) 15. (a) 16. (c)
 17. (b) 18. (a) 19. (c) 20. (a) 21. (c) 22. (b) 23. (b) 24. (b)
 25. (c) 26. (T) 27. (T) 28. (F) 29. (F) 30. (T)
 31. (A-S, B-R, C-T, D-P, E-Q)



- Q.1.** Petroleum is the main source of
 (a) Plastic (b) Cotton
 (c) Silk (d) None of these
- Q.2.** Polyester is made of repeating units of chemical called as
 (a) Cotton (b) Ether
 (c) Ester (d) None of these
- Q.3.** On a rainy day one must avoid wearing clothes made of
 (a) Cotton (b) Rayon
 (c) Nylon (d) None of these
- Q.4.** Which of the following statement is true for Rayon?
 (a) It is cheaper than wool
 (b) It is obtained by chemical treatment of wood pulp
 (c) Both (a) and (b)
 (d) None of these
- Q.5.** Non stick cookware has coating of
 (a) Melamine (b) PET
 (c) Teflon (d) None of these
- Q.6.** Plastic containers are preferred over iron container because plastic is
 (a) Easy to handle (b) None reactive
 (c) Both (a) and (b) (d) None of these
- Q.7.** I understand why a chef never wears polyester clothes while working in the kitchen
 (a) Because they are comfortable to wear
 (b) Because they absorb sweat easily
 (c) Because synthetic materials catch fire easily
 (d) None of these
- Q.8.** 
 Say no to plastic Bags
 (a) As it is non biodegradable
 (b) As it emits smoke on burning
 (c) Both (a) and (b) (d) None of these
- Q.9.** My mother always buys PET bottles and PET jars for storing rice and sugar, why?
 (a) Because it is poor conductor of heat and electricity
 (b) Because it is cheaper
 (c) Because it is air tight and does not allows germs to enter in
 (d) None of these
- Q.10.** An example of thermosetting plastic which is also a poor conductor of heat and electricity
 (a) Bakelite (b) Polyester
 (c) Polythene (d) None of these
- Q.11.** Ropes made of nylon and polyester are commonly used in cranes and elevators because _____
 (a) Of their high elasticity and tensile strength
 (b) It is good conductor of heat and electricity
 (c) It is inflammable
 (d) None of these
- Q.12.** Polypropylene is used for making
 (a) Liquid detergents (b) Grocery bags
 (c) Disposable cups (d) None of these
- Q.13.** Which fertilizer is added to make plant stronger and increase resistance to disease
 (a) Potassium Nitrate (b) Potassium Chloride
 (c) Both (a) and (b) (d) None of these
- Q.14.** Which of the following is used in automobile battery casings?
 (a) Polyvinyl Chloride (PVC)
 (b) Polypropylene (PP)
 (c) Polystyrene (PS)
 (d) None of these
- Q.15.** Fertilizers added to increase the yield and enhance the ripening of plants is
 (a) Super Phosphate
 (b) Potassium Phosphate
 (c) Ammonium Phosphate
 (d) None of these
- Q.16.** PVC (Polyvinyl chloride) and polythene are
 (a) Examples of natural substance
 (b) Examples of thermosetting
 (c) Examples of thermoplastics
 (d) None of these
- Q.17.** This synthetic fibre burns slowly with a smell that of burning hair
 (a) Wool and Silk (b) Acrylic
 (c) Nylon (d) None of these

- Q.18.** Which synthetic fibre was discovered first?
 (a) Nylon (b) Rayon
 (c) Polyester (d) None of these
- Q.19.** Most synthetic fibres have
 (a) Low Elasticity (b) High Elasticity
 (c) High Elasticity (d) None of these
- Q.20.** The synthetic fibre that resembles wool in its properties is
 (a) Nylon (b) Acrylic fibres
 (c) Terylene (d) None of these
- Q.21.** Which property of cotton makes it suitable for use as clothing material in summer?
 (a) Its tendency to absorb moisture
 (b) It leaves no residue on burning
 (c) Both (a) and (b)
 (d) None of these
- Q.22.** The fibre that burns completely leaving no residue
 (a) Acrylic (b) Polyester
 (c) Cotton (d) None of these
- Q.23.** Nylon, Polyester, acrylic are manufactured
 (a) From Petrochemicals (b) From Animals
 (c) From Plants (d) None of these
- Q.24.** Which device is used in textile industry for drawing Synthetic Fibre?
 (a) Cranes (b) Spinneret
 (c) Conveyor Belt (d) None of these
- Q.25.** The raw material for the production of synthetic fibres are obtained from _____ and _____
 (a) Rice, Wheat
 (b) Crude Oil, Rice
 (c) Crude Oil, Natural Oil
 (d) None of these

| |
|----------------------|
| TRUE OR FALSE |
|----------------------|

Write T for TRUE and F for FALSE in the given statement

- Q.26.** We use polyester to laminate kitchen workshops.
- Q.27.** Polycarbonate is used for making CD's.
- Q.28.** Lycra is a type of synthetic material.
- Q.29.** Terycot is a mix of terylene and wool.
- Q.30.** Nylon is used for making parachutes and stockings.

- Q.31.** PVC is a thermoplastic.
- Q.32.** Epoxy resin is a thermoplastic.
- Q.33.** HDPE (High density polyethylene) is a tough plastic used to making toys).
- Q.34.** Plastic is suitable for building large and heavy structure.
- Q.35.** Nylon is the best for manufacturing Sports wear.

Q.36. Match the Following

Column I

- A. Coir
 B. Linen
 C. Wool
 D. Glass
 E. Asbestos

Column II

- P. Ropes and Sacks
 Q. Mats, Carpet
 R. Vinyl Tiles, fire blanket etc.
 S. Yarn to make fabric
 T. Spacesuits.



| |
|----------------------|
| A N S W E R S |
|----------------------|

1. (a) 2. (c) 3. (a) 4. (c) 5. (c) 6. (c) 7. (c) 8. (c)
 9. (c) 10. (a) 11. (a) 12. (c) 13. (c) 14. (b) 15. (a) 16. (c)
 17. (a) 18. (c) 19. (b) 20. (b) 21. (a) 22. (c) 23. (a) 24. (b)
 25. (c) 26. (F) 27. (T) 28. (T) 29. (F) 30. (T) 31. (T) 32. (F)
 33. (T) 34. (F) 35. (T) 36. (A-Q, B-P, C-S, D-T, E-R)



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

Total duration : 60 Minutes

Total Marks : 50

GENERAL KNOWLEDGE

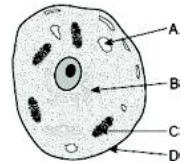
- Three percent of all the world's water is?
 - Salt water
 - Unreachable
 - Ice
 - Fresh water
- Which action would save the most water
 - Repairing a leaking tap
 - A bucket for collecting excess water
 - Both (a) and (b)
 - None of these
- What products and practices can assist pool users to save water?
 - Using a pool cover
 - Using a rain fall diverter
 - Maintaining the chemical levels
 - All of these
- Carbon monoxide is major contribute to air pollution. Which of the following is the biggest source of carbon monoxide.
 - Factories
 - People breathing
 - Motor vehicles
 - Trees
- What is the most common cause of pollution of streams, rivers and oceans?
 - Dumping of garbage by cities
 - Surface water running off yards, city streets and farm fields
 - Trash washed into the ocean from beaches
 - Waste dumped by factories.
- The average aluminum can is made up of how much recycled aluminum?
 - 10%
 - 50%
 - 30%
 - 70%
- How much oil does it take to process one for wood into paper?
 - 10 gallons
 - 45 Gallons
 - 15 hovels
 - 3.5 Barrel
- Every pound of steel recycled saves enough energy to light a 60 watt bulb for how long ?
 - 1 hour
 - 6 hour
 - 12 hour
 - More than 24 hours
- The energy saved from recycling one aluminum can is enough to run a TV set for how long?
 - 30 minutes
 - 1 hour
 - 2 hours
 - 3 hours
- What is the main way that carbon dioxide is made?
 - When it rains
 - When fuel is burnt
 - When tree's is cut
 - None of these

Class - 8

39

LIFE SCIENCE

- Which organelle in the diagram below represents an exception to the cell theory because it contains genetic material and can reproduce within the cell?



- A
- B
- C
- None of these

- Fungi, such as bread mold, use a method of digestion that is described as

- Chemical and intracellular
- Chemical and extracellular
- Mechanical and intracellular
- None of these

- The diagram below represents Watson and Crick's model of DNA



The substance indicated by the arrow could be

- Thymine
- Ribose
- Deoxyribose
- Uracil

- A fungus is an example of

- An herbivore
- An omnivore
- A saprophyte
- None of these

- A structure that performs a specialized function within a cell is known as

- A tissue
- An organ
- An organelle
- A system

- A mutation may be passed on to future generations if it occurs within specialized cells of the

- Stomach
- Pancreas
- Liver
- Ovary

- Scientists have cloned sheep but have not yet cloned a human. The best explanation for this situation is that

- The technology to clone humans has not been explored
- Human reproduction is very different from that of other mammals
- There are many ethical problems involved in cloning humans
- Cloning humans would take too long

- Which phrases best identify characteristics of asexual reproduction?

- One parent, union of gametes, offspring similar to but not genetically identical to the parent
- One parent, no union of gametes, offspring genetically identical to parents

- (c) Two parents, no union of gametes, offspring genetically identical to parents
 (d) None of these
19. One way to produce large numbers of genetically identical offspring is by
 (a) Cloning
 (b) Fertilization
 (c) Changing genes by agents such as radiation or chemicals
 (d) Inserting a DNA segment into a different DNA molecule
20. In some areas, foresters plant one tree for every tree they cut. This activity is an example of
 (a) Lack of management of nonrenewable natural resources
 (b) A good conservation practice for renewable natural resources
 (c) A good conservation practice for nonrenewable natural resources
 (d) Lack of concern for renewable natural resources
21. The use of bio-remediation by humans is an example of
 (a) Interfering with nature so that natural processes cannot take place
 (b) Using a completely unnatural method to solve a problem
 (c) Solving a problem by speeding up natural processes
 (d) None of these
22. Which statement describes all enzymes?
 (a) They control the transport of materials.
 (b) They provide energy for chemical reactions.
 (c) They affect the rate of chemical reactions.
 (d) None of these.
23. Which structure is best observed using a compound light microscope?
 (a) A cell
 (b) A virus
 (c) A DNA sequence
 (d) None of these
24. The process of transferring and combining of desirable characteristic features from one organism to other organism and multiplying them is called
 (a) Plant breeding
 (b) Genetic Engineering
 (c) Transplantation
 (d) None of these
25. A nitrogen fixing bacteria is
 (a) *E. coli*
 (b) *Rhizobium*
 (c) *Lactobacillus*
 (d) None of these
26. Which of the following is a bacterial disease?
 (a) Influenza
 (b) Measels
 (c) Leprosy
 (d) None of these
27. Recombinant DNA is
 (a) Plasmid DNA which a piece of foreign DNA has been added.

- (b) Any combination of DNA from a bacterium and a eukaryote.
 (c) Any combination of DNA from two or more different sources.
 (d) Bacterial DNA to which a cloning vector has been added.
28. Which of the following is composed of the other three
 (a) Genes
 (b) Allele
 (c) Centromere
 (d) Chromosomes
29. The basic DNA structure is almost same in all the living beings. Then what makes variation in plants animals, microbes and human beings?
 (a) Environmental factors
 (b) Changes occurred during recombination of chromosomes
 (c) Both (a) and (b)
 (d) None of these
30. *Bacillus thuringiensis* is used to create
 (a) Bio-fuel
 (b) Bio insecticide
 (c) Bio plastic
 (d) None of these
31. DOTS is associated with
 (a) Typhoid
 (b) Tuberculosis
 (c) AIDS
 (d) None of these
32. Gene therapy includes
 (a) Treating genes to get more desirable products.
 (b) Introducing genes as a treatment to any diseases.
 (c) Treatment of genetic disorders by using genetic engineering.
 (d) None of these.
33. **“Coal, petroleum and natural gas are in exhaustible natural resources.”**
 The statement is
 (a) True
 (b) Can't say
 (c) False
 (d) None of these
34. Test tube baby is born through
 (a) In vivo fertilization
 (b) In vitro fertilization
 (c) Metamorphosis
 (d) None of these
35. Replenishment of forests is
 (a) Apiculture
 (b) Silviculture
 (c) Biodiversity
 (d) None of these
36. The international organization that aimed at conservation of nature is
 (a) WWF
 (b) WHO
 (c) UNO
 (d) None of these
37. **“Conservation of Biodiversity is needed to maintain natural ecological balance.”**
 The statement is

- (a) True
- (b) False
- (c) Can't say
- (d) None of these

38. Gene-therapy is used to

- (a) Clean the atmosphere
- (b) Cure genetic disorder
- (c) Both (a) and (b)
- (d) None of these

39. Which of the following is a threat to Biodiversity?

- (i) Deforestation
- (ii) Change in climate
- (iii) Over harvesting

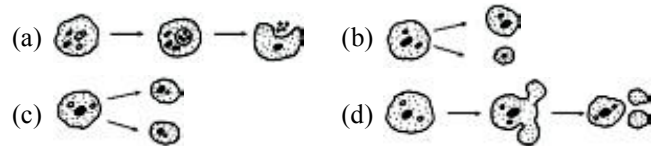
- (a) Only (i)
- (b) Only (i) and (ii)
- (c) All (i), (ii) and (iii)
- (d) None of these

40. One should always buys PET bottles and PET jars for storing rice and sugar, why?

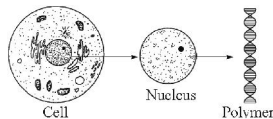
- (a) Because it is cheaper and durable.
- (b) Because it is air tight and does not allows germs to enter in.
- (c) These are chemically inert.
- (d) None of these.

INTERACTIVE QUESTIONS

41. Which diagram best shows the process of binary fission in an amoeba?



42. The structure and location of a cellular component is represented in the diagram below.



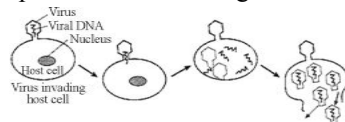
The polymer in the diagram most likely contains

- (a) Adenosine triphosphate
- (b) Genes
- (c) Lipids
- (d) Hydrolytic enzymes

43. Which diagram correctly illustrates the fusion of normal gametes that will most likely produce a human male?



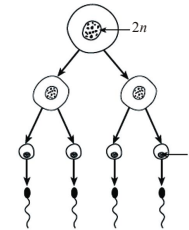
44. Viral activity is represented in the diagram below:



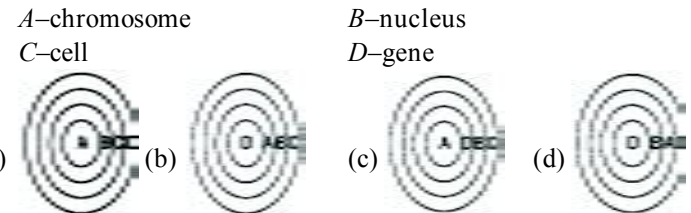
Invading the host cell enables the virus to

- (a) Increase its size
- (b) Obtain nutrients
- (c) Synthesize needed oxygen
- (d) Reproduce

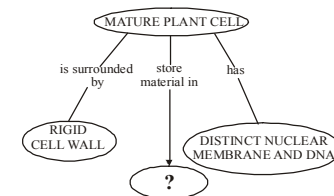
Base your answers to questions 45 through 47 on the diagram below, which represents a necessary part of human reproduction.



45. This diagram represents the process of
- (a) Ovulation
 - (b) Mitotic cell division
 - (c) Gastrulation
 - (d) Gametogenesis
46. In humans, this process is most influenced by the presence of
- (a) Egg cells
 - (b) Thyroxin
 - (c) Testosterone
 - (d) Progesterone
47. This process occurs within the
- (a) Corpus luteum
 - (b) Testes
 - (c) Ovaries
 - (d) Sperm duct
48. Which diagram best represents the relative locations of the structures in the list below?



49. Which of these best complete this concept map?



- (a) Many small vacuoles
- (b) Single large vacuole
- (c) Mitochondria and golgi bodies
- (d) None of these

50.



What the above given figure illustrate?

- (a) Sexual reproduction.
- (b) Production of pest resistance crop.
- (c) Production of high yielding variety of the crop.
- (d) None of these.

☺ **END OF THE EXAM** ☺

ANSWERS

- | | | | | |
|---------|---------|---------|---------|---------|
| 1. (d) | 2. (c) | 3. (d) | 4. (c) | 5. (b) |
| 6. (b) | 7. (d) | 8. (d) | 9. (d) | 10. (b) |
| 11. (c) | 12. (b) | 13. (a) | 14. (c) | 15. (c) |
| 16. (d) | 17. (c) | 18. (b) | 19. (a) | 20. (b) |
| 21. (c) | 22. (c) | 23. (a) | 24. (b) | 25. (b) |
| 26. (c) | 27. (c) | 28. (d) | 29. (c) | 30. (b) |
| 31. (b) | 32. (c) | 33. (a) | 34. (a) | 35. (b) |
| 36. (a) | 37. (a) | 38. (b) | 39. (c) | 40. (b) |
| 41. (c) | 42. (b) | 43. (c) | 44. (d) | 45. (d) |
| 46. (c) | 47. (b) | 48. (b) | 49. (b) | 50. (b) |

☺☺☺