

**1. Match List - I with List - II**

| <b>List - I</b>               | <b>List - II</b>                         |
|-------------------------------|--|
| <b>Action</b>                 | <b>Effects : Disturbs</b>                |
| A. DDT Biomagnification       | I. Aging of lake                         |
| B. Nuclear energy             | II. Electricity generation               |
| C. Accelerated Eutrophication | III. Disturbance in calcium metabolism   |
| D. Thermal power plants       | IV. Damage to Indigenous flora and fauna |

Choose the **correct** answer from the options given below:

- (a) A-IV, B-I, C-II, D-III    (b) A-III, B-I, C-IV, D-II  
 (c) A-III, B-II, C-I, D-IV    (d) A-I, B-II, C-III, D-IV

**2. Match List - I with List - II.**

| <b>List - I</b>          | <b>List - II</b> |
|--------------------------|------------------|
| <b>Microbes</b>          | <b>Products</b>  |
| A. Lactobacillus         | I. Citric acid   |
| B. Aspergillus niger     | II. Butyric acid |
| C. Acetobacter aceti     | III. Lactic acid |
| D. Clostridium butylicum | IV. Acetic acid  |

Choose the **correct** answer from the options given below:

- (a) A-II, B-IV, C-I, D-III    (b) A-III, B-I, C-IV, D-II  
 (c) A-I, B-III, C-IV, D-II    (d) A-II, B-III, C-I, D-IV

**3. Identify the flow of information according to the "Central Dogma" of Molecular biology:**

- (a) mRNA -> Protein -> DNA  
 (b) mRNA -> tRNA -> RNA  
 (c) DNA -> mRNA -> Protein  
 (d) Protein -> mRNA -> DNA

**4. Match List - I with List - II.**

| <b>List - I</b>          | <b>List - II</b>              |
|--------------------------|-------------------------------|
| <b>Name of the part</b>  | <b>characteristics</b>        |
| A. Non - albuminous seed | I. Residual endosperm present |
| B. Albuminous seed       | II. Fruit wall                |
| C. Perisperm absent      | III. Residual endosperm       |
| D. Pericarp              | IV. Residual nucellus         |

Choose the **correct** answer from the options given below:

- (a) A-I, B-II, C-IV, D-III    (b) A-II, B-I, C-III, D-IV  
 (c) A-III, B-I, C-IV, D-II    (d) A-III, B-IV, C-I, D-II

**5. Match List - I with List - II.**

| <b>List - I</b> | <b>List - II</b>   |
|-----------------|--------------------|
| <b>Crop</b>     | <b>Variety</b>     |
| A. Wheat        | I. Pusa Komal      |
| B. Brassica     | II. Pusa Sadabahar |
| C. Chilli       | III. Himgiri       |
| D. Cowpea       | IV. Pusa swarnim   |

Choose the correct answer from the options given below:

- (a) A-III, B-IV, C-II, D-I    (b) A-III, B-IV, C-I, D-II  
 (c) A-I, B-III, C-II, D-IV    (d) A-II, B-IV, C-I, D-III

**6. Species - area relationship in South American jungles was studied by-**

- (a) Alexander von Humboldt  
 (b) Paul Ehrlich  
 (c) Robert May  
 (d) David Tilman

**7. The experimental verification of the chromosomal theory of inheritance was given by**

- (a) Sturtevent    (b) Thomas Hunt Morgan  
 (c) Stadler    (d) Charles Darwin

**8. The excessive use of herbicides, pesticides etc. has resulted in selection of resistant varieties. It is an example of evolution by:**

- (a) Natural selection    (b) Chemical action  
 (c) Mutation    (d) Anthropogenic action

**9. Identify the incorrect statements from the following:**

- A. Phenylketonuria is an autosomal dominant trait.  
 B. Haemophilia is a sex linked recessive disease.  
 C. Thalassaemia is an autosomal linked recessive blood disease.  
 D. Colour blindness is an autosomal linked recessive disorder.

Choose the correct answer from the options given below:

- (a) A and B only    (b) C and D only  
 (c) B and D only    (d) A and D only

**10. Which of the following is **not** an example of hermaphrodite animal?**

- (a) Leech    (b) Cockroach  
 (c) Earthworm    (d) Tapeworm

**11. The fruits that develop without fertilization are called as**

- (a) True fruits    (b) False fruits  
 (c) Parthenocarpic fruits    (d) Hybrid fruit

12. Cocaine is obtained from \_\_\_\_\_  
 (a) Erythroxyllum coca (b) Cannabis sativa  
 (c) Papaver somniferum (d) Atropa belladonna
13. Expand KVIC  
 (a) Khadi and Village Internal Commission  
 (b) Khadi and Village Industrial Committee  
 (c) Khadi Viable Industries Commission  
 (d) Khadi and Village Industries Commission
14. Use of bio-resources without proper authorization from the concerned countries is termed as:  
 (a) Bioefficacy (b) Biopiracy  
 (c) Bioethics (d) Biowar
15. In humans, female, oogenesis is initiated \_\_\_\_\_.  
 (a) During embryonic development  
 (b) At puberty  
 (c) After birth  
 (d) After 18 years of age
16. Net Primary Productivity (NPP) is given by the formula  
 (a)  $NPP = GPP \times 100$   
 (b)  $NPP = GDP - \text{Secondary productivity}$   
 (c)  $NPP = GPP - \text{Respiration rate}$   
 (d)  $NPP = GPP/100$
17. Amoebic dysentery is caused by:  
 (a) Amoeba proteus (b) Entamoeba gingivalis  
 (c) Amoeba verrucosa (d) Entamoeba histolytica
18. Which of the following is/are NOT the benefit of transgenic animal to man?  
 A. Chemical safety testing  
 B. Vaccine safety testing  
 C. Increasing the industrial product  
 D. Obtaining useful biological products  
 E. Study of diseases
- Choose the correct answer from the options given below:  
 (a) A and D Only (b) B Only  
 (c) D and E Only (d) C Only
19. Identify the correct statements with respect to human evolution  
 A. Modern Homo sapiens arose during ice age between 50,000 to 75,000 years.  
 B. Ramapithecus was more man-like.  
 C. The brain capacity of Homo erectus was about 650-800 cc.  
 D. Dryopithecus was ape-like.

Choose the correct answer from the options given below:

- (a) A and B only (b) B and D only  
 (c) B and C Only (d) A and C only
20. Which of the following can solve the problem of hidden hunger?  
 (a) MOET (b) SCP  
 (c) Biofortification (d) Hybridization
21. Which of the protein encoded by gene controls corn borer?  
 (a) cryIAb (b) CryIAc  
 (c) CryIIAb (d) CryIIAc
22. Which of the following is **not** a sexually transmitted disease?  
 (a) Hepatitis B  
 (b) Tuberculosis  
 (c) Genital herpes  
 (d) Acquired Immuno Deficiency Syndrome (AIDS)
23. Biofertilizers enrich the nutrient quality of the soil. Which of the following is not a source of biofertilizer?  
 (a) Bacteria (b) Mycorrhiza  
 (c) Baculoviruses (d) Cyanobacteria
24. The genetically identical plants grown by the process of micropropagation are called  
 (a) Meristems (b) Somaclones  
 (c) Explants (d) Somatic hybrids
25. Stages of primary ecological succession in water are given below. Arrange these stages in the correct sequence.  
 A. Reed-swamp stage  
 B. Forest  
 C. Marsh-meadow stage  
 D. Submerged plant stage  
 E. Scrub stage
- Choose the correct answer from the options given below:  
 (a) A, C, D, B, E (b) C, D, A, E, B  
 (c) E, C, B, A, D (d) D, A, C, E, B
26. Identify the contraceptive measure which can not be practiced by human females:  
 (a) IUDs (b) Tubectomy  
 (c) Vasectomy (d) Diaphragms
27. Catalytic converters, made of platinum palladium and rhodium, change unburnt hydrocarbons into:-  
 (a) Carbon monoxide and water  
 (b) Carbon dioxide and water  
 (c) Nitric oxide  
 (d) Methane

28. Identify the species which is not invasive:  
 (a) Parthenium (b) Lantana  
 (c) Eicchornia (d) Vallisneria
29. Steps of Polymerase Chain Reaction (PCR) are given below. Arrange them in the correct sequence.  
 A. Annealing of primers to the template DNA  
 B. Isolation of gene of interest  
 C. Extension of primer end on the template DNA using Taq polymerase  
 D. Denaturation of template DNA by heating

Choose the correct answer from the options given below:

- (a) B, D, C, A (b) B, D, A, C  
 (c) A, C, D, B (d) D, B, C, A
30. If last year, there were 80 lotus plants in a lake. Then, 16 new lotus plants were added through reproduction and the current population is 96 now. The birth rate of lotus plant is-  
 (a) 0.2 offspring per lotus per year  
 (b) 2 offspring per lotus per year  
 (c) 5 offspring per lotus per year  
 (d) 6 offspring per lotus per year
31. Which factor does **not** affect Hardy-Weinberg equilibrium?  
 (a) Gene migration (b) Genetic drift  
 (c) Random Mating (d) Mutation
32. Air bubbles are sparged into bioreactor tanks. The role of these bubbles is to:  
 (a) Remove the foam  
 (b) Mix air with the medium  
 (c) Mix all the contents properly  
 (d) Increase the area for oxygen transfer

33. Match **List - I** with **List - II**.

| <b>List - I</b> | <b>List - II</b>                  |
|-----------------|-----------------------------------|
| A. Commensalism | I. Cuscuta on hedge plants        |
| B. Mutualism    | II. Balanus and Chathamalus       |
| C. Parasitism   | III. Sea anemone and clownfish    |
| D. Competition  | IV. Mycorrhizae and legume plants |

Choose the correct answer from the options given below:

- (a) A-I, B-II, C-III, D-IV (b) A-IV, B-II, C-I, D-III  
 (c) A-III, B-II, C-IV, D-I (d) A-III, B-IV, C-I, D-II

34. Which of the following is **NOT** a basic step in the genetic modification of an organism?  
 (a) Introduction of the identified DNA into the host  
 (b) Identification of DNA with maximum number of genes  
 (c) Maintenance of introduced DNA in the host  
 (d) Transfer of the introduced DNA into the progeny of host

35. Match **List - I** with **List - II**.

| <b>List - I</b> | <b>List - II</b>     |
|-----------------|----------------------|
| <b>Hormone</b>  | <b>Secreted from</b> |
| A. FSH          | I. Corpus luteum     |
| B. Relaxin      | II. Placenta         |
| C. hCG and hPL  | III. Ovary           |
| D. Progesterone | IV. Pituitary        |

Choose the **correct** answer from the options given below:

- (a) A-I, B-II, C-III, D-IV (b) A-II, B-I, C-III, D-IV  
 (c) A-III, B-II, C-IV, D-I (d) A-IV, B-III, C-II, D-I

36. Select the correct statements from the options given below:-

- A. Parthenium is an endemic species of India  
 B. Eicchornia is an invasive alien species in India  
 C. Lantana is also known as carrot grass  
 D. African catfish is a threat to indigenous catfish

Choose the correct answer from the options given below:

- (a) A and C only (b) B and D only  
 (c) B and C only (d) A and D only

37. Match **List - I** with **List - II**.

| <b>List - I</b>                        | <b>List - II</b>    |
|--|---------------------|
| A. The triplet nature of genetic code  | I. George Gamow     |
| B. The technique of DNA fingerprinting | II. Francis Crick   |
| C. Lac operon                          | III. Alec Jeffreys  |
| D. Central Dogma                       | IV. Jacob and Monod |

Choose the correct answer from the options given below:

- (a) A-III, B-II, C-I, D-IV (b) A-IV, B-II, C-I, D-III  
 (c) A-I, B-III, C-IV, D-II (d) A-II, B-III, C-IV, D-A

38. Select the **wrong** statement(s) with respect to HIV
- HIV belongs to retrovirus group.
  - HIV infection can occur by transfusion of contaminated blood and blood products.
  - In macrophages, viral DNA is produced by reverse transcription.
  - HIV enter into B-lymphocytes, replicate and produce progeny.

Choose the correct answer from the options given below:

- |            |                  |
|------------|------------------|
| (a) A only | (b) B and C only |
| (c) D only | (d) C and D only |

39. Write the correct sequence of events performed in DNA fingerprinting technique
- Isolation of DNA

- Separation of DNA fragments by electrophoresis
- Digestion of DNA using restriction endonucleases.
- Transfer of separated DNA fragments to synthetic membrane

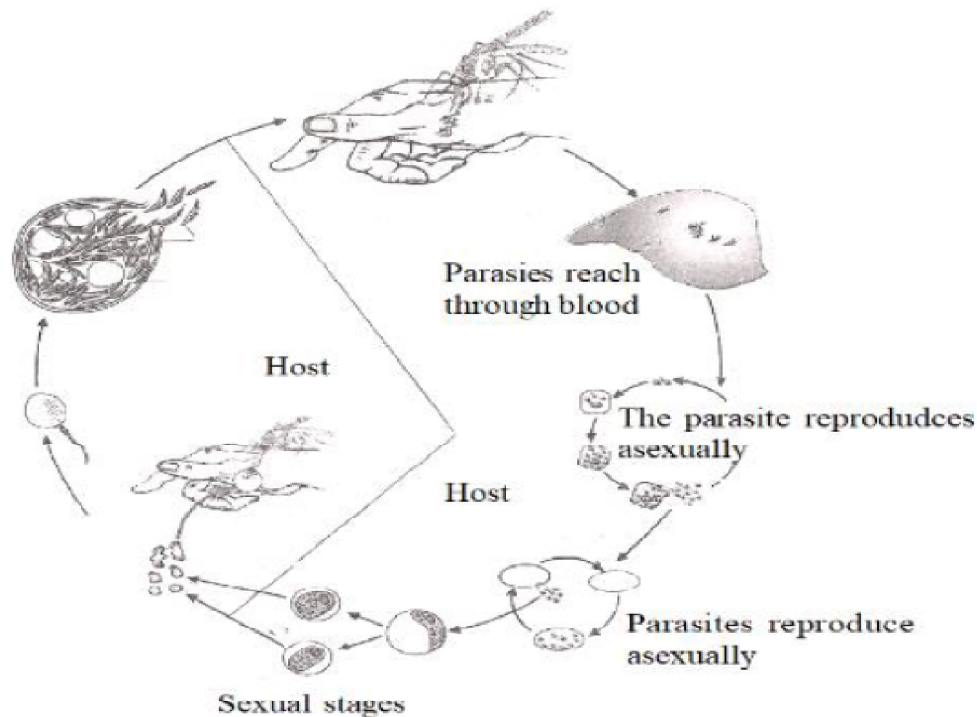
Choose the correct answer from the options given below:

- |                |                |
|----------------|----------------|
| (a) A, C, B, D | (b) A, B, C, D |
| (c) A, D, B, C | (d) B, A, D, C |

40. When a snapdragon plant homozygous for red flower (RR) is crossed with another plant bearing white flowers, (rr) what colour will be observed in flowers of F<sub>1</sub> generation?

- |          |                   |
|----------|-------------------|
| (a) Red  | (b) White         |
| (c) Pink | (d) Red and white |

**Direction for questions 41 to 45:** Observe the given figure and answer the given question.



41. Where does the fertilization and development takes place in the life cycle of Plasmodium?
- Gut of mosquito
  - Salivary glands of mosquito
  - Human RBCs
  - Human Liver Cells
42. Sexual stage of Plasmodium which develop in human RBCs are known as:-
- |                  |                  |
|------------------|------------------|
| (a) Gametophytes | (b) Zygote       |
| (c) Gametocytes  | (d) Gametospores |

43. Plasmodium enters the human body as:-
- |                 |                |
|-----------------|----------------|
| (a) Gametocyte  | (b) Sporozoite |
| (c) Gametozoite | (d) Sporocytes |
44. The rupturing of RBCs is associated with release of a toxic substance known as:-
- |                 |                   |
|-----------------|-------------------|
| (a) Haemocyanin | (b) Haemozoin     |
| (c) Haemoglobin | (d) Haemoerythrin |
45. In which part of the body of a mosquito the malarial parasite are stored?
- |                     |           |
|---------------------|-----------|
| (a) Gut             | (b) Wings |
| (c) Salivary glands | (d) Liver |

**Direction for questions 46 to 50:**

Fossil fuel also represent a reservoir of carbon. Carbon cycling occurs through atmosphere, ocean and through living and dead organisms. According to one estimate,  $4 \times 10^3$  kg of carbon is fixed annually in the biosphere through photosynthesis. A considerable amount of carbon returns to the atmosphere as  $\text{CO}_2$  through respiratory activities of the producers and consumers. Decomposers also contribute substantially to  $\text{CO}_2$  pool by their processing of waste materials and dead organic matter of land or oceans. Some amount of the fixed carbon is lost to sediments and removed from circulation. Burning of wood, forest fire and combustion of organic matter, fossil fuel, volcanic activity are additional sources for releasing  $\text{CO}_2$  in the atmosphere.

46. The role of bacteria in the carbon cycle is
- (a) Breakdown of organic compounds
  - (b) Chemosynthesis
  - (c) Photosynthesis
  - (d) Assimilation of nitrogen compounds
47. Identify the correct statements with respect to carbon cycle
- A. 75 percent carbon is found dissolved in oceans
  - B. Carbon constitution 49 percent of dry weight of organisms
  - C. Atmosphere contains about 1 percent of total global carbon
  - D.  $4 \times 10^3$  g of carbon is fixed annually in the biosphere through photosynthesis

Choose the correct answer from the option given below:

- (a) A, B only
- (b) B, C only
- (c) C, D only
- (d) A, D only

48. Identify the human activity which has major influence on the carbon cycle.

- A. Photosynthesis
- B. Deforestation
- C. Wheat crop plantation
- D. Burning of fossil fuels

Choose the correct answer from the options given below:

- (a) A and D only
- (b) C only
- (c) B and D only
- (d) D only

49. Human beings return carbon to the atmosphere through:-

- (a) Glucose formation
- (b) Cellular respiration
- (c) Nitrogen metabolism
- (d) Sweating

50. Identify the statement which is **NOT** correct for carbon cycle.

- (a) There is respiratory release of carbon in the atmosphere.
- (b) The gaseous reservoir of carbon is atmosphere.
- (c) Carbon dioxide is a major constituent of green house gases.
- (d) The environmental reservoir regulate the amount of  $\text{CO}_2$  in the ocean.