

Section A
● Choose correct answer from the given options. [Each carries 1 Mark] [50]

- A group of animals which are related by descent and share many similarities are referred to as
(A) Breed (B) Race (C) Variety (D) Species
- Which one of the following is not a fungal disease ?
(A) Rust of wheat (B) Smut of Bajra
(C) Black rot of crucifers (D) Red rot of sugarcane
- Which one of the following combination would a sugarcane farmer look for in the sugarcane crop ?
(A) Thick stem, long internodes, high sugar content and disease resistant
(B) Thick stem, high sugar content and profuse flowering
(C) Thick stem, short internodes, high sugar content, disease resistant
(D) Thick stem, low sugar content, disease resistant.
- Protoplast is –
(A) Another name for protoplasm (B) An animal cell
(C) A plant cell without a cell wall (D) A plant cell
- Where Taichung native-1 was developed ?
(A) Tokyo (B) Taraiva (C) Tallinn (D) Taiwan
- In mutation breeding mutations are induced by using radiation like.
(A) Gamma rays (B) UV-rays (C) X-rays (D) All of these
- Where is IVRI located at ?
(A) Izzatnagar (B) Madras (C) Hyderabad (D) Muzzafarnagar
- The vitamin whose content increases following the conversion of milk into curd by lactic acid bacteria is
(A) Vitamin C (B) Vitamin D (C) Vitamin B₁₂ (D) Vitamin E
- Match the following list of bioactive substances and their roles :

(Bioactive substances)		(Role)	
(a)	Statin	(1)	Removal of oil stains
(b)	Cyclosporin A	(2)	Removal of clots from blood vessels
(c)	Streptokinase	(3)	Lowering of blood cholesterol
(d)	Lipase	(4)	Immuno-suppressive agent

- (A) (a - 2), (b - 3), (c - 1), (d - 4) (B) (a - 4), (b - 2), (c - 1), (d - 3)
 (C) (a - 4), (b - 1), (c - 2), (d - 3) (D) (a - 3), (b - 4), (c - 2), (d - 1)
- Which one of the following alcoholic drinks is produced without distillation ?
(A) Wine (B) Whisky (C) Rum (D) Brandy
 - Activated sludge should have the ability to settle quickly so that it can

(A) Be rapidly pumped back from sedimentation tank to aeration tank

12. By the efforts of which institutes, biogas technology is developed ?
(A) IARI & KVIC (B) IARI (C) IARI & ICZN (D) KVIC & ICZN
13. Cyclosporin A is produced by the fungus
(A) *Monascus purpureus* (B) *Streptococcus* (C) *Arabia gossypae* (D) *Acetobacter acetic*
14. Which metabolic process occurs by methanogenic bacteria, in the biogas plant ?
(A) Anaerobic Respiration (B) Photosynthesis
(C) Internal Respiration (D) Cellular Respiration
15. The transfer of genetic material from one bacterium to another through the mediation of a viral vector is termed as
(A) Transduction (B) Conjugation (C) Transformation (D) Translation
16. While isolating DNA from bacteria, which of the following enzymes is not required ?
(A) Lysozyme (B) Ribonuclease (C) Deoxyribonuclease (D) Protease
17. An antibiotic resistance gene in a vector usually helps in the selection of
(A) Competent bacterial cells (B) Transformed bacterial cells
(C) Recombinant bacterial cells (D) None of the above
18. The molecule of DNA is transferred towards which electric charge ?
(A) Neutral (B) Positive and Negative (C) Negative (D) Positive
19. While enzyme is used in bacteria to break the membrane ?
(A) Cellulase (B) Lipase (C) Lysozyme (D) Chitinase
20. In EcoRI, 'R' stands for
(A) Genus (B) Species (C) Strain (D) Restriction enzyme
21. Bt cotton is not
(A) A GM plant (B) Insect resistant
(C) A bacterial gene expressing system (D) Resistant to all pesticides
22. C-peptide of human insulin is
(A) A part of mature insulin molecule
(B) Responsible for formation of disulphide bridges
(C) Removed during maturation of pro-insulin to insulin
(D) Responsible for its biological activity.
23. GEAC stands for
(A) Genome Engineering Action Committee (B) Ground Environment Action Committee
(C) Genetic Engineering Approval Committee. (D) Genetic and Environment Approval Committee
24. Golden rice is
(A) A variety of rice grown along the yellow river in China
(B) Long stored rice having yellow colour tint
(C) A transgenic rice having gene for β -carotene
(D) Wild variety of rice with yellow coloured grains.
25. Name the cells responsible for forming insuline.
(A) α -cells (B) β -cells (C) δ -cells (D) T-cells
26. ADA deficiency is caused by
(A) Deletion (B) Translocation (C) Substitution (D) Inversion

27. Biosphere is
(A) a component in the ecosystem
(B) composed of the plants present in the soil
(C) life in the outer space
(D) composed of all living organisms present on earth which interact with the physical environment
28. Salt concentration (Salinity) of the sea measured in parts per thousand is
(A) 10 – 15 (B) 30 – 70 (C) 0 – 5 (D) 30 – 35
29. Which of the following forest plants controls the light conditions at the ground ?
(A) Lianas and climbers (B) Shrubs (C) Tall trees (D) Herbs
30. What parameters are used for tiger census in our country's national parks and sanctuaries ?
(A) Pug marks only (B) Pug marks and faecal pellets
(C) Faecal pellets only (D) Actual head counts
31. In 2005, for each of the 14 million people present in a country, 0.028 were born and 0.008 died during the year. Using exponential equation, the number of people present in 2015 is predicted as
(A) 25 millions (B) 17 millions (C) 20 millions (D) 18 millions
32. In cold climate, the animals have short tail, shorter limbs and ears, this is called
(A) Allen's Law (B) Bergman's (C) Cope's Law (D) Jordan's law
33. An inverted pyramid of biomass can be found in which ecosystem ?
(A) Forest (B) Marine (C) Grass land (D) Tundra
34. Approximately how much of the solar energy that falls on the leaves of a plant is converted to chemical energy by photosynthesis ?
(A) Less than 1% (B) 2-10% (C) 30% (D) 50%
35. If the carbon atoms fixed by producers already have passed through three species, the trophic level of the last species would be.
(A) scavenger (B) tertiary producer (C) tertiary consumer (D) secondary consumer
36. Which of the following is known as "storehouse of carbon" ?
(A) atmosphere (B) ocean (C) pond (D) none of the above
37. NPP is equals to
(A) $GPP + R$ (B) $GPP - R$ (C) $GPP \times R$ (D) $GPP \div R$
38. Amongst the animal groups given below, which one appears to be more vulnerable to extinction ?
(A) Insects (B) Mammals (C) Amphibians (D) Reptiles
39. The historic convention on Biological Diversity held in Rio de Janeiro in 1992 is known as
(A) CITES Convention (B) The Earth Summit (C) G-16 Summit (D) MAB Programme
40. How many hotspots of biodiversity in the world have been identified ?
(A) 17 (B) 22 (C) 25 (D) 34
41. MAB means
(A) Man and Bacteria (B) Man and Botany
(C) Man and Biotic community (D) Man and Biosphere
42. What is due to evolution new and definite species are evolved ?
(A) Identification of species (B) Varieties in species
(C) Speciation (D) Species complexily
43. Reserpine is produced by which plant ?
(A) Rauwolfiy (B) Parthenium (C) Rosemary (D) Dandelion
44. World's most problematic aquatic weed is

- (A) Azolla (B) Wolffia (C) Eichhornia (D) Trapa
45. Compressed Natural Gas (CNG) is
(A) propane (B) methane (C) ethane (D) butane
46. Montreal Protocol aims by
(A) Control of CO₂ (B) Reduction in ozone depleting substances
(C) Biodiversity conservation (D) Control of water pollution
47. Which diseases is caused in human by radioactive waste ?
(A) AIDS (B) Cholera (C) Small pox (D) Cancer
48. How much ppm DDT is found in fish-eating birds ?
(A) 15 ppm (B) 20 ppm (C) 35 ppm (D) 25 ppm
49. Which of the following is not a greenhouse gas ?
(A) Methane and nitrous oxide (B) Hydrofluorocarbon (HFC)
(C) Chlorofluorocarbon (CFC) (D) Butane
50. In stratosphere, which of the following elements acts as a catalyst in degradation of ozone and release of molecular oxygen ?
(A) Oxygen (B) Carbon (C) Fe (D) Cl

Section B

- Write the answer of any 8 questions from given questions. [Each carries 2 Marks] [16]
- What is cultural eutrophication ?
 - Explain the given terms.
(A) Endemism (B) cryopreservation.
 - Explain the given term : (A) Trophic level (B) sere
 - What is GEAC ? Give its function.
 - Give difference : PCR and plasmid
 - Explain the given terms : (A) BOD, (B) Mycorrhiza
 - Describe Biofortification.
 - Explain the given terms :
(A) Blue revolution, (B) Somaclones.
 - How American company got patent rights on Basmati rice ? Explain it.

Section C

- Write the answer of any 6 questions from given questions. [Each carries 3 Marks] [18]
- Explain carbon cycle.
 - Explain about adaptation in detail.
 - Why the conservation of traditional knowledge is necessary ?
 - How are microbes useful in household products.
 - Give information about Bee-keeping.
 - Explain contribution of microbes in Bio-control of pests and diseases.
 - Give information about bioreactors.

Section D

- Write the answer of any 4 questions from given questions. [Each carries 4 Marks]

[16]

17. Describe species area relationship.
18. Describe mutualism in detail with examples.
19. Give information about Bt cotton.
20. Give types and functions of nuclease enzyme.
21. Give information about various crops grown and importance of agriculture in India.

