Sample Paper-01

Class 12th NEET (2024)

BOTANY

SECTION-A

1. What type of pollination takes place in Vallisneria?
(1) Pollination occurs in submerged condition by water.
(2) Flowers emerge above surface of water, and pollination occurs by insects.
(3) Flowers emerge above water surface, and pollen is carried by wind.
(4) Male flowers are carried by water currents to female flowers at surface of water

2. Flowers which have single ovule in the ovary and are packed into inflorescence are usually pollinated by;
(1) bee (2) wind
(3) bat (4) water

3. Micropyle is found in;
(1) seed.
(2) ovule.
(3) both ovule and seed.
(4) fruit.

4. Pollen kit is chiefly made of;
(1) chlorophylls. (2) lipids.
(3) carotenoids. (4) Both (2) and (3).

5. Which of the following are usual floral rewards to pollinating animals?
(1) Shelter and pollen grains
(2) Shelter and fragrance
(3) Nectar and pollen grains
(4) Nectar and fragrance

6. Perisperm is;
(1) remnant of endosperm
(2) persistent nucellus
(3) peripheral part of endosperm
(4) disintegrated secondary nucleus

7. When a true breeding pea plant that has yellow seeds is pollinated by a plant that has green seeds, then all the F_1 plants have yellow seeds. This means that the allele for yellow is;
(1) heterozygous (2) dominant
(3) recessive (4) lethal

8. Mendel crossed a pure white-flowered recessive pea plant with a dominant pure red-flowered plant. The first generation of hybrids from the cross should show;
(1) 50% white-flowered and 50% red-flowered plants.
(2) all red-flowered plants.
(3) 75% red-flowered and 25% white-flowered plants.
(4) all white-flowered plants.

9. Mendel was not able to get any linkage due to the;
(1) law of dominance.
(2) law of unit character.
(3) law of independent assortment.
(4) None of these.

10. In keeping with the law of independent assortment, what is actually assorted?
(1) Different genes on the same chromosome
(2) Centromeres
(3) Homologous chromosomes
(4) Heterologous chromosomes

11. Marriages between close relatives should be avoided because it includes more;
(1) recessive alleles to come together.
(2) mutations.
(3) multiple births.
(4) blood group abnormalities.

12. If one parent belongs to A blood group and the other to O blood group, their children possibly represent;
(1) A and B groups only.
(2) AB only.
(3) A and O groups only.
(4) All four groups.

13. Mr. Sandival has blood type B and Mrs. Sandival has blood type O. They have three children of their own and one adopted child. Om has blood type AB, Jai has blood type O, Aman has blood type B, and Priya has blood type B. Which child is adopted one?
(1) Priya
(2) Jai
(3) Om
(4) Aman

14. If the length of DNA in *E. coli* is 1.36 mm, calculate the number of base pairs in *E. coli*;
(1) 0.4×10^{13} (2) 4.6×10^{-7}
(3) 4×10^{6} (4) 0.4×10^{6}

15. Calculate the base ratio for a DNA sample if 22% cytosine was found in it;
(1) 0.78 (2) 1.27
(3) 1.0 (4) 0.93

16. Calculate the number of hydrogen bonds in DNA if out of 200 nitrogen bases, 246 molecules were of cytosine;
(1) 246 (2) 254
(3) 98 (4) 200

17. Fifth charged tRNA attaches itself to _____ of ribosome in translation.
(1) Shine Dalgarno (SD) sequence
(2) P site
(3) A site
(4) anti SD sequence

18. Which of the following steps of translation does **not** consume a high-energy phosphate bond?
(1) Peptidyl transferase reaction
(2) Aminoacyl tRNA binding to A site
(3) Translocation
(4) Amino acid activation

19. Imagine an error occurring during DNA replication in a cell, so that where there is supposed to be an A in one of the genes there is a C instead. What effect will this probably have on the cell?
(1) The amino acid sequence will be completely hanged
(2) An amino acid will be missing.
(3) An incorrect amino acid will appear.
(4) An additional amino acid will appear.

20. After a mutation at a genetic locus, the character of an organism changes due to change in;
(1) protein structure.
(2) DNA replication.
(3) protein synthesis pattern.
(4) RNA transcription pattern.

21. Enzyme required for removing RNA primer during DNA replication is;
(1) primase.
(2) ligase.
(3) DNA polymerase I.
(4) DNA polymerase III.

22. Alleles are;
(1) different molecular forms of a gene
(2) heterozygotes
(3) different phenotype
(4) true breeding homozygotes.

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23. What map unit (centimorgan) is adopted in the construction of genetic maps?
(1) A unit of distance between genes on chromosomes, representing 50% cross over.
(2) A unit of distance between two expressed genes, representing 10% cross over.
(3) A unit of distance between two expressed genes, representing 100% cross over.
(4) A unit of distance between genes on chromosomes, representing 1% cross over

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24. There are three genes a, b, c. Percentage of crossing over between a and b is 20%, b and c is 28% and a and c is 8%. What is the sequence of genes on chromosome?
(1) b, a, c
(2) a, b, c
(3) a, c, b
(4) None of these

25. ___(i)__ and domestication from ancestral wild cows, we have well known Indian breeds e.g. __(ii)__ cow in Punjab. Here (i) and (ii) are respectively.
(1) (i) Artificial selection (ii) sahiwal
(2) (i) Mass selection (ii) Murrah
(3) (i) Clonal selection (ii) jersi
(4) (i) Pure line selection (ii) Marwari

26. In human beings 45 chromosomes/single X/XO abnormality causes;
(1) Down's syndrome
(2) Kinefelter's syndrome
(3) Turner's syndrome
(4) Edward's syndrome

27. Both husband and wife have normal vision though their fathers were colour blind. The probability of their daughter becoming colour blind is;
(1) 0% (2) 25%
(3) 50% (4) 75%.

28. In prokaryotes, the genetic material is;
(1) linear DNA without histones
(2) circular DNA without histones
(3) linear DNA with histones
(4) circular DNA with histones.

29. The transforming principle of *Pneumococcus* as found out by Avery, MacLeod and McCarty was?
(1) mRNA (2) DNA
(3) protein (4) polysaccharide

30. Similarity in DNA and RNA is that;
(1) both are polymer of nucleotides
(2) both have similar pyrimidine
(3) both have similar sugar
(4) both are genetic material

31. Read the following four statements (a) – (d).
(a) Dough, which is used for making foods such as dosa and idli is fermented by fungi and algae.
(b) Toddy, a traditional drink of Southern India is made by fermenting sap from palms.
(c) Large holes in Swiss cheese are due to production of large amount of methane by *Propionibacterium shermanii*.
(d) In our stomach, lactic acid bacteria play a very beneficial role in checking disease causing microbes.
Which are the two statements that are **incorrect**?
(1) (a) and (c) (2) (a) and (b)
(3) (b) and (c) (4) (c) and (d)

32. Before disposal of municipal wastewater and sewage, they are treated in STP in order to make it less polluting. The stage of treatment which comprises use of anaerobic sludge digester is;
(1) primary. (2) secondary.
(3) tertiary. (4) quaternary.

33. Sexual deceit is employed by;
(1) figs. (2) orchid.
(3) Yucca. (4) Pinus.

34. Pollinators of flowers are;
(1) keystone species.
(2) link species.
(3) helper species.
(4) biotic species.

35. Which of the following is a commercial blood cholesterol lowering agent?
(1) Lipases (2) Cyclosporin A
(3) Statin (4) Streptokinase

SECTION-B

36. A population has more young individuals compared to the other individuals. What would be the status of the population after some years?
(1) It will decline.
(2) It will stabilise.
(3) It will increase.
(4) It will first decline and then stabilize.

37. Why are economists trying to quantify the dollar value of ecosystem services?
(1) This allows them to sell abiotic components.
(2) This allows them to manage the area.
(3) This allows them to justify the cost of preservation.
(4) This allows them to prevent habitat loss.

38. The pyramid of energy is always upright for any ecosystem. This situation indicates the fact that;
(1) producers have the lowest energy conversion efficiency.
(2) carnivores have a better energy conversion efficiency than herbivores.
(3) energy conversion efficiency is the same in all trophic levels.
(4) herbivores have a better energy conversion efficiency than carnivores.

39. Following are the two main structural features of an ecosystem:
(a) Species composition
(b) Energy flow
(c) Decomposition
(d) Stratification
(1) (a) and (d) (2) (b) and (c)
(3) Only (a) (4) (b), (c) and (d)

40. The most productive agroecosystem is of;
(1) sugarcane.
(2) wheat.
(3) maize.
(4) rice.

41. When a species goes extinct in one area, it is often desirable to reintroduce the species from other populations. A major problem with this approach is that?
(1) genetic diseases can easily be introduced when the species is reintroduced.
(2) populations are often adapted to local conditions and may not survive when moved to a different location.
(3) the community could have adapted to the extinct species absence, reintroduction may seriously disrupt the community.
(4) it is difficult to get an adequate sample of individuals to properly re-establish the population.

42. Anthropogenic extinction means the extinction of species from surface of earth that is due to;
(1) change in season.
(2) effects of meteors.
(3) human activities.
(4) None of these.

43. The species diversity of plants (22%) is much less than that of animals (72%), what could be the explanation to how animals achieved greater diversification?
(1) Animal are non-motile.
(2) Their movement to diverse habitats resulted in more evolutionary changes occurring in animals.
(3) Animals use carbohydrate and lipid as a source of energy.
(4) Animal DNA is different from plant DNA in terms of type of nitrogen bases.

44. According to the concept of species-area relations;
(1) the number of species in an area increases with the size of the area.
(2) larger species require large habitat areas than do smaller species.
(3) most species within any given area are endemic.
(4) the larger the area, the greater the extinction rate.

45. Greater biological diversity of tropics than temperate regions is due to the;
(1) presence of more seasonal environment.
(2) frequent glaciations in the past.
(3) highly variable climate and availability of less solar energy in the past.
(4) availability of more solar energy which contributes to higher productivity.

46. What is the difference between a threatened species and an endangered species?
(1) A threatened species is already extinct. An endangered species means that the population's numbers have increased greatly over the last 5 years.
(2) A threatened species and an endangered species are the same thing.
(3) A threatened species means that the population is likely to become endangered. An endangered species is already extinct.
(4) A threatened species that the population is likely to become endangered. An endangered species has population numbers so low that it is likely to become extinct.

47. What gases are produced in anaerobic sludge digesters?
(1) Methane and CO_2 only
(2) Methane, Hydrogen sulphide and CO_2
(3) Methane, Hydrogen sulphide and O_2
(4) Hydrogen sulphide and CO_2

48. *Cuscuta* is an example of;
(1) ectoparasitism
(2) brood parasitism
(3) predation
(4) endoparasitism

49. In a growing population of a country;
(1) pre-reproductive individuals are more than the reproductive individuals
(2) reproductive individuals are less than the post- reproductive individuals
(3) reproductive and pre-reproductive individuals are equal in number
(4) pre-reproductive individuals are less than the reproductive individuals.

50. The mass of living material at a trophic level at a particular time is called;

(1) net primary productivity
(2) standing crop
(3) gross primary productivity
(4) standing state.