



Sample Paper-03

Class 12th NEET (2024)

BOTANY

SECTION-A

1. From among the sets of terms given below, identify those that are associated with the gynoecium.
(1) Stigma, ovule, embryo sac, placenta
(2) Thalamus, pistil, style, ovule
(3) Ovule, ovary, embryo sac, tapetum
(4) Ovule, stamen, ovary, embryo sac
2. Choose the correct statement from the following:
(1) Cleistogamous flowers always exhibit autogamy
(2) Chasmogamous flowers always exhibit geitonogamy
(3) Cleistogamous flowers exhibit both autogamy and geitonogamy
(4) Chasmogamous flowers never exhibit autogamy
3. The outermost and innermost wall layers of microsporangium in an anther are respectively:
(1) Endothecium and tapetum
(2) Epidermis and endodermis
(3) Epidermis and middle layer
(4) Epidermis and tapetum
4. The total number of nuclei involved in double fertilisation in angiosperm are;
(1) two. (2) three.
(3) four. (4) five.
5. If tetraploid male plant is crossed with diploid female plant what will be ploidy level of endosperm cells in the resulting seed is?
(1) $8n$ (2) $5n$
(3) $4n$ (4) $3n$
6. **Assertion (A):** Perisperm is a haploid tissue.
Reason (R): Perisperm is the remains of nucellus which surround the embryo in certain seeds.
(1) Both **Assertion (A)** and **Reason (R)** are the true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are the true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
(3) **Assertion (A)** is true, and **Reason (R)** is false.
(4) **Assertion (A)** is false, and **Reason (R)** is true.
7. If 'Z' is an example of a very old viable seed excavated from Arctic tundra. Then 'z' is;
(1) Victoria. (2) date palm.
(3) neelakuranji. (4) lupine.
8. How many meiotic (p) and mitotic divisions (q) are required for the development of 16 sperms from microspore mother cells in flowering plants?
(1) $p = 8$ and $q = 16$
(2) $p = 8$ and $q = 8$
(3) $p = 16$ and $q = 16$
(4) $p = 2$ and $q = 16$
9. How many types of gametes are possible in the organism with the genotype AaBbCcDd?
(1) 32 (2) 4
(3) 8 (4) 16
10. 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.
11. From the following test cross result, find out the map distance between the genes A and B.
(a) Purple flower, long pollen (AaBb): 900
(b) Purple flower, round pollen (Aabb): 320
(c) White flower, long pollen (aaBb): 315
(d) White flower, round pollen (aabb): 920
(1) 36.7 mu (2) 25.8 mu
(3) 34.8 mu (4) 2.8 mu
12. Male heterogamy is found in case of;
(1) XO type male in grasshopper.
(2) XY type male in human.
(3) ZW male in birds.
(4) both (1) and (2)
13. A boy has normal brother and a colour blind sister. What is true about his parents?
(1) His father was normal but mother was colour blind.
(2) His father was colour blind but mother was normal.
(3) Both father and mother were colour blind.
(4) Both father and mother were normal.



14. If a negro marries a white skin female, the mulattoes are born. If such mulattoes intermarry, progeny will show a gradual gradation of skin colour in the ratio of;
- (1) 9:3:3:1.
 - (2) 1:4:6:4:1.
 - (3) 1:4:6:15:20:15:6:4:1.
 - (4) 1:6:15:20:15:6:1.
15. A test cross (cross between F1 hybrid progeny and parents either male (dominant) or female recessive) is performed to distinguish between;
- (1) two homozygous form.
 - (2) two heterozygous forms.
 - (3) a homozygous dominant and a heterozygous recessive form.
 - (4) a homozygous recessive and heterozygous dominant form.
16. How many genotypes and phenotypes are possible in inheritance of blood groups of human?
- (1) 9,4
 - (2) 3,2
 - (3) 3,3
 - (4) 6,4
17. Which idea is depicted by a cross in which the F1 generation resembles both the parents?
- (1) Inheritance of one gene
 - (2) Co-dominance
 - (3) Incomplete dominance
 - (4) Complete dominance
18. In human beings 45 chromosomes/single X/XO abnormality causes;
- (1) Down's syndrome.
 - (2) Klinefelter's syndrome.
 - (3) Turner's syndrome.
 - (4) Edward's syndrome.
19. In three dimensional view the molecule of tRNA is;
- (1) L-shaped.
 - (2) S-shaped.
 - (3) Y-shaped.
 - (4) E-shaped.
20. Which of the following is similar 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.
21. How many codons are used to code for all the 20 essential amino acids, in the genetic code dictionary?
- (1) 20
 - (2) 64
 - (3) 61
 - (4) 60
22. Beta-galactosidase is synthesised by *E.coli* to catalyse hydrolysis of _____ into _____ and glucose.
- (1) galactose; lactose
 - (2) galactose; glucose
 - (3) lactose; galactose
 - (4) maltose; galactose
23. In translation, the first phase is;
- (1) binding of mRNA to ribosome.
 - (2) recognition of DNA molecule.
 - (3) aminoacylation of trna.
 - (4) recognition of an anti-codon.
24. With regard to mature mRNA in eukaryotes;
- (1) exons and introns do not appear in the mature RNA.
 - (2) exons appear, but introns do not appear in the mature RNA.
 - (3) introns appear but exons do not appear in the mature RNA.
 - (4) both exons and introns appear in the mature RNA.
25. The RNA polymerase holoenzyme transcribes;
- (1) the promoter, structural gene and the terminator region.
 - (2) the promoter and the terminator gene.
 - (3) the structural gene and the terminator regions.
 - (4) the structural gene only.
26. While analysing the DNA of an organism a total number of 5,386 nucleotides were found out of which the proportion of different bases were: Adenine = 29%, Guanine = 17%, Cytosine = 32% and Thymine = 17%. Considering the Chargaff's rule, it can be concluded that:
- (1) it is a double-stranded circular DNA.
 - (2) it is single-stranded DNA.
 - (3) it is a double-stranded linear DNA.
 - (4) no conclusion can be drawn.



27. The Severo Ochoa enzyme is;
(1) DNA polymerase.
(2) reverse transcriptase.
(3) polynucleotide phosphorylase.
(4) DNA development DNA polymerases.
28. Biomass available for consumers and rate of formation of new organic matter by consumers are respectively;
(1) gross primary productivity and net primary Productivity.
(2) net primary productivity and gross primary Productivity.
(3) gross primary productivity and secondary Productivity.
(4) net primary productivity and secondary Productivity.
29. **Statement-I:** In an ecosystem, abiotic factors include the living components.
Statement-II: In an ecosystem biotic factors include the non-living components
(1) Statement I and Statement II both are correct.
(2) Statement I is correct, but Statement II is incorrect.
(3) Statement I is incorrect, but Statement II is correct.
(4) Statement I and Statement II both are incorrect.
30. **Statement-I:** Those animals that depend on the primary carnivores for food are secondary consumers.
Statement-II: Prime source of energy is sun for grazing food chain.
(1) Statement I and Statement II both are correct.
(2) Statement I is correct, but Statement II is incorrect.
(3) Statement I is incorrect, but Statement II is correct.
(4) Statement I and Statement II both are incorrect.
31. If 40 J of energy is trapped at producer level, then how much energy will be available to eagle as food in the following food chain?
Plant → Mice → Snake → eagle
(1) 0.04 J (2) 0.004 J
(3) 0.4 J (4) 0.0004 J
32. Which one of the following is not a functional unit of an ecosystem?
(1) Energy flow (2) Decomposition
(3) Productivity (4) Stratification
33. What is common to *Lantana*, *Eichhornia* and African catfish?
(1) All are endangered species of India.
(2) All are key stone species.
(3) All are mammals found in India.
(4) All the species are neither threatened, nor indigenous species of India.
34. **Assertion(A):** Equador has up to 10 times as many species of vascular plants as a forest of the Midwest of the USA.
Reason (R): In general, species diversity decreases as we move away from the equator toward the poles.
(1) Both **Assertion (A)** and **Reason (R)** are the true, and **Reason (R)** is a correct explanation of **Assertion (A)**.
(2) Both **Assertion (A)** and **Reason (R)** are the true, but **Reason (R)** is not a correct explanation of **Assertion (A)**.
(3) **Assertion (A)** is true, and **Reason (R)** is false.
(4) **Assertion (A)** is false, and **Reason (R)** is true.
35. Sacred groves in India are related with;
(1) aesthetic pleasure.
(2) the place where threatened species are Protected.
(3) the place where only artificial plant breeding is allowed.
(4) forest patches around the places of worship.
- SECTION-B**
36. In the rivet popper hypothesis A species that has an important role in ecosystem can be compared to;
(1) a rivet on the wings.
(2) a rivet on the seats.
(3) rivets inside the window pan.
(4) all of these.
37. Maximum bird species can be observed in;
(1) Colombia located near the equator.
(2) New York at 41°.
(3) Greenland at 71° N.
(4) India.
38. If $B = 0.55$, $D = 0.45$ and $N = 1000$, then dN/dt _____.
(1) 5500 (2) 1000
(3) 100 (4) 4500



39. Competition is a rivalry between two or more organisms for obtaining the same resources. It is a type of;
- (1) positive interaction.
 - (2) negative interaction.
 - (3) neither positive nor negative interaction.
 - (4) symbiotic relationship.
40. Which one of the following is not a parasitic adaptation?
- (1) Development of adhesive organs
 - (2) Loss of digestive organs
 - (3) Loss of reproductive capacity
 - (4) Loss of unnecessary sense organs
41. Which one is true?
- (1) Commensalism is when none of the interacting partners affect each other.
 - (2) Symbiosis is when the interaction is useful to both the interacting partners.
 - (3) Symbiosis is when populations affect each other.
 - (4) Commensalism is when the interaction is useful to both the partners.
42. A biologist studied the population of rats in a barn. He found that the average natality was 250, average mortality 240, immigration 20 and emigration 30. The net increase in population is;
- (1) 05
 - (2) zero
 - (3) 10
 - (4) 15
43. Which of the following is correct for r-selected species?
- (1) Large number of progeny with small size
 - (2) Large number of progeny with large size
 - (3) Small number of progeny with small size
 - (4) Small number of progeny with large size
44. Which of the following is correctly matched for the product produced by them?
- (1) *Methanobacterium*: Lactic acid
 - (2) *Penicillium notatum*: Acetic acid
 - (3) *Sacchromyces cerevisiae*: Ethanol
 - (4) *Acetobacter aceti*: Antibiotics
45. Which of the following is put into anaerobic sludge digester for further sewage treatment?
- (1) Primary sludge
 - (2) Floating debris
 - (3) Effluents of primary treatment
 - (4) Activated sludge
46. BOD of waste water is estimated by measuring the amount of;
- (1) total organic matter.
 - (2) biodegradable organic matter.
 - (3) oxygen evolution.
 - (4) oxygen consumption.
47. *Glomus* form a symbiotic relationship with plant.
- (1) leaves
 - (2) stem
 - (3) root
 - (4) stem and root
48. Baculoviruses are pathogens that;
- (1) attack insect and arthropods.
 - (2) placed in genus Nucleopolyhedrovirus.
 - (3) shows specific insecticidal application.
 - (4) all of these.
49. What is the genetic disorder in which an individual has an overall masculine development, gynaecomastia and is sterile?
- (1) Down's syndrome
 - (2) Turner's syndrome
 - (3) Klinefelter's syndrome
 - (4) Edward syndrome
50. A molecule that can act as a genetic material must fulfil the traits given below, except;
- (1) it should be able to express itself in the form of 'Mendelian characters'.
 - (2) it should be able to generate its replica.
 - (3) it should be unstable structurally and Chemically.
 - (4) it should provide the scope for slow changes that are required for evolution.

