

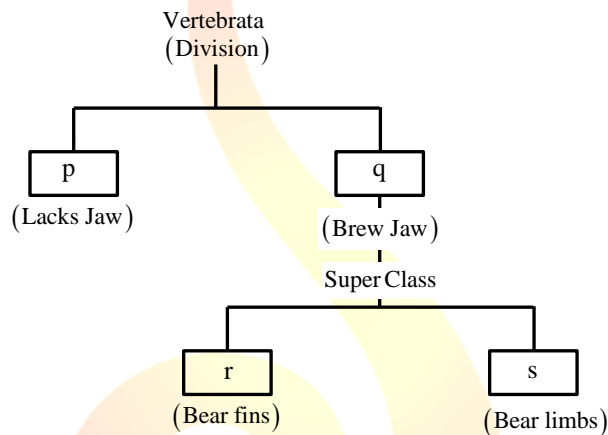
1. Match the following classes of Fungi (Column-I) with the examples (Column-II)

	Column-I		Column-II
(1)	Phycomycetes	(p)	Pencilium
(2)	Ascomycetes	(q)	Alternaria
(3)	Basidiomycetes	(r)	Albugo
(4)	Deutromycetes	(s)	Puccinia

Choose the correct option:

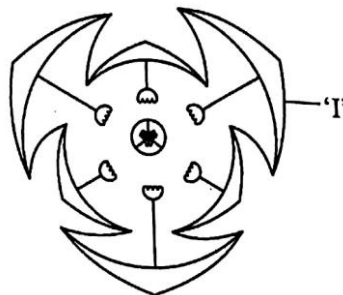
- (a) (1) → (r), (2) → (p), (3) → (q), (4) → (s) (b) (1) → (r), (2) → (p), (3) → (s), (4) → (q)
 (c) (1) → (p), (2) → (s), (3) → (r), (4) → (q) (d) (1) → (q), (2) → (p), (3) → (s), (4) → (r)

2. Observe the following simplified scheme and choose the correct option that matches with the letters given in the boxes



- (a) p-Tetrapoda, q-Pises, r-Gnathostomata, s-Agnatha
 (b) p-Agnatha, q-Gnathostomata, r-Tetrapoda, s-Pisces
 (c) p-Agnatha, q-Gnathostomata, r-Pisces, s-Tetrapoda
 (d) p-Gnathostomata, q-Agnatha, r-Tetrapoda, s-Pisces

3. Identify the floral unit 'T' in the given floral diagram



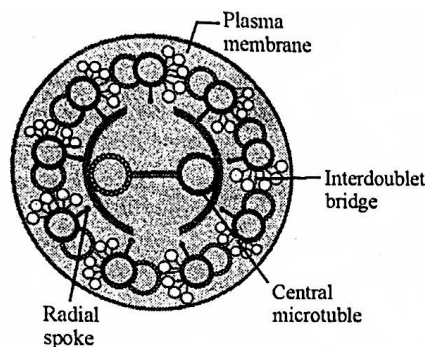
- (a) Tepal (b) Perianth (c) Sepal (d) Petal

4. A student observes grass and Hibiscus plants in his garden during noon. To his surprise, only the leaves of grass were found rolled inwards. The reason could be
- Presence of Bulliform cells in the grass leaves
 - Due to higher rate of transpiration
 - Presence of more number of stomata on the grass leaves
 - Undifferentiated mesophyll in grass leaves

5. Identify the given in meiosis mediated by the enzyme recombinase

- Crossing over
- Interkinesis
- Synaptic pairing
- Terminalization

6. In the below diagram, identify the part which connects the peripheral microtubules to the central sheath.



- Central microtubule
- Radial spoke
- Plasma membrane
- Interdoublet bridge

7. The element whose percentage weight is highest in both earth's crust and human body is

- Oxygen
- Calcium
- Hydrogen
- Carbon

8. During Citric Acid cycle, the various organic acid undergo decarboxylation. Which of the following organic acids of the above cycle have 4C, 5C and 6C respectively?

- Pyruvic acid, Malic acid and α -Ketoglutaric acid
- Pyruvic acid, α -Ketoglutaric acid and Citric acid
- Oxaloacetic acid, Citric acid and Succinic acid
- Succinic acid, α -Ketoglutaric acid and citric acid

9. The deficiency of which of these elements interrupts photolysis of water during photosynthesis?

- Ca and K
- N and P
- Mn and Cl
- Zn and Cu

10. In C_4 plants, C_3 cycle takes place in

- Companion cells
- Bundle sheath cells
- Mesophyll cells
- Bulliform cells

11. Consider the following statements regarding photosynthesis and respiration in plants and select the correct option

- (I) *RuBisCO* has high affinity to oxygen in low CO_2 concentration
 - (II) The Calvin pathway occurs in the chloroplast of bundle sheath cells of C_4 plants
 - (III) Yeast poison themselves when the concentration of alcohol reaches 7%
 - (IV) Oxygen is a final hydrogen acceptor during aerobic respiration
- (a) Statements I & III are correct, II is wrong
 - (b) Statements I & IV are correct, III is wrong
 - (c) Statements II & II are correct, I is wrong
 - (d) Statements I & II are correct, IV is wrong

12. Match the digestive glands given in Column-I with their respective enzymes given in Column-II and choose the combination from the given options

	Column-I		Column-II
(1)	Pancreas	(p)	Pepsin
(2)	Gastric glands	(q)	Enterokinase
(3)	Small intestine	(r)	Ptyalin
(4)	Salivary glands	(s)	Trypsin

Choose the correct option:

- (a) (1) → (r), (2) → (q), (3) → (p), (4) → (s)
- (b) (1) → (q), (2) → (s), (3) → (r), (4) → (p)
- (c) (1) → (p), (2) → (q), (3) → (r), (4) → (s)
- (d) (1) → (s), (2) → (p), (3) → (q), (4) → (r)

13. Girl after attaining sexual maturity shows development of growing ovarian follicles, development of mammary glands and high pitch of voice. These changes are attributed to _____ hormones.

- (a) Progesterone
- (b) Androgens
- (c) Melatonin
- (d) Estrogens

14. Match the different types of Leucocytes Column-I with their percentage of occurrence Column-II in a healthy adult human and choose the correct answer

	Column-I		Column-II
(1)	Neutrophils	(p)	6–8%
(2)	Lymphocytes	(q)	60–65%
(3)	Lymphocytes	(r)	0.5–1%
(4)	Basophils	(s)	2–3%
(5)	Eosinophils	(t)	20–25%

Choose the correct option:

- (a) (1) → (q), (2) → (t), (3) → (r), (4) → (s), (5) → (p)
- (b) (1) → (q), (2) → (t), (3) → (p), (4) → (r), (5) → (s)
- (c) (1) → (q), (2) → (r), (3) → (s), (4) → (t), (5) → (p)
- (d) (1) → (r), (2) → (s), (3) → (t), (4) → (q), (5) → (p)

15. In which part of the human brain corpora quadrigemina is located

- (a) Midbrain
- (b) Cerebral hemisphere
- (c) Forebrain
- (d) Hindbrain

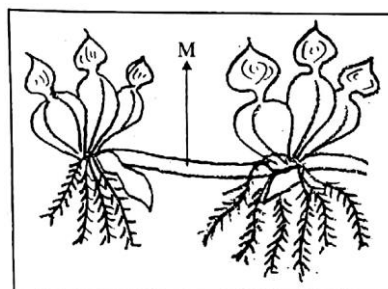
16. During an excavation of soil, Pollen fossils were retrieved from deepest remained as fossils because

- (a) The exine of pollen grains is highly resistant to enzyme action
- (b) Pollen grains are asexual reproductive structures
- (c) The intine of pollen grains is made up of pectin
- (d) Exine has spiny Ornamentation

17. In apple, the chromosome number of gametes is 17. What is the chromosome number in its Primary Endosperm Nucleus (PEN)?

- (a) 17
- (b) 51
- (c) 34
- (d) 68

18. Identify the vegetative propagule 'M' in the following diagram:



- (a) Rhizome
- (b) Runner
- (c) Bulbil
- (d) Offset

19. Match the months listed in Column-I with the organogenesis of foetus in Column-II.

	Column-I		Column-II
(I)	First month	(A)	Separation of eye lids
(II)	Second month	(B)	Hairs on head
(III)	Fifth month	(C)	Heart
(IV)	Six month	(D)	Limbs & digits

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

20. Identify the mismatch

- (a) Synergids - Diploid (b) Primary Endosperm Nucleus - Triploid
 (c) Antipodals - Haploid (d) Zygote - Diploid

21. Identify the correct order of events in pollenpistil interaction from the options given below

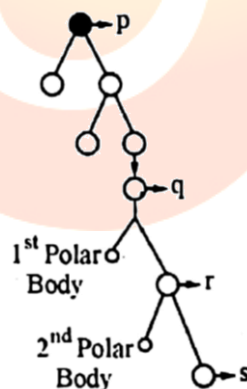
- (I) Release of male gametes into the embryo sac. (II) Deposition of pollen grains on stigma
 (III) Entry of pollen tube into embryo sac. (IV) Development of pollen tube
 (V) Entry of pollen tube into the ovule.

- (a) (II)-(IV)-(III)-(V)-(I) (b) (V)-(IV)-(III)-(II)-(I)
 (c) (IV)-(III)-(II)-(I)-(V) (d) (II)-(IV)-(V)-(III)-(I)

22. When the fallopian tube is blocked at ampullary region, the ovum fails to move from

- (a) Isthmus to Uterus (b) Infundibulum Isthmus
 (c) Isthmus to infundibulum (d) Ovary to ampulla

23. Identify the cells represented as p, q, r and s in the schematic representation of Oogenesis, shown below and choose the correct option.

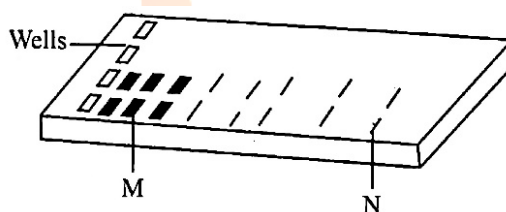


- (a) p-Ovum, q-Secondary Oocyte, r-Primary Oocyte, s-Ovum
 (b) p-Oogonia, q-Primary Oocyte, r-Secondary Oocyte, s-Ovum
 (c) p-Ovum, q-Oogonia, r-Primary oocyte, s-secondary Oocyte
 (d) p-Secondary Oocyte, q-Primary Oocyte, r-Ovum, S-Oogonia

24. Which of the following characters was not studied by Mendel in his Pea plant experiments?
 (a) Seed shape (b) Leaf shape (c) Stem height (d) Pod shape
25. Which of the following contraceptives could be effective in avoiding pregnancy if used within 72 hours after casual unprotected intercourse?
 (a) Relaxin - Oxytocin combination (b) Progestogen - Estrogen combination
 (c) Androgen - FSH combination (d) Testosterone - Relaxin combination
26. Choose the correct statement regarding the GIFT (Gamete Intrafallopian Tube Transfer) procedure.
 (a) Zygote is collected from a female donor and transferred to the uterus of recipient.
 (b) Ova are collected from a female donor and are transferred to the uterus of recipient
 (c) Ova collected from a female donor are transferred to the fallopian tube to facilitate zygote formation in the recipient
 (d) Zygote is collected from female donor and transferred to the fallopian tube of recipient
27. A man with blood group A marries a woman having blood group B. The maximum possible blood groups among their progenies are
 (a) A, B (b) A, B, AB, O (c) AB only (d) A, B, AB
28. In an Organism, mutation in a single gene exhibits multiple phenotypic expressions. Identify the underlying genetic mechanism in the above instance.
 (a) Polygenic inheritance (b) Multiple allelism
 (c) Pleiotropy (d) Incomplete dominance
29. A pure breeding pea plant with round yellow seeds was crossed with pea plant having wrinkled green seeds. On selfing of F_1 hybrid of his cross 64 progenies were obtained in F_2 generation. Find out the number of F_2 progenies showing non-parental characters.
 (a) 12 (b) 24 (c) 36 (d) 4
30. In eukaryotes, the entire base sequence of a gene do not appear in mature RNA because
 (a) Introns are removed during processing
 (b) Some gene sequences are removed by exonuclease
 (c) transcription in eukaryotes consumes more energy
 (d) coding sequences are removed during processing
31. Suppose DNA samples collected for DNA fingerprinting analysis are less than the required quantity. Which of the following techniques is helpful to make the samples sufficient for above analysis?
 (a) PCR (b) DNA probing
 (c) Electrophoresis (d) Chromatography
32. The length of DNA helix in a typical nucleosome is
 (a) 3.2×10^6 bp (b) 6.6×10^9 bp (c) 200 bp (d) 1000 bp

33. Which of the following types of RNA carries amino acids towards ribosome during translation?
(a) tRNA (b) mRNA (c) rRNA (d) dsRNA
34. Which among the following was the biggest land dinosaur?
(a) Brachiosaurus (b) Triceratops
(c) Stegosaurus (d) Tyrannosaurus rex
35. In a population of plants, some were extremely tall and the remaining were extremely dwarf. No plants of the population showed intermediated height. The type of operation of natural selection in the above cases is
(a) Stabilizing (b) Disruptive (c) Balancing (d) Directional
36. When *Escherichia coli* cells are cultured in a medium where Lactose is absent, the 'i' gene of Lac Operon continues to produce repressor mRNA because it is
(a) A constitutive gene (b) A structural gene (c) A non-coding gene (d) An operator gene
37. For the given sequence of DNA, identify the complementary sequences of base on its mRNA from the options given below DNA 3'-ATGCATGCATGC-5'
(a) 3'-UACGUACGUACG-5' (b) 5'-GCATGACATGCAT-3'
(c) 5'-UACGUACGUACG-3' (d) 5'-TACGTACGTACT-3'
38. The transport of which neurotransmitter is interfered by cocaine?
(a) GABA (b) Dopamine (c) Acetylcholine (d) Serotonin
39. In the life cycle plasmodium fertilisation takes places in
(a) Stomach of mosquito (b) Liver cells
(c) Salivary glands of mosquito (d) RBCs of humans
40. Injection of an antidote against snakebite is an example of
(a) Passive immunity (b) Auto immunity (c) Innate immunity (d) Active immunity
41. Certain tumours are called malignant, because
(a) They show contact inhibition
(b) They are not neoplastic
(c) They are confined to specific locations
(d) They invade and damage surrounding tissues
42. The hybridisation between naturally incompatible plants like potato and tomato can be achieved through
(a) Conventional breeding (b) Mutation breeding
(c) Artificial pollination (d) somatic hybridisation
43. A chilly plants was severely infected with Chilly Mosaic Virus (CMV). Identify the technique that helps to raises virus free plants in the next generation from the above virus infected plant
(a) Self-pollination (b) Hydroponics
(c) Artificial hybridisation (d) Meristem culture

44. White rust resistant variety of Brassica is
 (a) Pusa shbhra (b) Pusa Komal (c) Pusa Sadabahar (d) Pusa Swarnim
45. Which of the following plants tissues cannot be used as explant in tissue culture?
 (a) Sclerenchyma (b) Collenchyma
 (c) Meristem (d) Parenchyma
46. In sewage treatment secondary treatment is considered highly significant, because
 (a) It helps in the production of biogas (b) It increases the organic content of sewage
 (c) It helps to remove debris form the sewage (d) It reduces the BOD level of sewage
47. Ruminant animals can digest cellulose in their food, where as human beings are unable to do so. This is because
 (a) Cellulose reduces the bulk of food (b) Methanogens are absent in human gut
 (c) Methanogens represent in human gut (d) Cellulose is a complex sugar
48. Identify the labels M and N in the following: Agarose gel electrophoresis representation

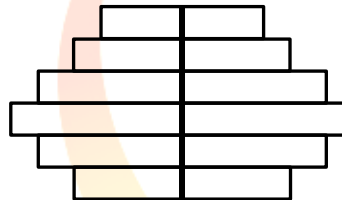


- (a) M-Largest DNA bands, N-Smallest DNA bands
 (b) M-Smallest DNA bands, N-Largest DNA bands
 (c) M-Digested DNA bands, N-Undigested DNA bands
 (d) M-Hybridised DNA bands, N-Un-hybridised DNA bands
49. From the given combinations of steps in PCR, identify the enzyme depended steps
 (a) Denaturation and extension (b) Extension only
 (c) Annealing and extension (d) Annealing and denaturation
50. Biolistics method is suitable for gene transfer into ____
 (a) Bacteria (b) Plant cell (c) Viruses (d) Animal cells
51. Which of the following features of plants is not helpful in adapting to desert life?
 (a) Presence of sunken stomata (b) Absence of trichomes on leaf surface
 (c) Presence of thick cuticle on the leaf surface (d) Leaves modified into spines
52. In the following equation of Verhulst - Pearl logistic growth, the letter 'r' denotes ____

$$\frac{dN}{dt} = rN \left(\frac{K - N}{K} \right)$$

- (a) Carrying capacity (b) Population density
 (c) Extrinsic rate of natural increases (d) Intrinsic rate of natural increases

53. In RNA interference, the dsRNA molecule prevents _____.
- (a) Translation of mRNA
 (b) Aminoacylation
 (c) Transcription of mRNA
 (d) Transport of RNA from nucleus to cytoplasm
54. Now-a-days, the early diagnosis of bacterial or viral infection in humans is possible using
- (a) PCR (b) CT scan (c) Serum analyser (d) DNA sequence
55. The organism which invade a bare area to initiate an ecological succession are known as
- (a) Endemic species (b) Pioneer species (c) Key stone species (d) Climatic species
56. The shape of the pyramids reflects the growth status of the population. Identify the type of age pyramid represented below for human population.



- (a) Stable (b) Declining (c) Ascending (d) Expanding
57. Identify the possible link 'M' in the following food chain:
 Plant → Insect → M → Snake → Eagle
- (a) Frog (b) Ichthyophis (c) Rabbit (d) Wolf
58. According to Supreme Court of India, ruling with respect to 'Bharat Stage VI' Norms from which date, these are supposed to be implemented in the country?
- (a) 1st January, 2021 (b) 10th December, 2020
 (c) 1st April, 2020 (d) 1st June, 2021
59. Which one of the following is not included under in-situ conservation?
- (a) Botanical Garden (b) Biosphere Reserve (c) National Park (d) Sanctuary
60. Which one of the following is a wrong statement?
- (a) Eutrophication is a natural phenomenon in fresh water lakes
 (b) Ozone in upper part of the atmosphere is harmful to animals
 (c) Most of the forests have been lost in tropical areas
 (d) Greenhouse effect a natural phenomenon