



MENDELIAN GENETICS

- Genes which are never expressed in a human female are
 - genes in a monosomic condition
 - holandric genes
 - pleiotropic genes
 - both (a) and (b)
- In tobacco plant, combinations of alleles in eggs and pollen have been found to influence the reproductive compatibility of the plants. Homozygous combinations such as S^1S^1 do not develop because S^1 pollen is not effective on S^1 stigmas. S^1 pollen, is however effective in S^2S^3 stigma. What progeny might be expected from a $S^1S^2 \times S^2S^3$ cross?
 - S^1S^2 , S^2S^2 and S^2S^3 progenies
 - Only S^2S^2 progeny
 - S^1S^3 and S^2S^2 progenies
 - S^1S^3 and S^2S^3 progenies
- If a cross is made between two yeasts, both with genotypes. A/a , B/b , C/c , what proportion of the offspring will be of genotype a/a , b/b , c/c ?
 - 0
 - 1/4
 - 1/16
 - 1/64
- One individual from a pair of identical twins developed a hare lip, whereas the other did not. This is an example of
 - variable pleiotropy
 - incomplete penetrance
 - variable expressivity
 - reversible expressivity
- If two nonallelic gene pairs influence the same character, interact to produce a novel phenotype which neither gene pair could produce by itself, this is called
 - collaboration
 - polygenic effect
 - epistasis
 - modification
- The blending theory of inheritance, prevalent before Mendel's work stated that
 - genes from somatic cells mix with genes from gametes.
 - hereditary material from both parents becomes permanently mixed in offspring
 - somatic cells blend into sperm or eggs
 - non-living things blend to form living things
- In water melons, the allele for green colour (G) is dominant over the allele for striped colour (g) and the allele for short shape (S) is dominant over the allele for long shape (s). When long striped melons are crossed with double heterozygous short green melons the phenotypic ratio of offspring is
 - 1 : 9 : 7 : 1
 - 2 : 1 : 1 : 1
 - 1 : 1 : 1 : 1
 - 3 : 4 : 1 : 2
- In bears, the genes for black or white furcoat show incomplete dominance. If a white bear is crossed with a black bear, then all offsprings are grey. If two of these grey bears are crossed, the theoretical progeny ratio would be



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- (a) all grey (b) 1/2 black and 1/2 white
(c) 1 grey : 2 black : 1 white (d) 50% grey, 25% white and 25% black
9. A plant heterozygous for two factors is crossed with a double recessive plant gives a phenotypic ratio of
(a) 1 : 7 : 7 : 1 (b) 1 : 1 : 1 : 1
(c) 7 : 1 : 7 : 1 (d) 9 : 3 : 3 : 1
10. Characters which can be inherited only from the mother and are not determined by nuclear genes are known to follow
(a) chromosomal inheritance (b) plastid inheritance
(c) epigenesis (d) cytoplasmic inheritance
11. Holandric genes are always expressed as
(a) they are located on X chromosomes
(b) they are in a trisomic condition
(c) they are never linked
(d) they are located on Y chromosome
12. X_g^a blood alleles in humans are
(a) holandric genes (b) sex linked
(c) sex influenced genes (d) autosomal genes
13. Maternal inheritance can be distinguished from Mendelian inheritance in human beings by
(a) reciprocal cross (b) pedigree analysis
(c) test cross (d) both (a) and (c)
14. Which one of the following statements is incorrect?
(a) Rh-negative mothers get immunized by blood from Rh positive foetus
(b) A daughter can inherit X chromosome from both parents
(c) A son cannot inherit X chromosome from his father
(d) Rh negative mother cannot conceive a Rh positive son
15. In which one of the following crosses would a dominant gene (C) be detected as a lethal gene?
(a) CC × cc (b) Cc × cc
(c) Cc × Cc (d) both (a) and (b)
16. If a man is heterozygous for 7 gene pairs, what is the number of kinds of gametes produced by him with respect to these 7 gene pairs?
(a) 64 (b) 116
(c) 1024 (d) 128



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17. Which one of the following is an example of negative eugenics?
- (a) Avoiding germinal waste (b) Genetic counselling
(c) Improving environmental conditions (d) Sterilization of defective individuals
18. Which one of the following is a wholly genetic trait?
- (a) Diptheria (b) Leucoderma
(c) Heterotrichosis (d) Tuberculosis
19. A gene whose action is suppressed by a non-allelic gene is called as
- (a) Epistatic gene (b) Supplementary gene
(c) Jumping gene (d) Hypostatic gene
20. Heterosis or hybrid vigour is lost by
- (a) inbreeding (b) cross-breeding
(c) emasculation (d) both (b) and (c)
21. Neurospora crassa is good material for genetic studies as eight spores are formed instead of four. This is due to
- (a) recombination occurring twice because of double meiosis
(b) increase in genetic variability of offspring as each meiosis is followed by amitosis
(c) extended, interkinesis between meiosis I and meiosis II
(d) each meiosis followed by mitosis
22. In a dihybrid cross, the ratio of F_2 individuals which can produce four types of gametes with respect to the two characters under study are
- (a) 9/16 (b) 1/8
(c) 3/16 (d) 1/4
23. Genetics is the branch which deals with the study of
- (a) inheritance and variations (b) Cell structure
(c) Tergal structures (d) Relation between plants and environment
24. Mendel's laws were rediscovered by
- (a) H. de Vries (b) Tschermak
(c) Correns (d) All of the above
25. One complete set of chromosomes inherited as a unit from one parent is known as
- (a) Genotype (b) Genome
(c) Correns (d) Gene pool
26. Mendel did his work on pea plant during the



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- (a) 17th century (b) 18th century
(c) 19th century (d) 20th century
27. Mendel is famous for his work on
(a) *Pisum sativum* (b) *Drosophila*
(c) *Oenothera lamarckiana* (d) *Neurospora*
28. The variation caused due to change in germ cells are called
(a) Somatic variations (b) Germinal variations
(c) Continuous variations (d) None of these
29. The father of Genetics is
(a) Darwin (b) Bateson
(c) Mendel (d) Kolliker
30. Mendel studied seven contrasting characters for his breeding experiments. Which of one of the following characters he did not study?
(a) Plant height (b) Leaf shape
(c) Pod colour (d) Pod shape
31. A red flowered pea plant is crossed with the white flowered pea plant. F₁ is red. Then white flower colour is
(a) Dominant (b) Recessive
(c) Non-genetic (d) Homomorphic
32. The type of cross between parents differing on only one character is called
(a) Dihybrid cross (b) Monohybrid cross
(c) Reciprocal cross (d) Trihybrid cross
33. In F₂ generation the phenotypic ratio for a dihybrid cross is
(a) 3 : 1 (b) 1 : 1
(c) 9 : 3 : 3 : 1 (d) 1 : 1 : 1 : 1
34. When two individuals differing in at least one character are crossed, the process is known as
(a) Selection (b) Hybridization
(c) Dioecious (d) Pedigree
35. The product of hybridization is known as
(a) Hybrid (b) Homozygous
(c) Heterozygous (d) Clone
36. In an experiment on pea plant, with round yellow seeds were crossed with plants producing green wrinkled seeds. What will be the phenotypic ratio of the progeny?



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- (a) all round yellow
(b) 9 round yellow, 3 round green, 3 wrinkled yellow, 1 wrinkled green
(c) 1 round yellow, 1 round green, 1 wrinkled yellow, 1 round green
(d) data insufficient
37. The tendency of genes to remain together during the process of inheritance is called
(a) Linkage (b) Sex linkage
(c) Gene replication (d) Operational linkage
38. In which plant concept of incomplete dominance may be seen?
(a) Jasmine plant (b) China rose plant
(c) 4 O'clock plant (d) None of these
39. One of the following ratios represents result of a test cross
(a) 3 : 1 (b) 9 : 7
(c) 1 : 2 : 1 (d) 1 : 1 : 1 : 1
40. When an individual is similar in external appearance but different in its genetic make up with the homozygous dominant, then it is definitely
(a) Genotype (b) Phenotype
(c) Homozygous (d) Heterozygous
41. If a plant heterozygous for tallness is selfed, the F_2 generation has both tall and dwarf plants. This proves the principle of
(a) Dominance (b) Purity of gametes
(c) Independent assortment (d) Incomplete dominance
42. The back cross of F_1 in a monohybrid cross can give an offspring phenotypic ratio of
(a) 9 : 3 : 3 : 1 (b) 1 : 1
(c) 1 : 2 : 1 (d) 1 : 1 : 1 : 1
43. Mendel may not have been able to establish the law of independent assortment if both characters under study were located on
(a) separate non homologous chromosome
(b) same homologous chromosome
(c) separate chromosome but at different loci
(d) sex chromosome
44. Pleiotropic gene is one which
(a) controls the characters of human beings only
(b) controls the character of plants only
(c) controls one character in association with other
(d) controls more than one character



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45. Imagine that in the pea plant, the factors for controlling seed coat colour and shape of seeds are present on the same chromosome very close together. Mendel would not have been able to arrive at the idea of
- (a) Dominance (b) Independent assortment
(c) Incomplete dominance (d) Segregation
46. In sickle cell anemia the death is caused when the lethal genes are present in
- (a) heterozygous condition (b) homozygous dominant condition
(c) homozygous condition (d) co-dominant condition
47. A man known to be a victim of haemophilia marries a normal woman whose father was known to be a "Bleeder" then it may be expected that
- (a) all of their children will be bleeders
(b) half of their sons will be bleeders
(c) one fourth of their children would be bleeders
(d) none of these
48. Epistasis is a phenomenon in which
- (a) one gene hides the effect of other
(b) one allele hides the effect of other allele
(c) dominant gene hides the effect of recessive gene
(d) recessive gene hides the effect of dominant gene
49. Colourblindness in man is a
- (a) sex linked character (b) dominant character
(c) recessive character (d) none of these
50. For a person of blood group 'A' the blood groups acceptable for transfusion are
- (a) A and B (b) A and O
(c) B and O (d) A, B, AB and O
51. In pigeons, the checkered pattern is dependent on a dominant gene 'C' and the plain exterior on recessive allele 'c'. Red colour is controlled by a dominant gene 'B' and brown by recessive allele 'b'. If a cross is made between plain brown birds and homozygous checked red birds, then what will be the F₂ phenotypic ratio?
- (a) 12 : 3 : 1 (b) 9 : 3 : 3 : 1
(c) 13 : 3 (d) 9 : 6 : 1
52. If a dominant gene is expressed in only 63% of the individuals known to carry it, then its penetrance is said to be
- (a) 37% (b) 63%
(c) 32.5% (d) zero
53. In case of humans, how can we distinguish between phenocopies and mutant genes?



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- (a) By test cross (b) By any back cross
(c) By pedigree analysis (d) both (a) and (b)
54. A series of crosses in a particular controlled environment, from which all progeny were known to carry a dominant autosomal gene B (causing a wing abnormality), resulted in 2400 abnormal and 1600 normal flies. What is the penetrance of gene 'B' in this population?
- (a) 70% (b) 60%
(c) 40% (d) 30%
55. In a case of disputed parentage, a woman of blood group AB claimed that a baby of blood group O was her child. In this case, which one of the following is true?
- (a) The baby belongs to her if her husband's blood group is AB
(b) The baby cannot belong to her if her husband's blood group is A
(c) The baby cannot belong to her in any case
(d) The baby belongs to her if the father's blood group is AB
56. What is the ratio of possible genotypes to possible phenotypes for the ABO blood groups?
- (a) 5 : 4 (b) 3 : 2
(c) 4 : 3 (d) 7 : 1
57. The genotypic expression found in a person of blood group AB is called
- (a) dominant recessive (b) co-dominance
(c) incomplete dominance (d) co-recession
58. From a cross $AaBB \times aaBB$, which one of the following F_1 genotypic ratio will be obtained?
- (a) 1 $AaBB$: 3 $aaBB$ (b) 1 $AaBB$: 1 $aaBB$
(c) 3 $AaBB$: 1 $aaBB$ (d) All $AaBB$
59. Cystic fibrosis, a disease characterized by unusually viscous mucus develops in people who are homozygous recessive. If a homozygous normal woman marries a man with cystic fibrosis, what is the probability that their child will be a carrier?
- (a) 33% (b) 50%
(c) 67% (d) 100%
60. A rose heterozygous for albinism (a recessive character) is self-pollinated and 1600 seeds are subsequently germinated. How many seedlings will have parental genotype?
- (a) 400 (b) 1600
(c) 1200 (d) 800
61. A plant with $AaBB$ genotype on selfing, results in which one of the following genotypic frequencies in offspring?

	AABB	AaBb	AaBB	AABb	aaBB	AAbb
(a)	1	2	1	1	×	×
(b)	1	×	2	×	1	×



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|-----|---|---|---|---|---|---|
| (a) | 1 | 1 | 2 | × | 2 | 1 |
| (a) | 2 | 3 | 1 | 1 | × | × |
62. Reciprocal cross is used to distinguish between
- (a) sex linked inheritance and Mendelian inheritance
 - (b) quantitative and incomplete inheritance
 - (c) cytoplasmic inheritance and Mendelian inheritance
 - (d) both (a) and (c)
63. In poultry the genes for rose comb (R) and pea comb (P) together produce walnut comb. If both genes are present in recessive condition (rrpp) then single comb is produced. What will be the phenotypic ratio of offsprings from a cross between rrpp and RrPp?
- (a) Walnut : Pea :: 1 : 1
 - (b) Walnut : Pea : Rose : Single :: 2:1:1:1
 - (c) Pea : Walnut :: 1 : 2
 - (d) walnut : Pea : Rose : Single :: 1:1:1:1
64. Walnut comb chickens mated with pea comb chickens produced 34 walnut and 11 pea comb offsprings. What is the possible genotype of parents.
- (a) RrPp × rrPp
 - (b) RrPP × RrPP
 - (c) RRPP × rrPp
 - (d) RRPP × rrpp
65. In cases of disputed parentage, the blood group analysis of the mother, child and alleged father can
- (a) definitely prove a man to be the father
 - (b) only prove that he cannot be the father
 - (c) not be of use if father's blood group is O negative
 - (d) none of the above
66. The F₂ 9 : 3 : 4 phenotypic ratio is present in case of
- (a) recessive epistasis
 - (b) dominant epistasis
 - (c) duplicate genes
 - (d) epistasis
67. Recessive character can be expressed if
- (a) they are in a homozygous state
 - (b) they are present on Y chromosome
 - (c) they are present on X chromosome of males
 - (d) all of the above
68. Offsprings resemble their parents but are not exactly like them because of
- (a) blending and mixing of paternal and maternal characters
 - (b) variation produced by chance distribution of chromosomes to the two poles during Meiosis-1
 - (c) variation produced by crossing over at the time of gamete formation



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- (d) both (b) and (c)
69. In carrying out a gene frequency analysis of a population, scientists assume that
- (a) the trait being studied is beneficial to all members of the population
 - (b) the population is in the process of mutation
 - (c) all members of the population will mate randomly and produce offsprings
 - (d) the population is in the process of emigration
70. From a cross between a male AABb and female aaBb plant, 680 seeds were produced and subsequently germinated. How many of the seedling will have paternal phenotype
- (a) 170
 - (b) 340
 - (c) 680
 - (d) 510
71. Why do farmers have to buy seeds of 'High yielding crops' every year and cannot use seeds from their previous crop?
- (a) The government of India has accepted Dunkel's proposals
 - (b) It is cheaper to purchase fungicide treated fresh seed
 - (c) No seed from previous crop is available due to parthenocarpy
 - (d) The hybrid vigour gets decreased due to inbreeding
72. The hypothesis that "Inheritance of skin colour in human beings is determined by cumulative gene" was proposed by
- (a) Bateson and Punnett
 - (b) Nilssen Ehle
 - (c) D.B. Davenport
 - (d) Morgan and Benzer
73. Albinism occurs due to homozygosity of the recessive allele 'a'. If a normal man and normal woman, both of whom had one albino parent, marry, then what is the probability of their having an albino child?
- (a) 50%
 - (b) 66%
 - (c) 75%
 - (d) 25%
74. Mr. Rajesh Chaudhary has heterotrichosis and is heterozygous for two autosomal gene pairs (BbCc) determining polydactyly and ptosis. If polydactyly and ptosis result from homozygous recessive state (bb and cc) then what proportion of this sons will have polydactyly and ptosis but no heterotrichosis, if his wife is homozygous recessive for ptosis polydactyly?
- (a) $\frac{1}{4}$
 - (b) $\frac{1}{8}$
 - (c) None
 - (d) $\frac{2 \times 2}{3 \times 3}$
75. Genetically identical population of the organisms or even cells is known as
- (a) Phenotype
 - (b) Clone
 - (c) Genome
 - (d) Cistron
76. Hereditary characters are passed on from parent to offspring chiefly through



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- (a) gametes (b) genes
(c) chromosomes (d) copulation
77. The sum total of all the genes in a population is known as
(a) Genotype (b) Genome
(c) Gene pool (d) Gene drift
78. When a cross is made between an offspring and its parent, it is known as
(a) Reciprocal cross (b) Dihybrid cross
(c) Back cross (d) Test cross
79. When a heterozygous offspring is crossed with homozygous recessive parent, the cross is known as
(a) Back cross (b) Test cross
(c) Dihybrid cross (d) None of these
80. When dihybrid test cross occurs, the number of F_2 phenotypes is
(a) 9 : 3 : 3 : 1 (b) 4
(c) 1 : 1 (d) 1 : 1 : 1 : 1
81. A dwarf pea plant was treated with Gibberelic acid. It grew as tall as the pure tall pea plant. If this tall plant is crossed with a pure tall then the phenotypic ratio of the F_1 is likely to be
(a) all tall (b) 50% tall and 50% dwarf
(c) 75% tall and 25% dwarf (d) all dwarf
82. Which one of the following is a test cross
(a) $Tt \times Tt$ (b) $TT \times TT$
(c) $Tt \times tt$ (d) $tt \times Tt$
83. The geometrical device that helps in visualizing all the possible combinations of male and female gametes is known as
(a) Bateson square (b) Punnett square
(c) Mendel square (d) Morgan square
84. A pair of contrasting characters are called
(a) Phenotype (b) Genotype
(c) Alleles (d) Gene
85. A gamete contains which of the following?
(a) Both alleles of a gene (b) Only one allele of a gene
(c) All alleles of a gene (d) No allele of a gene
86. Allele is the



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- (a) alternate trait of gene pair
(b) total number of genes for a trait
(c) total number of chromosomes of a haploid set
(d) total number of genes present on a chromosome
87. In a plant by self fertilization, seeds were obtained and in germination they produced 14 dwarf plant and 42 tall plants. The genotype of parent plant was
(a) TT (b) Tt
(c) TT or Tt (d) tt
88. Punnett square displays
(a) gametic genes (b) zygotic genes
(c) linked genes (d) none of these
89. Alleles are
(a) Two genes which are similar and belong to the same locus
(b) Two genes which are dissimilar and belong to the same locus
(c) Two genes which are dissimilar and belong to the same chromosome
(d) Two genes which are either dominant or recessive
90. Phenotype refers to
(a) cellular body (b) visible trait
(c) suppressed trait (d) a trait without variation
91. In F_1 generation a ratio of 1 : 4 : 6 : 4 : 1 is obtained instead of 9 : 3 : 3 : 1. It indicates
(a) Monohybrid cross (b) Incomplete dominance
(c) Quantitative inheritance (d) Linkage
92. A pure tall pea plant was reared in soil poor in the nutrition and reached the size of a pure dwarf pea plant, if this plant is selfed then the genotype in the F_1 generation is most likely to be
(a) all tall (b) 50% tall, 50% dwarf
(c) all dwarf (d) data insufficient
93. A cross between F_1 heterozygous for two factors and the recessive parent, recessive for both the factors, gives a phenotypic ratio of
(a) 7 : 1 : 1 : 7 (b) 9 : 3 : 3 : 1
(c) 1 : 7 : 7 : 1 (d) 1 : 1 : 1 : 1
94. If a plant is heterozygous and is designated Bb(Mm) and produces two kind of gametes fertilizing either B(M) and b(m). The probability of b(m) gametes fertilizing either B(M) or b(m) is
(a) 1/2 (b) 1/1
(c) 0/1 (d) 1/4



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95. An inherited blood abnormality where the RBCs become semicircular and can carry less oxygen is known as
- (a) Iron deficiency anemia (b) Aplastic anemia
(c) Pernicious anemia (d) Sickle cells anemia
96. A couple with blood types A and B may have children with which of the following blood types?
- (a) A and B only (b) A, B and AB
(c) A, B, AB and O (d) AB only
97. Two independent dominant genes, interacting to produce a phenotypic expression, different from that which can be produced by either gene are called
- (a) Supplementary genes (b) Multiple genes
(c) Complementary genes (d) Mutated genes
98. Genes that are similar in phenotypic effect when present separately but together interact to produce a different trait and give a ratio of 9 : 7 in the F_1 generation are known as?
- (a) Complementary genes (b) Supplementary genes
(c) Epistatic genes (d) Hypostatic genes
99. Haploids are better for mutation studies because in them all the mutation whether recessive or dominant are expressed as
- (a) there is only one allele of each gene present in each cell
(b) there are two allele of each gene
(c) there are many allele of each gene
(d) none of these
100. If a man having curly hairs (dominant) marries a woman with straight hairs, have eight children, the ratio of curly haired children to straight haired children can be
- (a) 3 : 5 (b) 1 : 7
(c) All curlyhaired (d) Any ratio is possible
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MINERAL NUTRITION IN PLANTS

- Which one is an inorganic nutrient?
 - Protein
 - Cellulose
 - Calcium
 - Vitamin
- Which of the following is not a macronutrient?
 - Manganese
 - Calcium
 - Sulphur
 - Phosphorous
- Non-essential element for the proper growth of plant is
 - Calcium
 - Cobalt
 - Chlorine
 - Magnesium
- Non-essential element of the plants is
 - Barium
 - Calcium
 - Magnesium
 - Potassium
- Micronutrients
 - Are called 'micro' as they play only a minor role in plant function
 - Are as important as macronutrients
 - May be omitted from culture media without any detrimental effect on the plants
 - Are less important than macronutrients
- Which of the following elements has not been proved to be essential for plants?
 - Potassium
 - Zinc
 - Sodium
 - Iron
- A trace element is
 - That which draws other elements out of protoplasm
 - Radioactive and can be traced by Geiger counter
 - Required in very, minute amounts
 - That which was first found in protoplasm
- Chlorosis in plants occurs due to
 - High – sunlight intensity
 - Low sunlight intensity
 - Absorption of yellow pigment from the soil
 - Deficiency of Mg and Fe in the soil



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9. Chlorophyll contains
- (a) Fe (b) Mg
(c) Mn (d) K
10. Cytochrome oxidase contains
- (a) Mg (b) Co
(c) Fe (d) Hg
11. In plants a common symptom caused by the deficiencies of P.K. Ca and Mg is the
- (a) Bending of the leaf tip in form of hooks
(b) Poor development of vascular system
(c) Appearance of deep necrotic areas on the leaves
(d) Formation of anthocyanin pigment in abundance
12. Which one of the following is a micronutrient?
- (a) Ca (b) Zn
(c) Mg (d) P
13. 'Die back' of citrus is caused due to the deficiency of
- (a) Zinc (b) Iron
(c) Copper (d) Manganese
14. Carbon becomes available to crop plants in the form of
- (a) Amino acids (b) Carbon dioxide
(c) Elemental carbon (d) Carbonates
15. Mineral salts which are absorbed by the roots from the soil are in the form of
- (a) Dilute solution (b) Concentrated solution
(c) Very dilute solution (d) Very concentrated solution
16. Deficiency of Mo causes
- (a) Bending of leaf tip (b) Yellowing of leaves
(c) Mottling and necrosis of leaves (d) Poor development of vasculature
17. Deficiency of iron causes
- (a) Interveinal chlorosis first on young leaves
(b) Bending of leaf tip
(c) Reduce leaves and stunted growth
(d) Decrease in protein synthesis



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18. On the basis of symptoms of chlorosis in leaves a student inferred that his was due to deficiency of nitrogen. This inference could be correct only if we assume that yellowing of leaves appeared first in
- (a) Young leaves followed by mature leaves
 - (b) Old leaves
 - (c) Mature leaves followed by young ones
 - (d) Yong leaves
19. Mg or Fe are needed by plants for
- (a) Energy transfer
 - (b) Stomatal opening
 - (c) Synthesis of chlorophyll
 - (d) Translocation of carbohydrates
20. The element which is required in largest quantities by plant is
- (a) Sulphur
 - (b) Nitrogen
 - (c) Phosphorous
 - (d) Calcium
21. Which of the following essential elements can land plants normally obtain directly from the air?
- (a) Hydrogen
 - (b) Phosphorous
 - (c) Carbon
 - (d) Nitrogen
22. The frame work elements of plants are
- (a) Manganese, Calcium and Nitrogen
 - (b) Copper, Carbon and Oxygen
 - (c) Magnesium, Copper and Iron
 - (d) Carbon, Hydrogen and Oxygen
23. Which of the following elements is involved in nitrogen metabolism in reduction of nitrates?
- (a) Boron
 - (b) Manganese
 - (c) Molybdenum
 - (d) Zinc
24. Most plants obtain their nitrogen from the soil in the form of
- (a) HNO_3
 - (b) Nitrate
 - (c) Free nitrogen gas
 - (d) Nitrogen oxide
25. Which of the following is a group of essential elements?
- (a) Zn, Co, B, Mo
 - (b) K, Mg, Na, Cl
 - (c) N, S, P, Si
 - (d) C, H, O, P
26. Premature leaf fall is caused due to the deficiency of
- (a) Nitrogen
 - (b) Calcium
 - (c) Potassium
 - (d) Phosphorous
27. Which is not an essential micronutrient?
- (a) Ni
 - (b) Co
 - (c) Mn
 - (d) B



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28. In phosphorous deficiency the leaves to become yellow first are
- (a) Mature leaves at base (b) Youngest leaves at the apex
(c) Both mature and young leaves (d) All of the above
29. Deficiency of one of the following causes little. "Leaf rosette" disease in trees
- (a) Boron (b) Copper
(c) Zinc (d) Manganese
30. In sulphur deficiency
- (a) Oldest leaves become yellow and youngest remain green
(b) There is uniform chlorosis of young and old leaves
(c) Young leaves are the first to become yellow
(d) None of these
31. The element that helps in transport of electrons from water in photosynthesis is
- (a) Molybdenum (b) Zinc
(c) Chlorine (d) Boron
32. Minerals absorbed by roots move to leaf through
- (a) Xylem (b) Phloem
(c) Sieve tube (d) None
33. Chlorosis occurs in plants grown in
- (a) Dark (b) Shade
(c) Strong light (d) Fe-free medium
34. Which of the following plants cannot fix atmospheric nitrogen directly?
- (a) Pea (b) Bean
(c) Gram (d) Castor
35. In plant nutrition elements are classified as macro or micro depending on
- (a) Their availability in soil
(b) Their relative production in the ash produced after burning the plant
(c) The relative amounts required by the plant
(d) Their relative importance in the plant
36. In an experiment a plant is dried, placed in a crucible and strongly heated in air for a long time. The residue is composed of
- (a) Carbon (b) Starch
(c) Oxides and carbonates of three elements
(d) Oxides or carbonates of about an elements



BIOLOGY



37. Boron is found associated with
- (a) Abscissic acid (b) Auxin
(c) Gibberlin (d) Glutamine
38. Which element is essentially required for translocation of sugars in plants?
- (a) Boron (b) Iron
(c) Molybdenum (d) Manganese
39. A trace element essential for plant growth and a radioisotope used in cancer therapy is
- (a) Cobalt (b) Iron
(c) Calcium (d) Sodium
40. Which of the following group of elements have balancing function in plants?
- (a) Cu, Fe, Mn (b) N, P, S
(c) Ca, K, Mg (d) Cu, Fe, Zn



MOLECULAR BASIS OF INHERITANCE

- Starting and stopping codons are respectively
 - UCA and UAA
 - AUG and UGA
 - GUA and AAA
 - all of these
- What will the RNA code be, if the DNA codes ATG?
 - ATG
 - AUG
 - UAC
 - TAC
- The number of bases representing a codon are
 - 2
 - 3
 - 4
 - 5
- rRNA is prepared in
 - nucleus
 - ribosome
 - ER
 - Golgi bodies
- According to Oparin's concept the regulator gene—
 - Inactivates the enzyme
 - Inactivates the substrate
 - Inhibits the movement of mRNA to the cytoplasm
 - Inhibits the transcription of mRNA
- The four nitrogenous base sequence which form the code words for DNA language are
 - UTAC
 - ACTU
 - AGGC
 - ATCG
- According to Wobble hypothesis
 - the process of polypeptide chain elongation has been established
 - first base is unstable
 - second base is most stable
 - third base is most unstable
- NHC proteins help in
 - Mutation
 - Position effect
 - Translation and Transcription
 - Replication and transcription
- The gene lac-operon is turned on when lactose molecule binds to
 - repressor protein
 - operator gene
 - mRNA
 - promoter



BIOLOGY



10. The synthesis of mRNA is
- (a) Transcription (b) Translation
(c) Translocation (d) Transduction
11. Ribosome binding site is on
- (a) DNA (b) mRNA
(c) rRNA (d) cloverleaf tRNA
12. UGA, UAG and UAA are called termination codons because
- (a) they terminate anticodon
(b) they are present at the beginning of mRNA
(c) they do not specify any amino acid
(d) they indicate initiation of polypeptide chain
13. One gene-One enzyme theory was proposed by
- (a) Temin and Baltimore (b) Watson and Crick
(c) Hook (d) Beadle and Tatum
14. DNA can be formed by
- (a) Transaminase
(b) DNA ligase
(c) RNA dependent DNA polymerase
(d) DNA dependent DNA polymerase
15. Number of essential amino-acids in a man are
- (a) 7 (b) 8
(c) 10 (d) 14
16. Splicing of RNA depends on
- (a) Hn mRNA (b) exon
(c) intron (d) self splicing of intron
17. In Lac-operon system, lac gene 1 codes for
- (a) Inducer (b) repressor
(c) promoter (d) β galactosidase
18. Which of the following is important for transcription?
- (a) DNA methylase (b) CAAT box
(c) Promoter (d) DNA polymerase
19. Which of these are termination codon?



BIOLOGY



- (a) GCG (b) GUG
(c) UAG (d) AUG
20. Translation means
(a) DNA synthesis (b) RNA synthesis
(c) protein synthesis (d) ribosome assambaleye
21. The known number of amino acids used in protein synthesis is
(a) 20 (b) 35
(c) more than 50 (d) more than 100
22. Initiation codon in mitochondria is
(a) AUG (b) UAC
(c) GUG (d) AGU
23. Lac operon in E coli is induced by
(a) β galactosidase (b) lactose
(c) I gene (d) Promotergene
24. In split genes, the coding sequences are called
(a) Introns (b) Operon
(c) exons (d) cistron
25. Anticodon site is located on
(a) DNA (b) tRNA
(c) rRNA (d) mRNA
26. In inducible operon, regulator gene releases
(a) interferon (b) co-repressor
(c) repressor (d) cepo-repressor
27. Shape of 3-D view of tRNA is
(a) Z shape (b) X shaped
(c) Y shaped (d) L shaped
28. Protein synthesis occurs in
(a) nucleus (b) ribosome
(c) cytoplasm (d) None of these
29. The type of RNA polymerase are required in nucleus for RNA synthesis
(a) 2 (b) 3
(c) 4 (d) 1
30. Exon help in synthesis of



BIOLOGY



- (a) Protein (b) Fatty acid
(c) Fat (d) Glycogen
31. What does lac refer to in the lac operon?
(a) Lactose (b) Lactase
(c) Lac insect (d) 100000
32. An octamer of four histone, complexed with DNA is called
(a) centrosome (b) nucleosome
(c) chromosomes (d) all of these
33. Isotopes used for proving semiconervative replication of DNA are
(a) N^{14} and P^{31} (b) N^{14} and N^{15}
(c) N^{14} and C^{14} (d) C^{14} and P^{81}
34. Unwinding of DNA is done by
(a) Topoisomerase (b) Exonuclease
(c) Helicase (d) Ligase
35. DNA strands
(a) have quaternary structure like protein
(b) are bonded by disulphide bond
(c) have same polarity
(d) are antiparallel
36. Which of the following enzyme is used in DNA replication?
(a) RNA polymerase (b) Exonuclease
(c) DNA endonuclease (d) DNA polymerase
37. Multiplication of DNA is caused by
(a) transcription (b) translation
(c) replication (d) transduction
38. In DNA when sugar molecule is joined with nitrogenous base, it becomes
(a) nucleoside (b) nucleotide
(c) nucleic acid (d) none of these
39. DNA consists of two complementary nucleotide chains if the sequence of nucleotides in one of the chain is AGCTTCGA then the complementary sequence of the other chain will be
(a) TCGAAGCT (b) TGGTATCG
(c) AATTCGG (d) TCGAACTG
40. Who gave the term nucleosome?

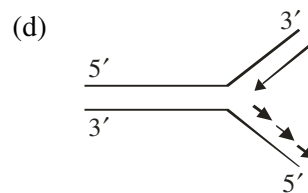
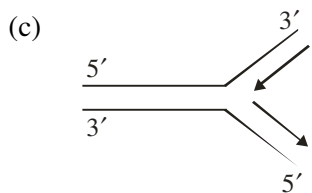
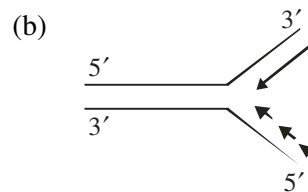
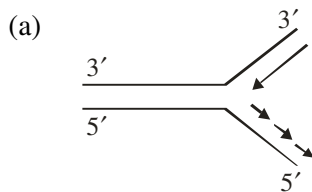


BIOLOGY



- (a) Oudet
(b) Morgen
(c) Punnet
(d) Ruckert
41. Two free ribonucleotide unit are interlinked with
(a) Peptide bond
(b) Covalent bond
(c) Hydrogen bond
(d) Phosphodiester bond
42. A nucleoside is
(a) purine/pyramidine + phosphate
(b) purin/pyramidine + sugar
(c) pyramidine + purine + phosphate
(d) purin + sugar + phosphate
43. DNA of bacteria is
(a) with histone (b) without histone
(c) with sugar and base (d) without sugar and base
44. DNA Replication generally proceeds in a
(a) 5 → 3 direction (b) 3 → 5 direction
(c) 3 → 5 direction (d) 3 → 3 direction

45. Which one of the following correctly represented?



46. In a DNA, % of thymine is 20 what is the % of Guanine?
(a) 20% (b) 40%
(c) 30% (d) 60%
47. Simplest amino acid is
(a) glycine (b) proline
(c) tryptophan (d) leucine

48. 80% of the cells have



BIOLOGY



- (a) mineral (b) water
(c) protein (d) carbohydrate
49. Starch and cellulose are compounds of many units of
(a) simple sugar (b) fatty acid
(c) glycerol (d) amino acid
50. Pentose and hexose are common
(a) monosaccharide (b) disaccharide
(c) polysaccharide (d) none of these



BIOLOGY



Answer

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. b | 2. c | 3. b | 4. b | 5. d |
| 6. d | 7. d | 8. d | 9. a | 10. a |
| 11. d | 12. c | 13. d | 14. c | 15. b |
| 16. a | 17. d | 18. c | 19. c | 20. a |
| 21. c | 22. b | 23. c | 24. b | 25. c |
| 26. d | 27. c | 28. b | 29. a | 30. a |
| 31. a | 32. b | 33. b | 34. c | 35. d |
| 36. d | 37. c | 38. a | 39. a | 40. a |
| 41. d | 42. b | 43. b | 44. a | 45. d |
| 46. c | 47. a | 48. b | 49. a | 50. a |



PLANT PHYSIOLOGY

MINERAL NUTRITION IN PLANTS

- Which one is an inorganic nutrient?
 - Protein
 - Calcium
 - Cellulose
 - Vitamin
- Which of the following is not a macronutrient?
 - Manganese
 - Sulphur
 - Calcium
 - Phosphorous
- Non-essential element for the proper growth of plant is
 - Calcium
 - Chlorine
 - Cobalt
 - Magnesium
- Non-essential element of the plants is
 - Barium
 - Magnesium
 - Calcium
 - Potassium
- Micronutrients
 - Are called 'micro' as they play only a minor role in plant function
 - Are as important as macronutrients
 - May be omitted from culture media without any detrimental effect on the plants
 - Are less important than macronutrients
- Which of the following elements has not been proved to be essential for plants?
 - Potassium
 - Sodium
 - Zinc
 - Iron
- A trace element is
 - That which draws other elements out of protoplasm
 - Radioactive and can be traced by Geiger counter
 - Required in very, minute amounts
 - That which was first found in protoplasm
- Chlorosis in plants occurs due to
 - High – sunlight intensity
 - Low sunlight intensity
 - Absorption of yellow pigment from the soil



BIOLOGY



- (d) Deficiency of Mg and Fe in the soil
9. Chlorophyll contains
- (a) Fe (b) Mg
(c) Mn (d) K
10. Cytochrome oxidase contains
- (a) Mg (b) Co
(c) Fe (d) Hg
11. In plants a common symptom caused by the deficiencies of P, K, Ca and Mg is the
- (a) Bending of the leaf tip in form of hooks
(b) Poor development of vascular system
(c) Appearance of deep necrotic areas on the leaves
(d) Formation of anthocyanin pigment in abundance
12. Which one of the following is a micronutrient?
- (a) Ca (b) Zn
(c) Mg (d) P
13. 'Die back' of citrus is caused due to the deficiency of
- (a) Zinc (b) Iron
(c) Copper (d) Manganese
14. Carbon becomes available to crop plants in the form of
- (a) Amino acids (b) Carbon dioxide
(c) Elemental carbon (d) Carbonates
15. Mineral salts which are absorbed by the roots from the soil are in the form of
- (a) Dilute solution (b) Concentrated solution
(c) Very dilute solution (d) Very concentrated solution
16. Deficiency of Mo causes
- (a) Bending of leaf tip (b) Yellowing of leaves
(c) Mottling and necrosis of leaves (d) Poor development of vasculature
17. Deficiency of iron causes
- (a) Interveinal chlorosis first on young leaves
(b) Bending of leaf tip
(c) Reduce leaves and stunted growth
(d) Decrease in protein synthesis



BIOLOGY



18. On the basis of symptoms of chlorosis in leaves a student inferred that his was due to deficiency of nitrogen. This inference could be correct only if we assume that yellowing of leaves appeared first in
- (a) Young leaves followed by mature leaves
(b) Old leaves
(c) Mature leaves followed by young ones
(d) Yong leaves
19. Mg or Fe are needed by plants for
- (a) Energy transfer
(b) Stomatal opening
(c) Synthesis of chlorophyll
(d) Translocation of carbohydrates
20. The element which is required in largest quantities by plant is
- (a) Sulphur
(b) Nitrogen
(c) Phosphorous
(d) Calcium
21. Which of the following essential elements can land plants normally obtain directly from the air?
- (a) Hydrogen
(b) Phosphorous
(c) Carbon
(d) Nitrogen
22. The frame work elements of plants are
- (a) Manganese, Calcium and Nitrogen
(b) Copper, Carbon and Oxygen
(c) Magnesium, Copper and Iron
(d) Carbon, Hydrogen and Oxygen
23. Which of the following elements is involved in nitrogen metabolism in reduction of nitrates?
- (a) Boron
(b) Manganese
(c) Molybdenum
(d) Zinc
24. Most plants obtain their nitrogen from the soil in the form of
- (a) HNO_3
(b) Nitrate
(c) Free nitrogen gas
(d) Nitrogen oxide
25. Which of the following is a group of essential elements?
- (a) Zn, Co, B, Mo
(b) K, Mg, Na, Cl
(c) N, S, P, Si
(d) C, H, O, P
26. Premature leaf fall is caused due to the deficiency of
- (a) Nitrogen
(b) Calcium
(c) Potassium
(d) Phosphorous
27. Which is not an essential micronutrient?
- (a) Ni
(b) Co



BIOLOGY



- (c) Mn (d) B
28. In phosphorous deficiency the leaves to become yellow first are
- (a) Mature leaves at base (b) Youngest leaves at the apex
- (c) Both mature and young leaves (d) All of the above
29. Deficiency of one of the following causes little. "Leaf rosette" disease in trees
- (a) Boron (b) Copper
- (c) Zinc (d) Manganese
30. In sulphur deficiency
- (a) Oldest leaves become yellow and youngest remain green
- (b) There is uniform chlorosis of young and old leaves
- (c) Young leaves are the first to become yellow
- (d) None of these
31. The element that helps in transport of electrons from water in photosynthesis is
- (a) Molybdenum (b) Zinc
- (c) Chlorine (d) Boron
32. Minerals absorbed by roots move to leaf through
- (a) Xylem (b) Phloem
- (c) Sieve tube (d) None
33. Chlorosis occurs in plants grown in
- (a) Dark (b) Shade
- (c) Strong light (d) Fe-free medium
34. Which of the following plants cannot fix atmospheric nitrogen directly?
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BIOLOGY



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(c) Ca, K, Mg (d) Cu, Fe, Zn



WATER ABSORPTION, CONDUCTION AND TRANSLOCATION OF SOLUTES

- The most important force which pulls the water up in tall trees is
 - Cohesive force
 - Osmotic force
 - Electromagnetic force
 - Imbibition force
- Ultimate cause of water movement against gravity is
 - Photosynthesis
 - Transpiration
 - Imbibition
 - Osmosis
- In ascent of sap water moves up in
 - Xylem
 - Phloem
 - Endodermis
 - Cambium
- When a plant is girdled (ringed)
 - The shoot dies first
 - The root dies first
 - The root and the shoot will die at the same time
 - Neither the root nor the shoot will die
- Ringing Experiment was first performed by
 - Godlewski
 - Hartig
 - Strasburger
 - J.C. Bose
- Root pressure is measured with
 - Manometer
 - Potometer
 - Osmometer
 - None of these
- Girdling experiment can not be performed in sugarcane because
 - Sugarcane plants are delicate
 - Vascular bundles in it are scattered
 - Phloem in it is situated internal to xylem
 - It can not withstand injury
- Water rises in the stem due to
 - Osmotic pressure
 - Turgor pressure
 - Cohesion and transpiration pull
 - None of these
- Cohesion theory for the ascent of sap was proposed by
 - Dixon and Jolly
 - Bose and Jolly
 - Molisch
 - Godlewski



BIOLOGY



10. Transpiration–Cohesion tension theory operates in
- (a) Active absorption (b) Passive absorption
(c) Both active and passive absorption (d) None of these
11. How does the removal of a ring of bark and wood from the trunk of a tree kill it?
- (a) The exposed part dies due to heat (b) Water can not go up
(c) Mineral salts can not go up (d) Immediate stoppage of photosynthesis
12. The most accepted theory for the ascent of sap in plants was put forward by
- (a) J.C. Bose (b) Sachs
(c) Dixon and Jolly (d) Strasburger
13. The chief function of vessels in the plant body is to
- (a) translocate food material (b) eliminate excess of water
(c) provide strength to stem (d) conduct water and material salts
14. Which of the following statements is not correct?
- (a) Plants take in small quantity of mineral salts through soil water.
(b) Plants absorb excess quantity of water.
(c) Plants absorb only one thing at a time, water or inorganic salt.
(d) Water and inorganic salts are taken simultaneously by the root hair.
15. Water will be absorbed by root hair when
- (a) plant is rapidly respiring
(b) concentration of salt in the soil is high
(c) they are separated from soil by a permeable membrane
(d) concentration of solutes in the cell sap is high
16. Water from the soil enters the root hair on account of
- (a) Atmospheric pressure (b) Osmotic pressure
(c) Turgor pressure (d) All the above
17. Roots absorb the water from the soil which is
- (a) Water in the form of dew (b) Hygroscopic
(c) Capillary (d) Rain water only
18. Minerals absorbed by roots move to the leaves in
- (a) Sieve tubes (b) Companion cells
(c) Xylem (d) Phloem
19. That the cell wall is a permeable membrane can be deduced from the passage of water and mineral salts from
- (a) Soil into root hair (b) Root hair into cortical cells
(c) Pericycle cells into tracheal elements (d) Cortical cells into pericycle



BIOLOGY



20. Root hair occur in the zone of
- (a) Cell elongation (b) Cell division
(c) Cell maturation (d) None of these
21. Active salt absorption depends on
- (a) Photophosphorylation (b) Expenditure of energy
(c) Active absorption (d) Activity of xylem cells
22. Cohesion theory is based on
- (a) Root pressure (b) Turgor pressure
(c) Transpiration (d) None of these
23. The pulsation theory was put forth by
- (a) Bose (b) Jolly
(c) Dixon (d) Bose and Dixon
24. Water will be absorbed by root hair when the external solution is
- (a) Hypotonic (b) Hypertonic
(c) Isotonic (d) Viscous
25. Absorption of water by roots is increased when
- (a) Transpiration rate is less (b) Photosynthesis increases
(c) Transpiration rate increases (d) Salt absorption is decreased
26. The root cap has no role in water absorption because
- (a) It has loosely arranged cells
(b) It has no cells containing chloroplast
(c) It has no direct connection with vascular system
(d) It has no root hair
27. The initial stage of water absorption by root cells is by
- (a) Imbibition (b) Absorption
(c) Osmosis (d) Desorption
28. The cell sap is
- (a) Living content of vacuole (b) Living content of cell
(c) Non living content of the cell (d) Non living content of the vacuole
29. When a cell is fully turgid which of the following will be zero?
- (a) Turgor pressure (b) Osmotic pressure
(c) Wall pressure (d) Diffusion pressure deficit (DPD)
30. The translocation of sugar in flowering plants occurs in the form of
- (a) Glucose (b) Starch
(c) Sucrose (d) Maltose



BIOLOGY



31. Food is transported to various parts of plant through
- (a) Root hair (b) Phloem
(c) Xylem (d) Stomata
32. Organic substances such as sugars are translocated in the phloem. This can be demonstrated by
- (a) Grafting (b) Root pressure
(c) Ringing the stem (d) Defoliation
33. Which of the following trees would die?
- (a) Purned (b) Hollow hearted
(c) Girdled (d) Deciduous
34. Gradient pressure was given as possible mechanism of translocation of food by
- (a) Curtis (b) Much
(c) Dixon and Jolly (d) Mason and Maskell
35. The removal of a ring of bark from trunk of a tree eventually kills it since
- (a) Water can not go up
(b) Mineral salts cannot go up
(c) The exposed part becomes infected with fungi
(d) Food does not travel down and roots are starved
36. Much mass flow hypothesis explains
- (a) Translocation (b) Transpiration
(c) Transcription (d) Translation
37. When the bark is stripped from a tree, the vital vascular tissue recovered is the
- (a) Cork cambium (b) Phloem
(c) Vessels (d) Pith
38. Electro-osmotic theory to explain the mechanism of translocation was given by
- (a) Fenson and Spanner (b) Much
(c) Manson and Phillis (d) De varies
39. Which would do maximum damage to a tree?
- (a) The loss of half of its leaves (b) The loss of all of its leaves
(c) The loss of half of its branches (d) The loss of its bark



TRANSPIRATION

1. If 50% of the leaves are removed from a plant the rate of transpiration by remaining leaves will
 - (a) remain unchanged
 - (b) increase
 - (c) decrease
 - (d) depend on the prevailing conditions
2. In monocot leaves, the guard cells are
 - (a) semilunar
 - (b) spherical
 - (c) linear
 - (d) none
3. The distribution of stomata per unit area of leaf and their size affects the rate of
 - (a) respiration
 - (b) transpiration
 - (c) guttation
 - (d) absorption
4. The loss of water in the form of liquid through hydathodes is called
 - (a) respiration
 - (b) transpiration
 - (c) evaporation
 - (d) guttation
5. Under what conditions the rate of transpiration will be maximum?
 - (a) Soil is wet and atmosphere is dry.
 - (b) Soil is dry and atmosphere is humid.
 - (c) Soil is wet and atmosphere is humid.
 - (d) Soil is dry and atmosphere is dry.
6. Which of the following is the most likely cause for wider opening of stomata?
 - (a) Fall in night temperature.
 - (b) Water molecules enter the guard cells.
 - (c) Atmosphere outside the stomata becomes less humid.
 - (d) Secretion of salt molecules by adjacent guard cells takes place.
7. Which of the following is used to determine the rate of transpiration in plants?
 - (a) Porometer
 - (b) Potometer
 - (c) Spirometer
 - (d) Tensiometer
8. Of the processes which occur in leaves, the one which may lower their temperature is
 - (a) Photosynthesis
 - (b) Transpiration
 - (c) Hydrolysis
 - (d) Respiration
9. Rate of transpiration is enhanced
 - (a) in rainy season
 - (b) in winter
 - (c) when temperature is high
 - (d) when there is no light
10. Guard cells differ from epidermal cells in having
 - (a) Mitochondria
 - (b) Chloroplast



BIOLOGY



- (c) Vacuoles (d) Cell wall
11. Transpiring organ in plants is
(a) Cortex (b) Phloem
(c) Epidermis (d) Xylem
12. Process of transpiration in plants helps in
(a) opening of stomata (b) absorption of CO₂
(c) upward conduction of sap (d) none of these
13. The chief role of transpiration in plants is to cause
(a) loss of surplus water (b) cooling of the plant
(c) rapid ascent of sap (d) rapid rise of minerals
14. Due to low atmospheric pressure, the rate of transpiration will
(a) decrease slowly (b) decrease rapidly
(c) increase (d) remain unaffected
15. Active K⁺ exchange mechanism of opening and closing of stomata was given by
(a) Khorana (b) Scarth
(c) Levitt (d) Darwin
16. Loss of turgor from the cells causes drooping leaves during day, but they recover from it at night. It is referred to as
(a) guttation (b) temporary wilting
(c) permanent wilting (d) none of these
17. Wilting of plants occurs when
(a) phloem is blocked (b) xylem is blocked
(c) both xylem and phloem are blocked (d) a few roots are removed
18. Wilting of leaves in hot weather is due to
(a) excessive transpiration
(b) excessive water absorption by roots
(c) lack of water absorption
(d) excess of transpiration as compared to water absorption
19. The condition under which transpiration would be lowest
(a) environmental conditions are very dry
(b) when there is high humidity in the atmosphere
(c) high wind velocity
(d) there is excess of water in the cells



BIOLOGY



20. Transpiration occurs through
- (a) lenticles (b) stomata
(c) cuticle (d) all the above
21. The rate of transpiration will greatly depend upon
- (a) position of stomata (b) state of stomata
(c) frequency of stomata (d) none of the above
22. The transpiration rate is regulated by the movements of
- (a) Epidermal cells of the leaves (b) Mesophyll cells
(c) Guard cells of the stomata (d) Subsidiary cells of the leaves
23. In the mechanism of opening of stomata, the important factor is the
- (a) shape of the guard cells (b) chlorophyll content of the cells
(c) protein content of the cells (d) hormone content of the cells
24. Stomata open because of
- (a) vacuoles in guard cells
(b) oxygen in the air
(c) increased turgidity of guard cells brought about by exposure to light
(d) all the above
25. The pores in leaves through which water comes out in the form of drops or droplets are called
- (a) Bordered pits (b) Stomata
(c) Lenticles (d) Hydathodes
26. When the stomata are opened, the guard cells are
- (a) flaccid (b) large
(c) green (d) turgid
27. Wilting of plants results from excessive
- (a) absorption (b) photosynthesis
(c) transpiration (d) respiration
28. Transpiration is minimised by the deposition of
- (a) Cellulose (b) Pectin
(c) Cutin (d) Mucilage
29. The following percentage of water absorbed by herbaceous plants is lost in transpiration
- (a) 80 (b) 99
(c) 60 (d) 40
30. The apparatus generally used for studying the rate of transpiration stream is
- (a) Evapometer (b) Perimeter



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- (c) Atmometer (d) Potometer
31. In both transpiration and evaporation water is lost in the form of vapour yet they differ because
- (a) frequency of water loss is different in both.
(b) transpiration is a physiological process and evaporation is a physical process.
(c) both transpiration and evaporation are similar but the rate of water loss differs.
(d) transpiration is a physical process and evaporation is a physiological process.
32. Guttation may be defined as a process in which plants can
- (a) synthesize carbohydrates (b) excrete the salt
(c) get rid of excess water in liquid form (d) compensate the loss of water
33. Guttation is caused due to
- (a) Imbibition (b) Osmosis
(c) Root pressure (d) Transpiration
34. Guttation usually occurs when the plant is put
- (a) in deserts (b) in more humid conditions
(c) in more saturated conditions (d) in dry conditions
35. Ultimate cause of water movement against gravity is
- (a) Osmosis (b) Photosynthesis
(c) Transpiration (d) Imbibition
36. According to Scarth the opening and closing of stomata is governed by
- (a) Enzymes (b) NADPH_2 formation
(c) Phosphorylation (d) pH
37. Stomata open during day time because the guard cells
- (a) photosynthesize and produce osmotically active sugars
(b) are thin – walled
(c) are bean – shaped
(d) have to help in gas exchange
38. What is the action spectrum of transpiration?
- (a) Orange and red (b) Blue and red
(c) Green and ultraviolet (d) Blue and far red
39. The condition under which transpiration would be most rapid is
- (a) excess of water in soil
(b) low humidity, high temperature, guard cells are turgid and moist soil
(c) low wind velocity
(d) high humidity



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40. What is the rate of transpiration when temperature increases?
(a) Low (b) High
(c) Low in herbs and high in trees (d) None of these
41. The stomatal aperture is measured by
(a) Luxmeter (b) Photometer
(c) Porometer (d) Potometer
42. When stomata remains open through out the day and night, they are
(a) Potato type stomata (b) Alfalfa type stomata
(c) Barely type stomata (d) None of these
43. The stomatas are widely open in
(a) Red light (b) Yellow light
(c) Green light (d) Blue light
44. When the relative humidity of the atmosphere is cent percent the stomata will
(a) Open (b) Close
(c) Partially open (d) Partially close
45. When the stomata opens during night time only they are called
(a) Photoactive stomata (b) Scotoactive stomata
(c) Nyctinastic stomata (d) All the above



CELLULAR RESPIRATION

- Which of the following molecules is glucose?
(a) $C_3H_6O_3$ (b) $C_6H_{12}O_6$
(c) C_3H_5OH (d) $C_6H_{10}O_5$
- How many molecules of oxygen gas are used during the glycolysis of one glucose molecule?
(a) 1 (b) 16
(c) 0 (d) 38
- Which one of the following is not true for glycolysis?
(a) The end products are CO_2 and H_2O
(b) ATP is used
(c) Substrate – level phosphorylation takes place
(d) ATP is formed
- Glycolysis is a process found in
(a) Eukaryotic cells (b) Most muscle cells
(c) Virtually all cells (d) Anaerobic bacteria
- The R.B.C derive their energy by
(a) Aerobic respiration
(b) From glycolytic splitting of glucose to lactic acid
(c) By the T.C.A. cycle
(d) None
- During glycolysis, glucose is split into
(a) two lactic acid molecules (b) two coenzyme A molecules
(c) two pyruvic acid molecules (d) one lactic acid and one ethanol molecule
- Which one of the following releases a carbondioxide molecule?
(a) Hydrolysis of glycogen (b) Alcohol fermentation
(c) Lactic acid fermentation (d) Glycolysis
- When a yeast is producing wine, which of the following is not formed?
(a) Carbondioxide (b) Acetyl coenzyme A
(c) Ethanol (d) Pytuvic acid
- In fermentation of one glucose molecule net gain of ATP is



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- (a) 0 ATP molecule
(b) 4 ATP molecules
(c) 2 ATP molecules
(d) 38 ATP molecules
10. When oxygen is not available to a muscle cell, NADH formed during glycolysis does not pass electrons to the electron transport system, instead, it passes hydrogen atoms to
- (a) Pyruvic acid
(b) ADP
(c) Acetyl coenzyme A
(d) Fructose
11. In conversion of pyruvic acid to acetyl coenzyme A, pyruvic acid is
- (a) oxidised
(b) reduced
(c) broken into one – carbon fragment
(d) isomerised
12. In conversion of pyruvic acid acetyl coenzyme A, NAD^+ is
- (a) isomerised
(b) oxidised
(c) reduced
(d) none
13. The molecular structure of pyruvic acid is
- (a)
$$\begin{array}{c} \text{OH} \\ | \\ \text{C} = \text{O} \\ | \\ \text{H} - \text{C} - \text{OH} \\ | \\ \text{H} - \text{C} - \text{H} \\ | \\ \text{H} \end{array}$$
- (b)
$$\begin{array}{c} \text{OH} \\ | \\ \text{C} = \text{O} \\ | \\ \text{C} = \text{O} \\ | \\ \text{H} - \text{C} - \text{H} \\ | \\ \text{H} \end{array}$$
- (c)
$$\begin{array}{c} \text{H} \\ | \\ \text{H} - \text{C} - \text{OH} \\ | \\ \text{H} - \text{C} - \text{H} \\ | \\ \text{H} \end{array}$$
- (d)
$$\begin{array}{c} \text{COOH} \\ | \\ \text{C} = \text{O} \\ | \\ \text{CH}_2 \\ | \\ \text{COOH} \end{array}$$
14. How many carbon atoms are in a citric acid molecule?
- (a) 3
(b) 2
(c) 6
(d) 5
15. Respiration is
- (a) anabolic process
(b) catabolic process
(c) aerobic process
(d) none of the above
16. Source of energy in respiration is
- (a) heat
(b) carbohydrates
(c) light
(d) all the above
17. Kreb's cycle results in the formation of



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- (a) Pyruvic acid (b) Lactic acid
(c) α - Ketoglutaric acid (d) Glucose and ATP
18. Acetyl – coA is the connecting link between
(a) Glycolysis and PPP (b) Glycolysis and Kreb's cycle
(c) Aerobic and Anaerobic respiration (d) None of the above
19. Glycolysis gives rise to net
(a) 38 ATP (b) 8 ATP
(c) 2 ATP (d) 4 ATP
20. Complete oxidation of 1 gm mole of glucose gives rise to
(a) 686000 k. cal (b) 68.6 k. cal
(c) 686 k.cal (d) 6860 k.cal
21. The proteinous part of a respiratory enzyme is
(a) Phosphomutase (b) Apoenzyme
(c) Dehydrogenase (d) Coenzyme
22. First step of utilization of glucose in metabolism is formation of
(a) glycogen (b) fructose 6 – phosphate
(c) glucose 6 – phosphate (d) fructose 1, 6 diphosphate
23. Citric acid cycle was proposed by
(a) F. Sanger (b) H.J. Muller
(c) H.A. Kreb (d) T.Caperson
24. Common phase between aerobic and anaerobic respiration is
(a) Kreb's cycle (b) Glycolysis
(c) T.C.A. (d) Oxidative phosphorylation
25. The function of acetyl coenzyme A is to
(a) isomerize pyruvic acid (b) isomerize NAD^+
(c) activate the acetyl group (d) facilitates oxidative phosphorylation
26. Mitochondria are called the power house of cell because
(a) mitochondria have a double membrane
(b) mitochondria are found in all plant and animal cells
(c) the enzymes of the Kreb's cycle and the cytochromes are found on mitochondria
(d) mitochondria produces ATP molecules
27. $F_0 - F_1$ particles are present in



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- (a) Ribosomes (b) Mitochondria
(c) Golgi complex (d) Chloroplast
28. Glycolysis take place in
(a) Cytoplasm (b) Mitochondria
(c) Matrix of the mitochondria (d) Grana of the chloroplast
29. T.C.A. cycle operates in
(a) Cytoplasm (b) Nucleoplasm
(c) Matrix of the mitochondria (d) Grana of the chloroplast
30. Energy liberated during cellular respiration is stored in
(a) GTP (b) ATP
(c) ADP (d) NADH
31. Oxygen which forms of the electron transport system, enters the mitochondria as an atom in
(a) Glucose (C_6, H_{12}, O_6) (b) Pyruvic acid ($C_3 H_4 O_3$)
(c) Carbondioxide (CO_2) (d) Oxygen gas (O_2)
32. In electron transport system, the final acceptor of electrons is
(a) Oxygen (b) Ubiquinone
(c) Cytochrome O_3 (d) Cytochrome b
33. On oxidation one of the following yields water
(a) starch (b) protein
(c) fats (d) sugar
34. The excess amino acid and fats are converted into carbohydrates in the liver the process is known as
(a) Glucogenesis (b) Glycolysis
(c) Glyconeogenesis (d) Glycogenesis
35. Transference of energy in animal cells is in form of
(a) Protein (b) Adenosine disphosphate
(c) Glucose (d) Adenosine triphosphate
36. The pigment in which reserve oxygen is preserved in case of the skeletal muscles is
(a) Haemoglobin (b) Myoglobin
(c) Haemocyanin (d) Chlorocruorin
37. Complete oxidation of a glucose molecule to H_2O and CO_2 gives rise to net
(a) 4 ATP (b) 2 ATP
(c) 38 ATP (d) 40 ATP
38. End product of a fatty acid molecule by the oxidation process is



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- (a) pyruvic acid
(c) lactic acid
39. Final end product of glycolysis is
- (a) pyruvic acid
(c) lactic acid
40. In most of the eukaryotes the net ATP yield in complete oxidation of one mole of glucose is
- (a) 38 ATP
(c) 8 ATP
- (b) acetyl coenzyme A
(d) ethanol
- (b) acetyl coenzyme A
(d) ethanol and CO₂
- (b) 36 ATP
(d) 2 ATP



PHOTOSYNTHESIS

- The function of chlorophyll in photosynthesis is that of an
 - Electron donor
 - Energy converter
 - Energy consumer
 - Electron acceptor
- Which of the following is directly dependent on the light reaction of photosynthesis?
 - Regeneration of RUDP
 - Synthesis of glucose
 - Conversion of RUDP to PGA
 - Synthesis of Pg-aldehyde from PGA
- Chlorophyll contains
 - Fe
 - K
 - Mg
 - Mn
- The C_4 – plants are more efficient than C_3 – plants because
 - They have two types of chloroplasts
 - CO_2 acceptor is PEP
 - They lack photorespiration
 - They have photorespiration
- The role of light in photosynthesis is
 - Conversion of CO_2 into phosphoglyceric acid
 - Conversion of glucose into starch
 - Penetration of CO_2 into leaf
 - Conversion of phosphoglyceric acid into phosphoglyceraldehyde
- 90% of all the photosynthesis of the world is carried out by
 - The scientist in the laboratories
 - The algae of the oceans
 - The chlorophyll containing cells of ferns in the forests
 - Large trees with abundant branches and leaves
- One of the following is never a limiting factor for photosynthesis
 - Oxygen
 - Water
 - Temperature
 - Carbon dioxide
- In the presence of light which of the following factors will be first to become limiting for photosynthesis
 - Water
 - Carbon dioxide
 - Oxygen
 - Oxaloacetate
- In C_4 -plants, the first stable compound is derived from
 - Aspartate
 - PG Aldehyde



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- (c) PGA (d) Oxaloacetate
10. In photosynthesis, oxygen in glucose is derived from
(a) Water (b) Carbon dioxide
(a) Partly H₂O and partly CO₂ (d) Not known at present
11. Which is least important in photosynthesis?
(a) Red light (b) Sun light
(c) Green light (d) Blue light
12. "Red drop" experiment by Emerson was the first evidence for the fact that there are
(a) Several light reactions in photosynthesis
(b) Light and dark reactions in photosynthesis
(c) Only two light reactions in photosynthesis
(d) None of these
13. In C₄ plants CO₂ combines with PEP in presence of
(a) Deoxy carboxylase (b) RUDP carboxylase
(c) PEP carboxylase (d) None of these
14. Pigment system I is concerned with
(a) Photolysis of water (b) Reduction of CO₂
(c) Flowering (d) None of these
15. Dark reaction in photosynthesis is called so because
(a) It can also occur in the dark (b) It does not require light energy
(c) Both of these (d) Neither of these
16. If a green plant neither seems to evolve oxygen nor CO₂ it is probably because of
(a) Deficiency of minerals (b) Deficiency of CO₂
(c) Low light intensity (d) High intensity of light
17. On a hot sunny day a green plant starts evolving CO₂ instead of oxygen because of
(a) Low rate of photosynthesis
(b) High rate of respiration
(c) Photo-oxidation of chlorophyll, due to high light intensity
(d) None of the above
18. Light is necessary in the process of the photosynthesis to
(a) Combine carbon dioxide and water (b) Release energy from glucose
(c) Split carbon dioxide (d) Produce ATP and a reducing substance



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19. Photophosphorylation is a process in which
- (a) Aspartic acid is formed
 - (b) Phosphorganic acid is produced
 - (c) CO₂ and oxygen unite
 - (d) Light energy is converted into chemical energy by production of ATP
20. The process in which carbohydrates are synthesised by green plants from carbon dioxide and water in presence of light is known as
- (a) Respiration
 - (b) Absorption
 - (c) Transpiration
 - (d) Photosynthesis
21. Oxygen which is liberated during photosynthesis comes from
- (a) Carbondioxide
 - (b) Chlorophyll
 - (c) Phospholygeric acid
 - (d) Water
22. Which of the following equations most adequately sums up the photosynthetic reaction?
- (a) $6 \text{CO}_2 + 12 \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2 + 6 \text{H}_2\text{O}$
 - (b) $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{CH}_2\text{O} + \text{HO}_2$
 - (c) $6 \text{CO}_2 + 6 \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_3$
 - (d) $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6 \text{CO}_2 + 6 \text{CH}_2\text{O}$
23. The hydrogen donor in bacterial photosynthesis is usually
- (a) Water
 - (b) Hydrogen sulphide
 - (c) Ammonia
 - (d) Sulphurous acid
24. Photosynthesis was discovered by
- (a) Blackman
 - (b) Ingenhousz
 - (c) Priestly
 - (d) Engleman
25. The scientist who first pointed out that plants purify foul air
- (a) J. Senebier
 - (b) Priestly
 - (c) R. Hooke
 - (d) Willstatter
26. The action spectra of photosynthesis was discovered by
- (a) Van Niel
 - (b) Blackman
 - (c) Engelman
 - (d) None of these
27. The principle of limiting factor was given by
- (a) Calvin
 - (b) Willstatter and Stoll



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- (c) F.F. Blackman (d) Mayor and Anderson
28. Rate of photosynthesis is independent of
(a) Temperature (b) Quality of light
(c) Intensity of light (d) Duration of light
29. The amount of CO₂ released during photosynthesis are equal volumes. This was proved by
(a) Aristotle (b) Von Helmont
(c) R. Mayer (d) Boussingault
30. Chloroplasts contain maximum quantity of
(a) Pyruvate carboxylase (b) Hexokinase
(c) RUDP carboxylase (d) None of these
31. During snowfall the trees
(a) Show minimum life function (b) Do not respire
(c) Do not photosynthesize (d) Show maximum transpiration
32. The electron doonor to pigment system 1 (P₇₀₀) is
(a) Ferredoxin (b) Quinone
(c) Plastoquinone (d) Plastocyanin
33. Peroxisomes in plants are the sites of
(a) Perioxidases (b) Fat synthesis
(c) Protein degradation (d) Photorespiration
34. If granal thylakoids are supplied light and CO₂ in an artificial medium, they fail to photosynthesis because of absence of
(a) ribosomes (b) stroma
(c) enzymes for CO₂ reduction (d) Oxygen
35. Which of the following is directly dependent on the light reactions of photosynthesis?
(a) Synthesis of glucose (b) Conversion of PG – aldehyde from PGA
(c) Regeneration of RUDP (d) Conversion of RUDP to PGA
36. In photosynthesis oxygen evolved is derived from
(a) CO₂ (b) H₂O
(c) Partly from H₂O and partly from CO₂ (d) none of these
37. Of the total light reaching the earth, the following percentage is used in photosynthesis
(a) 50% (b) 90%
(c) 10% (d) 1-2%
38. Quantosomes contain
(a) 200 chlorophyll molecules (b) 250 chlorophyll molecules



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- (c) 300 chlorophyll molecules (d) 230 chlorophyll molecules
39. Leaves appear green because they
- (a) Reflect green light (b) Absorb green light
(c) Both absorb and reflect green light (d) None of the above
40. Which of the following would not be a limiting factor in photosynthesis?
- (a) CO₂ (b) Oxygen
(c) Light (d) Chlorophyll
41. Discovery of Emerson Effect has shown the existence of
- (a) Photophosphorylation (b) Two distinct photochemical reactions
(c) Photorespiration (d) Light and dark reaction in photosynthesis
42. Tropical plant like sugarcane show high efficiency of CO₂ fixation because of
- (a) TCA cycle (b) EMP pathway
(c) Hatch – Slack cycle (d) Calvin cycle
43. Synthesis of fructose in C₄ pathway occurs in chloroplasts of
- (a) Guard cells (b) Spongy mesophyll
(c) Palisade tissue (d) Bundle sheath
44. Which is a C₄ plant?
- (a) Pea (b) Papaya
(c) Potato (d) Maize
45. Which of the following is least effective in photosynthesis?
- (a) Sun light (b) Green light
(c) Red light (d) Blue light
46. The substrate for photorespiration is
- (a) Pyruvic acid (b) Glycolate
(c) Glyoxylate (d) Phosphoglyceraldehyde
47. The researches on photosynthesis began
- (a) In the early 20th century (b) In the 18th century
(c) In the 19th century (d) In the 17th century
48. The trap centre of energy in photosystem I is
- (a) P 800 (b) P 400
(c) P 700 (d) P 689
49. It is advantageous to use Hydrilla to demonstrate photosynthesis than a land plant because
- (a) It respire slowly (b) It does not respire



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- (c) It photosynthesises rapidly (d) Oxygen bubbles can be observed
50. Which of the following occurs during dark phase of photosynthesis?
- (a) Hydrogen is released (b) ATP is produced
(c) PGAL is synthesised (d) Molecular oxygen is released
51. Which of the following element is concerned with the photolysis of water?
- (a) Manganese (b) Magnesium
(c) Zinc (d) Calcium
52. Which of the following is a Hill reaction?
- (a) Photolysis of water by chloroplast
(b) Photolysis of water by isolated chloroplast resulting in formation of ATP and NADH_2
(c) Photolysis of water by isolated chloroplast in light resulting in the reduction of some chemical compounds and release of oxygen
(d) Photolysis of water releasing oxygen and hydrogen by isolated chloroplast in the presence of light
53. Cyclic photophosphorylation releases
- (a) NADPH_2 (b) ATP only
(c) ATP and NADPH_2 (d) ATP, NADPH_2 and Oxygen
54. The role of PS – II in photosynthesis is
- (a) To release oxygen (b) To synthesise water
(c) To trap CO_2 (d) To reduce NADP to NADPH_2
55. Chemical phase in photosynthesis was discovered by
- (a) Hill (b) Blackman
(c) Arnon (d) Calvin
56. The first event in photosynthesis is
- (a) Release of oxygen
(b) Synthesis of ATP
(c) Photolysis of water
(d) Photo excitation of chlorophyll and ejection of electron
57. Impure air is purified in the presence of light and green plants was first said by
- (a) Von Helmont (b) De saussure
(c) Priestly (d) Ingenhousz
58. Which of the following is not a part of chlorophyll?
- (a) Carbon (b) Nitrogen



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- (c) Hydrogen (d) Iron
59. In photorespiration the evolution of CO_2 from photosynthetic cells is induced by
- (a) Low oxygen concentration (b) Light
(c) High oxygen concentration (d) None of these
60. In C_4 plants carbon dioxide is first fixed in
- (a) Bundle sheath (b) Mesophyll cells
(c) Palisade parenchyma (d) Spongy parenchyma
61. Photosynthetic bacteria and blue green algae have molecular component of their light receptor system in
- (a) Chloroplast (b) Lamella
(c) Chromatophores (d) Grana
62. In photorespiration there is involvement of
- (a) Peroxisomes (b) Mitochondria
(c) Both of these (d) None of these
63. Plants produce energy during
- (a) Photosynthesis (b) Transpiration
(c) Respiration (d) Translocation
64. The chlorophyll is not formed without
- (a) Calcium (b) Magnesium
(c) Potassium (d) Iron
65. Calvin cycle operates only in bundle sheaths in
- (a) C_3 plants (b) CAM plants
(c) C_4 plants (d) Hydrophytes
66. Rate of photosynthesis in scarcity of water will
- (a) Increase
(b) Decrease invariably
(c) Is not affected at all
(d) May increase or decrease depending on other factors
67. The C_4 plants are different from C_3 plants with reference to the
- (a) Type of end product of photosynthesis
(b) Substance that accepts CO_2 in carbon assimilation
(c) Number of ATP that are consumed in photosynthesis



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- (d) Type of pigments involved in photosynthesis
68. Photosynthetic leaves of fern plants are known as
- (a) Spotophylla (b) Ramenta
(c) Fronds (d) Microphylla
69. Assimilatory power in photosynthesis is used in the
- (a) Synthesis of PG – aldehyde (b) Synthesis of PGA
(c) Regeneration of RUDP (d) All the above
70. The oxygen liberated during photosynthesis is
- (a) Confined in the chlorophyll (b) Necessary for photosynthesis
(c) Necessary for all living organisms (d) The by product of photosynthesis
71. The first photosynthetic organisms appeared about how long ago
- (a) 7 billion years (b) 1 billion years
(c) 500 million years (d) 3 billion years
72. In a plant cell, the dark reactions of photosynthesis takes place in the
- (a) Cytosol (b) Endoplasmic reticulum
(c) Leucoplasts (d) Chloroplasts
73. Which of the following kind of plant fixes CO₂ by way of crassulacean acid metabolism?
- (a) Oak tree (b) Cactus
(c) Grass (d) Red algae
74. A source of protons for proton gradient within a chloroplast is
- (a) Water
(b) CH₂O
(c) Chlorophyll
(d) Phospholipids within the thylakoid membrane
75. In a plant cell, which of the following pigments participate directly in the light reaction
- (a) Chlorophyll a (b) Chlorophyll b
(c) Chlorophyll d (d) Carotenoids



PLANT GROWTH AND DEVELOPMENT

- Which of the following growth substances is not a growth promoter?
 - IAA
 - GA₃
 - Kinetin
 - Abscisic acid
- The curvature in Avena coleoptile is associated with the growth substance
 - IAA
 - GA₃
 - Abscisic Acid
 - Cytokinin
- The correct chronological sequence of developmental stages in plant is
 - Flowering – Fruiting – Juvenility – Germination
 - Germination – Juvenility – Flowering – Fruiting
 - Juvenility – Flowering – Germination – Fruiting
 - Fruiting – Flowering – Juvenility – Germination
- The correct sequence of cellular growth is
 - Division – Differentiation – Elongation
 - Division – Elongation – Differentiation
 - Differentiation – Division – Elongation
 - Elongation – Differentiation – Division
- Gibberellins do not
 - Substitute cold treatment
 - Promote flowering in long day plants
 - Inhibit flowering in long day plants
 - Promote bolting in rosette plants
- Fruit drop is caused by
 - Less auxin in fruit than in stem.
 - More auxin in fruit than in stem.
 - Absence of auxin in stem and fruit.
 - Equal distribution of auxin in stem and fruit.
- Negative geotropism in horizontal stem is caused by
 - Cell shrinkage on lower side
 - Cell enlargement on the upper side
 - Accumulation of auxin on the lower side
 - Accumulation of auxin on the upper side



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8. Cytokinins have the ability to
- (a) cause morphogenesis (b) cause root formation
- (c) substitute cold treatment (d) convert dwarf plants into all plants
9. Which of the following is a growth inhibitor?
- (a) Gibberellins (b) Auxins
- (c) Cytokinins (d) Ethylene
10. Substance which originate at the tip of stem and control growth elsewhere
- (a) Vitamins (b) Enzymes
- (c) Hormones (Auxins) (d) Food material
11. In plants growth is
- (a) restricted to certain regions or structure (b) change in size
- (c) irreversible (d) all the above
12. Auxins are abundantly produced in
- (a) root (b) meristematic region of the root
- (c) shoot (d) meristematic region of the shoot
13. Gibberellin was Isolated from
- (a) an algae (b) a fungus
- (c) a virus (d) a bacterium
14. The most important and naturally occurring auxin in higher plants is
- (a) NAA (b) MH (Maleic hydrazide)
- (c) IAA (d) 2,4 – D
15. The following hormone is concerned chiefly with cell division in plants
- (a) 2, 4- D (b) IAA
- (c) GA₃ (d) Cytokinin
16. Ethylene gas
- (a) speeds up maturation of fruits (b) slow down ripening of apples
- (c) is saturated hydrocarbon (d) retards ripening of tomatos
17. Which of the following is capable of delaying senescence?
- (a) Ascorbic acid (b) Cytokinins
- (c) Auxins (d) Gibberllins
18. Which of the following is not a naturally occurring plant hormone?



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- (a) IAA (b) GA₂
(c) 2, 4-D (d) Gibberellin
19. Gibberellin was first extracted from
(a) Gelidium (b) Aspergillus
(c) Gibberella fusikuroi (d) Gracelaria
20. Which one of the following causes rooting in cuttings?
(a) IBA (b) 2, 4-D
(c) GA₃ (d) ABA
21. Storage sprouting of potato can be prevented by
(a) Maleic hydrazide (b) Cytokinin
(c) Gibberellins (d) IAA
22. High concentration of synthetic auxins would
(a) kill weeds (b) cause root initiation
(c) control cell enlargement (d) prevent lateral buds to grow
23. Ripening of banana is accompanied with
(a) sudden rise in auxin (b) sudden rise in cytokinin
(c) sudden rise in ethylene (d) sudden rise in Gibberellin
24. Which of the following is a precursor of Auxin?
(a) Phenylalanine (b) Methionine
(c) Tryptophan (d) Cytosine
25. Garner and Allard are related with
(a) Photolysis (b) Photophosphorylation
(c) Phototropism (d) Photoperiodism
26. Abscisic acid (ABA) promotes
(a) Budding (b) Cell division
(c) Leaf fall (d) Germination
27. Seedless tomatoes are produced by
(a) growing tomato plants in mineral solution
(b) supplying radioactive compounds
(c) spraying hormones on flowers
(d) propagating tomato plants from cuttings
28. The habit of a cabbage plant can be changed drastically by the application of
(a) IAA (b) GA₃



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- (c) ABA (d) 2, 4-D
29. Plants bend towards light because
- (a) they need light for photosynthesis (b) they need light for respiration
- (c) light attracts them (d) cells on the shaded side elongate more
30. Which of the following effects of auxins on plants is the basis for commercial application?
- (a) Callus formation
- (b) Curvature of stem
- (c) Induction of root formation in stem cutting
- (d) All of the above
31. Exogenous application of gibberellins induces male flower formation on genetically female plants in
- (a) Cucumis (b) Cucurbita
- (c) Carica (d) Coccinia
32. Which of the following is an incorrect statement?
- (a) Gibberellins favour flowering of long day plants
- (b) Gibberellins substitute cold treatment
- (c) Gibberellic acid induces flowering of short day plants
- (d) Gibberellins convert biennials into annuals
33. For plant tissue culture among the following which one is required?
- (a) Kinetin (b) Coumarine
- (c) Trypsin (d) Caffeine
34. Avena curvature test was first performed by
- (a) Kurosawa (b) J.C. Bose
- (c) Skoog (d) F.W. Went
35. Bioassay for auxin is
- (a) Avena curvature test (b) Green leaf test
- (c) Dwarf maize test (d) Cell division test
36. Bioassay for gibberellin is
- (a) Green leaf test (b) Cell division test
- (c) Dwarf maize test (d) Avena curvature test
37. Auxins in small quantity inhibit the growth of
- (a) roots (b) flowers
- (c) stems (d) leaves
38. Weed-killers generally have properties much like that of



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- (a) Vitamins (b) Enzymes
(c) Hormones (d) Insecticides
39. The word Cytokinin which induces cell division was given by
(a) Brown (b) Skoog and Miller
(c) Allard (d) Letham
40. Auxin does not perform one of the following functions
(a) increase the uptake of water by cells
(b) increase the rate of photosynthesis
(c) increase the rate of respiration
(d) increase the plasticity of cell wall
41. An apple tree can be made to produce larger fruits than usual by
(a) defoliation (b) thinning of blossoms
(c) applying hormones (d) decapitating the stem apex
42. Enzymes, vitamins and hormones can be classified into a single category of biological chemicals because all of them
(a) are protein in nature (b) enhance the oxidative metabolism
(c) help in regulating metabolism (d) are synthesized within the body
43. Gibberellins differ from auxins since they induce
(a) Cell division (b) Root initiation
(c) Shortening of internodes (d) Stem elongation
44. Flowering in pineapple is promoted by
(a) IAA (b) GA3
(c) Short days (d) Cytokinin
45. The classical experiment on growth was performed by
(a) Lamarck and Boyen Jensen (b) Darwin and Boyen Jensen
(c) De Vries and Paal (d) Darwin and Lamrach
46. A plant which needs not less than 10 hours of light to flower is
(a) Day neutral plant (b) Short day plant
(c) Long day plant (d) None of these
47. Pineapple can be made to flower in off season by
(a) Zeatin (b) Ethylene
(c) Temperature (d) Short days
48. Which of the following is a long day plant?



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- (a) Wheat (b) Jowar
(c) Bajra (d) Soya – bean
49. Which of the following is a short day plant?
(a) Raddish (b) Maize
(c) Soya – bean (d) Sugar beat
50. When the dark period of short day plant is interrupted by a brief exposure of light then the plant
(a) flowers immediately (b) turns into a long day plant
(c) will not flower at all (d) gives more flowers
51. One of the following shows inter – conversion due to red far red light
(a) Chlorophyll (b) Cytochromes
(c) Carotenoids (d) Phytochrome
52. Vernalization is
(a) cycles of day and night
(b) flowering induction by low temperature of moist seeds
(c) effect of day length on plant growth
(d) growth curvature in response to light
53. The effect of daily light period on flowering of plants is called
(a) Photorespiration (b) Photooxidation
(c) Phototropism (d) Photoperiodism
54. Plants which need short periods of darkness daily are called
(a) Normal day plants (b) Long day plans
(c) Short day plants (d) Ephermeral plants
55. Phytochrome is found in
(a) Algae (b) Fungi
(c) Gymnosperms (d) Angiosperms
56. Phytochrome is involved in
(a) Phototropism (b) Geotropism
(c) Photoperiodism (d) Photorespiration
57. The phenomenon of vernalization was described for the first time by
(a) Went (b) Lysenko
(c) Kurosawa (d) Aristotle
58. In the red (P_R) and Far – red (P_{FR}) responses of plant, it is the



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- (a) middle treatment that counts (b) sum total of all the treatments that counts
(c) first treatment that counts (d) last treatment that counts
59. Hormones involved in phototropism is
- (a) IAA (b) Gibberellin
(c) Kinetin (d) 2, 4-D
60. Which hormone is related with internodal elongation?
- (a) Cytokinin (b) ABA
(c) Gibberellin (d) Auxin



MOVEMENTS IN PLANTS

- Plant movement initiated by external stimuli is known as
 - Seismonasty
 - Nyctinasty
 - Paratonic movement
 - Photonasty
- Nastic movement is caused by
 - Chemicals
 - Temperature
 - Sugar
 - Light
- The movement of hair in Drosera is
 - Thermonastic
 - Seismonastic
 - Thigmonastic
 - Photonastic
- The movement of plant organs in response to the force of gravity is called
 - Hydrotropism
 - Heliotropism
 - Geotropism
 - Phototropism
- The leaves of Mimosa pudica plant droop down on touch because
 - The leaf tissues are injured
 - The plant have nervous system
 - The leaves are very tender
 - The turgor pressure of the leaf base changes
- Which of the following is an example of turgor movement?
 - Chemotactic
 - Seismonasty
 - Thermotropic
 - Haptotropic
- Sleep movements of leaves in certain plants are due to
 - Decrease in intensity of light
 - Excess of transpiration
 - The leaves getting tired of carrying photosynthesis
 - Differential growth at the base of leaf
- The plant bend towards the source of light on account of the movement of curvature known as
 - Geotropism
 - Chemotropism
 - Thigmotropism
 - Phototropism
- Leaves of many grasses are capable of folding and unfolding because they
 - have parallel vascular bundles
 - are isobilateral
 - are very thin
 - have specialized bulliform cells



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10. Generally the plants grow towards water and this phenomenon is known as
 - (a) Hydrotropism
 - (b) Phototropism
 - (c) Thigmotropism
 - (d) Geotropism
11. Which of the following is an example of chemotropic movement?
 - (a) Germination of seedlings
 - (b) Germination of pollen tube towards the ovary
 - (c) Germination of roots towards water and chemicals present in the soil
 - (d) Coiling of tendril around a support
12. Movement in the leaf of the Touch-me-not (mimosa) plant is
 - (a) Photonasty
 - (b) Epinasty
 - (c) Seismonasty
 - (d) Nyctinasty
13. Closure of the flower and drooping of the bud of poppy are examples of
 - (a) Hyponasty and epinasty
 - (b) Epinasty and hyponasty
 - (c) Hyponasty only
 - (d) Epinasty
14. Geotropic movements are induced as result of
 - (a) bringing down of the auxin content in the root apex
 - (b) bringing down of auxin content on the lower side of the stem
 - (c) bringing down of the auxin content in the stem apex
 - (d) none of these
15. Thigmotropism is the response of the plant to
 - (a) contact
 - (b) light
 - (c) water
 - (d) gravity
16. Runner and rhizomes exhibit
 - (a) Plagiogeotropism
 - (b) Diageotropism
 - (c) Apogeotropism
 - (d) Positive orthogeotropism
17. Opening and closing of flowers represents a kind of
 - (a) Nutation
 - (b) Tropic movement
 - (c) Nastic movement
 - (d) Autonomic movement
18. Nyctinasty and thigmonasty movements are seen in
 - (a) Mimosa
 - (b) Drosera
 - (c) Cuscuta
 - (d) Utricularia
19. Nastic movements differ from tropic movements in being



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- (a) Controlled by chemicals
(b) Controlled by turgor pressure
(c) Directional with respect to stimulus
(d) Non-directional with respect to stimulus
20. Which of the following movements is induced by injury?
(a) Aerotropism
(b) Tromonasty
(c) Tromatropism
(d) Geotropism
21. Phototropism in shoots is attributed to
(a) Abscissic acid
(b) Cytokinins
(c) Gibberellins
(d) Auxins
22. Sleeping movements of Leguminous plants are
(a) Tropic movements
(b) Turgor movements
(c) Growth movements
(d) Nastic movements
23. Endogenous rhythmic changes that occur in an organism with periodicity of twenty four hours is know as
(a) Diurnal rhythm
(b) Circardian rhythm
(c) Both of the above
(d) None of the above
24. An apparatus commonly used to demonstrate phototropism is
(a) Arc auxanometer
(b) Heliotropic chamber
(c) Potometer
(d) Clinostat
25. If the sum goes towards sunlight and root goes just opposite to it then stem movement is called
(a) Phototropic movement
(b) Positive phototropic movement
(c) Negative phototropic movement
(d) None of these
26. Which of the following movements are shown by dead tissue or cells?
(a) Tropic and Hydrostatic
(b) Nastic and geotropic
(c) Xerochasty and Hydrochasy
(d) Chemotropism and thigmotropism
27. In phototropic movements curvature takes place
(a) Far behind the tip
(b) At the tip
(c) Behind the tip
(d) None of the above
28. Phototropic curvature is promoted by
(a) Red light
(b) Violet light
(c) Blue light
(d) Green light
29. Phototropic movements of roots and stems are due to
(a) Epinasty and hyponasty
(b) Differential hormonal effect



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- (c) Action of light
(d) Effect of light
30. Tertiary roots are
(a) Plageotropic
(b) Ageotropic
(c) Heliotropism
(d) Phototropism
31. Continuous movement of protoplasm in hydrilla leaves is an example of
(a) Spontaneous movement
(b) Induced movement
(c) Paratonic movement
(d) Tropic movement
32. Time period of perception of stimulus up to its end is termed as
(a) Presentation time
(b) Reaction time
(c) Restitution time
(d) Relaxation time
33. Hormone involved in phototropism is
(a) IAA
(b) Gibberellin
(c) Kinetin
(d) 2, 4-D
34. Protoplasmic streaming movements are referred as
(a) Movements of curvature
(b) Thigmonastic
(c) Heliotropism
(d) Hydrotropism
35. A plant which is kept on the window bends outside because of
(a) Apical dominance
(b) Photosynthesis
(c) Osmotic pressure
(d) More elongation of cells on the shaded portion



DIGESTIVE SYSTEM

1. The long term energy storage form in animals is
 - (a) Cholesterol
 - (b) Fats
 - (c) Starch
 - (d) Glycogen
2. The vitamins in our diet function as
 - (a) Enzymes
 - (b) Co-enzymes
 - (c) Emulsifiers
 - (d) Lubricants
3. During starvation the fat reserves of the body are depleted. When no fat is available to the body utilises next is
 - (a) Proteins
 - (b) Muscles
 - (c) Water
 - (d) None of these
4. Which of the following organs are not directly connected to each other
 - (a) Oesophagus – stomach
 - (b) Buccal cavity – stomach
 - (c) Colon – rectum
 - (d) None of these
5. A lubricant, mucin in saliva is made up of
 - (a) Polysaturated fats
 - (b) Actin and myosin
 - (c) Glycoproteins
 - (d) Phospholipids
6. Inactive enzyme precursors, such as pepsinogen for pepsin and trypsinogen for trypsin are called
 - (a) Polyglycoids
 - (b) Cholenzymes
 - (c) Activases
 - (d) Zymogens
7. In a villus some of the glycerol and fatty acids are bound to carrier proteins and transported as lip proteins to the
 - (a) Lacteals
 - (b) Capillaries
 - (c) Lumen of small intestine
 - (d) Lumen of large intestine
8. The reddish brown colour of the faeces is due to
 - (a) Undigested plant material
 - (b) Dead bacteria
 - (c) Haemoglobin from degraded Red Blood Cells
 - (d) Sloughed off cells from the digestive tract.
9. The BMR of birds and mammals is the highest. This is because they are
 - (a) Endothermic
 - (b) Exothermic



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- (c) Homiothermic (d) Isothermic
10. In the microvilli of the small intestine the enzymes for conversions are
- (a) Maltase, sucrase, lactase, peptidases
(b) Amylase, lipase, nucleases, trypsin
(c) Amylase, lactase, peptidase, carbopeptidase
(d) Maltase, lactase, lipase, trypsin
11. Diarrhoea develops when peristalsis is too fast in
- (a) Large intestine (b) Small intestine
(c) Stomach (d) Duodenum
12. Products of digestion that enter the capillaries of villi of small intestines are carried to the liver via
- (a) Jugular veins (b) Left jugular vein
(c) Lymphatic vessels (d) Hepatic portal vein
13. The true stomach of cow is
- (a) Rumen (b) Reticulum
(c) Omasum (d) Abomasum
14. Insulin and glucagon hormones are poured into
- (a) Pancreatic duct (b) Lymp
(c) Blood (d) Portal vein
15. Blood sugar is controlled by
- (a) Liver and pancreas (b) Liver and kidneys
(c) Pancreas and kidneys (d) Kidneys and spleen
16. At the end of the tongue, there is an area which is sensitive to the taste of
- (a) Bitter (b) Salty
(c) Sour (d) Sweet
17. The crypts of Leiberkhun and brunner's gland are found in
- (a) Oesophagus (b) Duodenum
(c) Ileum (d) Stomach
18. The gland that is activated by enterokinase is
- (a) Pancreas (b) Liver
(c) Gastric Glands (d) Brunner's Gland
19. The zymogen cells and chief cells secrete
- (a) Trypsin (b) Mucus cells



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- (c) Hydrochloric acid (d) Pepsin
20. The cells that produce glycogen in Islets of langerhan's are
(a) α - cells (b) β - cells
(c) γ - cells (d) All of these
21. Which of the following is correct pairing of site of action and substrate of rennin
(a) Stomach – caesin (b) Stomach – fat
(c) Mouth – starch (d) Small intestine – protein
22. Which of the following is not the role of liver
(a) Produce bile
(b) Regulate components of blood
(c) Converts toxic substances into harmless excretory products
(d) Products control cellular uptake of glucose
23. In which of the following is the Gall bladder absent
(a) Man (b) Dog
(c) Tiger (d) Horse
24. Vitamin containing cobalt cyanide linkage is
(a) A (b) B₁
(c) B₆ (d) B₁₂
25. Bolus of food undergoing digestion in acidic medium in stomach is called
(a) Acidified bolus (b) Bile Bolus
(c) Chyme (d) Chyle
26. Which of the following are reabsorbed as it is in the alimentary canal
(a) Albumen of egg (b) Protein
(c) Polysaccharides (d) Fat soluble vitamins
27. Digestion of proteins, fats and carbohydrates is complete upto
(a) Ileum (b) Duodenum
(c) Colon (d) Liver
28. Name the main constituent of the food, in the absence of that one can not live
(a) Carbohydrate (b) Mineral salt
(c) Proteins (d) Vitamins
29. Vermiform appendix is made up of
(a) Digestive tissue (b) Respiratory tissue



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- (c) Excretory tissue (d) Lymphatic tissue
30. The enzyme maltase in human alimentary canal acts on food at pH of
- (a) More than 7 to change starch into maltose
(b) Less than 7 to change starch into maltose
(c) Less than 7 to change maltose into fructose
(d) More than 7 to change maltose into glucose
31. Which of the following is best source of Axerophthol?
- (a) Apples (b) Carrots
(c) Honey (d) Peanuts
32. Release of gastro-intestinal secretion and movement after injection of food is brought about by
- (a) Sympathetic nervous system (b) Parasympathetic nervous system
(c) Central nervous system (d) Pituitary Gland
33. Wharton's duct is associated with
- (a) Brunner's Gland (b) Parotid Gland
(c) Sub-mandibular Gland (d) Sub-maxillary Gland
34. Glisson's capsule are present in
- (a) Liver cells of man
(b) Pancreas of man
(c) Spleen of man
(d) Fibrous connective tissue enclosing vertebrate liver
35. Intestinal villi are more numerous and larger in posterior part of large intestine than the anterior part because
- (a) Digestion is faster in posterior part
(b) Blood supply is poor in anterior part
(c) Blood supply is more in anterior part
(d) There is more digested food in posterior part
36. Which of the following papillae are present on the tongue of a rabbit?
- (a) Circumvallate and fungiform (b) Circumvallate and foliate
(c) Foliate (d) Circumvallate, fungiform and foliate
37. Antisterility vitamin is also called
- (a) Vitamin A (b) Vitamin B
(c) Vitamin D (d) Vitamin E



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38. A prolonged deficiency of nicotinic acid leads to
- (a) Addison's disease (b) Pellagra
(c) Osteomalacia (d) Muscular atrophy
39. The number of essential amino acids for an adult human being is
- (a) 4 (b) 8
(c) 16 (d) 20
40. Vertebrates with the highest resting requirement for energy are
- (a) Amphibians (b) Reptiles and amphibians
(c) Reptiles and aves (d) Amphibians and mammals
41. In a mammal the caloric requirement to support each gram of body weight is
- (a) inversely proportional to body size (b) Inversely proportional to body weight
(c) Directly proportional to body size (d) Directly proportional to body weight
42. The structure in the mouth that prevents food from entering the nasal cavity is
- (a) Soft palate (b) Uvula
(c) Epiglottis (d) Glottis
43. The term 'Vitamin' was introduced by
- (a) Funk (b) Calvin
(c) Starling (d) Stanley
44. Which of the following vitamins has anticancerous properties?
- (a) Vitamin B₅ (b) Vitamin B₁₇
(c) Vitamin P (d) Vitamin Q
45. The function of ductus choledochus is to carry
- (a) Gastric Juice (b) Succus entericus
(c) Bile (d) Pancreatic juice
46. The centre that regulates the amount of food we eat is located in
- (a) Tongue (b) Brain
(c) Cerebrum (d) Hypothalmus
47. In a child of 3-5 years of age the teeth absent are
- (a) Incisors (b) Canines
(c) Premolars (d) Molars
48. Diastema is
- (a) A type of tooth in rabbit (b) Canines of rabbit



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- (c) Tooth less space in jaws of rabbit (d) None of these
49. In man the gall bladder is situated in
(a) Left central lobe of liver (b) Caudate lobe
(c) Right central lobe of liver (d) Speglian lobe
50. At what time the sugar is maximum in the blood of man?
(a) In the late evening (b) In the early morning
(c) Midway between a meal (d) Soon after a meal
51. One of the following is the specific function of liver
(a) Digestion (b) Excretion
(c) Gluconeogenesis (d) Glycogenolysis
52. In the people addicted to alcohol the liver gets damaged because it
(a) Has to detoxify the alcohol (b) Stores excess of glycogen
(c) Is over stimulated to secrete bile (d) Accumulates excess of fats
53. Surgical removal of Gall bladder in human would lead to
(a) Impairment of digestion of proteins (b) Impairment of digestion of fats
(c) Increased acidity in intestine (d) jaundice
54. Parotid salivary glands are present
(a) Below the tongue (b) Below the ears
(c) In the angle between two jaws (d) Below the eye orbits
55. Which of the following does not produce any digestive enzyme?
(a) Gastric mucosa (b) Intestinal mucosa
(c) Liver (d) Pancreas
56. Usually the alimentary canal is longer in
(a) Omnivores (b) Insectivores
(c) Herbivores (d) Carnivores
57. The yellow colour of cow's milk is due to the presence of
(a) Carotin (b) Xanthophyll
(c) Riboflavin (d) Both (a) and (b)
58. Which of the following in excess causes gastric ulcers
(a) HCl (b) Gastrin
(c) Secretin (d) Pepsin
59. In the stomach of a camel which of the following is absent



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- (a) Omasum (b) Abomasum
(c) Reticulum (d) Rumen
60. Obstructive jaundice is caused by
(a) Defective pancreas (b) Damage to the liver
(c) Reticulum (d) Rumen
61. Five lobed liver is characteristic is of
(a) Man (b) Cow
(c) Rat (d) Rabbit
62. Salt in diet helps to
(a) Make the food taste good
(b) Make the process of cooking easy
(c) Increase the solubility of end products
(d) Produce small amounts of HCl required to digest food
63. Due to the presence of one of the following cellulose cannot be digested
(a) Polymer of glucose subunits
(b) Linkage between the glucose molecules
(c) Peptide linkage between the amino acid molecule
(d) Fibrous proteins
64. Maximum number of enzymes are present in
(a) Carnivores (b) Omnivores
(c) Herbivores (d) Both (a) and (b)
65. Bacteria destroying enzyme present in saliva is
(a) Lysozyme (b) Ptyalin
(c) Catalase (d) None of these
66. Among mammals, a herbivore has
(a) More teeth than a carnivore
(b) Fewer teeth than a carnivore
(c) Flatter teeth than a carnivore
(d) More pointed teeth than a carnivore in herbivore
67. In herbivore the rumen is also known as
(a) Honeycomb (b) Rennet
(c) Paunch (d) Psalterium



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68. The smallest and most numerous papillae present on tongue are
- (a) Valuate papillae (b) Fungiform papillae
(c) Foliate papillae (d) Filiform papillae
69. Prorennin occurs in
- (a) Saliva (b) Gastric juice
(c) Pancreatic juice (d) Intestinal juice
70. Transverse rugae occur on
- (a) Tongue (b) Soft palate
(c) Hard palate (d) Glottis



EXCRETION

1. Urea is produced from ammonia in the body of rabbit or man in
 - (a) liver
 - (b) urinary bladder
 - (c) kidneys
 - (d) blood
2. Bowman's capsule occurs in
 - (a) pancreas
 - (b) kidneys
 - (c) pituitary body
 - (d) adrenal gland
3. Urea is transported by
 - (a) blood plasma
 - (b) leucocytes
 - (c) haemoglobin
 - (d) erythrocytes
4. The snakes living in deserts are mainly
 - (a) aminotelic
 - (b) ureotelic
 - (c) ammonotelic
 - (d) uricotelic
5. Bidder's canal is found in
 - (a) kidney of frog
 - (b) testis of frog
 - (c) kidney of mammal
 - (d) ovary of mammal
6. In a mammalian kidney, Loops of Henle are situated in
 - (a) cortex
 - (b) medulla
 - (c) pelvis
 - (d) renal columns of Bertini
7. The vital morphological and physiological units of a mammalian kidney are
 - (a) ureters
 - (b) seminiferous tubules
 - (c) nephridia
 - (d) uriniferous tubules
8. Reabsorption of water in nephrons is controlled by
 - (a) STH
 - (b) ACTH
 - (c) ADH
 - (d) vasopressin
9. Most insects are
 - (a) ureotelic
 - (b) uricotelic
 - (c) aminotelic
 - (d) ammonotelic
10. Birds are
 - (a) uricotelic
 - (b) ureotelic
 - (c) ammonotelic
 - (d) aminotelic



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11. Ureotelic excretion is found in
 - (a) mammals
 - (b) amphibians
 - (c) birds
 - (d) all of these
12. Proximal and distal convoluted tubules are parts of a
 - (a) nephron
 - (b) oviduct
 - (c) vas deferens
 - (d) caecum
13. Waste product of adenine and guanine metabolism are excreted by man as
 - (a) ammonia
 - (b) urea
 - (c) uric acid
 - (d) allantoin
14. Percentage of which increases in blood if liver becomes functionless
 - (a) urea
 - (b) uric acid
 - (c) ammonia
 - (d) proteins
15. Urea is a breakdown product of
 - (a) fatty acids
 - (b) amino acids
 - (c) glucose
 - (d) fat
16. Composition of ECF is regulated by
 - (a) kidneys
 - (b) brain
 - (c) lungs
 - (d) thyroid
17. Ultrafiltration occurs in a glomerulus when
 - (a) hydrostatic pressure exceeds osmotic pressure
 - (b) osmotic pressure exceeds hydrostatic pressure
 - (c) capsular hydrostatic pressure exceeds glomerular hydrostatic pressure
 - (d) colloidal osmotic pressure plus capsular pressure remain less than glomerular hydrostatic pressure
18. Filtration pressure in human kidneys is about
 - (a) 10 mm Hg
 - (b) 70 mm Hg
 - (c) 45 mm Hg
 - (d) 55 mm Hg
19. Diuresis is a condition characterized by
 - (a) increase in urine volume
 - (b) increased glucose excretion
 - (c) decrease in urine volume
 - (d) decrease in electrolyte balance



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20. Nitrogenous waste is excreted mainly as
- (a) urea in both frog and tadpole (b) urea in frog, ammonia in tadpole
(c) uric acid in frog, urea in tadpole (d) urea in tadpole, ammonia in frog
21. In man, the urea is mainly produced in
- (a) Liver (b) Kidneys
(c) Gall bladder (d) Spleen
22. Urea is transported by
- (a) Plasma (b) Blood
(c) RBC (d) WBC
23. Bidder canal in frog is found in
- (a) Liver (b) Kidney
(c) Testis (d) Ovary
24. The kidneys resemble the contractile vacuoles of protozoans in
- (a) expelling out excess of water (b) expelling out glucose
(c) expelling out urea and uric acid (d) expelling out salts
25. The chief nitrogenous waste material in the urine of frog is
- (a) Ammonia (b) Uric acid
(c) Urea (d) Allantoin
26. Tiny tubes of kidney are called
- (a) Axons (b) Dendrons
(c) Nephrons (d) Neurons
27. In the kidney of the rabbit, the Loops of Henle are found in
- (a) Medulla (b) Cortex
(c) Pelvis (d) Pyramid
28. Surplus amino acids in the body are broken down to form urea in
- (a) Kidneys (b) Liver
(c) Spleen (d) Pancreas
29. The nephrostomes in the kidneys are functional in
- (a) Rabbit (b) Adult frog
(c) Tadpole (d) Young of rabbit



BIOLOGY



30. Kidneys of man is
- (a) Pronephric (b) Mesonephric
(c) Metanephric (d) All types
31. In man kidneys are present
- (a) In the groin
(b) In the thoracic cavity
(c) Just under the diaphragm
(d) Attached to the dorsal wall of the abdominal cavity
32. Green glands are excretory in function and are found in
- (a) Spiders (b) Moths
(c) Scorpions (d) Cray fishes
33. Urea in human urine is derived from the breakdown of
- (a) Glucose (b) Amino acids
(c) Fats (d) Uric acid
34. What is the alternative name for uriniferous tubules?
- (a) Cytons (b) Nephridia
(c) Nephrons (d) Neurons
35. In the kidney of the rabbit, the Loop of Henle is the part of
- (a) Glomerulus (b) Collecting duct
(c) Bowman's capsule (d) Uriniferous tubule
36. Where would you find the Henle's Loop in adult rabbit?
- (a) Arterioles (b) Bowman's capsule
(c) Glomerulus (d) Uriniferous tubule
37. Which one of the following is the simplest excretory organs?
- (a) Alveoli (b) Epidermis
(c) Lung (d) Tubule
38. For hypertonicity, urea is retained in
- (a) Man (b) Amphibians
(c) Birds (d) Elasmobranchs



BIOLOGY



39. Vitamin excreted by urine in higher vertebrates is
- (a) A (b) B
(c) K (d) C
40. In which organ of the body the insoluble calcium phosphate is eliminated?
- (a) Liver (b) Kidneys
(c) Lungs (d) Large intestine
41. Separation of amino acid into amino and carboxyl group is known as
- (a) Deamination (b) Excretion
(c) Amination (d) Egestion
42. In aquatic organisms, the end product of nitrogen exchange is
- (a) Urea (b) Nitrogen
(c) Ammonia (d) Allantoin
43. The reabsorption of water in the kidneys is under the control of a hormone
- (a) STH (b) ACTH
(c) LH (d) ADH
44. Difference between glomerular filtrate and blood plasma is of
- (a) proteins (b) potassium
(c) first is white and second is yellow (d) first is yellow and second is white
45. In marine teleost fishes Na^+ and Cl^- ions are excreted by
- (a) Gills (b) Kidneys
(c) Neuromast organs (d) Scroll valve
46. The snakes and birds are mainly
- (a) Ammonotelic (b) Amiotelic
(c) Ureotelic (d) Uricotelic
47. Least concentration of urea is present in
- (a) Renal artery (b) Renal vein
(c) Post caval (d) Dorsal aorta
48. Waste products of adenine and guanine metabolism are excreted by man as
- (a) Ammonia (b) Urea
(c) Uric acid (d) Allantoin



BIOLOGY



49. The highest concentration of urea is found in
- (a) Renal vein (b) Hepatic portal vein
(c) Dorsal aorta (d) Hepatic vein
50. Malpighian tubules are the excretory organs in
- (a) Cockroach (b) Platyhelminthes
(c) Pila (d) Frog
51. Uric acid is excreted in
- (a) Frog (b) Rabbit
(c) Man (d) Pigeon
52. The term urine can first be used in
- (a) Bowman's capsule (b) Loop of Henle
(c) Collecting tubule (d) Urinary bladder
53. What is the pH value of human urine?
- (a) 2.00 (b) 6.00
(c) 7.5 (d) 8.00
54. Which of the following is not the structure of kidney?
- (a) Cortex (b) Medulla
(c) Pelvis (d) Urethra
55. Which is the least toxic nitrogenous waste?
- (a) Ammonia (b) Urea
(c) Ammonia and urea (d) Uric acid
56. The blood leaves the glomerulus through
- (a) Afferent arteriole (b) Efferent arteriole
(c) Renal veins (d) Renal portal veins
57. In rabbit the main nitrogenous waste product is
- (a) Ammonia (b) Urea
(c) Uric acid (d) Arginase
58. In rabbit, the urinary bladder opens into
- (a) Uterus (b) Urethra
(c) Ureter (d) Vestibule



BIOLOGY



59. Ammonia is the chief excretory substance in
- (a) Camel and Whale (b) Cartilaginous fishes
(c) Whale and Porpoise (d) Fresh water fishes
60. Workers in deep mines usually suffer from dehydration because
- (a) water is lost due to evaporation
(b) water is lost due to defecation
(c) water is lost in the form of sweat
(d) water is lost alongwith salts from sweat
61. The filtrate from the glomerulus contains
- (a) urea and uric acid (b) urea, uric acid and ammonia
(c) urea, uric acid, ammonia and water (d) urea, uric acid, glucose and water
62. Glomerular filtration takes place due to
- (a) Secretion of water and electrolytes
(b) Ultra filtration
(c) Ultra filtration and reabsorption
(d) All of the above
63. The filtrate from glomerulus contains
- (a) blood without blood cells and proteins
(b) plasma without sugar
(c) blood with proteins but without cells
(d) blood without urea
64. Under normal conditions which one is completely reabsorbed in the renal tubule?
- (a) Urea (b) Uric acid
(c) Salts (d) Glucose
65. The chief nitrogenous waste in urine of rabbit or terrestrial mammals is
- (a) Urea (b) Uric acid
(c) Ammonia (d) None
66. Trimethylamine is excreted by
- (a) fresh water fishes (b) marine teleosts
(c) amphibians (d) molluscs



BIOLOGY



67. A condition of failure of kidney to form urine is
- (a) Creatinine (b) Hematuria
(c) Anuria (d) Ketonuria
68. Liquid which collects in the cavity of Bowman's capsule is
- (a) concentrated urine (b) plasma minus blood proteins
(c) glycogen and water (d) sulphates and water
69. Excretion means
- (a) Removal of useless substances and substances present in excess.
(b) Formation of those substances which have some role in the body.
(c) Removal of such substances which have never been part of the body.
(d) All of these.
70. Animals in which the main excretory product is urea, are called
- (a) Ametelic (b) Ammonotelic
(c) Ureotelic (d) Uricotelic
71. Kidneys are not only organs of excretion, their work is supplemented by
- (a) Liver (b) Skin
(c) Heart (d) Large intestine
72. Malpighian body consists of
- (a) Bowman's capsule and glomerulus
(b) Uriniferous tubule
(c) Golomerulus and uriniferous tubule
(d) Bowman's capsule and uriniferous tubule
73. Ammonia is the chief nitrogenous excretory material in
- (a) Reptiles (b) Turtles
(c) Amphibians (d) Tadpoles
74. Morphological and physiological unit of vertebrate kidney is
- (a) Ureter (b) Nephridium
(c) Uriniferous tubule (d) Seminiferous tubule
75. In kidney, glucose is mainly absorbed by
- (a) Bowman's capsule (b) Loop of Henle
(c) Proximal convoluted bubule (d) Distal convoluted tubule



BIOLOGY



Answer

- | | | |
|---------|---------|---------|
| 1. (a) | 30. (c) | 59. (d) |
| 2. (b) | 31. (d) | 60. (d) |
| 3. (a) | 32. (d) | 61. (b) |
| 4. (d) | 33. (b) | 62. (b) |
| 5. (a) | 34. (c) | 63. (a) |
| 6. (b) | 35. (d) | 64. (d) |
| 7. (d) | 36. (d) | 65. (a) |
| 8. (d) | 37. (b) | 66. (b) |
| 9. (b) | 38. (d) | 67. (c) |
| 10. (a) | 39. (d) | 68. (b) |
| 11. (c) | 40. (d) | 69. (a) |
| 12. (a) | 41. (a) | 70. (c) |
| 13. (c) | 42. (c) | 71. (a) |
| 14. (c) | 43. (d) | 72. (a) |
| 15. (b) | 44. (a) | 73. (d) |
| 16. (a) | 45. (a) | 74. (c) |
| 17. (d) | 46. (d) | 75. (c) |
| 18. (a) | 47. (b) | |
| 19. (a) | 48. (c) | |
| 20. (b) | 49. (d) | |
| 21. (a) | 50. (a) | |
| 22. (a) | 51. (d) | |
| 23. (b) | 52. (c) | |
| 24. (a) | 53. (b) | |
| 25. (c) | 54. (d) | |
| 26. (c) | 55. (d) | |
| 27. (a) | 56. (b) | |
| 28. (b) | 57. (b) | |
| 29. (c) | 58. (b) | |

RESPIRATORY SYSTEM GAS-EXCHANGE

1. If you place your hands on your chest you can feel the chest moving up and down. It is due to
 - (a) respiration
 - (b) breathing
 - (c) absorption
 - (d) ventilation
2. Lower invertebrates like sponges, coelenterates exchange CO₂ with O₂ by
 - (a) simple diffusion over their entire body surface
 - (b) lungs where atmospheric air is drawn in and CO₂ rich alveolar air is released out
 - (c) diffusion of gases across alveolar air
 - (d) special vascularised structures called gills
3. The organ of gas exchange in Earthworm is
 - (a) tracheal gills
 - (b) lungs
 - (c) gills
 - (d) moist outer surface
4. Gills are used as respiratory organs by
 - (a) terrestrial reptiles
 - (b) aquatic arthropods and molluscs
 - (c) terrestrial mammals
 - (d) aquatic reptiles
5. Which of the following respire through lungs?
 - (a) Reptile
 - (b) Birds
 - (c) Mammals
 - (d) All of these
6. Which of the following is correct?
 - (a) Amphibians like frogs can respire through moist skin also.
 - (b) Mammals have well developed gills.
 - (c) Earthworm has tracheal tubes to transport atmospheric air within the body.
 - (d) The process of exchange of O₂ from the atmosphere with CO₂ produced by the cell is called respiration.
7. Which of the following is known as sound box?
 - (a) Pharynx
 - (b) Larynx
 - (c) Nasopharynx
 - (d) Trachea
8. In human respiratory system, the trachea, primary, secondary and tertiary bronchi and initial bronchiole are supported by
 - (a) complete cartilaginous ring
 - (b) incomplete cartilaginous ring

- (c) complete non cartilaginous ring (d) incomplete non cartilaginous ring
9. Lungs are covered by
- (a) a double layered pleura (b) a single layered pleura
- (c) gill chamber (d) sound box
10. Lungs are situated in the thoracic chamber which consists of
- (a) dorsally by the vertebral column and ventrally by the sternum
- (b) laterally by ribs
- (c) dome shape diaphragm on the lower side
- (d) all the above
11. The breathing involves
- (a) inspiration during which atmospheric air is drawn in
- (b) expiration by which the alveolar air is released out
- (c) both inspiration and expiration
- (d) neither inspiration nor expiration
12. Which of the following is not correct?
- (a) Inspiration is initiated by the contract of diaphragm.
- (c) Inspiration increases the volume of thoracic chamber.
- (c) A healthy human breathes 72-80 times/minutes.
- (d) The volume of air involved in breathing movements can be estimated by using spirometer.
13. The volume of air inspired or expired during a normal respiration is called
- (a) inspiratory reserve volume (b) expiratory reserve volume
- (c) residual volume (d) tidal volume
14. The maximum volume of air a person can breathe in, after a forced expiration is called
- (a) tidal volume (b) vital volume
- (c) total lungs capacity (d) residual volume
15. Additional volume of air, a person can inspire by forcible inspiration is
- (a) 6000 to 8000 ml (b) 2500 to 3000 ml
- (c) 1000 to 1100 ml (d) 1100 to 1200 ml
16. Tidal volume of air accommodated in the lungs at the end of a forced inspiration is called total lungs capacity. It includes.
- (a) residual volume

- (b) tidal volume
 - (c) expiratory reserve volume and inspiratory reserve volume
 - (d) All of these
17. The primary site of exchange of gases in human is
- (a) bronchi
 - (b) bronchioles
 - (c) alveoli
 - (d) trachea
18. Pressure contributed by an individual gas in a mixture of gases is called
- (a) partial pressure
 - (b) diffusion pressure
 - (c) osmotic pressure
 - (d) lung pressure
19. The correct statement is
- (a) There is a concentration gradient for oxygen from alveoli to blood.
 - (b) There is a concentration gradient for oxygen from blood to tissue.
 - (c) There is a concentration gradient for O₂ from tissues to blood and blood to alveoli.
 - (d) All of the above.
20. Oxygen will diffuse from blood to tissue faster in response to which of the following conditions?
- (a) A decrease in the surface area of the capillary.
 - (b) An increase in the thickness of capillary wall.
 - (c) An increase in the PO₂ of the tissue.
 - (d) A decrease in the PO₂ of the tissue.
21. Which of the following is not the function of blood?
- (a) Buffer against pH change.
 - (b) Produce RBC and other formed elements.
 - (c) Distribute body heat.
 - (d) Transport O₂ and CO₂.
22. How is most of the CO₂ transported in the blood?
- (a) It is bound to the haem group of hemoglobin.
 - (b) It is in the form of bicarbonate ion (HCO₃⁻).
 - (c) It is dissolved as a gas in the plasma.
 - (d) It is bound to amino group on haemoglobin.
23. Which of the following is/are advantages of breathing air over breathing water?
- (a) The oxygen content of air is greater than that of an equal volume of water.
 - (b) Air is less dense than water so it takes less energy to move during respiration.

- (c) Oxygen diffuses faster through air than it does through water.
- (d) All of the above are the advantages.
24. Which of the following promotes the release of oxygen from haemoglobin?
- (a) A decrease in temperature (b) A decrease in CO₂ level
- (c) A decrease in carbonic ion (d) A decrease in pH
25. An open circulatory system is less efficient than a closed circulatory system in what respect?
- (a) It is harder to deliver O₂ to specific tissues based on need.
- (b) There is no heart to pump the blood.
- (c) In closed system body movement can not help circulate the blood.
- (d) Haemolymph does not contains respiratory pigments like haemoglobin.
26. The solubility of CO₂ is
- (a) 5-10 times higher than that of O₂
- (b) 20-25 times higher than that of O₂
- (c) 30-35 times higher than that of O₂
- (d) 40-45 times higher than that of O₂
27. The 97% of O₂ is transported by
- (a) RBC, in the blood (b) Plasma
- (c) Bicarbonate (d) None of the above
28. About 70% of CO₂ is transported by
- (a) RBCs in the blood (b) Bicarbonate
- (c) Plasma (d) None of the above
29. Oxygen after binding with haemoglobin forms a product called
- (a) carbaminohaemoglobin (b) oxyhaemoglobin
- (c) leghaemoglobin (d) deoxyhaemoglobin
30. Each haemoglobin molecule can carry a maximum of
- (a) one molecule of O₂ (b) two molecules of O₂
- (c) three molecules of O₂ (d) four molecules of O₂
31. Binding of oxygen with haemoglobin is primarily related to
- (a) partial pressure of O₂ (b) partial pressure of CO₂
- (c) hydrogen ion concentration (d) temperature

32. Which of the following factors can interfere with the binding of O₂ to haemoglobin?
- (a) Partial pressure of O₂. (b) Partial pressure of CO₂.
(c) Hydrogen ion concentration. (d) All of the above.
33. The curve obtained when percentage saturation of haemoglobin with O₂ is plotted against the partial pressure of O₂ is
- (a) L shaped curve (b) sigmoid curve
(c) straight curve (d) v shaped curve
34. Which is not a structure of the respiratory system?
- (a) Pharynx (b) Bronchi
(c) Larynx (d) Hyoid
35. The roof of the nasal cavity is formed primary by
- (a) hard palate (b) cribriform palate of ethmoid bone
(c) superior concha (d) vomer
36. The cartilage upon which the vocal cords are attached are the
- (a) thyroid and arytenoid
(b) thyroid and cricoid cartilages
(c) cunciform and cricoid cartilages
(d) thyroid and corniculate cartilages
37. Pulmonary vessels, nerves and a bronchus enter or leave the lung at the
- (a) cardiac notch (b) apex
(c) capsule (d) hilum
38. Neither the trachea nor the bronchi contain
- (a) hyaline cartilage (b) ciliated columnar epithelium
(c) goblet cell (d) simple squamous epithelium
39. Pharyngeal tonsils are located in the
- (a) nasopharynx (b) oral cavity
(c) nasal cavity (d) oropharynx
40. Which of the following is a false statement?
- (a) Slacker vocal cords produce higher sounds.
(b) During swallowing the epiglottis is depressed to cover the glottis.

- (c) In whispering the vocal cords do not vibrate.
- (d) Testosterone secretion influences laryngeal development during puberty.
41. The serous membrane in contact with the lung is the
- (a) parietal pleura (b) pulmonary mesentery
- (c) pulmonary peritoneum (d) visceral pleura
42. Most of the CO₂ is transported in the blood as
- (a) carboxyhaemoglobin (b) HCO₃⁻
- (c) carbaminohaemoglobin (d) dissolved CO₂
43. Peripheral chemoreceptors are located in
- (a) lung tissue (b) the pons and medulla oblongata
- (c) aortic and carotid bodies (d) the myocardium
44. As CO₂ produced in the tissues combines with H₂O in the blood
- (a) carbonic acid is formed (b) Cl⁻ enters the blood
- (c) most of the HCO₃⁻ from the carbonic acid leaves the RBCs from the blood plasma
- (d) all of the above occur
45. When blood CO₂ levels rise
- (a) only the rate of breathing decreases
- (b) respiratory acidosis may occur
- (c) peripheral pressure receptors responds
- (d) both the rate and depth of breathing decrease
46. The amount of air that is moved in and out of the lungs in normal quiet breathing is
- (a) vital capacity (b) tidal volume
- (c) residual volume (d) vital volume
47. Which of the following is not a structural feature the left lung?
- (a) Superior lobe (b) Cardiac lobe
- (c) Inferior lobe (d) Middle lobe
48. Which combination of muscles contraction causes inspiration?
- (a) internal intercostals – diaphragm
- (b) diaphragm – abdominal complex

- (c) external intercostals – diaphragm
 (d) external internal intercostals
49. The maximum amount of air that can be expired after a maximum inspiration is called
 (a) forced expiratory volume (b) maximum expiratory flow
 (c) tidal volume (d) vital capacity
50. Surfactant
 (a) reduces the surface tension in pulmonary alveoli
 (b) increases the PCO₂ levels in the blood
 (c) is a mucus secreted by goblet cells
 (d) reduces friction in the pleural cavity
51. The basic aspiratory and expiratory centers are located in the
 (a) lungs (b) medulla oblongata
 (c) pons (d) carotid and aortic bodies
52. Factors determining the extent to which O₂ will combine with haemoglobin are
 (a) PCO₂ in blood (b) body temperature
 (c) blood H⁺ concentration (d) all of the above
53. The cells formed in the alveolar wall that remove foreign particles from the pulmonary alveoli are called
 (a) kupffer cells (b) pulmonary reticulocytes
 (c) surfactant cells (d) alveolar macrophage cells
54. Breathing rate will increase when CO₂ in your blood
 (a) increases (b) decreases
 (c) does not change (d) all of these
55. The tracheae of insects
 (a) are stiffened with chitinous ring and lead into the lungs
 (b) are filled by positive pressure breathing
 (c) ramify along capillaries of the circulatory system for gas exchange
 (d) are highly branched coming into contact with almost every cell for gas exchange
56. Which of the following is not involved in speeding up of breathing?
 (a) A drop in the pH of the blood.
 (b) Stretch receptors in the lungs.
 (c) Impulses from the breathing centers in the medulla.

- (d) Severe deficiencies of oxygen.
57. The binding of an oxygen atom to the first iron atom of a haemoglobin molecule
- (a) occur at a very low partial pressure of oxygen
 - (b) produce a conformational change that lowers the other subunit affinity for oxygen
 - (c) is an example of co-operativity as O₂ readily binds to other subunits
 - (d) occurs more readily at a lower pH value
58. Which of the following normally contains the highest concentration of oxygen?
- (a) Body cells
 - (b) Inhaled air
 - (c) Air in alveoli
 - (d) Blood entering the lungs
59. Which of the following in a human is most similar in function to the gill lamellae of a fish?
- (a) vocal cords
 - (b) bronchioles
 - (c) Alveoli
 - (d) trachea
60. In which of the following does oxygen pass directly from the air through a moist surface, to individual cells without being carried by the blood?
- (a) Mouse
 - (b) Earthworm
 - (c) Shark
 - (d) Ant
61. Which of the following has no specialized respiratory structures?
- (a) Crab
 - (b) Earthworm
 - (c) Salmon
 - (d) Ant
62. The respiratory control centers are located in the
- (a) heart
 - (b) lungs
 - (c) diaphragm and ribs
 - (d) brain
63. When you exhale the diaphragm
- (a) relaxes and arches
 - (b) relaxes and flattens
 - (c) contracts and arches
 - (d) contracts and flattens
64. Why the lungs of the birds are more efficient than human lungs?
- (a) They use countercurrent exchange
 - (b) They have more surface area than human lungs
 - (c) They are able to concentrate the oxygen to much higher levels

- (d) They use a one way rather than an in-out air flow system
65. Through which of the following does the inhaled air pass in the end
- (a) Bronchiole (b) Larynx
(c) Pharynx (d) Trachea
66. An advantage of gas exchange in water compared with gas exchange in air, is that
- (a) water usually contains a higher concentration of O₂
(b) water is easier to move over the respiratory surface
(c) the respiratory surface does not dry out in water
(d) ventilation requires less energy in water
67. In the blood, bicarbonate ions
- (a) help transport O₂
(b) act as buffers to guard against pH changes
(c) are transported by haemoglobin
(d) attach to numerous CO₂, keeping them from solution
68. Smoking destroys the cilia in the respiratory passage this
- (a) makes it harder to move air in and out of the lungs
(b) decreases the surface area for respiration
(c) slow blood flow through lung blood vessels
(d) makes it harder to keep the lungs clean
69. A disease called emphysema decreases the springiness of the lungs. This decreases
- (a) the volume of each breath (b) respiratory rate
(c) residual volume (d) vital capacity
70. It is a structure specialized for diffusion of gases and nutrients between the blood of the mother and the foetus
- (a) uterus (b) lamella
(c) placenta (d) alveolus

NERVOUS SYSTEM

1. Third, sixth and eleventh cranial nerves in mammals are respectively the
 - (a) trigeminal, abducens, vagus
 - (b) oculomotor, abducens, spinal accessory
 - (c) trochlear, facial, spinal accessory
 - (d) oculomotor, abducens, hypoglossal
2. Which one illustrates a reflex arc?
 - (a) brain → spinal cord → muscles
 - (b) receptor → spinal cord → muscles
 - (c) muscle → receptor → brain
 - (d) muscles → spinal cord → brain
3. During conduction of an impulse, electric potential on inside of axolemma changes from
 - (a) negative to positive and remains positive
 - (b) positive to negative and again positive
 - (c) negative to positive and again negative
 - (d) positive to negative and remains negative
4. One common example of simple reflex is
 - (a) tying your shoe laces while talking to another person and not looking at them
 - (b) watering of mouth at sight of a favourite food
 - (c) climbing up a stairs in dark without stumbling
 - (d) closing of eyelids against an approaching object
5. White matter of spinal chord is mainly made up of
 - (a) nerve fibres without myelin sheaths
 - (b) nerve fibres with myelin sheaths
 - (c) areolar tissue with abundance of white fibres
 - (d) nerve cells
6. Which is a mixed nerve?
 - (a) Olfactory
 - (b) Auditory
 - (c) Facial
 - (d) Oculomotor
7. Cerebellum of brain is concerned with
 - (a) static balance
 - (b) initiation of muscular contraction
 - (c) regulation of body posture and equilibrium

- (d) co-ordination of muscular movements
8. Which nerve originates from medulla?
 (a) oculomotor (b) olfactory
 (c) optic (d) vagus
9. Lateral ventricles and diocoel of brain are connected by
 (a) foramen of monro (b) aqueduct of Sylvius
 (c) foramen magnum (d) occipital foramen
10. Vagus nerve is
 (a) mixed (b) sensory
 (c) motor (d) spinal
11. Corpus callosum of brain connects
 (a) cerebral hemispheres (b) two optic lobes
 (c) olfactory lobes (d) optic chiasma
12. Memory weakens if one of the following parts is injured
 (a) medulla (b) cerebellum
 (c) cerebrum (d) hypothalamus
13. Normal heart beat is under the control of
 (a) vagus nerves (b) glossopharyngeal nerves
 (c) autonomic system (d) none of these
14. Olfactory lobes are concerned with
 (a) Taste (b) Touch
 (c) Smell (d) Hearing
15. Auditory area is present in the
 (a) Occipital lobe (b) Parietal lobe
 (c) Frontal lobe (d) Temporal lobe
16. Cholesterol content is maximum in
 (a) Grey matter of brain (b) White matter of brain
 (c) Kidney (d) Liver
17. Cerebellum is concerned with
 (a) Intelligence (b) Smell
 (c) Equilibrium (d) Hearing
18. Ventricles of the brain are filled with
 (a) Spinal fluid (b) Cerebrospinal fluid

- (c) Interstitial fluid (d) Tissue fluid
19. Weight of the human brain is approximately
 (a) 1000 grams (b) 1300 grams
 (c) 15 grams (d) 17 grams
20. The vomiting centre is situated in
 (a) Cerebrum (b) Cerebellum
 (c) Medulla (d) Hypothalamus
21. Brain develops from which of the following layers?
 (a) Ectoderm (b) Endoderm
 (c) Mesoderm (d) Both ectoderm and endoderm
22. Largest number of cells are found in
 (a) Brain (b) Spinal cord
 (c) Retina (d) Tongue
23. Loss of memory can be done by destruction of
 (a) Cerebrum (b) Cerebellum
 (c) Medulla (d) Diencephalon
24. Which part of mammalian brain controls the muscular co-ordination?
 (a) Cerebrum (b) Cerebellum
 (c) Corpus callosum (d) Medulla oblongata
25. Power of regeneration is lowest in
 (a) Brain cell (b) Liver cell
 (c) Bone cell (d) Muscle cell
26. Fourth ventricle of brain is situated in
 (a) Medulla (b) Olfactory lobes
 (c) Diencephalon (d) Cerebrum
27. Which part of brain is responsible for hearing?
 (a) Cerebrum (b) Cerebellum
 (c) Medulla (d) Hypothalamus
28. Foramen of Monro is an aperture between
 (a) Fourth and Third ventricles (b) Lateral and third ventricles
 (c) Lateral and fourth ventricles (d) None of these
29. Medulla oblongata is also called
 (a) Prosencephalon (b) Mesencephalon

- (c) Myelencephalon (d) Metencephalon
30. Crura cerebri is found in
 (a) Fore brain (b) Mid brain
 (c) Hind brain (d) None of these
31. Organ of corti is found in
 (a) middle ear (b) utriculus
 (c) sacculus (d) cochlea
32. Focal length of eye lens is controlled by
 (a) iris muscles (b) ciliary muscles
 (c) cornea (d) pupil
33. Which are responsible for colour detection?
 (a) cones (b) rods
 (c) rods and cones (d) choroid
34. Retina of vertebrate eyes consists of
 (a) rods and cones (b) rods, cones and neurons
 (c) rods, cones, neurons and neuroglia (d) neurons and neuroglia
35. Pigment found in rods is
 (a) keratin (b) photopsin
 (c) retinene (d) melanin
36. Function of iris is to
 (a) move the lens forwards and backwards
 (b) alter the diameter of pupil
 (c) close the eyelids
 (d) secrete aqueous humor
37. Myopia (shortsightedness) is a defect in human eyes in which image is formed
 (a) in front of retina and can be corrected by using concave lenses
 (b) in front of retina and can be corrected by using convex lenses
 (c) behind retina and can be corrected by using concave lenses
 (d) behind retina and can be corrected by using convex lenses
38. The chief function of utriculus in vertebrates is to
 (a) perceive sound vibrations
 (b) serve as shock absorber
 (c) perceive pressure

- (d) help in maintenance of body equilibrium
39. Blind spot in vertebrate eyes is the place where
- (a) there are no cones (b) there are no rods
(c) there are neither rods nor cones (d) retina is absent
40. Balancing organs occur in
- (a) sponges (b) paramecia
(c) only mammals (d) all vertebrates
41. Eustachian tube connects
- (a) pharynx to middle ear (b) middle ear to external ear
(c) left ventricle to right ventricle (d) left atrium to right atrium
42. The part of an eye which acts like a diaphragm of a photographic camera is
- (a) Pupil (b) Iris
(c) Lens (d) Cornea
43. Cavity of vitreous humour in the eye is situated
- (a) behind the lens (b) in front of the lens
(c) behind the retina (d) between retina and sclerotic
44. In the ear of mammals, the receptor organs of sense of hearing is
- (a) Cochlea (b) Middle ear
(c) Sacculus (d) Utriculus
45. The chief function of utriculus in vertebrates is
- (a) to perceive sound vibrations (b) to help in body equilibrium
(c) to perceive pressure (d) to act as shock absorber
46. The cones are located in
- (a) Iris (b) Sclerotic
(c) Choroid (d) Retina
47. In a mammal, the eyes are lubricated by secretion of
- (a) Harderian glands (b) Nictitating membrane
(c) Meibomian glands (d) Lachrymal glands
48. Short sightedness of myopic vision is corrected by wearing
- (a) Convex lenses (b) Concave lenses
(c) Convex mirrors (d) Concave mirrors
49. Acute vision is found in
- (a) Vulture (b) Frog

- (c) Shark (d) Bat
50. In mammals, the colour is perceived by or which is responsible for colour detection?
 (a) Rod cells of retina (b) Cone cells of retina
 (c) Cornea lens complex of eye (d) Rods and cones
51. In frog the taste buds are confined to
 (a) Tongue (b) Buccal cavity
 (c) Tongue and floor of buccal cavity (d) Tongue and root of buccal cavity
52. Statolith is an organ which helps in
 (a) Vision (b) Equilibrium
 (c) Tactile stimulation (d) Chemical stimulation
53. Smallest bone is found
 (a) eye (b) ear
 (c) nose (d) leg
54. Ampullae of Lorenzini are thermoreceptor sense organs which are found in
 (a) Man (b) Bat
 (c) Fishes (d) Reptiles
55. Focal length of the eye lens is controlled by
 (a) Iris (b) Pupil
 (c) Ciliary body (d) Cornea
56. Iodospsin is associated with
 (a) Goiter (b) Hypophysis
 (c) Cones (d) Olfaction
57. You are riding a bicycle and take a sudden turn around a sharp corner. The organs involved in the maintenance of balance is
 (a) Medulla oblongata (b) Semicircular canals
 (c) Cerebrum (d) Optic chiasma
58. Canal joining middle ear with buccal cavity is
 (a) Inguinal canal (b) Eustachian canal
 (c) Haversian canal (d) Aquaduct of Sylvius
59. Jacobson's organ in Amphibia is known as
 (a) Vomero-nasal organ (b) Ear
 (c) Alimentary canal (d) Tongue
60. A substance responsible for making the stratum lucidum cells of the epidermis of skin of rabbit transparent, is
 (a) Rhodopsin (b) Eleiden

- (c) Keratohyaline (d) Luciferin
61. The part of our tongue which tells sweet taste is
 (a) sides (b) tip
 (c) rear (d) middle
62. Ear is most sensitive to
 (a) 20 cycles/sec (b) 1,000 cycles/sec
 (c) 10,000 cycles/sec (d) 40,000 cycles/sec
63. Cochlea of mammalian internal ear is concerned with
 (a) hearing (b) balance of body posture
 (c) both balance and hearing (d) perception of atmospheric pressure
64. In vision light energy is
 (a) converted into electrical energy (b) converted into chemical energy
 (c) converted into mechanical energy (d) converted into physical energy
65. Presbyopia is an eye defect in which
 (a) the eye ball becomes short.
 (b) the lens becomes opaque.
 (c) diminution of accommodation of lens due to loss in elasticity occurs.
 (d) the retina gets damaged with aging.
66. The visual purple rhodopsin in the eye is found in
 (a) Cornea (b) Cones
 (c) Rods (d) Retina
67. If the light source in front of an eye becomes bright suddenly
 (a) focus of lens will change (b) retinal blood supply is cut
 (c) vitreous humour becomes fluid (d) pupil will contract
68. In which of the following the eyes do not shine at night?
 (a) Cat (b) Lion
 (c) Man (d) Fish
69. Chief functions of the rods and cones in the eye of a vertebrate are
 (a) rods are important for vision in bright light and cones in dim light
 (b) rods are important for vision in dim light and cones in bright light
 (c) rods are involved in colour vision and cones in distinguishing intensities of light
 (d) rods and cones are both important for vision in dim light
70. Retina is
 (a) inner most layer of eye (b) second layer of eye

(c) third layer of eye

(d) none of these

Answer Sheet

- | | | | |
|---------|---------|---------|---------|
| | 17. (c) | 35. (c) | 53. (c) |
| | 18. (b) | 36. (b) | 54. (c) |
| 1. (b) | 19. (b) | 37. (a) | 55. (c) |
| 2. (b) | 20. (c) | 38. (d) | 56. (c) |
| 3. (c) | 21. (a) | 39. (c) | 57. (b) |
| 4. (b) | 22. (a) | 40. (d) | 58. (b) |
| 5. (c) | 23. (a) | 41. (a) | 59. (a) |
| 6. (c) | 24. (b) | 42. (b) | 60. (b) |
| 7. (d) | 25. (a) | 43. (a) | 61. (b) |
| 8. (d) | 26. (a) | 44. (a) | 62. (c) |
| 9. (a) | 27. (a) | 45. (b) | 63. (a) |
| 10. (a) | 28. (b) | 46. (d) | 64. (b) |
| 11. (a) | 29. (c) | 47. (c) | 65. (c) |
| 12. (c) | 30. (b) | 48. (b) | 66. (c) |
| 13. (d) | 31. (d) | 49. (a) | 67. (d) |
| 14. (c) | 32. (b) | 50. (b) | 68. (c) |
| 15. (d) | 33. (a) | 51. (d) | 69. (b) |
| 16. (b) | 34. (c) | 52. (b) | 70. (a) |

Locomotion and Movement

1. Articulation of femur with pelvic girdle is an example of
 - (a) Gliding joint
 - (b) Ball and socket joint
 - (c) Hinge joint
 - (d) Pivot joint
2. The cup-shaped cavity for articulation of head of humerus is
 - (a) Glenoid cavity
 - (b) Acetabulum
 - (c) Noch
 - (d) Obturator
3. Cervical vertebrae occur in
 - (a) Thorax
 - (b) Neck
 - (c) Abdomen
 - (d) Tail
4. Knee joint is
 - (a) Ball and socket joint
 - (b) Pivot joint
 - (c) Hinge joint
 - (d) Angular joint
5. Joint between atlas and axis vertebra is an example of
 - (a) Ball and socket
 - (b) Hinge joint
 - (c) Pivot joint
 - (d) Angular joint
6. The first vertebra is
 - (a) Axis
 - (b) Atlas
 - (c) Thoracic
 - (d) Lumbar
7. The cytoplasm of a muscle fibre is called
 - (a) Endoplasm
 - (b) Sarcoplasm
 - (c) Sarcomere
 - (d) Karoplasm
8. Axial skelton is made up of
 - (a) skull only
 - (b) sternum only
 - (c) vertebral column
 - (d) all of the above
9. Formula of vertebral column is (mammals)
 - (a) C₆T₁₃L₆S₄cd₁₅
 - (b) C₇T₁₃L₇S₄cd₁₅
 - (c) C₇T₁₂S₄cd₁₆
 - (d) C₇T₁₃L₇S₄cd₁₆
10. Biceps and triceps are found in
 - (a) Forearm
 - (b) Upperarm

11. (c) Thigh (d) Shank
Muscle used in bending a limb is called
(a) Flexor (b) Extensor
(c) Drepressor (d) Elevator
12. Elbow joint is
(a) Ball and socket joint (b) Pivot joint
(c) Hinge joint (d) Gliding joint
13. Tendon is a structure which connects
(a) A nerve fiber with muscle (b) A muscle with bone
(c) A bone with another bone (d) Skin with underling parts
14. Axis differs from its atlas in
(a) The absence of centrum (b) The presence of neutral arch
(c) The presence of central canal (d) All of above are wrong
15. Bone is distingusished from cartilage by the presence of
(a) Collagen (b) Blood vesseles
(c) Lymph vesseles (d) None of these
16. In rabbit 'Teeth gap' is found between
(b) Incisor (b) Canine and Premolar
(c) Premolar and Molar (d) Incisor and Premolar
17. Glenoid cavity is found in
(a) Pelvic girdle (b) pectoral girdle
(c) Humerus (d) Tibia-fibula
18. In human wrist bone is
(a) Ulna (b) Tibia
(c) Humerus (d) Femur
19. The fenestra rotundrus connects
(a) the external ear to middle ear (b) the middle ear to the inner ear
(c) the cochlea to semicircular canal (d) Middle ear to pharyx
20. The deltoid ridge characterises
(a) Humerus (b) Femur
(c) Radius (d) Ulna
21. Total number of bones in the hind limb of man is
(a) 21 (b) 14
(c) 13 (d) 24
22. The muscle fatigue occur due to accumulation of
(a) CO₂ (b) Lactic acid
(c) Creatine phosphate (d) Myosine ATP ase
23. The condition of vigor mortis when the muscle do not relax and become stiff is due to fall of concentration in
(a) Myosin (b) Relaxin
(c) Actin (d) ATP
24. The A band (dark band) of skeletal muscle are known as
(a) Isotropic band (b) Anisotropic band
(c) Intercalated disc (d) Cross bridges

25. What is the functional unit of myofibril?
 (a) Chromosome (b) Endomysium
 (c) Micro mere (d) Sarcomere
26. The functional unit of contractile system in striated muscle is
 (a) z band (b) A band
 (c) myofibril (d) sarcomere
27. Singly refractive bands are those of
 (a) A band (b) I band
 (c) Q band (d) both A and Q band
28. Cardiac muscle are supplied with
 (a) Non-myelinated fibres (b) myelinated fiber
 (c) Both a and b (d) None of these
29. The contraction and relaxation period of a muscle constitute
 (a) Muscle beat (b) Muscle stimulus
 (c) Muscle twitch (d) Muscle conduction
30. Electron microscopic studies of the sarcomere have revealed that during muscle contraction
 (a) the width of A band remain constant
 (b) the width of H zone becomes smaller
 (c) the width of I band increases
 (d) the diameter of the fibre increases
31. In birds which flight muscle is well developed
 (a) Alary (b) Bicep
 (c) Gastrocnemius (d) Pectoralis major
32. The largest muscle of the body is
 (a) Biceps (b) Gluteus maximus
 (c) Triceps (d) Quadriceps
33. Bicep muscle connects humerus with
 (a) Radius (b) Ulna
 (c) Scapula (d) Pectoral girdle
34. During fatigue
 (a) blood circulation in muscles stop
 (b) muscles fail to be stimulated
 (c) muscles fail to relax
 (d) motor nerve does not respond to muscle
35. Tricep muscle joins ulna with
 (a) Radius (b) Humerus
 (c) Phallanges (d) Supra scapula
36. For the contraction of a muscle, it needs
 (a) Protein (b) Stimulation
 (c) ATP and Mg^{++}/Ca^{++} (d) All of the above
37. The joints of wrist is of
 (a) Hinge type (b) Ball and Socket joints
 (c) Pivot type (d) None of these
38. Large number of mitochondria are present in
 (a) cardiac muscle (b) thigh muscle
 (c) breast muscle of birds (d) thin muscle

39. Voluntary muscular co-ordination are under control of
 (a) cerebrum (b) cerebral hemisphere
 (c) cerebellum (d) medulla oblongata
40. Sarcoplasmic reticulum plays a major role during
 (a) muscle contraction (b) muscle excitement
 (c) muscle relaxation (d) all of the above
41. The biceps and triceps muscles are found in
 (a) Epidermis (b) Fore arm
 (c) Shank (d) Shoulder
42. Smooth muscles are present in the
 (a) Ciliary body (b) Dermis
 (c) Iris (d) All of above
43. Hings joints are present between
 (a) Humerus and Radio ulna (b) Femur and pelvicgirdle
 (c) Femur and Acetabulum (d) Humerus and Pectoral girdle
44. Total number of bones in human body is
 (a) 203 (b) 206
 (c) 306 (d) 270
45. In the body the membrane surrounding the bone is known as
 (a) periosteum (b) endosteum
 (c) Perichondrium (d) Chondriocytes
46. The strongest muscle of the body is found in
 (a) thigh (b) wrist
 (c) finger (d) jjaw
47. Intercostal muscles are found in
 (a) Thigh (b) Abdomen
 (c) Ribs (d) Diaphram
48. The longest visceral muscles are found in
 (a) vasa deferens (b) normal uterus
 (c) pregnant uterus (d) abdomen
49. The total number of muscles in the body of man is
 (a) 409 (b) 439
 (c) 539 (d) 639
50. Muscles of the heart are
 (a) voluntary striated (b) voluntary smooth
 (c) Involuntary striated (d) Involuntary smooth

Answer Sheet

1. b	2. a	3. a	4. a	5. b
6. b	7. c	8. d	9. d	10. b
11. b	12. c	13. b	14. d	15. d
16. c	17. b	18. a	19. b	20. a
21. c	22. b	23. d	24. b	25. d
26. d	27. b	28. c	29. c	30. c
31. d	32. b	33. b	34. b	35. d
36. d	37. d	38. d	39. c	40. d
41. b	42. d	43. a	44. b	45. a
46. d	47. c	48. d	49. d	50. c

ENDROCRINE SYSTEM

- Broadly defined a hormone is molecule that
 - Influence development
 - Moves through the blood stream
 - Alters the activity of certain non adjacent cells
 - Has the same chemical activity in a variety of organisms
- Which of the following is a steroid?
 - Prostaglandin
 - Estrogen
 - Thyroxine
 - Epinephrine
- Which of the following is a modified amino acid?
 - Estrogen
 - Progesterone
 - Prostaglandin
 - Epinephrine
- The target cells of a hormone always have
 - Large amounts of the hormone stored within vesicles
 - Undifferentiated cytoplasm
 - Special receptors to which to hormone binds
 - Special channels through which the hormone moves
- An exocrine gland releases its secretions into a
 - Blood vessel
 - Duct
 - Into the duct and blood vessel
 - None of these
- The part of the brain with the greatest influence over the endocrine system is the
 - Cerebellum
 - Cerebral cortex
 - Medulla oblongata
 - Hypothalamus
- The moult of an insect is triggered by
 - Thyroxine
 - Ecdysone
 - A pheromone
 - Juvenile hormone
- Hormone-secreting cells, called neurosecretory cells, are abundant in
 - Cerebral cortex
 - Medulla oblongata
 - Amygdala
 - Hypothalamus
- The peptide hormone typically alters the activity of its cells by
 - Digesting holes in the cell's lysosomes
 - Entering the cell and altering gene expression

- (c) Passing its message to an intracellular messenger
 (d) Digesting holes in the cell's plasma membrane
10. The pituitary gland lies near the
 (a) Cerebellum (b) Cerebrum
 (c) Brain (d) Diencephalon
11. The correct name for the pituitary gland
 (a) Rathke's pouch (b) Epiphysis
 (c) Hypophysis cerebri (d) Infundibulum
12. The chemical composition of hormones of the Pituitary gland are
 (a) All proteins
 (b) All steroids
 (c) Complex substances formed from proteins, and carbohydrates
 (d) Some steroids and some proteins
13. Which of the following is not under direct control of pituitary gland with respect to the regulation of its secretory functions?
 (a) Adrenal medulla (b) Testis
 (c) Thyroid (d) Adrenal Cortex
14. The pituitary gland effects the urine volume through
 (a) ACTH (b) Antidiuretic hormone
 (c) Thyroid (d) Adrenal Cortex
15. The pituitary gland develops from
 (a) Mesoderm (b) Endoderm
 (c) Ectoderm (d) Mesoglea
16. The source of melanocyte stimulating hormone is
 (a) Anterior pituitary (b) Hypothalamus
 (c) Diencephalon region of the brain (d) Posterior pituitary
17. The metabolic rate in mammals is controlled by the secretions of
 (a) Pancreas (b) Pituitary
 (c) Liver (d) Thyroid
18. The spermatogenesis in the mammalian testis is controlled by
 (a) Growth hormone and prolactin (b) Luteinizing hormone (L.H.)
 (c) Follicle Stimulating Hormone (F.S.H) (d) F.S.H and prolactin
19. The gonadotropic hormone is secreted by

- (a) Adrenal cortex (b) Interstitial cells of testis
(c) Adenohypophysis of Pituitary (d) Posterior part of throid
20. The activity of adrenal cortex is governed by a pituitary hormone abbreviated as
(a) T.S.H (b) F.S.H.
(c) ACTH (d) HCG
21. A gorilla like man with a stooping body posture, large jaw, huge hands and legs is due to the abnormal secretion of
(a) Pituitary G.H. (b) Thyroid
(c) Pituitary FSH (d) Pituitary LH
22. The gonadotropins secreted by the anterior pituitary are
(a) TSH, FSH, LTH (b) GH, FSH, LH
(c) FSH, LH, LTH (d) STH, FSH, LH
23. A posterior pituitary hormone which is released during parturition is
(a) ICSH (b) ACTH
(c) Oxytocin (d) Vasopressin
24. If the pituitary gland of an adult rat is surgically removed, which of the following endocrine glands, will be least affected?
(a) Adrenal medulla (b) Adrenal cortex
(c) Thyroid (d) Gonads
25. Excessive production of growth hormone in man after attainment of puberty results in
(a) Obesity (b) Gigantism
(c) Acromegaly (d) Muscular dystrophy
26. Which of the following affects reproduction?
(a) Adenohypophysis (b) Pancreas
(c) Parathyroids (d) Neurohypophysis
27. New follicles will not begin to ripen so long as the blood has high level of
(a) FSH (b) Estrogen
(c) LH (d) Progesterone
28. The hormone which initiates the uterine lining to grow softer and thicker is
(a) FSH (b) Prolactin
(c) LH (d) Estrogen
29. Which of the following is the correct sequence of hormonal increase after the menstruation?
(a) FSH, Estrogen Progesterone (b) Estrogen, Progesterone, FSH

- (c) Estrogen, Progesterone, FSH (d) FSH, Progesterone, Estrogen
30. The pituitary hormone that stimulates the interstitial cells of the testis is
 (a) LH (b) LTH
 (c) FSH (d) ICSH
31. The chorionic gonadotropic hormone is secreted by the
 (a) Ovary (b) Pituitary
 (c) Uterus (d) Placenta
32. Which of the following pituitary hormones does not have another endocrine gland as its target organ?
 (a) Follicle-stimulating hormones (b) Corticotropin
 (c) Growth hormone (d) Thyrotropin
33. In the blood calcium and phosphate levels are controlled by
 (a) Parathyroid (b) Thyroid
 (c) Adrenal (d) (a) and (b)
34. Disease not caused by malfunctioning of thyroid is
 (a) Acromegaly (b) Cretinism
 (c) Goitre (d) Myxedoma
35. Metamorphosis in tadpole of frog will be accelerated if we add to the medium
 (a) Iron (b) Iodine
 (c) Potassium chloride (d) Sodium chloride
36. Gland responsible for decreasing calcium level in the blood is
 (a) Thymus (b) Throid
 (c) Parathyroid (d) Adrenal
37. In an adult man hypothyroidism may result in a disease called
 (a) Myxedema (b) Acromegaly
 (c) Hypertension (d) Cretinism
38. An organ in our body which selectively accumulates iodine is
 (a) Thymus (b) Kidney
 (c) Thyroid (d) Pituitary
39. Deficiency of Iodine in diet leads to
 (a) Enlargement of liver (b) Enlargement of neck region
 (c) Enlargement of hands and feet (d) Enlargement of bones
40. Thyroxine has a direct effect on

- (a) Cellular respiration (b) Rate of excretion
(c) Rate of digestion (d) Blood flow
41. Cushing's syndrome is caused by
(a) Liver cirrohsis (b) Under secretion of insulin
(c) Excess of ACTH secretion by the pituitary (d) Distrubance in the fat metabolism
42. The ACTH released from the anterior pituitary gland stimulates the released of cortisol and aldosteron by the
(a) Adrenal medulla (b) Adrenal cortex
(c) parathyroid (d) Sympathetic nerves
43. The source of melanocyte stimulating hormone is
(a) Anterior pituitary (b) Hypothalamus
(c) Posterior pituitary (d) Adrenal cortex
44. One of the hormones from the pineal gland influences sexual development and may reduce the sexual activity; this hormone is called
(a) Melatonin (b) Relaxin
(c) Oxytocin (d) Prolactin
45. In the body iodine is needed for the synthesis of
(a) Insulin (b) Thyroxine
(c) Epinephrine (d) Parathyroid hormone
46. The hormones by the hypothalamus, pituitary, parathyroids and pancreas are all
(a) Amino acids (b) Steriods
(c) Derivatives of biogenic amines (d) proteins
47. High amounts of throxine in blood exerts an inhibitory influence on the hypothalamus which results in
(a) Increase in the size of the thyroid
(b) Increase in TSH
(c) Decrease in the thyroxine secretion
(d) Increase in the iodination of thyroid hormone
48. Islets of Langerhans are the endocrine part of
(a) Liver (b) Ovary
(c) Spleen (d) Pancreas
49. α -cells of the endrocine pancreas secrete
(a) Pancreatic juice (b) Insulin

- (c) Glucagon (d) Lipase
50. Insulin deficiency results in
 (a) Glycosuria (b) Hypoglycaemia
 (c) Glycolysis (d) Diabetes insipidus
51. Glucagon brings about the breakdown of liver glycogen and the process is known as
 (a) Glycogenolysis (b) Glycolysis
 (c) Glucogenesis (d) Gluconeogenesis
52. Insulin controls the metabolism of the sugar
 (a) Galactose (b) Fructose
 (c) Sucrose (d) Glucose
53. The output of the pancreatic hormone insulin depends on the blood levels of
 (a) Water (b) Glucose
 (c) Oxygen (d) Glucagon
54. Hyperglycemia is an indication of malfunctioning of
 (a) Liver (b) Adrenals
 (c) Thyroid (d) Islets of Langerhans
55. Diabetes mellitus is due to deficiency of
 (a) Trypsin (b) ADH
 (c) Glucagon (d) Insulin
56. Adrenal Cortex secretes
 (a) Aldosterone (b) Adrenaline
 (c) Calcitonin only (d) Adrenaline and calcitonin
57. The basis of Addison's disease is
 (a) Hyperfunction of thyroid
 (b) Hypofunction of adrenal cortex
 (c) Hyperfunction of adrenal cortex
 (d) Hyperfunction of adrenal medulla
58. The heart rate is increased by the action of
 (a) Atropine (b) Adrenaline
 (c) Acetylcholine (d) Acetylcholine and atropine
59. The 'fight and flight response' in the event of danger is chiefly effected by
 (a) Mineralocorticoids

- (b) Glucocorticoids
(c) Epinephrine and norepinephrine
(d) Glucocorticoids, epinephrine and nor-epinephrine
60. Glucocorticoids are steroid hormones secreted from
(a) Ovary (b) Adrenal cortex
(c) Adrenal medulla (d) Testis
61. Aldosterone is an example of hormones which influence salts and water metabolism in the body, such hormones are collectively called
(a) Steroid hormones (b) Glucocorticoids
(c) Mineralocorticoids (d) Adrenocortical steroids
62. The secretion of epinephrine by the adrenal medulla is under the control
(a) Spinal nerves (b) Cranial nerves
(c) Parasympathetic nervous system (d) Sympathetic nervous system
63. Chemically epinephrine is a
(a) Protein (b) Lipid
(c) Steroid (d) Amine
64. Testosterone is secreted by
(a) Testis cells (b) Spermatogonia
(c) Leydig's cells (d) Sertoli cells
65. Estrogen is secreted by
(a) Adenohypophysis (b) Interstitial cells of testes
(c) Corpus leutum (d) Cells of developing Graffian follicies
66. Function of Relaxin, a placental hormone, is to
(a) Relax smooth muscles (b) Relax public symphysis
(c) Relax Fallopian tubes (d) Relax uterus
67. One of the following levels of gonadotropins that provide the stimulus for ovulation is
(a) Low levels of both FSH and LH
(b) High levels of FSH and low level of LH
(c) High levels of both FSH and LS
(d) Low levels of FSH and high level of LH
68. Which of the following hormone sis responsible for bringing about changes at puberty in the human female
(a) Progesterone (b) Oxytocin

- (c) Prolactin (d) Extrogen
69. Following pregnancy in the human female, which one of the following hormones would be secreted in higher amounts?
- (a) Progesterone (b) Adrenalin
(c) Luteinizing hormone (d) Estrogen
70. A posterior pituitary hormone which is released during parturition is
- (a) Vasopressin (b) ICSH
(c) Oxytocin (d) ACTH
71. Hormone that stimulate contraction of gall bladder
- (a) Secretin (b) Gastrin
(c) Cholecystokinin (d) Glucagon
72. Feedback mechanism is induced by
- (a) Substrate (b) Enzyme
(c) Endproduct (d) Catalyst
73. In the 28 day ovarian cycle, ovulation takes place typically on
- (a) day 1 of the cycle (b) on 5th day of the cycle
(c) day 28 of the cycle (d) day 14 of the cycle
74. If a person is passing out large amount of urine and feeling thirsty, yet this urine has no glucose, then the cause of copious micturition can be
- (a) over secretion of an anterior pituitary hormone
(b) undersecretion of hormone from pancreas
(c) under secretion of a posterior pituitary hormone
(d) over secretion of a hormone from pancreas
75. Which endocrine gland stores its secretion in extracellular space before discharging it into the blood
- (a) adrenal (b) pancreas
(c) testis (d) thyroid
76. According to accepted concept of hormonal action, if receptor molecules are removed from target organs, the letter will
- (a) continue to respond to the hormone but in opposite way
(b) continue to respond to the hormone, but will required higher concentration
(c) continue to respond to the hormone without any difference
(d) not respond to the hormone
77. Mammalian corpus luteum produces

- (a) estrogens (b) progesterone
(c) luteotropic hormone (d) luteinizing hormone
78. BMR is increased due to
(a) sympathetic nervous system (b) adrenaline
(c) parasympathetic nervous system (d) thyroxine
79. If some girls exhibit certain male characteristics like enlarged clitoris, heavy voice, moustache, etc. it is because of
(a) abnormal secretion of adrenal cortex (b) abnormal secretion of thyroid
(c) undersecretion of androgens (d) oversecretion of estrogens
80. Pheromones are secreted upon skin surface by certain exocrine glands. Odor of these affects
(a) skin colour
(b) secondary
(c) breasts
(d) mutual behaviour of members of a species
81. Undersecretion of cortisol causes
(a) mental retardation (b) Addison's disease
(c) anaemia (d) cretinism
82. Insulin is secreted by
(a) α cells of pancreas (b) β cells of pancreas
(c) spleen (d) oesophageal mucosa
83. An individual exhibiting both male and female characteristics is known as
(a) gynandromorphs (b) hermaphrodite
(c) bisexual (d) intersex
84. According to immunity theory of ageing, ageing starts with gradual atrophy and disappearance of
(a) thyroid (b) thymus
(c) islets of langerhan's (d) parathyroid
85. Patients suffering from cholera are given saline drip, because
(a) Cl^- ions are important constituents of blood plasma
(b) Na^+ ions helps to retain water in the body
(c) Na^+ ions are important in transport of substances across membrane
(d) Cl^- ions helps in formation of HCl in stomach for digestion

86. Hormone which stimulates the “let down” release of milk from mother’s breast when the baby is suckling
- (a) prolactin (b) progesterone
(c) oxytocin (d) relaxin
87. At menopause, there is a rise in urinary excretion of
- (a) STH (b) TH
(c) MSH (d) FSH
88. Which of these is not a ketone body
- (a) acetoacetic acid (b) succinic acid
(c) β hydroxybutyrate (d) acetone
89. Which endocrine gland helps man to combat emergency
- (a) adrenal medulla (b) adrenal cortex
(c) both of these (d) parathyroids
90. Effect of thyroxine on metabolic rate is
- (a) decrease (b) no effect
(c) increases (d) uncertain
91. In man cholecystokinin and pancreozymin hormone stimulates contraction of
- (a) Stomach (b) Brunner’s glands
(c) Salivary glands (d) Gall bladder
92. Thymus in mammals is mainly concerned with
- (a) secretion of throtropins (b) immunological functions
(c) regulation of body growth (d) regulation of body temperature
93. Diabetes insipidus occurs due to hyposecretion of
- (a) oxytocin (b) insulin
(c) vasopressin (d) thymosine
94. Steroid hormones are almost similar in structure to
- (a) cholestrol (b) triglycerides
(c) tyrosine (d) coenzyme A
95. Which of these is not a hormone
- (a) gastrin (b) insulin
(c) maltose (d) secretin
96. Chromotophores in frog’s skin are controlled by
- (a) hormones (b) nervous activity

- (c) environment (d) nervous and hormonal activities
97. Iodine deficiency in frog tadpole will lead to
(a) development of a giant frog (b) inhibition of metamorphosis
(c) development of miniature frog (d) accelerated metamorphosis
98. If parathyroid gland of man is removed, the specific result will be
(a) onset of ageing (b) disturbance of calcium level in blood
(c) onset of myxoedema (d) elevation of blood pressure
99. Iodination of Tyrosine is reaction
(a) Addition (b) Esterification
(c) Substitution (d) Decarboxylation
100. Thyroglobulin has no. of tyrosine residues
(a) 111 (b) 114
(c) 112 (d) 115

Answer Sheet (Endocrine System)

- | | | | |
|-------|-------|-------|--------|
| 1. a | 31. d | 61. c | 91. d |
| 2. b | 32. b | 62. d | 92. b |
| 3. d | 33. d | 63. d | 93. c |
| 4. c | 34. b | 64. c | 94. a |
| 5. b | 35. b | 65. d | 95. c |
| 6. d | 36. d | 66. b | 96. d |
| 7. a | 37. d | 67. d | 97. b |
| 8. d | 38. c | 68. d | 98. b |
| 9. c | 39. b | 69. a | 99. b |
| 10. d | 40. b | 70. c | 100. a |
| 11. c | 41. b | 71. c | |
| 12. a | 42. a | 72. c | |
| 13. d | 43. a | 73. d | |
| 14. b | 44. a | 74. c | |
| 15. c | 45. b | 75. c | |
| 16. a | 46. d | 76. d | |
| 17. d | 47. c | 77. b | |
| 18. c | 48. d | 78. d | |
| 19. c | 49. c | 79. a | |
| 20. b | 50. a | 80. d | |
| 21. b | 51. a | 81. d | |
| 22. a | 52. d | 82. b | |
| 23. c | 53. b | 83. a | |
| 24. b | 54. d | 84. a | |
| 25. b | 55. d | 85. c | |
| 26. a | 56. a | 86. c | |
| 27. a | 57. b | 87. c | |
| 28. c | 58. b | 88. b | |
| 29. d | 59. d | 89. a | |
| 30. d | 60. b | 90. c | |

DEVELOPMENTAL BIOLOGY

1. Amnion is an extra-embryonic membrane which develops during embryonic development of
 - (a) Cockroach
 - (b) Lizard
 - (c) Toad
 - (d) Fish
2. In man and rabbits eggs are
 - (a) Alecithal
 - (b) Microlecithal
 - (c) Centrolecithal
 - (d) Megalecithal
3. In the spawn of frog the gelatin keeps it
 - (a) Warm
 - (b) Waterproof
 - (c) Cool
 - (d) Shockproof
4. Upwards directed pigmented part of frog's egg contains living cytoplasm. It is related with
 - (a) Respiration
 - (b) Colouration
 - (c) Comouflage
 - (d) Nourishment
5. In the development of fog the blastopore forms the future
 - (a) Anus
 - (b) Mouth
 - (c) Nares
 - (d) Tympanum
6. The intesine of tadpole is
 - (a) Straight
 - (b) Curved
 - (c) Coiled
 - (d) Zig-Zig
7. A developed mammalian embryo with embryonic membrane is
 - (a) Foetus
 - (b) Gastrula
 - (c) Morula
 - (d) Planula
8. In frogs the micromeres contains
 - (a) Large amount of yolk
 - (b) Normal amount of yolk
 - (c) Less amount of yolk
 - (d) No yolk
9. Archenteron starts forming in
 - (a) Blastula
 - (b) Morula
 - (c) Early gastrula
 - (d) Early nerula

10. On removing the thyroid from the tadpole of frog it will
- (a) grow into a giant frog (b) die immediately
(c) remain tadpole throughout life (d) turn into a dwarf frog
11. During metamorphosis the tail of tadpole gets
- (a) reabsorbed (b) broken off
(c) pinched off (d) dries up and falls off
12. Larva is a stage in life history of frog which
- (a) grows in the uterus of frog
(b) lives on land
(c) is different in behaviour and structure from an adult frog
(d) resembles the adult frog
13. Which system does not undergo any special change during metamorphosis of frog's tadpole?
- (a) Respiratory (b) Circulatory
(c) Nervous (d) Digestive
14. Blastopore is found in
- (a) gastrula (b) blastula
(c) larva (d) adult
15. A placenta in mammalian embryo is formed from
- (a) amnion (b) yolk sac
(c) allantois (d) chorion
16. Animal pole of frog's egg in water remains upwards because
- (a) sperms enter from animal pole
(b) it absorbs light
(c) animal pole is free from yolk
(d) it makes the egg invisible to enemies by absorbing light
17. Placenta is universally present in
- (a) Prototherian mammals (b) Reptiles
(c) Birds (d) Eutherian mammals
18. Yolk plug appears during
- (a) morula formation (b) blastula formation

- (c) gastrulation (d) neurulation
19. Mammalian embryo is directly surrounded by
 (a) amniotic cavity (b) allantoic cavity
 (c) primary digestive cavity (d) yolk sac cavity
20. Grey crescent is an area formed soon after fertilization in
 (a) zygote of all animals (b) zygote of vertebrates
 (c) zygote of non-chordates (d) blastula of vertebrates
21. Human beings are
 (a) monoecious (b) dioecious
 (c) intersexes (d) hermaphrodite
22. Yolk which provides nourishment and serves as building material for the growth and development of the embryo is composed chemically of
 (a) glycogen (b) lipid and glycogen
 (c) proteins and lipids (d) proteins and glycogen
23. During fertilization the intermixing of the nuclei of male and female gametes is known as
 (a) syngamy (b) amphimixis
 (c) internal fertilization (d) intra-cellular fertilization
24. During normal development the activation of egg is achieved by
 (a) vitellogenesis (b) oogenesis
 (c) spermatogenesis (d) fertilization
25. Antifertilizin is secreted by
 (a) fertilized egg (b) spermatozoa
 (c) unfertilized egg (d) egg membranes
26. Cleavage divisions differ from the normal mitotic divisions in that
 (a) there is no nuclear division during cleavage.
 (b) there is no cytoplasm division during cleavage.
 (c) the division of cytoplasm follows the nuclear division.
 (d) there is no period of growth in between two cleavages.
27. During cleavage the embryo
 (a) enlarges in size.

- (b) decreases in size.
- (c) retains the same size as in the beginning.
- (d) gradually enlarges in size.
28. Meroblastic cleavage is observed in
- (a) man (b) frog
- (c) hens egg (d) rabbit
29. The cellular movements during gastrulation are known as
- (a) epiboly (b) emboly
- (c) involution (d) morphogenetic movement
30. When eggs are released from the ovary of frog they are at the stage:
- (a) primary oocyte (b) secondary oocyte
- (c) ootid (d) matured ova
31. The act of laying eggs by the female frog is known as
- (a) fecundicity (b) fertility
- (c) spawning (d) spermiation
32. The hollow blastula of frog comes in the category of
- (a) coeloblastula (b) steroblastula
- (c) discoblastula (d) blastocysts
33. The movement of pigmented micromeres over macromeres during gastrulation is known as
- (a) epiboly (b) emboly
- (c) involution (d) proliferation
34. The primary organizer (dorsal lip) was discovered by
- (a) Lillie (b) Spemann
- (c) N. Sprad (d) Vogt
35. The back muscles of the body develop from
- (a) myotome (b) sclerotome
- (c) nephrotome (d) plate mesoderm
36. The nitrogenous wastes of the tadpole are
- (a) Urea (b) Uric acid
- (c) Ammonia (d) Both ammonia and uric acid

37. The large macromeres projecting out of the blastopore in an early gastrula of frog constitute what is known
- (a) yolk plug (b) grey crescent
(c) dorsal lip and blastopore (d) chorda mesoderm
38. Amphibian metamorphosis is an excellent example of the control of morphogenetic process by
- (a) enzymes (b) hormones
(c) environment (d) nervous system
39. Metamorphosis is a characteristic feature of
- (a) direct ontogenic development (b) indirect ontogenic development
(c) chordates (d) embryogenesis of mammals
40. The mammalian heart develops from
- (a) endoderm (b) mesoderm
(c) ectoderm (d) neurectoderm

CELL BIOLOGY

- Which of the following cell organelles are considered to be rich in catabolic enzymes?
(a) Endoplasmic reticulum (b) Lysosome
(c) Golgi bodies (d) Mitochondria
- Khorana has been awarded Nobel Prize for research in
(a) hormones (b) genetic code
(c) Plant breeding (d) mechanism of origin of life
- The cell theory was propounded by
(a) Schleiden and Schwann (b) Watson and Crick
(c) Darwin and Wallace (d) Mendel and Morgan
- Cell membrane is composed of
(a) protein (b) proteins and lipids
(c) lipids (d) cellulose
- Which of the following element is a component of the middle lamella in plant cell?
(a) Potassium (b) Calcium
(c) Magnesium (d) iron
- Stroma is the ground substance of
(a) lysosome (b) ribosome
(c) chloroplast (d) mitochondria
- The smallest organelle in a cell is
(a) lysosome (b) spherosome
(c) peroxisome (d) ribosome
- The smallest structure that can replicate itself is
(a) chloroplast (b) gene
(c) chromosomes (d) bacterium
- Ribosomes are concerned with
(a) protein synthesis (b) carbohydrate synthesis
(c) fat synthesis (d) starch synthesis
- Ribosomes were discovered by
(a) Watson (b) Nicunan
(c) Palade (d) Khorana

11. The following is present in the chlorophyll molecule
- (a) Calcium (b) Potassium
(c) Magnesium (d) Iron
12. The membrane surrounding the vacuole is called
- (a) cell wall (b) cell membrane
(c) tonoplast (d) karyotheca
13. The chemical substance most abundantly present in the middle lamella is
- (a) suberin (b) cutin
(c) pectin (d) lignin
14. The study of spores and pollen grains is called
- (a) pomology (b) palynology
(c) topology (d) floriculture
15. Cystoliths are composed of
- (a) calcium oxalate (b) calcium carbonate
(c) MgCO_3 (d) glucosides
16. An angstrom is equal to
- (a) 10^{-8} cm (b) 10^{-4} cm
(c) 10^{-6} cm (d) 10^{-2} cm
17. Which of the following cell organelle is responsible for photo respiration?
- (a) Glyoxisome (b) Spherosome
(c) Peroxisome (d) Transosomes
18. The figures of cork cell seen by Robert Hook were published in
- (a) Micrographia (b) Origin of Species
(c) Genera Planatarum (d) Species planaterum
19. Which of the following stain in used for establishing the presence of DNA?
- (a) Eosin (b) Haematoxylin
(c) Feulgen (d) both (a) and (b)
20. Nobel Prize for in-vitro synthesis of polyribounucleotides was awarded to
- (a) A. Kornberg (b) S. Oocha
(c) H. Khorana (d) Nirenberg
21. The largest cell orgenelle is
- (a) Chloroplast (b) Nucleus
(c) Golgi bodies (b) Endoplasmic Reticulum

22. Cristae of mitochondria are responsible for
- (a) Intake of O₂ (b) Elimination of CO₂
(c) Carbon assimilation and ATP synthesis (d) Electron transfer and ATP synthesis
23. Semi-autonomous cell organelles are
- (a) mitochondria and golgi bodies (b) golgi bodies and centriole
(c) mitochondria and chloroplast (d) chloroplast and microtubules
24. Which is not a membrane bound cell organelle?
- (a) Ribosome (b) Nucleus
(c) Centriole (d) None of these
25. The organelle meant for the degradation of fat is
- (a) microsome (b) Glyoxisome
(c) peroxisomes (d) Lysosome
26. To isolate mitochondria
- (a) Cells are disrupted and centrifuged
(b) Cells are plasmolysed
(c) Cells having larger number of mitochondria are selected
(d) none of these
27. Which of the following is single membrane bound cell organelle?
- (a) Lipochondria (b) Mitochondria
(c) Lysosome (d) Endoplasmic Reticulum
28. Nucleic acids were discovered by
- (a) Altman (b) Benda
(c) Meischer (d) Fontona
29. Units of photosynthesis are
- (a) Cristae (b) Thylakoid
(c) Grass (d) Quantasomes
30. Magnification of electron microscope is
- (a) 200 times (b) 20,000 times
(c) 2000 times (d) 200,00 times
31. Autolysis of cell brought about by
- (a) Dictyosome (b) Lysosome
(c) Microsome (d) Micro-bodies

32. Vacuole in a plant cell contains
- (a) water (b) cytoplasm
(c) air (d) water and dissolved salts
33. Nuclear ribosomes were first observed by
- (a) Fontana (b) Palade
(c) Tso and Sato (d) Claude
34. Centriole is absent in
- (a) Angiosperm (b) Bryophytes
(c) Both (a) and (b) (d) None of these
35. The microtubular organization in centriole is
- (a) 9 + 2 (b) 9 + 0
(c) 9 + 4 (d) Varies from cell to cell
36. Which of the following derives energy from the carbohydrates to form ATP?
- (a) Mitochondria (b) Chloroplast
(c) Lysosome (d) Golgi bodies
37. Lignin is complex compound of
- (a) Succinic acid (b) Acetyl Co-enzymes
(c) Ethyl alcohol (d) Coniferyl alcohol
38. Cytochrome is absent in
- (a) Chloroplast (b) Mitochondria
(c) none of these (d) Both (a) and (b)
39. Endoplasm is also known as
- (a) Plasmasol (b) Plasmagel
(c) Deutoplasm (d) Paraplasm
40. Mitochondria was first observed by
- (a) Benda (b) Altman
(c) Kolliker (d) Fila
41. Which of the following is an exception to the cell Theory?
- (a) Bacteria (b) Lichen
(c) Fungi (d) Virus

42. The DNA molecule is composed of
- (a) pentose sugar, phosphoric acid, pyrimidines
 - (b) pentose sugar, phosphoric acid, pyrimidines and purines
 - (c) pentose sugar, phosphoric acid and purines
 - (d) pentose sugar, pyrimidines and purines
43. The word 'Chromosome' was coined by
- (a) Johnson
 - (b) Waldeyer
 - (c) Robinson
 - (d) Robert Brown
44. Most hydrolytic enzymes function in a medium which is
- (a) Acidic
 - (b) Basic
 - (c) Neutral
 - (d) of any nature
45. Which of the following is found only in RNA and not DNA?
- (a) Uracil
 - (b) Guanine
 - (c) Thymine
 - (d) Cytosine
46. Lysosomes originate from
- (a) Centriole
 - (b) Golgi bodies
 - (c) Mesosome
 - (d) Mitochondria
47. Nobel prize for artificial synthesis of Gene was awarded to
- (a) Nirenberg
 - (b) Khorana
 - (c) Ochoa
 - (d) Kornberg
48. The inclusion of nucleus is
- (a) Ribosomes
 - (b) Mitochondria
 - (c) Nucleolus
 - (d) None of these
49. If the cells are broken up and sedimented by centrifugation the new structure formed in one of the fractions is
- (a) Ribosome
 - (b) RNA
 - (c) Microsome
 - (d) Mesosome
50. Cellulose cell wall can be stained by
- (a) Methylene blue
 - (b) Haematoxyline
 - (c) Zinc chloride
 - (d) Eosin
51. Ribosomes are attached to endoplasmic reticulum through
- (a) Ribophorins
 - (b) r-RNA
 - (c) t-RNA
 - (d) m-RNA

52. Feulgen reaction is a specific test for
- (a) RNA (b) DNA
(c) Protein (d) Sugar
53. The chief role of nucleolus in a nucleus concerns
- (a) Organization of chromosomes (b) Replication of DNA
(c) Synthesis of ribosomes (d) Chromatid separation
54. The regions of chromatin which usually undergo transcription are
- (a) Euchromatin (b) Heterochromatin
(c) Nucleosome (d) None of these
55. Site of formation of immature ribosomal sub units in a eukaryotic cell is
- (a) Cytoplasm (b) Nucleus
(c) Nucleolus (d) Nuclear pore complex
56. The secretory material is discharged by the Golgi vesicles, from the surface of membrane by
- (a) Pinocytosis (b) Endocytosis
(c) Reverse pinocytosis (d) Dissolving the cell membrane
57. The site of synthesis and degradation of H_2O_2 in a plant cell is
- (a) Glyoxisome (b) Transosome
(c) Peroxisome (d) Lysosome
58. The fruits after ripening become soft due to
- (a) Dissolution of tannin in cell sap (b) Dissolution of cell wall
(c) Formation of ethylene gas (d) Dissolution of middle lamella
59. One nanometer is equal to
- (a) $1/10^{\text{th}}$ of an Angstrom (b) $1/100^{\text{th}}$ of an Angstrom
(c) $1/1000^{\text{th}}$ of an Angstrom (d) $1/10,000$ of an Angstrom
60. Ribosomes never contain
- (a) RNA (b) Protein
(c) Protein and Carbohydrates (d) DNA and Carbohydrates

CELL REPRODUCTION

1. If there were 4 chromosomes present in parent cell, How many chromosomes are there during Anaphase II in each cell?
(a) 2 (b) 4
(c) 3 (d) 16
2. During what phase of meiosis do tetrads form?
(a) Anaphase I (b) Prophase II
(c) Prophase I (d) Anaphase II
3. In oogenesis, the haploid egg that is fertilized by a sperm is the
(a) Ootid (b) Primary oocyte
(c) Secondary oocyte (d) Ovum
4. Prophase I is divided into substages which have the sequence of
(a) Pachytene, leptotene, zygotene, diplotene, diakinesis
(b) Zygotene, pachytene, leptotene, diplotene, diakinesis
(c) Diplotene, diakinesis, leptotene, zygotene, pachytene
(d) Leptotene, zygotene, pachytene, diplotene, diakinesis
5. In meiosis chromosomes undergo
(a) Duplication (b) Coiling
(c) Segregation (d) Individual division
6. In garden pea the minimum number of meiotic divisions needed to produce one hundred seeds is
(a) 100 (b) 125
(c) 150 (d) 50
7. Terminalisation is related to
(a) Cytokinesis (b) Diakinesis
(c) Mitosis (d) Meiosis
8. During synapsis the number of threads present in the bivalent are
(a) 8 (b) 4
(c) 6 (d) Many
9. Mitotic divisions in a cell to form 128 cells are
(a) 127 (b) 128
(c) 64 (d) 7
10. Meiosis is significant in that it

- (a) Produces double metaphase plate
 - (b) Divergent double chromatids are observed in Anaphase I
 - (c) Is accompanied by crossing over
 - (d) Synapsis of homologous chromosomes
11. Colehicine interferes with
- (a) Spindle formation
 - (b) Chromosome decondensation
 - (c) Separation of daughter chromosomes
 - (d) Chromosomes formation
12. The points at which crossing over has taken place between homologous chromosomes are called
- (a) Chiasmata
 - (b) Centromeres
 - (c) Synaptonemal complex
 - (d) Protein axes
13. Synapsis occur during
- (a) Leptotene
 - (b) Zygotene
 - (c) Diplotene
 - (d) Pachytene
14. Centromere is also referred as
- (a) Chromomere
 - (b) Chromocentre
 - (c) Kinetosome
 - (d) Kinetochore
15. Longitudinal splitting of chromosomes and crossing over occurs in
- (a) Leptotene
 - (b) Zygotene
 - (c) Pachytene
 - (d) Diplotene
16. Among the following which one is the longest phase in Prophase I of meiosis
- (a) Leptotene
 - (b) Pachytene
 - (c) Zygotene
 - (d) Diplotene
17. The shape of the chromosome could be clearly observed during
- (a) Prophase
 - (b) Metaphase
 - (c) Anaphase
 - (d) Telophase
18. Crossing over occurs at
- (a) 2-strand stage
 - (b) 4-strand stage
 - (c) 1-strand stage
 - (d) 3-strand stage
19. Spindle fibres are made of protein
- (a) Actin
 - (b) Myelin
 - (c) Globulin
 - (d) Tubulin
20. Mitosis is important in that it maintains genetic continuity of daughter cells through

- (a) Segregation of the chromosomes of homologous pairs
 - (b) Halving the chromosome number
 - (c) Replication and equitable distribution of chromosomes
 - (d) Maintaining linkages
21. Phragmoplast is the term used for
- (a) Cell plate
 - (b) Furrow
 - (c) Spindle that disappears at the time of cytokinesis in animal cells
 - (d) Spindle that persists for some time during cytokinesis of plant cells
22. How many mitotic divisions occur to produce 64 cells from a single mother cell?
- (a) 4
 - (b) 32
 - (c) 63
 - (d) 6
23. Equatorial or metaphase plate is
- (a) A circle of vesicles deposited at the equator of the spindle
 - (b) Cell plate or future middle lamella
 - (c) A ring shaped complex formed by the of the chromosomes towards on the equator of the movement spindle in metaphase
 - (d) The widest part of the spindle that lies in centre or equator and observable during metaphase
24. At what phase or meiosis do we observe two cells with sister chromatids aligned at the spindle equator?
- (a) Metaphase II
 - (b) Metaphase I
 - (c) Anaphase I
 - (d) Anaphase II
25. If at the end of meiosis the four daughter cells have four chromosomes, how many chromosomes were in the mother cell?
- (a) 2
 - (b) 4
 - (c) 8
 - (d) 16
26. Which would probably occur when a diploid cell undergoes normal meiotic division?
- (a) All linkage groups will be disrupted
 - (b) All dominant genes will segregate together into daughter cells
 - (c) All homologous chromosomes will separate
 - (d) All daughter cell will have homologous chromosome pairs
27. The phenomenon permitting exchange of chromosome segments is called

- (a) Crossing over (b) Segregation
(c) Recombination (d) Linkage
28. Mitosis is an equatorial division while meiosis is completed in two divisions, a reduction division and meiosis II is equational due to
(a) Pairing of homologous chromosomes (b) Due to separation of chromatids
(c) Chiasmata formation (d) Terminalisation
29. Series of changes that occur in a newly formed cell till it grows and divides to form two daughter cells are called
(a) Mitosis (b) Interphase
(c) Generation cycle (d) Cell cycle
30. DNA replication occurs in
(a) G₁ phase (b) S phase
(c) G₂ (d) All of these
31. M phase of the cell is divisible into
(a) Cytokinesis and telophase
(b) Prophase, metaphase, anaphase and telophase
(c) G₁, S and G₂ phase
(d) Karyokinesis and cytokinesis
32. Fibres of the spindle apparatus are made of
(a) Microfilaments (b) Protofilaments
(c) Microfibrils (d) Microtubules
33. At what phase of meiosis are the two cells, each with separated sister chromatids that have been moved to opposite spindle poles?
(a) Anaphase II (b) Anaphase I
(c) Telophase I (d) Telophase II
34. At what phase of meiosis are homologous chromosomes separated?
(a) Prophase I (b) Prophase II
(c) Anaphase I (d) Anaphase II
35. DNA duplication takes place in
(a) Both mitosis and meiosis (b) Mitosis only
(c) Meiosis only (d) Synapsis
36. The meiotic process by which homologous chromosomes are paired during prophase I is called

- (a) Chiasma (b) Interkinesis
(c) Crossing over (d) Synapsis
37. Meiosis involves
(a) One division of nucleus and two divisions of chromosomes
(b) Two divisions of nucleus and one division of chromosomes
(c) One division of nucleus and one division of chromosome
(d) Two divisions of nucleus and two divisions of chromosome
38. Centromere is concerned with
(a) Duplication of DNA (b) Movement of chromosomes to the poles
(c) Formation of spindle fibres (d) Splitting of chromosome
39. Cells which undergo meiosis are called
(a) Mother cells (b) Meicytes
(c) Androcytes (d) Oocytes
40. In oogenesis when a diploid cell in the ovary undergoes meiosis how many ova are produced?
(a) 1 (b) 2
(c) 3 (d) 4
41. Initial or zygotic meiosis is found in
(a) Marchantia (b) Pinus
(c) Chlamydomonas (d) Dryopteris
42. Chromosome number is reduced to half during
(a) Metaphase I (b) Anaphase I
(c) Telophase I (d) Prophase I
43. Synaptonemal complex is formed during
(a) Amitosis (b) Mitosis
(c) Meiosis (d) Cytokinesis
44. Cancer is caused by
(a) Protogenes (b) Cancogenes
(c) Oncogenes (d) Calcyogenes
45. Which of the following inhibits the formation of mitotic spindle?
(a) Acetocaramine (b) Orecien
(c) Colchicine (d) Any of the above
46. Second division of meiosis can be described as division

- (a) Mitotic (b) Meiotic
(c) Half meiotic, half mitotic (d) None
47. The sequence of events during cell division is highly ordered and precise, which one of the following describes the correct order?
(a) DNA replication, nuclear division, cytokinesis
(b) Nuclear division, cytokinesis, DNA replication
(c) Nuclear division, DNA replication, cytokinesis
(d) Cytokinesis, DNA replication, nuclear division
48. In the two daughter cells formed during mitosis both cells contain
(a) The same amount of DNA and different sets of chromosomes as the parent cell
(b) Same amount of DNA and same set of chromosomes as the parent cell
(c) Same amount of DNA and same sets of chromosomes as the parent cells
(d) Different amount of DNA but same sets of chromosomes as the parent cell
49. Polyploid cells contain
(a) One set of genomes (b) Two sets of genomes
(c) More than two sets of chromosomes (d) Complete absence of genomes complex
50. In meiotic division daughter cells are produced by two successive divisions where
(a) First division is equational and second division reductional
(b) First division is reductional and second equational
(c) Both the divisions are reductional
(d) Both the divisions are equational
51. In mitosis the chromosome start separating at
(a) Early prophase (b) Early metaphase
(c) Anaphase (d) Early telophase
52. Crossing over of chromosomes takes place at
(a) Zygotene stage (b) Pachytene stage
(c) Leptotene stage (d) Diplotene stage
53. During meiotic cell division the homologous chromosomes start separating at
(a) First metaphase (b) Second metaphase
(c) First anaphase (d) Second anaphase
54. Karyokinesis occurs in

- (a) Nuclear membrane (b) Cytoplasm
(c) Nuclear membrane (d) Tonoplasm
55. Anastral mitosis is characteristic of
(a) Higher plants (b) Higher animals
(c) Lower animals (d) All living organism
56. Spindle fibres of a mitotic cell are made up of
(a) Actin (b) Myosin
(c) Collagen (d) Tubulin
57. Where would the cortical reaction take place?
(a) Cytoplasm of sperm (b) Nucleus of sperm
(c) Cytoplasm of eggs (d) Nucleus of eggs
58. The term arrhenotoky (Haplodiploidy) is related to
(a) Parthenogenesis (b) Cell division
(c) Reproduction only (d) b and c
59. Natural parthenogenesis in vertebrates occur in
(a) Some fishes (b) Some lizards
(c) Some mammals (d) a and c
60. The nuclear spindle is formed in
(a) Amitotic division only (b) Mitotic division only
(c) Meiotic division only (d) b and c
61. Synaptonemal complex is associated with
(a) Polytene chromosome (b) Mitotic chromosome
(c) Lamp brush chromosome (d) Paired meiotic chromosome
62. The period between two nuclear division during mitosis is characterized by
(a) Important metabolic reactions in the cytoplasm
(b) DNA replication
(c) Presence of more mitochondria
(d) Suspension of more activities
63. A study of chromosomes at meiotic diplotene show that
(a) The intimately paired chromosomes repel each other and begin to separate
(b) The homologous chromosomes remain united by chiasmata
(c) The pairing of homologous chromosomes which had initiated in the earlier stage is completed
(d) None of the above
64. In oogenesis mitotic divisions occur during the formation of the following stage except.

(a) Oogonia

(b) Oocytes

(c) First polarocytes

(d) Second polarocytes

65. Which will probably occur when a diploid cell undergoes normal meiotic division

(a) All dominant genes will segregate together into daughter cells

(b) All homologous chromosomes pairs will separate

(c) All daughter cells will have different homologous chromosome pairs

(d) All linkage groups will be disrupted

ANSWERS

(Cell Reproduction)

- | | | | | |
|---------|---------|---------|---------|---------|
| 1. (a) | 14. (d) | 27. (a) | 40. (a) | 53. (c) |
| 2. (c) | 15. (c) | 28. (b) | 41. (c) | 54. (c) |
| 3. (c) | 16. (b) | 29. (d) | 42. (b) | 55. (a) |
| 4. (d) | 17. (b) | 30. (b) | 43. (c) | 56. (d) |
| 5. (b) | 18. (b) | 31. (d) | 44. (c) | 57. (c) |
| 6. (b) | 19. (d) | 32. (d) | 45. (c) | 58. (a) |
| 7. (b) | 20. (c) | 33. (a) | 46. (a) | 59. (d) |
| 8. (b) | 21. (a) | 34. (c) | 47. (a) | 60. (d) |
| 9. (a) | 22. (c) | 35. (d) | 48. (c) | 61. (d) |
| 10. (c) | 23. (c) | 36. (d) | 49. (c) | 62. (d) |
| 11. (a) | 24. (d) | 37. (b) | 50. (b) | 63. (c) |
| 12. (a) | 25. (c) | 38. (b) | 51. (c) | 64. (c) |
| 13. (b) | 26. (c) | 39. (b) | 52. (d) | 65. (b) |

BIOMOLECULES

- Protein was coined by
 - Kolbe
 - Muller
 - Krebs
 - Mulder
- A positive 'Haller's Test' is indicated by
 - Blue solution
 - White disc
 - Red solution
 - Brown ring
- Buuret reaction is indicated by
 - Pink colour
 - Both of these
 - Violet colour
 - None of these
- Fructose contains
 - Acidic group
 - Aldehyde group
 - Ketonic group
 - Seven hydroxy groups
- Hydrolysis of starch gives
 - Glucose
 - Both (a) and (b)
 - Fructose
 - Maltose
- Cane sugar is 'inverted' into glucose and fructose by
 - Zymase
 - Maltase
 - Invertase
 - Sucrose
- Starch is
 - $C_0H_{10}O_5$
 - $(C_6H_{12}O_6)_n$
 - $(C_6H_{10}O_5)_n$
 - $C_{12}H_{22}O_{11}$
- Milk sugar is
 - Sucrose
 - Fructose
 - Lactose
 - Glucose
- Hydrolysis of sucrose gives
 - Glucose
 - Invert sugar
 - Fructose
 - None of these
- Protein are detected by
 - Ester bond
 - Phosphodiester bond
 - Peptide bond
 - Ionic bond

11. Proteins are detected by
(a) Fehling's solution (b) Baeyer's reagent
(c) Tollen's reagent (d) Conc. HNO_3
12. Which carbohydrate is used in silvering of mirrors?
(a) Sucrose (b) Cellulose
(c) Starch (d) Glucose
13. Which is a disaccharide?
(a) Glucose (b) Fructose
(c) Amylose (d) Sucrose
14. Which is found abundantly in nature?
(a) Fructose (b) Cellulose
(c) Starch (d) Glucose
15. Change in optical rotation with time of freshly prepared solution of sugar is known as
(a) Specific rotation (b) Inversion
(c) Rotatory motion (d) Mutarotation
16. Which of these contains nitrogen?
(a) Carbohydrates (b) Fats
(c) Starch (d) Protein
17. Fructose ring has a skeleton of
(a) 5 C atoms (b) 6 C atoms
(c) 9 C and 10 atom (d) 4 C and one O atom
18. One molecule of glucose in aerobic respiration gives in eukaryotes
(a) 38 ATP (b) 36 ATP
(c) 40 ATP (d) 42 ATP
19. ATP stands for
(a) American tennis professionals (b) Adenosine tri phosphate
(c) Adenine tri phosphate (d) Adenosine tetra phosphate
20. The sweetest sugar is
(a) lactose (b) fructose
(c) glucose (d) sucrose
21. Beriberi is caused due to deficiency of vitamin
(a) A (b) C
(c) D (d) B

22. Deficiency of vitamin A causes
- (a) loss of appetite (b) sterility
(c) night blindness (d) skin diseases
23. Vitamin D is called
- (a) ascorbic acid (d) thiamine
(c) ergocalciferol (d) riboflavin
24. Cyanocobalamine chemically
- (a) B₁₂ (b) C
(c) B₆ (d) B₉
25. Digestion is chemically
- (a) Cracking (b) Hydrolysis
(c) Anabolism (d) Combustion
26. Which is the storehouse of energy in the body?
- (a) vitamin (b) hormone
(c) fats (d) all of these
27. A peptide bond is represented by
- (a) $-\text{COO}-\text{CH}_2$ (b) $=\text{CONH}_2$
(c) $-\text{CO}-\text{O}-\text{NH}_4$ (d) $-\text{CO}-\text{NH}^-$
28. Antiseptic present in Dettol is
- (a) codeine (b) chloroxylenol
(c) bithional (d) none of these
29. Which of the following is an analgesic?
- (a) equanil (b) eqinine
(c) novalgin (d) all of these
30. Which is 'catabolism'
- (a) breakdown of complex molecules in living organism
(b) synthesis of complex molecules
(c) both synthesis as well as breakdown of complex molecules
(d) none of these
31. Hyperglycemia refers to
- (a) high blood-sugar level (b) low blood-sugar level
(c) high conc. of salt in blood (d) low conc. of salt in blood

32. Which is a communicable disease?
- (a) scurvy (b) diabetes
(c) beriberi (d) none of these
33. Measles is a disease
- (a) Bacterial (b) Viral
(c) Veneral (d) Protozoal
34. Chemical compounds released by one species of animals in order to influence the behaviour of the other members of the same species is called
- (a) pheromones (b) hormones
(c) nucelic acids (d) steriods
35. Dark reactions of photosynthesis refer to
- (a) synthesis of ATP (b) synthesis of carbohydrate
(c) photolysis of water (d) none of these
36. Base unit absent in DNA is
- (a) adenine (b) guanine
(c) uracil (d) cytocine
37. Helix structure of a protein is its
- (a) primary structure (b) secondary structure
(c) tertiary structure (d) quarternary structure
38. Hemoglobin has a structure
- (a) primary (b) secondary
(c) tertiary (d) quarternary
39. Myoglobin has a structure
- (a) primary (b) secondary
(c) tertiary (d) quarternary
40. Hemoglobin contains
- (a) Fe (b) Mg
(c) Mn (d) all of these
41. Chlorophyll contains
- (a) Fe (b) Mg
(c) Mn (d) none of these
42. The monosaccharide units in a disaccharide are linked by bond
- (a) peptide (b) phosphodiester
(c) ionic (d) glycosidic

43. Lecithin is a
- (a) Carbohydrate (b) Hormone
(c) Vitamin (d) Phospholipid
44. Amylose is a polymer of
- (a) α - D – glucopyranose (b) fructose
(c) β - fructose (d) β - D glucose
45. Number of C atoms in β - D fructofurnaose is
- (a) 6 (b) 5
(c) 4 (d) 7
46. Blood is
- (a) highly acidic (b) neutral
(c) slightly acidic (d) slightly alkaline
47. Bile helps in
- (a) Digestion of proteins (b) Digestion of carbohydrates
(c) Digestion of fats (d) Emulsification of fats
48. Energy currency of cell is
- (a) ATP (b) ADP
(c) AMP (d) none of these
49. Energy for protein synthesis comes from
- (a) ATP (b) ADP
(c) GTP (d) GDP
50. Nucleoside contains
- (a) Sugar (b) Sugar + Base
(c) Sugar + Phosphate (d) All of these
51. Nucleotide contains
- (a) Sugar (b) Sugar + Base
(c) Sugar + Phosphate (d) Sugar + Base + Phosphate
52. DNA is a
- (a) Polyribonucleoside (b) Polyribonucleotide
(c) Polydeoxyribonucleotide (d) Polydeoxyribonucleoside
53. Chlorophyll, hemoglobin and cytochromes have in common a
- (a) Pyrrole ring (b) Fe
(c) Mg (d) Cu

54. Cocaine is a
- (a) Vitamin (b) Poison
(c) Flavoring material (d) Antiseptic
55. Most commonly used tranquilizer is
- (a) Equanil (b) Malonyl urea
(c) Luminal (d) Seconal
56. Example of antibody is
- (a) Pepsin (b) Gamma globulin
(c) Hemoglobin (d) Keratin
57. Penicillin is an
- (a) antibiotic (b) antiseptic
(c) antigen (d) antibody
58. Bile is produced by
- (a) Liver (b) Gall bladder
(c) Pancreas (d) Duodenum
59. Ascorbic acid is oxidised metabolically to
- (a) Citric acid (b) Oxalic acid
(c) Dihydroascorbic acid (d) Dehydroascorbic acid
60. Which is a segment of DNA which codes or specifies for one polypeptide chain?
- (a) pentose (b) Phosphate
(c) Amino acid (d) Gene
61. Humans cannot hydrolyse
- (a) Starch (b) Sucrose
(c) Cellulose (d) Amylose
62. Which is a coenzyme?
- (a) ADP (b) ATP
(c) Phosphatide (d) None of these
63. DNA was artificially synthesized by
- (a) Kornberg (b) Ochoa
(c) Sutton-Boveri (d) Khorana
64. 'Suicide bag' of cell is
- (a) Lysozyme (b) Lysosome
(c) Enzyme (d) ER

65. Non-steroidal hormone is
 (a) Cortisone (b) Testosterone
 (c) Insulin (d) Progesterone
66. Hormone regularly Ca^{2+} concentration is
 (a) Thyroxine (b) Cortisone
 (c) Insulin (d) parathormone
67. DNA serves as template to manufacture
 (a) m-RNA (b) Proteins
 (c) Aminoacids (d) Fats
68. Which element is absent in all proteins?
 (a) C (b) H
 (c) N (d) P
69. Element S is present in
 (a) Methionine and cysteine (b) Methionine and valini
 (c) Methionine and cytosine (d) Valine and cytosine
70. Leafy vegetables contain vitamin
 (a) B (b) C
 (c) E (d) K
71. Cobalt is present in
 (a) Vitamin B₆ (b) Vitamin B₁₂
 (c) Vitamin B₂ (d) Vitamin C
72. DNA exists as
 (a) Helix (b) Single stranded sheet
 (c) Pleated sheet (d) Triple stranded helix
73. RNA exists as
 (a) linear chain (b) clover leaf shape
 (c) coil (d) all of these
74. DNA acts as template to produce
 (a) DNA only (b) RNA only
 (c) Both of these (d) None of these
75. RNA is used to produce
 (a) DNA (b) Proteins
 (c) Both a and b (d) None of these

ANSWERS

- | | | |
|---------|---------|---------|
| 1. (d) | 34. (a) | 67. (a) |
| 2. (c) | 35. (b) | 68. (d) |
| 3. (c) | 36. (c) | 69. (a) |
| 4. (b) | 37. (b) | 70. (d) |
| 5. (a) | 38. (d) | 71. (b) |
| 6. (b) | 39. (c) | 72. (a) |
| 7. (b) | 40. (a) | 73. (d) |
| 8. (b) | 41. (b) | 74. (c) |
| 9. (c) | 42. (d) | 75. (c) |
| 10. (b) | 43. (d) | |
| 11. (d) | 44. (a) | |
| 12. (d) | 45. (a) | |
| 13. (d) | 46. (d) | |
| 14. (b) | 47. (d) | |
| 15. (b) | 48. (a) | |
| 16. (d) | 49. (c) | |
| 17. (d) | 50. (b) | |
| 18. (b) | 51. (d) | |
| 19. (b) | 52. (c) | |
| 20. (b) | 53. (a) | |
| 21. (d) | 54. (b) | |
| 22. (c) | 55. (a) | |
| 23. (c) | 56. (b) | |
| 24. (a) | 57. (a) | |
| 25. (b) | 58. (a) | |
| 26. (c) | 59. (d) | |
| 27. (d) | 60. (d) | |
| 28. (b) | 61. (c) | |
| 29. (c) | 62. (b) | |
| 30. (a) | 63. (a) | |
| 31. (a) | 64. (b) | |
| 32. (d) | 65. (c) | |
| 33. (b) | 66. (d) | |

APPLICATIONS OF BIOLOGY

1. Finger printing involves
 - (a) agglutinations
 - (b) Chromatography
 - (c) electrophoresis
 - (d) both (b) and (c)
2. NMR is useful for
 - (a) Tissue metabolism for spectroscopy
 - (b) Heart beat
 - (c) X-rays
 - (d) None of the above
3. Antitoxin serum is/are available against
 - (a) tetanus and diphtheria
 - (b) botulism and scarlet fever
 - (c) snake venoms
 - (d) all of these
4. Widal test is useful after days of fever
 - (a) six days
 - (b) four days
 - (c) three days
 - (d) one day
5. AIDS is tested with
 - (a) wintrobe method
 - (b) ELISA
 - (c) nesslerisation
 - (d) widal
6. ELISA Test is useful for the detection of
 - (a) antigen
 - (b) antibody
 - (c) blood urea
 - (d) both (a) and (b)
7. Stethoscope was invented by
 - (a) Koch
 - (b) Warksman
 - (c) Jenner
 - (d) Laennec
8. P wave of ECG indicates
 - (a) spread of excitation from SA node to AV node
 - (b) depolarisation of atria muscles
 - (c) activation of SA Node
 - (d) both (b) and (c)

9. ORS complex of ECG is connected with
 - (a) repolarisation of ventricles
 - (b) after-potential of ventricular muscle
 - (c) repolarisation of atria and depolarisation of ventricles
 - (d) combined depolarisation
10. EEG provides information about electrical activity of

(a) brain	(b) heart
(c) kidneys	(d) liver
11. A person in deep sleep emits brain waves

(a) Alpha	(b) Beta
(c) Delta	(d) Theta
12. Father of ECG

(a) Berger	(b) Einthoven
(c) Satton	(d) Cormack
13. Father of Radiology is

(a) Roentagen	(b) Cormack
(c) Curie	(d) Blch and Purcell
14. In sonography, wavelength of ultrasound used is

(a) 20,000 Hz/sec	(b) 40-50 kHz/sec
(c) 1-15 MHz	(d) 1500-2000 MHz
15. The technique which uses resonance of H^1 protons is

(a) CT scanning	(b) Sonography
(c) EEG	(d) MRI
16. Numbers of beams of X-rays employed in CT scanning is

(a) 5-20	(b) 100-200
(c) 10,000-15,000	(d) more than 30,000
17. Ultrasound is of

(a) low frequency	(b) frequency lower than 500 Hz
(c) frequency 15-20000 Hz	(d) frequency higher than 20,000 Hz
18. CT was invented by

- (a) Block and Purcell (b) Berger
(c) Hounsfield (d) Einthoven
19. CT is
(a) computerised tomography (b) computerised transmission
(c) chardack's technique (d) cardiac tracer
20. Hematocrit is
(a) equal in both venous and arterial bone
(b) more in venous blood
(c) more in arterial blood
(d) variable
21. Oxygenator is
(a) bubble oxygenator (b) membrane oxygenator
(c) liquid-liquid oxygenator (d) all of the above
22. Hematocrit is the ratio of
(a) WBC to plasma (b) RBC to plasma
(c) Platelets to plasma (d) total blood cells to plasma
23. The cells used in pacemaker are those of
(a) cadmium chloride (b) lithium halide
(c) lead (d) zirconium
24. In sonography the waves are produced by
(a) electrical effect (b) piezo-electric effect
(c) sound effect (d) x-rays
25. CAT scanner is
(a) night vision apparatus
(b) computerised axial tomography
(c) computerised automatic tissue scanner
(d) computerised amplified tissue scanner
26. PET uses
(a) Gamma radiation
(b) Lasers

- (c) Positron emitting radioisotopes
- (d) A special electron device that boosts up heart beat
27. PET implant is
- (a) pace maker (b) ultrasound image
- (c) oxygenator (d) Lasers
28. Nuclear magnetic resonance imaging was employed as a technique by
- (a) William Roentgen (b) Block and Preucell
- (c) Berger (d) P.K. Sethi
29. Which of the following has contributed remarkably in designing aids for physically handicapped?
- (a) Block and Prvcell (b) Chardack
- (c) P.K. sethi (d) Willium Roentegen
30. Which of the following instruments is used to assist the heart in pumping blood?
- (a) Intra aortic ballon pump (b) pacemaker
- (c) medical laser (d) vascular graft
31. Which of the following technique is used to measure cerebral blood volume?
- (a) PET imaging (b) ECG
- (c) EEG (d) CT scanning
32. Sonography is also known as
- (a) NMR imaging (b) ECG
- (c) EEG (d) ultrasound imaging
33. Vascular grafts are made up of
- (a) rubber tube (b) decron
- (c) fire glass (d) plastic
34. Which of the following is an organic fertilizer
- (a) CAN (b) DAP
- (c) Urea (d) MOP
35. DAP is a
- (a) straight fertilizer (b) complete fertilizer
- (c) nitrate fertilizer (d) potash fertilizer
36. Khaira disease of rice is caused by deficiency of

- (a) Zinc (b) Copper
(c) Cobalt (d) Nitrogen
37. Major nutrients are
(a) Mg, Cu, CO (b) N, P, K
(c) Zn, MO, Na (d) Ni, B, Be
38. Sulphur is mainly absorbed as
(a) SO_4^2 (b) H_2S
(c) SO_3^- (d) all of these
39. Deficiency of Ca and B first appears on
(a) older leaves (b) apical bud
(c) middle leaves (d) new leaves
40. Deficiency symptoms of calcium include
(a) killing of apical bud (b) hyperbrophy
(c) hyperplasia (d) none of these
41. Deficiency of Iron leads to
(a) Dwarfing of plant (b) interveinal chlorosis
(c) shortening root (d) little leaft of plant
42. Chlorosis is
(a) Yellowing of leaf tissue (b) burning of leaf tissue
(c) death of leaf tissue (d) abnormal flowering
43. Nitrogen is absorbed by plants in the form
(a) Only as NH_4^+ (b) Only as NO_3^-
(c) both (a) and (b) (d) none of these
44. Criteria of essentiality of element was given by
(a) Leibig (b) Arnon and Stont
(c) Jethrotull (d) Jean Bapist
45. The N_2 fixation by symbiosis of Rhizobium species and legume is called
(a) symbiotic N_2 fixation (b) non symbiotic association
(c) non symbiotic N_2 fixation (d) all the above
46. Rhizobium trifolli can fix the nitrogen in the root of

- (a) gram (b) clover
(c) lerpinus (d) soyabean
47. Rhizobium leguminoseum can fix nitrogen in the roots of
(a) latus (b) neem
(c) pea, sweet pea (d) mango
48. Urea is taken up by plant with the help of enzyme
(a) rennin (b) urease
(c) peptidase (d) all of these
49. Which nitrogenous fertilizer should be used in paddy crop?
(a) Nitrate fertilizer (b) Amide fertilizer
(c) Nitrite fertilizer (d) None of these
50. Potassium chloride contains what % K_2O
(a) 40 (b) 50
(c) 60 (d) 70
51. Which of the following elements can be taken up by some plants directly from air?
(a) K (b) P
(c) N (d) Cl
52. The biomass can be used to
(a) obtain alcohol (b) generate biogas
(c) generate producer gas (d) all of these
53. Growing more fuel wood tree is called
(a) Silviculture (b) energy plantation
(c) energy cropping (d) forestry
54. The aim of the social forestry is to make available
(a) fodder (b) miner tibber
(c) fire wood (d) all
55. A plant that produces poor fuel wood is
(a) Acaccia nilotica (b) Pinus roxburghi
(c) Azardirachta indica (d) Quercus ruber
56. An ideal good fuelwood is obtained from

- (a) Bauhinia racemosa (b) Dalbergia sissoo
(c) Michellia excelsa (d) Mangifera indica
57. Fuel wood is a source of
(a) biogas (b) alcohol
(c) renewable energy (d) petroleum gas
58. Biofuels are
(a) renewable (b) orthodox
(c) pollution producing (d) organic waste
59. The maximum usage of wood in India is for
(a) fuel (b) timber
(c) paper (d) industry
60. The rate of biogas production can be limited by
(a) methane production
(b) cellulose digestion
(c) conversion of monomers to organic acid
(d) none of the above
61. It is possible to extract maximum energy from wood through
(a) bio-mass (b) cracking
(c) direct burning (d) gasification
62. Deforestation does not result in
(a) soil erosion and silting up of dams
(b) flood havoc
(c) fodder and animal produce
(d) low wood resources
63. Example of renewable source of energy is
(a) Bacteria (b) Green plants
(c) Fungi (d) Crop plants
64. HIV virus is also known as
(a) AIDS (b) HTLV III
(c) LAV (d) All of these

65. Second line of defence is
- (a) WBC (c) antibodies
(c) Liver (d) Blood acid
66. One good example of an antiseptic is
- (a) Bordeaux mixture (b) DDT
(c) Carbolic (d) hydrocyanic acid
67. The cells which directly attack and destroy the antigens, are known as
- (a) helper T-cells (b) killer T-cell
(c) helper B-cell (d) killer B-cell
68. After vaccination, the body builds up
- (a) toxin (b) lymph
(c) antitoxin (d) antibody
69. Which of the following is a live oral vaccine given for protection of poliomyelitis?
- (a) salk vaccine (b) TAB vaccine
(c) DPT vaccine (d) Sabin vaccine
70. Deficiency of B cells and T cells is known as
- (a) Pathogenicity (b) auto immunity
(c) cyto-toxicity (d) immune deficiency
71. After infection of germs, immunity acquired is
- (a) active immunity (b) passive immunity
(c) artificial immunity (d) both (a) and (b)
72. Edward Jenner is discoverer of
- (a) BCG (b) immunization against polio
(c) vaccination against smallpox (d) immunization against smallpox
73. Pollen like agent which produces, allergy is known as
- (a) antigen (b) allergens
(c) oncogens (d) none of these
74. The immune system which works against self is
- (a) self immune system (b) auto immunity
(c) specific immunity (d) none of these

75. ELISA can be employed for
- (a) treating disease
 - (b) killing virus
 - (c) diagnosis of disease
 - (d) none of these

Answer Sheet

1. d	2. a	3. d	4. a	5. b
6. d	7. d	8. d	9. c	10. a
11. c	12. b	13. a	14. c	15. d
16. d	17. d	18. c	19. a	20. b
21. d	22. b	23. b	24. b	25. b
26. c	27. a	28. b	29. a	30. a
31. a	32. d	33. b	34. c	35. b
36. a	37. b	38. a	39. b	40. a
41. b	42. a	43. c	44. b	45. a
46. b	47. c	48. b	49. b	50. c
51. c	52. b	53. b	54. d	55. b
56. b	57. c	58. a	59. a	60. b
61. d	62. c	63. b	64. d	65. a
66. c	67. b	68. d	69. d	70. d
71. a	72. c	73. b	74. b	75. c

REPRODUCTION IN FLOWERING PLANTS

- Which is not possessed by a staminate flower?
 - Stalk
 - Baracteole
 - Bract
 - Pistil
- Egg apparatus is made of:
 - Only egg
 - Eggs and polar nuclei
 - Egg and antipodals
 - Egg and synergids
- Egg apparatus is situated at
 - Micropylar end
 - Chalazal end
 - At periphery
 - In the centre of embryo sac
- The inner most layer of pollen chamber which acts as nutritive layer is called
 - Tapetum
 - Endothecium
 - Endothelium
 - Perisperm
- Formation of embryo sac directly from megaspore mother cell in angiosperms is called:
 - Apospory
 - Diplospory
 - Apogamy
 - Agamospermy
- Germ pores are found in
 - Ovules
 - Microspores
 - Seeds
 - Megaspores
- Accessory whorls of the flower are
 - Calyx and epicalyx
 - Androecium and gynoecium
 - Calyx and corolla
 - Corolla and androecium
- Embryo sac represents
 - Megasporangium
 - Female gametophyte
 - Megaspore
 - Female gamete
- Meiosis occurs in angiosperms when
 - Flowers are formed
 - Pollen grains are formed
 - Seeds are formed
 - None of the above
- The most common type of ovule in angiosperms is
 - Orthotropous
 - Hemianatropous
 - Anatropous
 - Circinotropous
- In anatropous ovule, the micropyle is
 - In straight line with funicle
 - At right angles with funicle

- (c) At 45° with funicle (d) Side by side with funicle
12. Caruncle is derived from
 (a) Peduncle (b) Cotyledon
 (c) Integument (d) None of these
13. Carpels represent
 (a) Megasporophylls (b) Megasporangia
 (c) Microsporagia (d) Microsporophylls
14. Pollen tube at the time of entering the embryo sac has
 (a) 4-gamete nuclei (b) Single gamete nucleus
 (c) 3-gamete nuclei (d) 2-gamete nuclei
15. Upon fertilization, what structure develops from carpel?
 (a) Testa (b) Tegmen
 (c) Pericarp (d) Perisperm
16. Embryoids are
 (a) Immature embryos
 (b) Non-zygotic embryos developed through tissue culture
 (c) Embryos formed by parthenogenesis
 (d) Embryos which lack vitality
17. Sexuality in plants was observed by
 (a) Grew (b) Kolreuter
 (c) Camerarius (d) Amici
18. Term 'Alternation of generation' was first used in plants by
 (a) Amici (b) Hofmeister
 (c) Kolreuter (d) None of these
19. Actual fusion of male gamete with egg (syngamy) was observed in *Monotropa* by
 (a) Nawaschin (b) Strasburger
 (c) Schleiden (d) Amici
20. Double fertilization was first reported by Nawaschin in
 (a) *Portulaca* (b) *Fritillaria*
 (c) *Monotropa* (d) None of these
21. Foremost Indian embryologist was
 (a) S.C. Maheshwari (b) P. Maheshwari
 (c) H.Y. Mohan Ram (d) None of these
22. Modified shoot with highly condensed internodes is
 (a) Leaf (b) Flower

- (c) Microsporophyll (d) Megasporophyll
23. Anther is generally
 (a) Monosporangiate (b) Bisporangiate
 (c) Tetrasporangiate (d) Trisporangiate
24. Single microsporangium per anther is found in
 (a) Gossypium (b) Hibiscus
 (c) Arceuthobium (d) Najas
25. Main function of endothecium (in anther) is
 (a) Mechanical (b) Nutritive
 (c) Dehiscence (d) None of these
26. Simultaneous type of cytokinesis in microspore mother cells leads to
 (a) Isobilateral tetrad (b) Tetrahedral tetrad
 (c) Linear tetrad (d) None of these
27. Isobilateral pollen tetrad is common in
 (a) Monocots (b) Dicots
 (c) Both (a) and (b) (d) None of these
28. Filiform pollen grains are found in
 (a) Aristolocia (b) Zostera
 (c) Drimys (d) Juncus
29. Compound pollen grains are found in
 (a) Cyripedium (b) *Calotropis*
 (c) *Typha* (d) None of these
30. Compound pollens held together in small units are called
 (a) Pollinium (b) Massulae
 (c) Translator (d) None of these
31. Translator apparatus is found in
 (a) Asclepiadaceae (b) Malvaceae
 (c) Droseraceae (d) None of these
32. 'Callase' enzyme which dissolves callose of pollen tetrads to separate 4 pollens is provided by
 (a) Pollens (b) Tapetum
 (c) Middle layers (d) Endothecium
33. Terms Intine and Exine were proposed by
 (a) Amici (b) Strasburger

- (c) Fritsche (d) None of these
34. Number of germ pores in exine are
 (a) 1 (b) 2
 (c) 1 or many (d) 4
35. Pollen grains are preserved for long periods in fossils due to
 (a) Cellulose (b) Sporopollenin
 (c) Carotenoids (d) Ubisch bodies
36. Ubisch bodies are provided by
 (a) Tapetum (b) Pollen kitt
 (c) Exine (d) Intine
37. Smallest pollens are in
 (a) Cucurbita (b) Nyctanthes
 (c) Myosotis (d) Hyacinthus
38. 'Pollen grains embryo sacs' are first observed in
 (a) *Hymenocallis* (b) *Elodea*
 (c) *Hyacinthus* (d) None of these
39. Which forms maximum proportion in chemical composition of pollens?
 (a) Proteins (b) Fats
 (c) Carbohydrates (d) Water
40. 'Nemec phenomenon' relates to
 (a) 7 called female gametophyte (b) 8 nucleated male gametophyte
 (c) Formation of pollen kitt (d) None of these
41. Study of pollen grains is called
 (a) Micrology (b) Microsporogenesis
 (c) Polynology (d) Aerology
42. Poisonous pollens are in
 (a) *Alnus* (b) *Citrus*
 (c) *Putranjiva* (d) *Serjania*
43. Latropolynology is
 (a) Meciical aspects of pollen grains
 (b) Fossil pollen grains
 (c) Pollens in relation to honey
 (d) None of the above

44. Important 'Aeroallergen' in India is
 (a) *Amaranthus spinosus* (b) *Serjania*
 (c) *Borassus flabellifer* (d) *Holoptelea*
45. Pollens are shed from anther generally at
 (a) Single celled stage (b) 2-celled stage
 (c) 3-celled stage (d) 4-celled stage
46. Which is the most common type of ovule?
 (a) Unitegmic (b) Bitegmic
 (c) Ategmic (d) None of these
47. Ategmic ovule is present in which plant?
 (a) *Casuarina* (b) *Opuntia*
 (c) *Loranthus* (d) None of these
48. Micropyle in ovule is mostly formed by
 (a) Outer integument (b) Inner integument
 (c) Both (a) and (b) (d) None of these
49. Embryo sac is present embedded in nucellus at which end of ovule?
 (a) Micropylar end (b) Chalazal end
 (c) In the centre (d) None of these
50. Multilayered endothelium (Integumentary tepetum) is present in which of the following families?
 (a) Malvaceae (b) Compositae
 (c) Cruciferae (d) None of these
51. Cells of endothelium are
 (a) Haploid (b) Diploid
 (c) Polyploid (d) Triploid
52. Obturator in ovule is generally derived from
 (a) Placenta (b) Funiculus
 (c) Integument (d) Nucellus
53. When megaspore mother cell (sporogenous cell) is hypodermal in position and nucellar tissue around it is single layered, this type of ovule is called
 (a) Crassinucellate (b) Tenuinucellate
 (c) Amphitropous (d) Circinotropous
54. Group of lignified cells above the vascular supply of funiculus, which acts as barrier for the growing embryo sac into the base is called
 (a) Nucellar beak (b) Epistase

- (c) Hypostase (d) Perisperm
55. Single functional megaspore which develops into embryo sac is
 (a) First at micropylar end
 (b) Second from micropylar end
 (c) First at chalazal end
 (d) Second from chalazal end
56. In which family, a prominent air space is present between two integuments at chalazal end?
 (a) Aristolochiaceae (b) Cactaceae
 (c) Compositae (d) None of these
57. Stomata and chlorophyll are present in integuments of
 (a) Cleome (b) Ulmus
 (c) Hymenocallis (d) Asphodelus
58. Collar like outgrowth from the base of ovule forming a sort of third integument is called
 (a) Caruncle (b) Aril
 (c) Chalazosperm (d) None of these
59. Red coloured 'mace' which is used as condiment is obtained from nutmegs and is
 (a) Integument (b) Aril
 (c) Caruncle (d) Perisperm
60. Herkogamy is seen in
 (a) calotropis (b) ficus
 (c) Tagetus (d) Commelina

Answer

Reproduction in flowering plant

- | | |
|---------|---------|
| 1. (d) | 32. (b) |
| 2. (d) | 33. (c) |
| 3. (a) | 34. (c) |
| 4. (a) | 35. (b) |
| 5. (c) | 36. (a) |
| 6. (c) | 37. (c) |
| 7. (b) | 38. (c) |
| 8. (c) | 39. (c) |
| 9. (c) | 40. (b) |
| 10. (b) | 41. (c) |
| 11. (d) | 42. (d) |
| 12. (c) | 43. (a) |
| 13. (a) | 44. (a) |
| 14. (d) | 45. (b) |
| 15. (c) | 46. (b) |
| 16. (b) | 47. (c) |
| 17. (c) | 48. (b) |
| 18. (b) | 49. (a) |
| 19. (b) | 50. (b) |
| 20. (b) | 51. (c) |
| 21. (b) | 52. (b) |
| 22. (b) | 53. (b) |
| 23. (c) | 54. (c) |
| 24. (c) | 55. (c) |
| 25. (c) | 56. (b) |
| 26. (b) | 57. (c) |
| 27. (a) | 58. (b) |
| 28. (b) | 59. (b) |
| 29. (c) | 60. (a) |
| 30. (b) | |
| 31. (a) | |

'STRUCTURAL ORGANISATION IN ANIMALS'

1. A tissue is a
 - (a) group of separate organs that are coordinated in their activities
 - (b) group of similar cells that function together in a specialized activity
 - (c) layer of cells surrounding an organ
 - (d) sheet of cells, one layer thick
2. In order for cells to form a tissue, they must
 - (a) have different membrane proteins
 - (b) have different membrane potentials
 - (c) receive a command from the central nervous system
 - (d) recognize on another
3. An organ is a
 - (a) group of two or more kinds of tissue, united structurally and coordinated in their activities
 - (b) group of similar cells that function together in a specilized activity
 - (c) multilayered sheet of cells
 - (d) solid structure formed of embryonic mesodem
4. An organs system is a
 - (a) group of two or more kinds of tissue united sturcturally and coordinated in their activites
 - (b) group of tissues forming a negative feedback loop
 - (c) group of organs that function together in an integrated way
 - (d) group o forgans that form an individula animal
5. Epithelial tissue always has an exposed outer surface and an inner surface anchored to connective tissue by a thin, noncellular layer called the
 - (a) nonstratified layer
 - (b) stratified layer
 - (c) basement membrane
 - (d) fibroblast
6. Which type of tissue forms the inner lining of a blood vessel?
 - (a) Epithelial
 - (b) Connective
 - (c) Nervous
 - (d) Muscle
7. Which type of tissue forms that framework of the external ear?

- (a) Epithelial (b) Connective
(c) Nervous (d) Muscles
8. Which type of tissue changes the diameter of a blood vessel?
(a) Epithelial (b) Connective
(c) Nervous (d) Muscles
9. Which type of tissue forms the thin surface for gas exchange in the lungs?
(a) Epithelial (b) Connective
(c) Nervous (d) Muscles
10. Which type of tissue forms glands?
(a) Epithelial (b) Connective
(c) Nervous (d) Muscles
11. The cells constituting a specific tissue have similar
(a) function (b) origin
(c) structure (d) all of these
12. Internal lining of the organ is provided by
(a) muscular tissue (b) connective tissue
(c) epithelial tissue (d) nervous tissues
13. Embryonic mesoderm forms
(a) endothelium of blood vessels (b) exocrine cells
(c) endocrine cells (d) glial cells
14. Identify the substance which keeps the epithelial cells together
(a) hyaluronic acid (b) collagen
(c) mucin (d) glycoprotein
15. Bowman's capsule of mammalian nephron is lined by
(a) columnar epithelial cells
(b) squamous epithelial cells
(c) cuboidal epithelial cells
(d) ciliated columnar epithelial cells
16. Transition epithelium lines the
(a) epiglottis (b) skin

- (c) urinary bladder (d) fallopian tubes
17. Tissue means
- (a) similar cells having common origin
 - (b) similar cells having common origin and functions
 - (c) cells having same metabolic activities
 - (d) similar cells with same metabolic activity
18. Simple tissue is defined as
- (a) group of similar cells which are common in origin
 - (b) different types of cells performing same functions
 - (c) different types of cells performing different functions
 - (d) organised group of cells performing many functions
19. Compound tissue is defined as
- (a) similar types of cells held together by connective tissue
 - (b) different types of cells which are different in structure and function
 - (c) different types of cells performing one function
 - (d) similar cells at different regions performing many functions
20. The three germinal layers of the gastrula gives rise to
- (a) epithelial tissues
 - (b) muscular and nervous tissues
 - (c) connective tissues
 - (d) all of these
21. Compound tubular glands are found in
- (a) exocrine pancreas (b) endocrine pancreas
 - (c) salivary gland (d) Brunner's gland
22. Mammary glands of human female is an example of
- (a) simple tubular (b) compound tubulo-alveolar
 - (c) simple alveolar (d) compound alveolar
23. Bones and blood are
- (a) mesodermal in origin
 - (b) mesodermal and endodermal in origin

- (c) endodermal in origin
(d) ectodermal in origin
24. Which of the following is not a connective tissue?
(a) Areolar tissue (b) Hyaline cartilage
(c) Ligament (d) Cardiac muscles
25. Ciliated epithelial cells are present in
(a) buccal cavity of frog
(b) stomach of frog
(c) pancreatic duct of pancreas
(d) none of the above
26. Human mammary glands belong to one of the following types of glands
(a) simple alveolar
(b) coiled tubular
(c) compound tubulo-alveolar
(d) simple tubular
27. Tesselated epithelium is found in
(a) lining of intestine (b) lining of blood vessel
(c) seminiferous tubule (d) uriniferous tubule
28. Germinal epithelia cells are present in
(a) seminiferous tubules (b) uriniferous tubules
(c) lining of stomach (d) inner lining of trachea
29. Glands are formed of
(a) secretory epithelial cells
(b) transitiagonal epithelial cells
(c) stratified columnar cells
(d) pseudostratified epithelial cells
30. Goblet cells secrete
(a) mucin (b) dil. HCl
(c) polypeptide hormones (d) enzymes
31. Endocrine glands

- (a) secrete hormones (b) are ductless glands
(c) also secrete enzymes (d) both (a) and (b)
32. Epithelial cells get nutrient material from
(a) neighbouring cells (b) blood vessels
(c) lymph vessels (d) underlying tissue
33. Microvilli of epithelia cells
(a) increase surface area (b) protect the cells
(c) engulf the foreign matter (d) give movements to the cells
34. Maximum intercellular substance is found in
(a) connective tissue (b) nervous tissue
(c) epithelial tissue (d) muscular tissue
35. Antibodies are produced by
(a) T-killer cells (b) T-helper cells
(c) Macrophage (d) β -lymphocytes
36. Higher concentration of mitochondria and cytochromes is seen in
(a) areolar tissue (b) brown adipose tissue
(c) tendon (d) ligament
37. Squamous epithelium is also called
(a) germinal epithelium (b) columnar epithelium
(c) pavement epithelium (d) sensory epithelium
38. Epidermis of skin of vertebrates comprise
(a) adipose connective tissue (b) epithelial tissue
(c) muscular tissue (d) areolar connective tissue
39. Areolar tissue
(a) is made of threads crossing each other and leaving a space between them
(b) stores fat
(c) is found in mammary gland
(d) is found in hyaline cartilage
40. Elastin is found in
(a) yellow fibres of areolar tissue

- (b) adipose tissue
 - (c) cartilage
 - (d) spongy bone
41. Which one of these is not a function of the body wall of earthworm
- (a) sensory reception
 - (b) respiration
 - (c) excretion
 - (d) defense
42. Which structure helps in locomotion of the concerned animal
- (a) clitellum-earthworm
 - (b) trichocysts-paramecium
 - (c) posterior sucker-Hirudinaria
 - (d) pedicellariae-starfish
43. Testes occur in earthworm in the segments
- (a) 11 and 12
 - (b) 12 and 13
 - (c) 14 and 15
 - (d) 10 and 11
44. Structure present in segments 8, 9, 12 and 13 in earthworm are
- (a) spermathecae
 - (b) dorsal hearts
 - (c) lateral hearts
 - (d) testis sacs
45. Functionwise, just as there are nephridia in an earthworm, so are
- (a) statocysts in prawn
 - (b) flame cells in liver fluke
 - (c) parotid glands in toad
 - (d) myotomes in fish
46. Spermathecal pores in Pheretima are located in intersegmental grooves between segments
- (a) 5/6, 6/7, 7/8, 8/9
 - (b) 6/7, 7/8, 8/9, 9/10
 - (c) 14/15, 15/16, 16/17, 17/18
 - (d) 1/2, 2/3, 3/4, 4/5
47. Function of Malpighian tubules in cockroach is
- (a) respiration
 - (b) excretion, osmoregulation and homeostasis
 - (c) reproduction
 - (d) digestion
48. Periplaneta belongs to
- (a) Annelida
 - (b) Platyhelminthes
 - (c) Arthropoda
 - (d) Mollusca
49. Complete metamorphosis occurs in

- (a) moths and mosquitoes
- (b) grasshopper
- (c) bed-bug
- (d) silverfish

50. Elephantiasis or Filariasis is transmitted by

- (a) housefly
- (b) mosquitoes
- (c) bedbug
- (d) fruitfly

VEGETATIVE AND REPRODUCTIVE MORPHOLOGY OF PLANTS

1. Mangrove plants have
 - (a) Pneumatophores
 - (b) Prop roots
 - (c) viviparous germination
 - (d) All the above
2. An unbranched root, cylindrical stout stem with layer of fallen leaves is called
 - (a) Scape
 - (b) Culm
 - (c) Caudex
 - (d) Offset
3. The largest leaves are found in
 - (a) *Musa paradisiaca*
 - (b) *Vitis vinifera*
 - (c) *Victoria reola*
 - (d) *Nelumbom nucifera*
4. The root differs from stem in
 - (a) Absence of nodes and internodes
 - (b) Having root cap
 - (c) Both (a) and (b)
 - (d) None of the above
5. Plants which obtain their food from other living organisms by haustoria are
 - (a) Saprophytes
 - (b) Parasites
 - (c) Symbionts
 - (d) Hydrophytes
6. Ginger is a stem and not a root because
 - (a) It is bitter in taste
 - (b) It has nodes and internodes
 - (c) It is non-green in colour
 - (d) It stores food
7. Nodules with nitrogen fixing bacteria are present in
 - (a) Wheat
 - (b) Cotton
 - (c) Gram
 - (d) Mustard
8. A leaf without a petiole is called
 - (a) Petiolate
 - (b) Sessile
 - (c) Subsessile
 - (d) Subpetiolate
9. Parallel venation is found in the leaves of
 - (a) Wheat
 - (b) Pea
 - (c) Gurhal
 - (d) Sarson
10. The leaf scar protects the plants from
 - (a) Air
 - (b) Glorisoa

- (c) Transpiration (d) Evaporation
11. Vegetative reproduction through offset is found in
 (a) Antigonon (b) Eicchomia
 (c) Elodae (d) Amorphophallus
12. The reserve carbohydrates in onion are stored in the
 (a) Shoot (b) Root
 (c) Fleshy leaves (d) None of the above
13. Sweet potato is
 (a) Shoot (b) Root
 (c) Fleshy leaves (d) None of the above
14. Phylloclade is the modification of
 (a) Root (b) Stem
 (c) Leaf (d) Flower
15. The part of cauliflower which is eaten is
 (a) Flower (b) Inflorescence
 (c) Fruit (d) Leaves
16. A floret is
 (a) Small, sessile flower (b) Small neutral flowers
 (c) Small fruit (d) Semi transparent bract
17. Cohesion is
 (a) union of dissimilar parts (b) union of similar parts
 (c) aggregation of florets (d) None of the above
18. Monothealous stamen is
 (a) A sterile stamen (b) A stamen with two lobes
 (c) A stamen with one lobe (d) None of the above
19. When pedicellate bisexual flowers are borne acropetally, it is a
 (a) Raceme (b) Spike
 (c) Head (d) Cymose
20. When Pedicellate bisexual flowers are borne acropetally, it is a
 (a) Raceme (b) Spike
 (c) Head (d) Cymose
21. The inflorescence of wheat is

- (a) Raceme (b) Spike
(c) Spikelet (d) Spike of spikelet
22. Glumes are modified
(a) Leaves (b) Bracts
(c) Calyx (d) None of these
23. The whorl of bracts present in a sunflower is called
(a) Epicalyx (b) Glumes
(c) Involucre (d) Spathe
24. A flower is said to be actinomorphic if it can be divided into two
(a) Halves having sepals and petals in equal numbers
(b) Exactly equal halves by any vertical section
(c) Similar halves by a single vertical section only
(d) Both (a) and (c)
25. When stamens are adnate to perianth leaves it is known as
(a) Episepalous (b) Epipetalous
(c) Gynandrous (d) Epiphyllous
26. An ovary with ovules on three parietal placenta is called
(a) Unilocular (b) Bilocular
(c) Trilocular (d) Pentalocular
27. In a typical flower the ovary is superior and the other whorls are inferior, such a flower is said to be
(a) Hypogamous (b) Epigamous
(c) Polygynous (d) Perigynous
28. A floral diagram represents the
(a) Function of the flower
(b) Symmetry of the flower
(c) Diagrammatic notation of the floral-characteristics
(d) Colour of flower
29. When the anthers and stigmas mature at the same time, it is called
(a) Dichogamy (b) Allogamy
(c) Xanogamy (d) Homogamy
30. Angiosperms differ from gymnosperms in having

- (a) Broad leaves (b) Trachieds
(c) Cotyledons (d) Fruits
31. The arrangement of the leaves on the branch is known as
(a) Venation (b) Vernation
(c) Ptyxis (d) Phyllotaxy
32. Roots which develop from any portion of the plant except the radicle are known as
(a) Stilt roots (b) Tap roots
(c) Adventitious roots (d) Fibrous roots
33. Phyllode is a modified
(a) Leaf (b) Petiole
(c) Stem (d) Branch
34. Thorn is a modified branch because
(a) It is a part of the plant
(b) It looks like a branch
(c) It arises in the axis of a leaf
(d) It is hard, straight and pointed structure
35. Red root is another name of
(a) Potato roots (b) Sugar cane roots
(c) Beet roots (d) None of the above
36. Reticulate venation is found in the leaves of
(a) Canna (b) Plum
(c) Banana (d) Maize
37. Epidermal outgrowths are known as
(a) Stomata (b) Leaves
(c) Trichomes (d) Flower buds
38. Respiration roots are found in
(a) Vanda (b) Tinospora
(c) Viscum (d) Jussiaea
39. The stem is extremely enlarged in
(a) Rhizome (b) Bulb
(c) Corm (d) Tuber
40. In a twiner, normally the climbing organ will be a

- (a) Spring like tendril (b) Woody curved hook
 (c) Strong pointed spine (d) Wire like stem
41. Secondary roots arise
 (a) Endogenously from the endodermis
 (b) Exogenously from the cortex
 (c) Exogenously from the epidermis
 (d) Endogenously from the pericycle
42. The cauliflower used as a vegetable is
 (a) A bunch of fertile flowers
 (b) An undifferentiated compaction of leaves
 (c) A fleshy inflorescence
 (d) None of the above
43. Insectivorous plants grow in the soil which is deficient in
 (a) Nitrogen (b) Calcium
 (c) Water (d) Magnesium
44. The ovule is attached to the placenta by a slender stalk which is known as
 (a) Petiole (b) Placenta
 (c) Funicle (d) Pedicel
45. National flower of India is
 (a) Rafflesia (b) Wolffia
 (c) Lotus (d) Rose indica
46. Largest flower in the world is borne by
 (a) Cuscuta (b) Loranthus
 (c) Rafflesia (d) Drosera
47. Empty glumes are modified
 (a) Stamens (b) Petals
 (c) Bracts (d) Carpels
48. Pollination is best defined
 (a) Visiting of flowers by insects
 (b) Growth of pollen tube in ovule
 (c) Transfer of pollen from another to stigma
 (d) Germination of pollen grain

49. Superficial placenta is seen in
 (a) Cosmos (b) Nymphaea
 (c) Brassica (d) Calotrocia
50. The coloured structures associated with flowers of Poinsettia are
 (a) Sepals (b) Petals
 (c) Bracts (d) Tepals
51. In turnip the tap root modification consists of the tap root
 (a) Swollen in the middle gradually tapering at both ends
 (b) Swollen at the top gradually tapering towards the lower end
 (c) Swollen above abruptly tapering towards the base
 (d) Swollen without a definite shape
52. Which one of the following does not have several swollen roots without any definite shape occurring in a cluster at the base of the stem?
 (a) 4 O'clock plant (b) Asparagus
 (c) Dehlia (d) None of these
53. Intercalary meristem is present in
 (a) Grasses (b) Mango
 (c) Pinus (d) Fern
54. Which one of the following statements is not correct for a rhizome?
 (a) It has no bud (b) It has leaves
 (c) It is a storage organ (d) None of the above
55. Winged Petiole is found in
 (a) Lemon (b) Peepal
 (c) Babul (d) Radish
56. Ptyxis refers to
 (a) Arrangement of leaves on stem
 (b) Arrangement of leaves in the bud in relation to one another
 (c) Manner in which individual leaf is folded or rolled
 (d) All the above
57. Multiple root cap is found in
 (a) Maize (b) Radish
 (c) Pandanus (d) Lemon

58. Bipinnate leaf is characteristic of
- (a) Solanaceae (b) Cruciferae
(c) Papilionaceae (d) Mimosoideae
59. Which of the following features would distinguish a monocot from a dicot plant?
- (a) Aestivation (b) Vernation
(c) Phyllotaxy (d) Venation
60. Fibrous roots develop in maize from
- (a) Lower nodes (b) Flowering axis
(c) Upper internodes (d) Hydrophytes
61. Which is not a modified stem?
- (a) Corm of Colocasia (b) Rhizome of Ginger
(c) Pitcher of Nepenthes (d) Tuber of Potato
62. Bulb of garlic and onion have
- (a) Greatly developed root system (b) No leaves
(c) No stem (d) Greatly reduced stem
63. Velamen, the spongy tissue is present in
- (a) Breathing roots (b) Parasitic roots
(c) Tuberos roots (d) Epiphytic roots
64. Potatoes are borne on
- (a) Adventitious roots (b) Lateral roots
(c) Primary roots (d) Stolons
65. Tendrillar stipules are found in
- (a) Smilax (b) Gloriosa
(c) Acacia (d) Clematis
66. Some plants have roots and rhizome, both-underground structures. Which characteristics of rhizome would distinguish them from roots?
- (a) Rhizomes are thicker than roots (b) Rhizomes have scaly leaves
(c) Rhizomes are thinner than roots (d) None of the above
67. Mint produces
- (a) Runner (b) Offset
(c) Rhizome (d) Sucker
68. The flattened greenleaf like modification of petiole in Australian Acacia is called

- (a) Phyllode (b) Phylloclade
(c) Phyllid (d) Cladode
69. A cladode is one internode long in
(a) Phyllode (b) Phylloclade
(c) Sucker (d) None of the above
70. Perianth is the term used when
(a) Calyx and corolla are similar
(b) Calyx and androecium are similar
(c) Androecium and gynoecium are similar
(d) None of the above
71. A flower is considered as a modified shoot because
(a) Flowers aggregate to form an inflorescence
(b) Necessary organs are absent in some flowers
(c) In some flowers thalamus becomes elongated and shows distinct nodes and internodes
(d) Epicalyx is present in some flowers
72. The term tetradynamous is applied where there are
(a) 4 Stamens; 2 long and 2 short (b) 6 Stamens; 2 short and 4 long
(c) 6 Stamens; 2 long and 4 short (d) None of the above
73. When male and female parts of a flower mature at different times, it is called
(a) Monocliny (b) Dichogamy
(c) Herkogamy (d) Heterostyly
74. Which one of the following is considered as the most advanced inflorescence?
(a) Raceme (b) Spike
(c) Corymb (d) Capitulum
75. Cleistogamous flowers are
(a) Open bisexual flowers
(b) Bisexual flowers which never open
(c) Unisexual flowers which never open
(d) None of the above
76. An anther which dehisces outward is
(a) Extrose (b) Introse

- (c) Inserted (d) Extended beyond the corolla
77. A flower is said to be complete when it has
 (a) Calyx and corolla only (b) Androecium and gynoecium only
 (c) Corolla, androecium and gynoecium (d) All the four whorls
78. A ligulate corolla found in Composite is also known as
 (a) Masked (b) Two-lipped
 (c) Star-shaped (d) Wheel-shaped
79. Polyadelphous condition is related with
 (a) Calyx (b) Corolla
 (c) Androecium (d) Gynoecium
80. Synandrium means fusion of
 (a) Filament only (b) Only anthers
 (c) Both filament and anther (d) Part of the stamen
81. Roots are described as adventitious depending upon their
 (a) Place of origin (b) Function
 (c) Anatomy (d) Position, aerial or underground
82. The plant with biggest flower is a
 (a) Total root parasite (b) Partial root parasite
 (c) Partial stem parasite (d) Total stem parasite
83. Swollen leaf base is called
 (a) Pulvinus (b) Bract
 (c) Tuber (d) Otipches
84. Thorns, spines, prickles in plant work as
 (a) Respiratory organs (b) Defensive organs
 (c) Organs of offense (d) Excretory organs
85. Which of the following plant is insectivorous?
 (a) Hydrilla (b) Drosera
 (c) Castor (d) Ranunculus
86. Underground modification of stem is primarily meant for
 (a) Perennation (b) Growth
 (c) Respiration (d) Vegetative reproduction
87. Leafless stem of onion which is produced to bear flowers is called

- (a) Scape (b) Rachis
(c) Floral axis (d) Peduncle
88. Epiphyllous buds are those that arise from the
(a) Entire plant (b) Axil of leaf
(c) Petals (d) Surface of leaf
89. Thick and woody twiners are known as
(a) Creepers (b) Lianas
(c) Suckers (d) Climbers
90. Leaves fall from branches in winter on account of
(a) Shortening of day time (b) Fall in atmospheric temperature
(c) Fall in atmospheric pressure (d) Formation of abscission layer
91. Which of the following is axillary?
(a) Flowers (b) Trichomes
(c) Stomata (d) Leaves
92. Petioles are modified into tendrils in
(a) Clematis (b) Antigonon
(c) Gloriosa (d) Passiflora
93. In a raceme, the flowers are
(a) Arranged in a basipetal succession
(b) Arranged in an acropetal succession
(c) Of separate sexes
(d) Of the same sex
94. The axis between the androecium and the gynoecium is called
(a) Gynandrophore (b) Androphore
(c) Gynophore (d) Anthrophore
95. Syngenesious condition is
(a) When all the carpels in a gynoecium are fused
(b) When filament are free and the anthers are fused
(c) When filaments of stamens are fused and the anthers are free
(d) When both the filaments and the anthers are fused
96. Polyadelphouse condition is related to
(a) Androecium (b) Sepals

- (c) Petals (d) Gynoecium
97. Epicalyx represents
(a) A whorl of bracts (b) Involucre
(c) An additional whorl of calyx (d) A whorl of bracteoles
98. Placenta is the point of attachment of
(a) Ovules to the thalamus (b) Style to the ovary
(c) Filament with the anther (d) Ovules to the ovary
99. The carpels of the Solanum flower are oblique because
(a) The posterior and anterior carpels move to the left
(b) The posterior carpels turn to the left and the anterior to the right
(c) The posterior and anterior carpels turn in 180 degrees
(d) The posterior carpel turns to the right and anterior to the left
100. If the flowers are unisexual, the condition is known as
(a) Monocliny (b) Dicliny
(c) Dichogamy (d) Moncecious

Answer

1. a	31. b	61. c	91. d
2. c	32. c	62. d	92. d
3. d	33. a	63. d	93. b
4. c	34. c	64. b	94. c
5. b	35. c	65. d	95. b
6. b	36. d	66. a	96. a
7. c	37. c	67. d	97. c
8. b	38. b	68. b	98. b
9. a	39. c	69. b	99. c
10. c	40. a	70. a	100. b
11. b	41. d	71. a	
12. a	42. c	72. b	
13. b	43. a	73. b	
14. b	44. c	74. d	
15. b	45. c	75. b	
16. a	46. c	76. a	
17. b	47. c	77. d	
18. c	48. c	78. c	
19. a	49. b	79. c	
20. d	50. d	80. c	
21. b	51. c	81. d	
22. c	52. a	82. a	
23. c	53. a	83. a	
24. b	54. d	84. c	
25. b	55. a	85. b	
26. c	56. d	86. d	
27. a	57. c	87. d	
28. c	58. b	88. b	
29. d	59. d	89. b	
30. d	60. a	90. d	

