UP-CPMT - 2009

Paper-1

Biology

1. Perianth is represented by
   1) glumes
   2) lemma
   3) lodicules
   4) palea

2. Table sugar is consist of
   1) lactose
   2) sucrose
   3) maltose
   4) glucose

3. The terminator gene technology causes
   1) failure of seed setting after one generation
   2) breakage of seed dormancy
   3) early flowering in plants
   4) none of the above

4. The term totipotency refers to
   1) the capability of organism to regenerate its lost parts
   2) capability of somatic cells to produce complete organism
   3) the introduction of foreign gene in a cells DNA
   4) the technique of growing immature embryos

5. Work of Beadle and Tatum on *Neurospora crassa* proved that
   1) replication of DNA is semi-conservative
   2) viruses have genetic material
   3) every gene is responsible for specific enzymes
   4) plant cells are totipotent

6. Polyploidy means occurence of
   1) haploid sets of chromosomes
   2) diploid sets of chromosomes
   3) more than diploid sets of chromosomes

4) all of the above

7. The deteriorative processes in plants, that naturally terminate their functional life, are collectively called
   1) wilting
   2) abscission
   3) plasmolysis
   4) sensescence

8. Which pigment involves in photoperiodic change in plants?
   1) Phytochrome
   2) Cytochrome
   3) Chlorophyll
   4) Anthocyanin

9. Linnaen system of plant classification is based on
   1) morphological and anatomical characters
   2) evolutionary trends
   3) floral characters
   4) None of the above

10. Succession on secondary base area is
   1) primosere
   2) subsere
   3) xerosere
   4) None of these

11. An unrestricted reproductive capacity is called
   1) birth rate
   2) biotic potential
   3) carrying capacity
   4) fertility

12. Ubisch bodies are secreted by
   1) tapetum
   2) exine
   3) microspore mother cells
   4) endothecium

13. Alginic acid is found in the cell wall of
   1) Gigartina
   2) Laminaria

3) Gelidium
4) Scytonema

14. Lady finger (bhindi) belongs to
1) Malvaceae
2) Cruciferae
3) Solanaceae
4) Liliaceae

15. P-porteins are associated with
1) sieve tube elements
2) xylem parenchyma
3) trichomes
4) tracheids and vessels

16. Potato is a modification of
1) stem
2) rhizome
3) root
4) leaf

17. Antherozoids of *Dryopteris* are
1) multiciliated and coiled
2) multiciliated and sickle-shaped
3) biciliated and coiled
4) biciliated and sickle-shaped

18. Ginger multiplies vegetatively by
1) bud
2) tuber
3) stem
4) rhizome

19. In *Gycas* stem, open vascular bundle is characterized by
1) phloem being sandwitched between xylem
2) cambium present in between xylem and phloem
3) xylem being sandwitched between phloem
4) xylem and phloem occurring on different radii

20. From which part of coconut coir is obtained?
1) Pericarp
2) Mesocarp

3) Epicarp
4) Endocarp

21. Both heterospory and circinate plyxis occur in
1) Dryopteris
2) Pinus
3) Cycas
4) Funaria

22. In *Funaria,* the stomata are found on
1) foot
2) seta
3) capsule
4) all of these

23. Tracheophyta consists of
1) bryophytes only
2) pteridophytes only
3) gymnosperms and angiosperms
4) Both (2) and (3)

24. Green-house effect is mainly caused by
1) CFCs
2) CH_4
3) CO_2
4) CO

25. Nucellar polyembryony occurs in
1) Corchorus
2) Citrus
3) Carthamus
4) Zea mays

26. Male gametophyte of angiosperms is reduced to
1) one cell
2) two cells
3) three cells
4) four cells

27. In C_3 plants, the first stable product of photosynthesis during dark reaction is
1) PGAL 2) RuBP 3) PGA 4) OAA

28. During the formation of embryo sac, the functional megaspore undergoes
    1) two mitotic divisions
    2) two meiotic divisions
    3) three meiotic divisions
    4) three mitotic divisions

29. The first CO_2 acceptor in C_4 cycle is
    1) RuBP 2) PEP 3) PGA 4) OAA

30. The water available to plants for absorption is
    1) gravitational water
    2) hygroscopic water
    3) capillary water
    4) chemically bound water

31. Cell wall of fungi is made up of
    1) fungal cellulose
    2) hemicellulose
    3) fungal chitin
    4) Both (1) and (3)

32. The plant ash indicates
    1) organic matter of plant
    2) mineral salts absorbed by plants
    3) both mineral salts and organic matter
    4) silica absorbed by plants

33. During cell cycle, RNA and non-histone proteins are synthesized in
    1) S-phase
    2) G_0-phase
    3) G_2-phase
    4) M-phase

34. Which one of the following is the terminal electron acceptor?
    1) Molecular CO_2
    2) Molecular O_2
    3) Molecular H_2
    4) $NADPH_2$

35. Bract is a modified

1) petal
2) sepal
3) leaf
4) involucre

36. Hormone replacing the requirement of vernalization is
1) ethylene
2) auxin
3) gibberellins
4) cytokinin

37. Thigmotropism is best seen in
1) tendrils
2) leaf apex
3) root apex
4) stem apex

38. Transpiration is measured by
1) potometre
2) porometre
3) auxanometre
4) respirometre

39. The function of polymerase chain reaction is
1) transduction
2) DNA amplification
3) translation
4) None of these

40. Mutation is more common when it is present in
1) recessive condition
2) dominant condition
3) constant in population
4) None of the above

41. The most common type of ovule in angiosperms is
1) amphitropous
2) atropous
3) anatropous
4) circinotropous

42. When two hybrids rrTt and Rrtt are crossed, the phenotype ratio of offspring would be

1) 3 : 1
2) 9 : 3 : 3 : 1
3) 1 : 1
4) 1 : 1 : 1 : 1

43. One of the most resistant known biological material is
1) lignin
2) hemicellulose
3) sporopollenin
4) lignocellulose

44. Energy enters the ecosystem through
1) herbivore
2) carnivore
3) producer
4) decomposer

45. In soil profile, humus is present in
1) horizon-0
2) horizon-A
3) horizon-B
4) horizon-C

46. The smallest angiospermic flower is
1) Wolffia
2) Ranunculus
3) Rafflesia
4) Stellaria

47. The pyramid of energy is always
1) opaque
2) horizontal
3) upright
4) inverted

48. The transition zone between the two vegetations of ecosystem is called
1) ecotone
2) ecocline
3) ecosystem
4) ecesis

49. Protein in silk thread is

1) fibroin
2) keratin
3) albumin
4) globulin

50. Thermoregulatory centre of human body is associated with
1) cerebrum
2) cerebellum
3) hypothalamus
4) medulla oblongata

51. Body cavity of adult *Ascaris* is
1) haemocoel
2) amphicoel
3) pseudocoel
4) schizocoel

52. Collar cells are characteristic of
1) earthworm
2) roundworms
3) coelenterate
4) sponges

53. In honey bee, the drones are
1) sterile male
2) fertile male
3) fertile female
4) sterile female

54. Crypts of Leiberkuhn are involved in
1) secretion of succus entericus
2) secretion of rennin
3) secretion of ptyalin
4) digestion of food

55. Plasmids are found in
1) virus
2) bacteria
3) fungi
4) viroid

56. Oxygen dissociation curve is

1) sigmoid
2) parabolic
3) hyperbolic
4) straight line

57. Blood leaving the liver and going towards heart is rich in
1) bile
2) urea
3) ammonia
4) oxygen

58. Membrane that covers the vacuole in a plant cell is called
1) tonoplast
2) tonoplasm
3) jacket
4) cell membrane

59. In earthworm, gizzard is found, in which of the following segments?
1) 9^{th} segment
2) 18^{th} segment
3) 13^{th} segment
4) 16^{th} segment

60. The infective stage of *Entamoeba histolytica* is
1) trophozoite stage
2) binucleated cyst stage
3) tetranucleated cyst stage
4) None of the above

61. The initiation codon in eukaryotes is
1) AUG 2) UGA 3) UAG 4) UAA

62. Pasteurization temperature is
1) 72°C for 20 minutes
2) 63°C for 15 seconds
3) 70°C for 15 seconds
4) 65°C for 30 minutes

63. The number of heart chambers found in cockroach is
1) 4 2) 7 3) 5 4) 13

64. The ratio of methane, ammonia and hydrogen in Stanley Miller's experiment was

1) 3 : 1 : 2
2) 2 : 1 : 2
3) 1 : 2 : 1
4) 5 : 4 : 1

65. Convergent evolution is shown by

1) homologous organ
2) analogous organ
3) vestigial organ
4) All of the above

66. Teichoic acid is present in

1) cell wall of Gram positive bacteria
2) cell wall of Gram negative bacteria
3) capsid of virus
4) protoplasm of mycoplasma

67. % sign is used for

1) actinomorphic flower
2) zygomorphic flower
3) incomplete flower
4) epigynous flower

68. Crossing over occurs

1) single strand stage
2) two strand stage
3) four strand stage
4) eight strand stage

69. "Ontogeny repeats phylogeny" is the statement of which of the following theories?

1) Mutation theory
2) Inheritance theory
3) Recapitulation theory
4) Natural selection theory

70. Darwin proposed the theory of

1) inheritance of acquired characters
2) natural selection
3) recapitulation
4) continuity of germplasm

71. Which of the following is not Darwin's conclusion?

1) Survival of the fittest
2) Struggle for existence
3) Inheritance of acquired characters
4) Origin of species by natural selection

72. Nuclear membrane is continuous with

1) rough endoplasmic reticulum
2) smooth endoplasmic reticulum
3) cell membrane
4) Golgi bodies

73. Cosmid is

1) extragenetic material in mycoplasma
2) circular DNA in bacteria
3) extra DNA in bacteria
4) fragment of DNA inserted in bacteria for forming copies

74. XO chromosomal abnormality in humans causes

1) Turner's syndrome
2) Down's syndrome
3) Darwin's syndrome
4) Klinefelter's syndrome

75. Fertilization of ovum takes place in rabbit, man and other placental mammals in

1) ovary
2) fallopian tube
3) cervix
4) uterus

76. At what stage in test tube babies, the zygote is implanted in human female?

1) 32-celled stage
2) 64-celled stage
3) 100-celled stage
4) 164-celled stage

77. Pentoses and hexoses are common

1) monosaccharides
2) disaccharides
3) polysaccharides
4) oligosaccharides

78. Pheromone is

1) a product of endocrine gland
2) used for animal communication
3) messenger RNA
4) always protein

79. Secretion is under control of neurosecretory nerve axons in

1) pineal gland
2) adrenal cortex
3) anterior pituitary
4) posterior pituitary

80. If an isolated strain of DNA is kept at 82-90°C than

1) it changes into RNA
2) it breaks into two fragments
3) it breaks into many fragments
4) it uncoils and the two strands separate

81. The smallest endocrine gland is

1) thyroid
2) parathyroid
3) pituitary
4) adrenal

82. Barr body in mammals represents

1) all the heterochromatin in female cells
2) one of the two X-chromosomes in somatic cells of females
3) all the heterochromatin in male and female cells
4) the Y-chromosome in somatic cells of male

83. Gland responsible for calcium metabolism is

1) thumus
2) thyroid
3) parathyroid
4) adrenal

84. Which of the following is not a case of epimorphosis?

1) Formation of sperms from small clumps of cells
2) Regeneration of tail in a lizard
3) Replacement of severed arm in starfish
4) Replacement of limb in salamander

85. The daughter born to haemophilic father and normal mother could be

1) normal
2) carrier
3) haemophilic
4) None of these

86. Removal or absence of thymus in early life shall bring about

1) lack of lymphocytes
2) lack of antibodies
3) lack of lymph nodes
4) All of the above

87. Bone marrow is made up of

1) muscular fibre and fatty tissue
2) fatty tissue and areolar tissue
3) fatty tissue and cartilage
4) fatty tissue, areolar tissue and blood vessel

88. Mast cells secrete

1) serotonin
2) heparin
3) histamine
4) All of these

89. Which one is component of ornithine cycle?

1) Ornithine, citrulline and fumaric acid
2) Ornithine, citrulline and arginine
3) Ornithine, citrulline and alanine
4) Amino acids are not used

90. Bidder's canal is present in

1) male rabbit
2) male frog
3) female frog
4) Both (2) and (3)

91. Zygomatic arch of rabbit is formed of

1) maxilla, periotic and jugal
2) periotic, jugal and palatine
3) maxilla, squamosal and jugal
4) maxilla, premaxilla and squamosal

92. Role of spleen in mammal is

1) to control blood pressure
2) to assist liver
3) to act as haemopoietic tissue
4) to assist kidneys

93. Excretory product of spider is

1) uric acid
2) ammonia
3) guanine
4) None of the above

94. Green glands present in some arthropods help in

1) respiration
2) excretion
3) digestion
4) reproduction

95. Sensation of stomach pain is due to

1) interoceptors
2) exteroceptors
3) proprioceptors
4) teloceptors

96. Right lung of rabbit is divided into

1) four lobes
2) two lobes
3) six lobes
4) eight lobes

97. Haemoglobin is having maximum affinity with

1) CO_2
2) CO
3) O_2
4) NH_3

98. Veliger larva occurs in phylum

1) Mollusca
2) Echinodermata
3) Arthropoda
4) Cnidaria

99. The most recent and direct prehistoric ancestor of present man is

1) Cro-magnon
2) Pre-Neanderthal
3) Neanderthal
4) None of these

100. "Darwin's finches" refers to

1) fossils of birds collected by Darwin at Galapagos islands
2) a type of birds present of Galapagos islands
3) migratory birds collected by Darwin at Galapagos islands
4) fossils of reptiles collected by Darwin at Galapagos islands

Answer Key

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