

# UP-CPMT - 2007

## Paper-1

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### Biology

1. If flowers are cut and dipped in dilute NaCl solution, then
  - 1) transpiration is low
  - 2) endo-osmosis occurs
  - 3) no bacterial growth takes place
  - 4) absorption of solute inside flower cell takes place
  
2. Pyramid of energy in aquatic ecosystem is
  - 1) always upright
  - 2) always inverted
  - 3) bell shaped
  - 4) none of these
  
3. In which of the following features, *Cycas* resembles with angiosperms?
  - 1) Presence of vessels
  - 2) Circinate vernation
  - 3) Dichotomously branched leaves
  - 4) Pollen tube is the carrier of male gametes
  
4. Mesogamy is
  - 1) fusion of male and female gametes
  - 2) fusion of physiologically similar and morphologically different gametes
  - 3) entry of pollen tube through integuments
  - 4) none of the above
  
5. Polyarch condition is found in
  - 1) monocot root
  - 2) dicot root
  - 3) monocot stem
  - 4) dicot stem
  
6. When temperature decreases oxy-Hb curve will become
  - 1) more steep
  - 2) straight
  - 3) parabola



- 1) protoxins
  - 2) prolectins
  - 3) phytoalexins
  - 4) all of these
15. Absence of circulatory system in *Hydra* is compensated by
- 1) pseudocoelomic fluid
  - 2) gastrovascular cavity
  - 3) presence of tentacles
  - 4) none of the above
16. Photosynthesis is maximum in
- 1) green light
  - 2) blue followed by red light
  - 3) red followed by blue light
  - 4) blue light
17. What is C-value paradox?
- 1) Haploid DNA content
  - 2) Huge variations in C-values between species
  - 3) Constant C-value for all species
  - 4) Diploid DNA content
18. Number of archegonia in *Cycas* is
- |      |      |      |      |
|------|------|------|------|
| 1) 8 | 2) 4 | 3) 1 | 4) 2 |
|------|------|------|------|
19. A cell swells up when kept in
- 1) hypotonic solution
  - 2) hypertonic solution
  - 3) isotonic solution
  - 4) all of the above
20. A 22 years student goes to his ophthalmologist. He has problem in reading books because he is not able to contract his
- 1) suspensory ligament
  - 2) pupil
  - 3) iris
  - 4) ciliary muscles
21. Extinction of a species in a food chain is compensated by
- 1) food chain
  - 2) ecological pyramid

- 3) food web
- 4) none of the above

22. Enterogastrone is

- 1) hormone secreted by gastric mucosa
- 2) enzyme secreted by mucosa
- 3) hormone secreted by duodenal mucosa
- 4) secreted by endocrine gland related to digestion

23. Mosquito receive air through

- 1) flagellum
- 2) cilia
- 3) pedicel
- 4) none of these

24. Dominant stage in Bryophyta is

- 1) sporophytic
- 2) gametophytic
- 3) both (1) and (2)
- 4) none of the above

25. ADH acts on the

- 1) collecting tubule of kidney
- 2) loop of Henle
- 3) collecting ducts of testes
- 4) none of the above

26. Centrosome is not present in

- 1) cells of higher plants
- 2) cells of lower plants
- 3) cells of higher animals
- 4) cells of lower animals

27. Excretory product of spider is

- 1) uric acid
- 2) ammonia
- 3) guanine
- 4) none of these

28. Part of bile juice useful in digestion is

- 1) bile salt
- 2) bile pigment

- 3) bile matrix
- 4) all of them

29. Which of the following is not the character of *Taenia solium*?

- 1) Apolysis
- 2) Proglottid
- 3) Metamerism
- 4) Strobila

30. In housefly pseudotracheae is found in

- 1) haustellum
- 2) rostrum
- 3) labellum
- 4) none of these

31. Process of vernalization can be induced by

- 1) cytokinin
- 2) auxin
- 3) phototropin
- 4) GA

32. Cell division or mitosis is normal process in a living cell, but sudden and abnormal mitosis in an organ will frequently result in

- 1) zygote
- 2) cancer
- 3) new organ
- 4) gastrula

33. Myelin sheath is derived from

- 1) neuroglial cells
- 2) Schwann cells
- 3) nerve cells
- 4) all of these

34. A cell plate is laid down during

- 1) cytokinesis
- 2) karyokinesis
- 3) interphase
- 4) none of these

35. Red rot disease in plants occurs in

- 1) leaf tip

- 2) leaf margins
- 3) mid rib
- 4) whole leaf

36. Salivary gland in earthworm is found in

- 1) dorsal wall of buccal cavity
- 2) ventral wall of buccal cavity
- 3) pharyngeal wall
- 4) none of the above

37. Stink gland is found in

- 1) 4<sup>th</sup> and 5<sup>th</sup> terga of cockroach
- 2) 5<sup>th</sup> and 6<sup>th</sup> terga of cockroach
- 3) 5<sup>th</sup> and 6<sup>th</sup> sterna of cockroach
- 4) 4<sup>th</sup> and 5<sup>th</sup> sterna of cockroach

38. *Wuchereria* is found in

- 1) lymph nodes
- 2) lungs
- 3) eye
- 4) gonads

39. A<sub>0</sub> layer is rich in

- 1) minerals
- 2) humus
- 3) litter
- 4) none of these

40. Deamination occurs in

- 1) kidney
- 2) liver
- 3) nephron
- 4) both (1) and (2)

41. Regeneration in *Hydra* will be faster if it is cut off from

- 1) tentacles
- 2) hypostome
- 3) base
- 4) all of these

42. First mammal occur in which era-period?

- 1) Permian-Palaeozoic
- 2) Triassic-Mesozoic
- 3) Tertiary-Coenozoic
- 4) None of the above

43. Work of Beadle and Tatum on *Neurospora crassa* proved that

- 1) replication of DNA is semiconservative
- 2) viruses have genetic material
- 3) every gene is responsible for specific enzymes
- 4) plant cells are totipotent

44. Cristae are associated with which of the following ?

- 1) Mitochondria
- 2) Cytoplasm
- 3) Protoplasm
- 4) Endoplasmic reticulum

45. Number of female flowers in a cyathium inflorescence is

- 1) 1
- 2) 2
- 3) 3
- 4) several

46. How many young amoebae hatch out from a cyst of *E histolytica*?

- 1) One
- 2) Two
- 3) Four
- 4) Six

47. Stability of ecosystem depends upon

- 1) primary productivity
- 2) interchange between producers and consumers
- 3) number of producers
- 4) number of consumers

48. If root of a flowering plant has 24 chromosomes, then its gamete has how many chromosomes?

- 1) 24
- 2) 12
- 3) 4
- 4) 8

49. Maximum surface area of circulating system is seen in

- 1) heart
- 2) capillaries
- 3) arterioles
- 4) veins

50. Raphe is

- 1) part of flower
- 2) funicle attached to ovule

- 3) ridge formed by funiculus
- 4) part of nucellus

51. Mulching is

- 1) putting straw or waste vegetables to conserve moisture
- 2) rearing of animals
- 3) both (1) and (2)
- 4) none of the above

52. Which of the following has exoskeleton of scales and paired copulatory organ or penis?

- 1) Sharks
- 2) Lizards
- 3) Urodela
- 4) Urochordata

53. Pneumotaxic centre is present in

- 1) cerebrum
- 2) cerebellum
- 3) medulla oblongata
- 4) pons varolii

54. Which of the following characters are present in class Crustacea?

- 1) Cephalothorax, gills and appendages
- 2) Head and thorax, gills and appendages
- 3) Cephalothorax, book gills and appendages
- 4) Head and thorax, book gills and appendages

55. Struggle for existence and survival of the fittest theories were given by

- 1) Wallace
- 2) Darwin
- 3) Lamarck
- 4) None of these

56. During inflammation which of the following is secreted by connective tissue?

- 1) Heparin
- 2) Histamine
- 3) Serotonin
- 4) Glucagon

57. Carriers of *Entamoeba histolytica* are

- 1) mosquito of genus, Anopheles
- 2) cattle



- 3) *Musca domestica* (housefly)
- 4) healthy human host

58. Which of the following is true for vitamin-C ?

- 1) Also called as ascorbic acid
- 2) Also called as fumaric acid
- 3) Obtained from citrus fruits
- 4) Both (1) and (3)

59. Most of the economically important fibre yielding plants belong to family

- 1) Malvaceae
- 2) Solanaceae
- 3) Cruciferae
- 4) Poaceae

60. Diatoms belong to which class?

- 1) Phaeophyceae
- 2) Bacillariophyceae
- 3) Chlorophyceae
- 4) Xanthophyceae

61. 3-segmented club shaped maxillary palp is present in

- 1) male *Culex*
- 2) male *Anopheles*
- 3) female *Culex*
- 4) female *Anopheles*

62. Fight and flight hormone is

- 1) adrenaline
- 2) thyroxine
- 3) ADH
- 4) oxytocin

63. Body of earthworm is divided into how many similar segments which are called metamers or somites?

- 1) 60 to 120
- 2) 100 to 120
- 3) 80 to 120
- 4) 120 or more

64. Dental formula of rabbit is

- 1) (2/1)(0/0) (3/2)(3/3)

- 2) (2/1)(1/0) (3/2)(3/3)
- 3) (2/1)(0/0) (2/2)(3/3)
- 4) (1/1)(3/2) (0/0)(3/3)

65. In meiosis, chromosome number becomes
- 1) half of its parent chromosome
  - 2) same as that of parent chromosome
  - 3) one fourth of its parent chromosome
  - 4) none of the above
66. Which of the following are correct for axolotl larva?
- (i) It shows neoteny and paedogenesis
  - (ii) Absence of thyroxine affect metamorphosis
  - (iii) It is the larva of Hemichordata
- 1) (i), (ii), (iii)
  - 2) (i) and (ii)
  - 3) (ii) and (iii)
  - 4) (iii)
67. Regeneration of liver is
- 1) metamorphosis
  - 2) reparative regeneration
  - 3) epimorphosis
  - 4) morphogenesis
68. Bacteriophage release lysozyme during
- 1) penetration phase
  - 2) eclipse phase
  - 3) absorption phase
  - 4) maturation phase
69. Alginic acid is present in the cell wall of
- 1) Bacillariophyceae
  - 2) Myxophyceae
  - 3) Xanthophyceae
  - 4) Laminaria
70. An eukaryote which causes disease comes under
- 1) monerans
  - 2) fungi
  - 3) virus
  - 4) none of these

71. Which of the following symbols are used for representing chromosome of birds?

- 1) ZZ – ZW
- 2) XX – XY
- 3) XO – XX
- 4) ZZ – WW

72. Which of the following statements are correct?

- (i) Venom of cobra is neurotoxic
- (ii) Venom of sea snake is neurotoxic
- (iii) Venom of viper is haemotoxic

- 1) (i), (ii) and (iii)
- 2) (i) and (iii)
- 3) (i) and (ii)
- 4) (ii) and (iii)

73. Gametophytic and sporophytic phases are independent in

- 1) pteridophyte
- 2) bryophyte
- 3) gymnosperms
- 4) phaeophytes

74. Bidder's canal is found in

- 1) testes of frog
- 2) kidney of frog
- 3) kidney of rabbit
- 4) both (1) and (3)

75. Which layer develops first during embryonic development?

- 1) Ectoderm
- 2) Mesoderm
- 3) Endoderm
- 4) Both (2) and (3)

76. Prostaglandins are

- 1) amino acid
- 2) steroid
- 3) fatty acid
- 4) carbohydrate

77. If  $AAbb \times aaBB$ , then phenotypic ratio of its progeny will be

- 1) 9 : 3 : 3 : 1

- 2) 1 : 2 : 1
- 3) 1 : 1 : 1 : 1
- 4) 4 : 1

78. Which of the following are the indicators of pollution?

- 1) Lichen
- 2) Fungi
- 3) Algae
- 4) None of these

79. Length of petiole increases due to division of

- 1) apical meristem
- 2) lateral meristem
- 3) intercalary meristem
- 4) all of the above

80. Formation of *mRNA* from DNA is

- 1) translation
- 2) transcription
- 3) transformation
- 4) transduction

81. Acetylcholinesterase help in breaking

- 1) synapse
- 2) acetylcholine
- 3) dendrites
- 4) axon

82. Acoelus vertebrae in frog is

- 1) 5th vertebrae
- 2) atlas vertebrae
- 3) 8th vertebrae
- 4) none of these

83. Opening and closing of stomata is due to

- 1)  $\text{Ca}^{2+}$
- 2)  $\text{Na}^{+}$
- 3)  $\text{K}^{+}$
- 4)  $\text{Cl}^{-}$

84. Endodermis mainly helps in

- 1) preventing loss of water from stele
- 2) provides protection
- 3) maintains rigidity
- 4) all of the above

85. Digestion of protein is completed in

- 1) stomach
- 2) duodenum
- 3) ileum
- 4) duodenum and ileum

86. Increase in bleeding time and delay in blood coagulation is due to the deficiency of which hormone?

- 1) Adrenaline
- 2) Noradrenaline
- 3) Parathormone
- 4) Thyroxine

87. Genotypic ratio of a monohybrid cross is

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

88. Nucellus forms which of the following part of fruit?

- 1) Seed coat
- 2) Perisperm
- 3) Seed
- 4) Raphe

89. Longest loop of Henle is found in

- 1) kangaroo rat
- 2) opossum
- 3) rhesus, monkey
- 4) all of these

90. Which of the following is not a concept of Lamarck?

- 1) Environmental pressure causes variation
- 2) Rate and survival of organism is different due to variation
- 3) Inheritance of acquired character
- 4) If an organ is used constantly it will continuously increase its size

91. Layers of an ovum from outside to inside is
- 1) corona radiata, zona pellucida and vitelline membrane
  - 2) zona pellucida, corona radiata and vitelline membrane
  - 3) vitelline membrane, zona pellucida and corona radiata
  - 4) zona pellucida, vitelline membrane and corona radiata
92. Transfer of any gene into a completely different organism can be done through
- 1) genetic engineering
  - 2) tissue culture
  - 3) transformation
  - 4) none of the above
93. Site of protein synthesis is
- 1) ribosome
  - 2) SER
  - 3) Golgi bodies
  - 4) lysosome
94. Nitrite is converted to nitrate by
- 1) Nitrosomonas
  - 2) Nitrobacter
  - 3) Pseudomonas
  - 4) Clostridium
95. *Archaeopteryx* is a connecting link between
- 1) reptiles and birds
  - 2) birds and mammals
  - 3) amphibians and reptiles
  - 4) none of the above
96. *Daphnia* is commonly known as
- 1) clam shrimp
  - 2) fairy shrimp
  - 3) water fleas
  - 4) tadpole shrimp
97. Bryophytes are called amphibians of plant kingdom because
- 1) their reproductive phase requires water
  - 2) their sex organs are multicellular and jacketed
  - 3) they have tracheids
  - 4) all of the above

98. Which of the following metal causes harmful effects?

- 1) Lead
- 2) Cobalt
- 3) Uranium
- 4) All of these

99. Provirus is

- 1) a free virus
- 2) primitive virus
- 3) integrated viral genome
- 4) a free DNA

100. Pappus is present in Compositae for

- 1) air pollination
- 2) insect pollination
- 3) water pollination
- 4) air dispersal

### Answer Key

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