

CBSE - 2008 (Pre)
BIOLOGY – SET B

51. Keeping in view the 'fluid mosaic model for the structure of cell membrane, which one of the following statements is *correct* with respect to the movement of lipids and proteins from one lipid monolayer to the other (described as flip-flop movement) ?

- (1) Both lipids and proteins can flip-flop
- (2) While lipids can rarely flip-flop, proteins can not
- (3) While proteins can flip-flop, lipids can not
- (4) Neither lipids, nor proteins can flip-flop

Ans. [2]

52. Which one of the following pairs of plant structures has haploid number of chromosomes ?

- (1) Megaspore mother cell and antipodal cells
- (2) Egg cell and antipodal cells
- (3) Nucellus and antipodal cells
- (4) Egg nucleus and secondary nucleus

Ans. [2]

53. The C_4 plants are photosynthetically more efficient than C_3 plants because

- (1) The CO_2 compensation point is more
- (2) CO_2 generated during photorespiration is trapped and recycled through PEP carboxylase
- (3) The CO_2 efflux is not prevented
- (4) They have more chloroplasts

Ans. [2]

54. In human adult females oxytocin

- (1) is secreted by anterior pituitary
- (2) stimulates growth of mammary glands
- (3) stimulates pituitary to secrete vasopressin
- (4) causes strong uterine contractions during parturition

Ans. [4]

55. Gel electrophoresis is used for

- (1) Cutting of DNA into fragments
- (2) Separation of DNA fragments according to their size
- (3) Construction of recombinant DNA by joining with cloning vectors
- (4) Isolation of DNA molecule

Ans. [2]

56. Polysome is formed by

- (1) Several ribosomes attached to a single mRNA
- (2) Many ribosomes attached to a strand of endoplasmic reticulum
- (3) A ribosome with several subunits
- (4) Ribosomes attached to each other in a linear arrangement

Ans. [1]

57. Given below are four methods (A - D) and their modes of action (a - d) in achieving contraception. Select their correct matching from the four options that follow :

Method	Mode of Action
A. The pill	(a) Prevents sperms reaching cervix
B. Condom	(b) Prevents implantation
C. Vasectomy	(c) Prevents ovulation
D. Copper T	(d) Semen contains no sperms

Matching :

- (1) A - (c), B - (a), C - (d), D - (b) (2) A - (d), B - (a), C - (b), D - (c)
 (3) A - (c), B - (d), C - (a), D - (b) (4) A - (b), B - (c), C - (a), D - (d)

Ans. [1]

58. What is vital capacity of our lungs ?

- (1) Inspiratory reserve volume *plus* tidal volume
 (2) Total lung capacity *minus* expiratory reserve volume
 (3) Inspiratory reserve volume *plus* expiratory reserve volume
 (4) Total lung capacity *minus* residual volume

Ans. [4]

59. In which one of the following male and female gametophytes *do not* have free living independent existence ?

- (1) *Pteris* (2) *Funaria* (3) *Polytrichum* (4) *Cedrus*

Ans. [4]

60. A transgenic food crop which may help in solving the problem of night blindness in developing countries is

- (1) Flavr Savr tomatoes (2) Starlink maize
 (3) Bt Soybean (4) Golden rice

Ans. [4]

61. A lake near a village suffered heavy mortality of fishes within a few days. Consider the following reasons for this ?

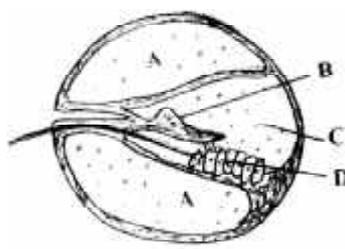
- (a) Lots of urea and phosphate fertilizer were used in the crops in the vicinity
 (b) The area was sprayed with DDT by an aircraft
 (c) The lake water turned green and stinky
 (d) Phytoplankton populations in the lake declined initially thereby greatly reducing photosynthesis

Which two of the above were the main causes of fish mortality in the lake ?

- (1) b, c (2) c, d (3) a, c (4) a, b

Ans. [2]

62. Given below is a diagrammatic cross section of a single loop of a human cochlea :



Which one of the following options correctly represents the names of three different parts ?

- (1) B : Tectorial membrane, C : Perilymph, D : Secretory cells
- (2) C : Endolymph, D : Sensory hair cells, A : Serum
- (3) D : Sensory hair cells, A : Endolymph, B : Tectorial membrane
- (4) A : Perilymph, B : Tectorial membrane, C : Endolymph

Ans. [4]

63. Senescence as an active developmental cellular process in the growth and functioning of a flowering plant, is indicated in

- (1) vessels and tracheid differentiation
- (2) leaf abscission
- (3) annual plants
- (4) floral parts

Ans. [2]

64. Vascular tissues in flowering plants develop from

- (1) Phellogen
- (2) Plerome
- (3) Periblem
- (4) Dermatogen

Ans. [2]

65. Nitrogen fixation in root nodules of *Alnus* is brought about by

- (1) *Bradyrhizobium*
- (2) *Clostridium*
- (3) *Frankia*
- (4) *Azorhizobium*

Ans. [3]

66. What will happen if the secretion of parietal cells of gastric glands is blocked with an inhibitor ?

- (1) Gastric juice will be deficient in chymosin
- (2) Gastric juice will be deficient in pepsinogen
- (3) In the absence of HCl secretion, inactive pepsinogen is not converted into the active enzyme pepsin
- (4) Enterokinase will not be released from the duodenal mucosa and so trypsinogen is not converted to trypsin

Ans. [3]

67. Electrons from excited chlorophyll molecule of photosystem II are accepted first by

- (1) Cytochrome - b
- (2) Cytochrome - f
- (3) Quinone
- (4) Ferredoxin

Ans. [3]

68. *Trichoderma harzianum* has proved a useful microorganism for

- (1) bioremediation of contaminated soils
- (2) recelamation of wastelands
- (3) gene transfer in higher plants
- (4) biological control of soil-borne plant pathogens

Ans. [4]

69. Which type of white blood cells are concerned with the release of histamine and the natural anticoagulant heparin ?

- (1) Neutrophils
- (2) Basophils
- (3) Eosinophils
- (4) Monocytes

Ans. [2]

70. Which one of the following birds, indicates their reptilian ancestry ?

- (1) Scales on their hind limbs
- (2) Four-chambered heart
- (3) Two special chambers crop and gizzard in their digestive tract
- (4) Eggs with a calcareous shell

Ans. [1]

71. Endosperm is consumed by developing embryo in the seed of
(1) Coconut (2) Castor (3) Pea (4) Maize

Ans. [3]

72. In humans, at the end of first meiotic division, the male germ cells differentiate into the
(1) primary spermatocytes (2) secondary spermatocytes
(3) spermatids (4) spermatogonia

Ans. [2]

73. In the DNA molecule
(1) the total amount of purine nucleotides and pyrimidine nucleotides is not always equal
(2) there are two strand which run parallel in the 5' → 3' direction
(3) the proportion of Adenine in relation to thymine varies with the organism
(4) there are two strands which run antiparallel-one in 5' → 3' direction and other in 3' → 5'

Ans. [4]

74. Consider the following four measures (a - d) that could be taken to successfully grow chickpea in an area where bacterial blight disease is common
(a) Spray with Bordeaux mixture
(b) Control of the insect vector of the disease pathogen
(c) Use of only disease-free seeds
(d) Use of varieties resistant to the disease

Which two of the above measures can control the disease ?

- (1) b and c (2) a and b (3) c and d (4) a and d

Ans. [3]

75. The rupture and fractionation *do not usually occur* in the water column in vessel/tracheids during the ascent of sap because of
(1) lignified thick walls (2) cohesion and adhesion
(3) weak gravitational pull (4) transpiration pull

Ans. [2]

76. The blood calcium level is lowered by the deficiency of
(1) Parathormone (2) Thyroxine
(3) Both Calcitonin and Parathormone (4) Calcitonin

Ans. [1]

77. About 70% of total global carbon is found in
(1) Grasslands (2) Agroecosystems (3) Oceans (4) Forests

Ans. [3]

78. Which one of the following is heterosporous ?
(1) *Dryopteris* (2) *Salvinia* (3) *Adiantum* (4) *Equisetum*

Ans. [2]

79. Dry indehiscent single-seeded fruit formed from bicarpellary syncarpous inferior ovary is
(1) Caryopsis (2) Cypsela (3) Berry (4) Cremocarp

Ans. [2]

80. Which extra embryonic membrane in humans prevents desiccation of the embryo inside the uterus ?
 (1) Chorion (2) Allantois (3) Yolk sac (4) Amnion

Ans. [4]

81. The fleshy receptacle of syconus of fig encloses a number of
 (1) Achenes (2) Samaras (3) Berries (4) Mericarps

Ans. [1]

82. Which one of the following is linked to the discovery of Bordeaux mixture as a popular fungicide ?
 (1) Bacterial leaf blight of rice (2) Downy mildew of grapes
 (3) Loose smut of wheat (4) Black rust of wheat

Ans. [2]

83. Unisexuality of flowers prevents
 (1) autogamy, but not geitonogamy (2) both geitonogamy and xenogamy
 (3) geitonogamy, but not xenogamy (4) autogamy and geitonogamy

Ans. [1]

84. The length of different internodes in a culm of sugarcane is variable because of
 (1) shoot apical meristem
 (2) position of axillary buds
 (3) size of leaf lamina at the node below each internode
 (4) intercalary meristem

Ans. [4]

85. Which one of the following is the correct difference between *Rod cells* and *Cone Cells* of our retina?

	<i>Red Cells</i>	<i>Cone Cells</i>
(1) Visual acuity	High	Low
(2) Visual pigment contained	Iodopsin	Rhodopsin
(3) Overall function	Vision in poor light	Colour vision and detailed vision in bright light
(4) Distribution	More concentrated in center of retina	Evenly distributed all over retina

Ans. [3]

86. In leaves of C₄ plants malic acid synthesis during CO₂ fixation occurs in
 (1) Epidermal cells (2) Mesophyll cells (3) Bundle sheath (4) Guard cells

Ans. [2]

87. Which one of the following pairs of codons is *correctly* matched with their function or the signal for the particular amino acid ?
 (1) GUU, GCU - Alanine (2) UAG, UGA - Stop
 (3) AUG, ACG - Start/Methionine (4) UUA, UCA - Leucine

Ans. [2]

88. Cellulose is the major component of cell walls of
 (1) *Pythium* (2) *Xanthomonas* (3) *Pseudomonas* (4) *Saccharomyces*

Ans. [1]

89. The slow rate of decomposition of fallen logs in nature is due to their
- (1) low moisture content (2) poor nitrogen content
(3) anaerobic environment around them (4) low cellulose content

Ans. [2]

90. Carbohydrates are commonly found as starch in plant storage organs. Which of the following five properties of starch (a - e) make it useful as a storage material ?

- (a) easily translocated
(b) chemically non-reactive
(c) easily digested by animals
(d) osmotically inactive
(e) synthesized during photosynthesis

The useful properties are :

- (1) (b) and (c) (2) (b) and (d) (3) (a), (c) and (e) (4) (a) and (e)

Ans. [2]

91. Which one of the following pairs of organs includes *only* the endocrine glands ?

- (1) Parathyroid and Adrenal (2) Pancreas and Parathyroid
(3) Thymus and Testes (4) Adrenal and Ovary

Ans. [1]

92. Match the disease in *Column I* with the appropriate items (pathogen/prevention/treatment) in *Column II*.

Column I

- (a) Amoebiasis
(b) Diphtheria
(c) Cholera
(d) Syphilis

Column II

- (i) *Treponema pallidum*
(ii) Use only sterilised food and water
(iii) DPT Vaccine
(iv) Use oral rehydration therapy

- (1) a - (i), b - (ii), c - (iii), d - (iv) (2) a - (ii), b - (iv), c - (i), d - (iii)
(3) a - (ii), b - (i), c - (iii), d - (iv) (4) a - (ii), b - (iii), c - (iv), d - (i)

Ans. [4]

93. Replum is present in the ovary of flower of

- (1) Lemon (2) Mustard (3) Sun flower (4) Pea

Ans. [2]

94. Which one of the following is the **correct matching** of the *site* of action on the given *substrate*, the *enzyme* acting upon it and the *end product* ?

- (1) *Duodenum* : Triglycerides $\xrightarrow{\text{Trypsin}}$ monoglycerides
(2) *Small intestine* : Starch $\xrightarrow{\alpha\text{-Amylase}}$ Disaccharide (Maltose)
(3) *Small intestine* : Proteins $\xrightarrow{\text{Pepsin}}$ Amino acids
(4) *Stomach* : Fats $\xrightarrow{\text{Lipase}}$ micelles

Ans. [2]

95. Modern detergents contain enzyme preparations of
(1) Acidophiles (2) Alkaliphiles (3) Thermoacidophiles (4) Thermophiles

Ans. [2]

96. The haemoglobin of a human foetus
(1) has a lower affinity for oxygen than that of the adult
(2) its affinity for oxygen is the same as that of an adult
(3) has only 2 protein subunits instead of 4
(4) has a higher affinity for oxygen than that of an adult

Ans. [4]

97. Which one of the following scientist's name is *correctly* matched with the theory put forth by him ?
(1) Weismann - Theory of continuity of Germplasm
(2) Pasteur - Inheritance of acquired characters
(3) de Vries - Natural selection
(4) Mendel - Theory of Pangenesis

Ans. [1]

98. The most active phagocytic white blood cells are
(1) neutrophils and eosinophils (2) lymphocytes and macrophages
(3) eosinophils and lymphocytes (4) neutrophils and monocytes

Ans. [4]

99. According to Central Pollution Control Board (CPCB), which particulate size in diameter (in micrometers) of the air pollutants is responsible for greatest harm to human health ?
(1) 2.5 or less (2) 1.5 or less (3) 1.0 or less (4) 5.2 - 2.5

Ans. [1]

100. Which one of the following is the *correct* statement regarding the particular psychotropic drug specified?
(1) *Hashish* causes after thought perceptions and hallucinations
(2) *Opium* stimulates nervous system and causes hallucinations
(3) *Morphine* leads to delusions and disturbed emotions
(4) *Barbiturates* cause relaxation and temporary euphoria

Ans. [1]

101. The two sub-units of ribosome remain united at a critical ion level of
(1) Copper (2) Manganese (3) Magnesium (4) Calcium

Ans. [3]

102. During the propagation of a nerve impulse, the action potential results from the movement of
(1) K^+ ions from extracellular fluid to intracellular fluid
(2) Na^+ ions from intracellular fluid to extracellular fluid
(3) K^+ ions from intracellular fluid to extracellular fluid
(4) Na^+ ions from extracellular fluid to intracellular fluid

Ans. [4]

103. Bacterial leaf blight of rice is caused by a species of
(1) *Xanthomonas* (2) *Pseudomonas* (3) *Alternaria* (4) *Erwinia*

Ans. [1]

104. Darwin's Finches are an excellent example of

- (1) Adaptive radiation (2) Seasonal migration (3) Brood parasitism (4) Connecting links

Ans. [1]

105. Earthworms have no skeleton but during borrowings, the anterior end becomes turgid and acts as a hydraulic skeleton. It is due to

- (1) Coelomic fluid (2) Blood (3) Gut peristalsis (4) Setae

Ans. [1]

106. Which one of the following pairs of nitrogenous bases of nucleic acids, is wrongly matched with the category mentioned against it ?

- (1) Thymine, Uracil - *Pyrimidines* (2) Uracil, Cytosine - *Pyrimidines*
 (3) Guanine, Adenine - *Purines* (4) Adenine, Thymine - *Purines*

Ans. [4]

107. Main objective of production/use of herbicide resistant GM crops is to

- (1) eliminate weeds from the field without the use of manual labor
 (2) eliminate weeds from the field without the use of herbicides
 (3) encourage eco-friendly herbicides
 (4) reduce herbicide accumulation in food articles for health safety

Ans. [1]

108. The table below gives the populations (in thousands) of ten species (A-J) in four areas (a-d) consisting of the number of habitats given within brackets against each. Study the table and answer the question which follows :

area and number of habits	Species, and their populations (in thousands) in the areas									
	A	B	C	D	E	F	G	H	I	J
a (11)	2.3	1.2	0.52	6.0	-	3.1	1.1	9.0	-	10.3
b (11)	10.2	-	0.62	-	1.5	3.0	-	8.2	1.1	11.2
c (13)	11.3	0.9	0.48	2.4	1.4	4.2	0.8	8.4	2.2	4.1
d (12)	3.2	10.2	11.1	4.8	0.4	3.3	0.8	7.3	11.3	2.1

Which area out of the to d shows maximum species diversity ?

- (1) b (2) c (3) d (4) a

Ans. [3]

109. To which type of barriers under innate immunity, do the saliva in the mouth and the tears from the eyes, belong ?

- (1) Cytokine barriers (2) Cellular barriers
 (3) Physiological barriers (4) Physical barriers

Ans. [3]

110. Cornea transplant in humans is almost never rejected. This is because

- (1) Its cells are least penetrable by bacteria (2) It has no blood supply
 (3) It is composed of enucleated cells (4) It is a non-living layer

Ans. [2]

111. The energy-releasing process in which the substrate is oxidised without an external electron acceptor is called

- (1) Fermentation (2) Photorespiration (3) Aerobic respiration (4) Glycolysis

Ans. [1]

112. Select one of the following pairs of important features distinguishing *Gnetum* from *Cycas* and *Pinus* and showing affinities with angiosperms

- (1) Absence of resin duct and leaf venation
- (2) Presence of vessel elements and absence of archegonia
- (3) Perianth and two integuments
- (4) Embryo development and apical meristem

Ans. [3]

113. Thorn of *Bougainvillea* and tendril of *cucurbita* are examples of

- (1) Analogous organs
- (2) Homologous organs
- (3) Vestigial organs
- (4) Retrogressive evolution

Ans. [2]

114. What is true about the isolated small tribal populations ?

- (1) There is decline in population as boys marry girls from their own tribe
- (2) Hereditary diseases like colour blindness do not spread in the isolated population
- (3) Wrestlers who develop strong body muscles in their life time pass this character on to their progeny
- (4) There is no change in population size as they have a large gene pool

Ans. [1]

115. Human insulin is being commercially produced from transgenic species of

- (1) *Escherichia*
- (2) *Mycobacterium*
- (3) *Rhizobium*
- (4) *Saccharomyces*

Ans. [1]

116. In the light of recent classification of living organisms into three domains of life (bacteria, archaea and eukarya), which one of the following statements is true about archaea ?

- (1) Archaea resemble eukarya in all respects
- (2) Archaea have some novel features that are absent in other prokaryotes and eukaryotes
- (3) Archaea completely differ from both prokaryotes and eukaryotes
- (4) Archaea completely differ from prokaryotes

Ans. [2]

117. *Thermococcus*, *Methanococcus* and *Methanobacterium* exemplify

- (1) Archaeobacteria that contain protein homologous to eukaryotic core histones
- (2) Archaeobacteria that lack any histones whose DNA is negatively supercoiled
- (3) Bacteria whose DNA is relaxed or positively supercoiled but which have a cytoskeleton as well as mitochondria
- (4) Bacteria that contain cytoskeleton and ribosome

Ans. [2]

118. A competitive inhibitor of succinic dehydrogenase is

- (1) Malonate
- (2) Oxaloacetate
- (3) α -ketoglutarate
- (4) Malate

Ans. [1]

119. Cry 1 endotoxins obtained from *Bacillus Thuringiensis* are effective against

- (1) Mosquitoes
- (2) Flies
- (3) Nematodes
- (4) Boll worms

Ans. [4]

120. Vacuole in a plant cell

- (1) is membrane-bound and contains storage proteins and lipids
- (2) is membrane-bound and contains water and excretory substances
- (3) lacks membrane and contains air
- (4) lacks membrane and contains water and excretory substances

Ans. [2]

121. Which one of the following is not observed in biodiversity hotspots ?

- (1) Endemism
- (2) Accelerated species loss
- (3) Lesser inter-specific competition
- (4) Species richness

Ans. [3]

122. Consider the statements given below regarding contraception and answer as directed thereafter :

- (a) Medical Termination of Pregnancy (MTP) during first trimester is generally safe
- (b) Generally chances of conception are nil until mother breast-feeds the infant upto two years
- (c) Intrauterine devices like copper-T are effective contraceptives
- (d) Contraception pills may be taken upto one week after coitus to prevent conception

Which two of the above statements are correct ?

- (1) b, c
- (2) c, d
- (3) a, c
- (4) a, b

Ans. [3]

123. Which one of the following proved effective for biological control of nematodal diseases in plants ?

- (1) *Pisolithus tinctorius*
- (2) *Pseudomonas cepacia*
- (3) *Gladiolus virens*
- (4) *Paecilomyces lilacinus*

Ans. [4]

124. Which one of the following conditions in humans is correctly matched with its chromosomal abnormality/linkage ?

- (1) Klinefelter's syndrome -- 44 autosomes + XXY
- (2) Colour blindness -- Y-linked
- (3) Erythroblastosis foetalis -- X-linked
- (4) Down syndrome -- 44 autosomes + XO

Ans. [1]

125. Which one of the following items gives its correct total number ?

- (1) Floating ribs in humans - 4
- (2) Amino acids found in proteins - 16
- (3) Types of diabetes - 3
- (4) Cervical vertebrae in humans - 8

Ans. [1]

126. In germinating seeds fatty acids are degraded *exclusively* in the

- (1) proplastids
- (2) glyoxysomes
- (3) peroxisomes
- (4) mitochondria

Ans. [2]

127. What does the filiform apparatus do at the entrance into ovule ?

- (1) It helps in the entry of pollen tube into a synergid
- (2) It prevents entry of more than one pollen tube into the embryo sac
- (3) It brings about opening of the pollen tube
- (4) It guides pollen tube from a synergid to egg

Ans. [1]

128. Which one of the following is being tried in India as a biofuel substitute for fossil fuels ?

- (1) *Jatropha* (2) *Azadirachta* (3) *Musa* (4) *Aegilops*

Ans. [1]

129. Which one of the following is resistant to enzyme action ?

- (1) Cork (2) Wood fibre (3) Pollen exine (4) Leaf cuticle

Ans. [3]

130. What is antisense technology ?

- (1) A cell displaying a foreign antigen used for synthesis of antigens
(2) Production of somaclonal variants in tissue cultures
(3) When a piece of RNA that is complementary in sequence is used to stop expression of a specific gene
(4) RNA polymerase producing DNA

Ans. [3]

131. Haploids are more suitable for mutation studies than the diploids. This is because

- (1) haploids are reproductively more stable than diploids
(2) mutagens penetrate in haploids more effectively than in diploids
(3) haploids are more abundant in nature than diploids
(4) all mutations, whether dominant or recessive are expressed in haploids

Ans. [4]

132. Which one of the following is not a characteristic of phylum Annelida ?

- (1) Closed circulatory system (2) Segmentation
(3) Pseudocoelom (4) Ventral nerve cord

Ans. [3]

133. Importance of day length in flowering of plants was first shown in

- (1) *Lemna* (2) Tobacco (3) Cotton (4) *Petunia*

Ans. [2]

134. In humans, blood passes from the post caval to the diastolic right atrium of heart due to

- (1) pushing open of the venous valves
(2) suction pull
(3) stimulation of the sino auricular node
(4) pressure difference between the post caval and atrium

Ans. [1]

135. Which one of the following is the true description about an animal concerned ?

- (1) Earthworm - The alimentary canal consists of a sequence of pharynx, oesophagus, stomach, gizzard and intestine
(2) Frog - Body divisible into three regions - head, neck and trunk
(3) Rat - Left kidney is slightly higher in position than the right one
(4) Cockroach - 10 pairs of spiracles (2 pairs on thorax and 8 pairs on abdomen)

Ans. [4]

136. The linking of antibiotic resistance gene with the plasmid vector became possible with

- (1) DNA ligase (2) Endonucleases (3) DNA polymerase (4) Exonucleases

Ans. [1]

137. Which one of the following statements is incorrect about menstruation ?

- (1) During normal menstruation about 40 ml blood is lost
(2) The menstrual fluids can easily clot
(3) At menopause in the female, there is especially abrupt increase in gonadotropic hormones
(4) The beginning of the cycle of menstruation is called menarche

Ans. [3]

138. Which one of the following phyla is correctly matched with its two general characteristics ?

- (1) Arthropoda - Body divided into head, thorax and abdomen and respiration by tracheae
(2) Chordata - Notochord at some stage and separate anal and urinary openings to the outside
(3) Echinodermata - Pentamerous radial symmetry and mostly internal fertilisation
(4) Mollusca - Normally oviparous and development through a trochophore or veliger larva

Ans. [4]

139. Which one of the following pairs of items correctly belongs to the category of organs mentioned against it ?

- (1) Thorn of *Bougainvillea* and tendrils of *Cucurbita* - Analogous organs
(2) Nictitating membrane and blind spot in human eye - Vestigial organs
(3) Nephridia of earthworm and malpighian tubules of Cockroach - Excretory organs
(4) Wings of honey bee and wings of crow - Homologous organs

Ans. [3]

140. The chemiosmotic coupling hypothesis of oxidative phosphorylation proposes that adenosine triphosphate (ATP) is formed because

- (1) high energy bonds are formed in mitochondrial proteins
(2) ADP is pumped out of the matrix into the intermembrane space
(3) a proton gradient forms across the inner membrane
(4) there is a change in the permeability of the inner mitochondrial membrane toward adenosine diphosphate (ADP)

Ans. [3]

141. Consider the following statements about biomedical technologies :

- (a) During open heart surgery blood is circulated in the heart-lung machine
(b) Blockage in coronary arteries is removed by angiography
(c) Computerised Axial Tomography (CAT) shows detailed internal structure as seen in a section of body
(d) X-ray provides clear and detailed images of organs like prostate glands and lungs

Which two of the above statements are correct ?

- (1) b and d (2) c and d (3) a and c (4) a and b

Ans. [3]

142. Consider the following statements concerning food chains :

- (a) Removal of 80% tigers from an area resulted in greatly increased growth of vegetation
- (b) Removal of most of the carnivores resulted in an increased population of deers
- (c) The length of food chains is generally limited to 3-4 trophic levels due to energy loss
- (d) The length of food chains may vary from 2 to 8 trophic levels

Which two of the above statements are correct ?

- (1) b, c (2) c, d (3) a, d (4) a, b

Ans. [1]

143. *Ascaris* is characterised by

- (1) absence of true coelom but presence of metamerism
- (2) presence of neither true coelom nor metamerism
- (3) presence of true coelom but absence of metamerism
- (4) presence of true coelom and metamerism (metamerisation)

Ans. [2]

144. Consider the following four statements (a-d) about certain desert animals such as kangaroo rat.

- (a) They have dark colour and high rate of reproduction and excrete solid urine
- (b) They do not drink water, breathe at a slow rate to conserve water and have their body covered with thick hairs
- (c) They feed on dry seeds and do not require drinking water
- (d) They excrete very concentrated urine and do not use water to regulate body temperature

Which two of the above statements for such animals are true ?

- (1) c and d (2) b and c (3) c and a (4) a and b

Ans. [1]

145. Which one of the following is incorrect about the characteristics of protobionts (coacervates and microspheres) as envisaged in the abigenic origin of life?

- (1) They were able to reproduce
- (2) They could separate combinations of molecules from the surroundings
- (3) They were partially isolated from the surroundings
- (4) They could maintain an internal environment

Ans. [1]

146. Which one of the following groups of three animals each is correctly matched with their one characteristic morphological feature ?

- | Animals | Morphological feature |
|--|--|
| (1) Liver fluke, Sea anemone, Sea cucumber | - Bilateral symmetry |
| (2) Centipede, Prawn, Sea urchin | - Jointed appendages |
| (3) Scorpion, Spider, Cockroach | - Ventral solid central nervous system |
| (4) Cockroach, Locust <i>Taenia</i> | - Metameric segmentation |

Ans. [3]

147. The fruit is chambered, developed from inferior ovary and has seeds with succulent testa in

- (1) Pomegranate (2) Orange (3) Guava (4) Cucumber

Ans. [1]

148. Which one of the following is the *correct percentage* of the two (out of the total of 4) green house gases that contribute to the total global warming ?

- (1) CFCs 14%, Methane 20% (2) CO₂ 40%, CFCs 30%
(3) N₂O 6%, CO₂ 86% (4) Methane 20%, N₂O 18%

Ans. [1]

149. World Summit on Sustainable Development (2002) was held in

- (1) Brazil (2) Sweden (3) Argentina (4) South Africa

Ans. [4]

150. *Quercus* species are the dominant component in

- (1) Temperate deciduous forests (2) Alpine forests
(3) Scrub forests (4) Tropical rain forests

Ans. [1]

