43. Which of the following is **not** correct about carbon monoxide ?

(1) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin.

(2) It is produced due to incomplete combustion.

(3) It forms carboxyhaemoglobin.

(4) It reduces oxygen carrying ability of blood.

44. Reaction between acetone and methylmagnesium chloride followed by hydrolysis will give :

(1) Tert. butyl alcohol

(2) Isobutyl alcohol

(3) Isopropyl alcohol

(4) Sec. butyl alcohol

45. Elimination reaction of 2-Bromo-pentane to form pent-2-ene is :

(a) β-Elimination reaction

(b) Follows Zaitsev rule

(c) Dehydrohalogenation reaction

(d) Dehydration reaction

(1) (b), (c), (d)

(2) (a), (b), (d)

(3) (a), (b), (c)

(4) (a), (c), (d)

46. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	*Clostridium butylicum*	(i)	Cyclosporin-A
(b)	*Trichoderma polysporum*	(ii)	Butyric Acid
(c)	*Monascus purpureus*	(iii)	Citric Acid
(d)	*Aspergillus niger*	(iv)	Blood cholesterol lowering agent

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

47. Match the organism with its use in biotechnology.

(a)	*Bacillus thuringiensis*	(i)	Cloning vector
(b)	*Thermus aquaticus*	(ii)	Construction of first rDNA molecule
(c)	*Agrobacterium tumefaciens*	(iii)	DNA polymerase
(d)	*Salmonella typhimurium*	(iv)	Cry proteins

Select the **correct** option from the following :

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

48. Which of the following would help in prevention of diuresis ?

(1) Atrial natriuretic factor causes vasoconstriction

(2) Decrease in secretion of renin by JG cells

(3) More water reabsorption due to undersecretion of ADH

(4) Reabsorption of Na^+ and water from renal tubules due to aldosterone

49. The enzyme enterokinase helps in conversion of :

(1) caseinogen into casein

(2) pepsinogen into pepsin

(3) protein into polypeptides

(4) trypsinogen into trypsin

50. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	Pituitary gland	(i)	Grave's disease
(b)	Thyroid gland	(ii)	Diabetes mellitus
(c)	Adrenal gland	(iii)	Diabetes insipidus
(d)	Pancreas	(iv)	Addison's disease

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

51. The roots that originate from the base of the stem are :

(1) Prop roots
(2) Lateral roots
(3) Fibrous roots
(4) Primary roots

52. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	Floating Ribs	(i)	Located between second and seventh ribs
(b)	Acromion	(ii)	Head of the Humerus
(c)	Scapula	(iii)	Clavicle
(d)	Glenoid cavity	(iv)	Do not connect with the sternum

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

53. The body of the ovule is fused within the funicle at :

(1) Nucellus
(2) Chalaza
(3) Hilum
(4) Micropyle

54. The infectious stage of *Plasmodium* that enters the human body is :

(1) Female gametocytes
(2) Male gametocytes
(3) Trophozoites
(4) Sporozoites

55. Identify the **wrong** statement with regard to Restriction Enzymes.

(1) They are useful in genetic engineering.
(2) Sticky ends can be joined by using DNA ligases.
(3) Each restriction enzyme functions by inspecting the length of a DNA sequence.
(4) They cut the strand of DNA at palindromic sites.

56. Which of the following statements about inclusion bodies is **incorrect** ?

(1) They lie free in the cytoplasm.
(2) These represent reserve material in cytoplasm.
(3) They are not bound by any membrane.
(4) These are involved in ingestion of food particles.

57. Dissolution of the synaptonemal complex occurs during :

(1) Diplotene
(2) Leptotene
(3) Pachytene
(4) Zygotene

58. Identify the **wrong** statement with reference to the gene 'I' that controls ABO blood groups.

(1) When I^A and I^B are present together, they express same type of sugar.
(2) Allele 'i' does not produce any sugar.
(3) The gene (I) has three alleles.
(4) A person will have only two of the three alleles.

59. Select the option including all sexually transmitted diseases.

(1) AIDS, Malaria, Filaria
(2) Cancer, AIDS, Syphilis
(3) Gonorrhoea, Syphilis, Genital herpes
(4) Gonorrhoea, Malaria, Genital herpes

60. Which of the following is put into Anaerobic sludge digester for further sewage treatment ?

(1) Effluents of primary treatment
(2) Activated sludge
(3) Primary sludge
(4) Floating debris

61. In water hyacinth and water lily, pollination takes place by :

(1) wind and water
(2) insects and water
(3) insects or wind
(4) water currents only

62. Identify the **incorrect** statement.

(1) Sapwood is the innermost secondary xylem and is lighter in colour.

(2) Due to deposition of tannins, resins, oils etc., heart wood is dark in colour.

(3) Heart wood does not conduct water but gives mechanical support.

(4) Sapwood is involved in conduction of water and minerals from root to leaf.

63. Ray florets have :

(1) Hypogynous ovary

(2) Half inferior ovary

(3) Inferior ovary

(4) Superior ovary

64. Identify the **correct** statement with regard to G_1 phase (Gap 1) of interphase.

(1) Cell is metabolically active, grows but does not replicate its DNA.

(2) Nuclear Division takes place.

(3) DNA synthesis or replication takes place.

(4) Reorganisation of all cell components takes place.

65. The specific palindromic sequence which is recognized by EcoRI is :

(1) 5' - CTTAAG - 3'
3' - GAATTC - 5'

(2) 5' - GGATCC - 3'
3' - CCTAGG - 5'

(3) 5' - GAATTC - 3'
3' - CTTAAG - 5'

(4) 5' - GGAACC - 3'
3' - CCTTGG - 5'

66. Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their :

(1) Defence action

(2) Effect on reproduction

(3) Nutritive value

(4) Growth response

67. Which one of the following is the most abundant protein in the animals ?

(1) Lectin

(2) Insulin

(3) Haemoglobin

(4) Collagen

68. The process of growth is maximum during :

(1) Senescence

(2) Dormancy

(3) Log phase

(4) Lag phase

69. According to Robert May, the global species diversity is about :

(1) 50 million

(2) 7 million

(3) 1.5 million

(4) 20 million

70. Goblet cells of alimentary canal are modified from :

(1) Chondrocytes

(2) Compound epithelial cells

(3) Squamous epithelial cells

(4) Columnar epithelial cells

71. Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop.

(1) Ethylene

(2) Abscisic acid

(3) Cytokinin

(4) Gibberellin

72. Which of the following pairs is of unicellular algae ?

(1) *Anabaena* and *Volvox*

(2) *Chlorella* and *Spirulina*

(3) *Laminaria* and *Sargassum*

(4) *Gelidium* and *Gracilaria*

73. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	6 - 15 pairs of gill slits	(i)	*Trygon*
(b)	Heterocercal caudal fin	(ii)	Cyclostomes
(c)	Air Bladder	(iii)	Chondrichthyes
(d)	Poison sting	(iv)	Osteichthyes

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

74. Bilaterally symmetrical and acoelomate animals are exemplified by :

(1) Aschelminthes

(2) Annelida

(3) Ctenophora

(4) Platyhelminthes

75. The ovary is half inferior in :

(1) Sunflower

(2) Plum

(3) Brinjal

(4) Mustard

76. Which of the following regions of the globe exhibits highest species diversity ?

(1) Himalayas

(2) Amazon forests

(3) Western Ghats of India

(4) Madagascar

77. By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams ?

(1) Cross breeding

(2) Inbreeding

(3) Out crossing

(4) Mutational breeding

78. How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits ?

(1) 14

(2) 8

(3) 4

(4) 2

79. In light reaction, plastoquinone facilitates the transfer of electrons from :

(1) PS-I to $NADP^+$

(2) PS-I to ATP synthase

(3) PS-II to $Cytb_6f$ complex

(4) $Cytb_6f$ complex to PS-I

80. Name the enzyme that facilitates opening of DNA helix during transcription.

(1) DNA polymerase

(2) RNA polymerase

(3) DNA ligase

(4) DNA helicase

81. Match the following concerning essential elements and their functions in plants :

(a)	Iron	(i)	Photolysis of water
(b)	Zinc	(ii)	Pollen germination
(c)	Boron	(iii)	Required for chlorophyll biosynthesis
(d)	Manganese	(iv)	IAA biosynthesis

Select the **correct** option :

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

82. Which of the following refer to **correct** example(s) of organisms which have evolved due to changes in environment brought about by anthropogenic action ?

(a) Darwin's Finches of Galapagos islands.

(b) Herbicide resistant weeds.

(c) Drug resistant eukaryotes.

(d) Man-created breeds of domesticated animals like dogs.

(1) (b), (c) and (d)

(2) only (d)

(3) only (a)

(4) (a) and (c)

83. The oxygenation activity of RuBisCo enzyme in photorespiration leads to the formation of :

(1) 1 molecule of 6-C compound

(2) 1 molecule of 4-C compound and 1 molecule of 2-C compound

(3) 2 molecules of 3-C compound

(4) 1 molecule of 3-C compound

84. Snow-blindness in Antarctic region is due to :

(1) High reflection of light from snow

(2) Damage to retina caused by infra-red rays

(3) Freezing of fluids in the eye by low temperature

(4) Inflammation of cornea due to high dose of UV-B radiation

85. Floridean starch has structure similar to :

(1) Mannitol and algin

(2) Laminarin and cellulose

(3) Starch and cellulose

(4) Amylopectin and glycogen

86. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	Bt cotton	(i)	Gene therapy
(b)	Adenosine deaminase deficiency	(ii)	Cellular defence
(c)	RNAi	(iii)	Detection of HIV infection
(d)	PCR	(iv)	*Bacillus thuringiensis*

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

87. Meiotic division of the secondary oocyte is completed :

(1) After zygote formation

(2) At the time of fusion of a sperm with an ovum

(3) Prior to ovulation

(4) At the time of copulation

88. From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask :

(1) CH_4, H_2, NH_3 and water vapor at 600°C

(2) CH_3, H_2, NH_3 and water vapor at 600°C

(3) CH_4, H_2, NH_3 and water vapor at 800°C

(4) CH_3, H_2, NH_4 and water vapor at 800°C

89. Choose the **correct** pair from the following :

(1) Nucleases - Separate the two strands of DNA

(2) Exonucleases - Make cuts at specific positions within DNA

(3) Ligases - Join the two DNA molecules

(4) Polymerases - Break the DNA into fragments

90. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	Placenta	(i)	Androgens
(b)	Zona pellucida	(ii)	Human Chorionic Gonadotropin (hCG)
(c)	Bulbo-urethral glands	(iii)	Layer of the ovum
(d)	Leydig cells	(iv)	Lubrication of the Penis

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

91. Which of the following statements are **true** for the phylum-Chordata ?

(a) In Urochordata notochord extends from head to tail and it is present throughout their life.

(b) In Vertebrata notochord is present during the embryonic period only.

(c) Central nervous system is dorsal and hollow.

(d) Chordata is divided into 3 subphyla : Hemichordata, Tunicata and Cephalochordata.

(1) (a) and (b)

(2) (b) and (c)

(3) (d) and (c)

(4) (c) and (a)

92. Identify the **wrong** statement with reference to transport of oxygen.

(1) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin.

(2) Low pCO_2 in alveoli favours the formation of oxyhaemoglobin.

(3) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2.

(4) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.

93. Experimental verification of the chromosomal theory of inheritance was done by :

(1) Boveri

(2) Morgan

(3) Mendel

(4) Sutton

94. The sequence that controls the copy number of the linked DNA in the vector, is termed :

(1) Palindromic sequence

(2) Recognition site

(3) Selectable marker

(4) Ori site

95. Select the **correct** statement.

(1) Insulin acts on pancreatic cells and adipocytes.

(2) Insulin is associated with hyperglycemia.

(3) Glucocorticoids stimulate gluconeogenesis.

(4) Glucagon is associated with hypoglycemia.

96. Identify the **wrong** statement with reference to immunity.

(1) Active immunity is quick and gives full response.

(2) Foetus receives some antibodies from mother, it is an example for passive immunity.

(3) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".

(4) When ready-made antibodies are directly given, it is called "Passive immunity".

97. Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells ?

(1) Golgi bodies

(2) Polysomes

(3) Endoplasmic reticulum

(4) Peroxisomes

98. Match the trophic levels with their **correct** species examples in grassland ecosystem.

(a)	Fourth trophic level	(i)	Crow
(b)	Second trophic level	(ii)	Vulture
(c)	First trophic level	(iii)	Rabbit
(d)	Third trophic level	(iv)	Grass

Select the **correct** option :

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

99. Identify the basic amino acid from the following.

(1) Lysine

(2) Valine

(3) Tyrosine

(4) Glutamic Acid

100. Embryological support for evolution was disapproved by :

(1) Charles Darwin

(2) Oparin

(3) Karl Ernst von Baer

(4) Alfred Wallace

101. The transverse section of a plant shows following anatomical features :

(a) Large number of scattered vascular bundles surrounded by bundle sheath.

(b) Large conspicuous parenchymatous ground tissue.

(c) Vascular bundles conjoint and closed.

(d) Phloem parenchyma absent.

Identify the category of plant and its part :

(1) Dicotyledonous stem

(2) Dicotyledonous root

(3) Monocotyledonous stem

(4) Monocotyledonous root

102. Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of :

(1) S phase

(2) G_2 phase

(3) M phase

(4) G_1 phase

103. The QRS complex in a standard ECG represents :

(1) Depolarisation of ventricles

(2) Repolarisation of ventricles

(3) Repolarisation of auricles

(4) Depolarisation of auricles

104. The number of substrate level phosphorylations in one turn of citric acid cycle is :

(1) Two

(2) Three

(3) Zero

(4) One

105. Strobili or cones are found in :

(1) *Marchantia*

(2) *Equisetum*

(3) *Salvinia*

(4) *Pteris*

106. Presence of which of the following conditions in urine are indicative of Diabetes Mellitus ?

(1) Ketonuria and Glycosuria

(2) Renal calculi and Hyperglycaemia

(3) Uremia and Ketonuria

(4) Uremia and Renal Calculi

107. Flippers of Penguins and Dolphins are examples of :

(1) Industrial melanism

(2) Natural selection

(3) Adaptive radiation

(4) Convergent evolution

108. Which of the following statements is **not correct** ?

(1) The functional insulin has A and B chains linked together by hydrogen bonds.

(2) Genetically engineered insulin is produced in *E-Coli*.

(3) In man insulin is synthesised as a proinsulin.

(4) The proinsulin has an extra peptide called C-peptide.

109. Cuboidal epithelium with brush border of microvilli is found in :

(1) proximal convoluted tubule of nephron

(2) eustachian tube

(3) lining of intestine

(4) ducts of salivary glands

110. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	Organ of Corti	(i)	Connects middle ear and pharynx
(b)	Cochlea	(ii)	Coiled part of the labyrinth
(c)	Eustachian tube	(iii)	Attached to the oval window
(d)	Stapes	(iv)	Located on the basilar membrane

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

111. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	Eosinophils	(i)	Immune response
(b)	Basophils	(ii)	Phagocytosis
(c)	Neutrophils	(iii)	Release histaminase, destructive enzymes
(d)	Lymphocytes	(iv)	Release granules containing histamine

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

112. In which of the following techniques, the embryos are transferred to assist those females who cannot conceive ?

(1) ICSI and ZIFT
(2) GIFT and ICSI
(3) ZIFT and IUT
(4) GIFT and ZIFT

113. The first phase of translation is :

(1) Aminoacylation of tRNA
(2) Recognition of an anti-codon
(3) Binding of mRNA to ribosome
(4) Recognition of DNA molecule

114. Match the following :

(a)	Inhibitor of catalytic activity	(i)	Ricin
(b)	Possess peptide bonds	(ii)	Malonate
(c)	Cell wall material in fungi	(iii)	Chitin
(d)	Secondary metabolite	(iv)	Collagen

Choose the **correct** option from the following :

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

115. Which of the following is **not** an inhibitory substance governing seed dormancy ?

(1) Phenolic acid
(2) Para-ascorbic acid
(3) Gibberellic acid
(4) Abscisic acid

116. The plant parts which consist of two generations - one within the other :

(a) Pollen grains inside the anther
(b) Germinated pollen grain with two male gametes
(c) Seed inside the fruit
(d) Embryo sac inside the ovule

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

117. Montreal protocol was signed in 1987 for control of :

(1) Release of Green House gases
(2) Disposal of e-wastes
(3) Transport of Genetically modified organisms from one country to another
(4) Emission of ozone depleting substances

118. Which of the following is **correct** about viroids ?

(1) They have DNA with protein coat.

(2) They have free DNA without protein coat.

(3) They have RNA with protein coat.

(4) They have free RNA without protein coat.

119. Which of the following statements is **correct** ?

(1) Adenine pairs with thymine through three H-bonds.

(2) Adenine does not pair with thymine.

(3) Adenine pairs with thymine through two H-bonds.

(4) Adenine pairs with thymine through one H-bond.

120. In gel electrophoresis, separated DNA fragments can be visualized with the help of :

(1) Acetocarmine in UV radiation

(2) Ethidium bromide in infrared radiation

(3) Acetocarmine in bright blue light

(4) Ethidium bromide in UV radiation

121. Identify the **correct** statement with reference to human digestive system.

(1) Ileum is a highly coiled part.

(2) Vermiform appendix arises from duodenum.

(3) Ileum opens into small intestine.

(4) Serosa is the innermost layer of the alimentary canal.

122. If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is 6.6×10^9 bp, then the length of the DNA is approximately :

(1) 2.2 meters

(2) 2.7 meters

(3) 2.0 meters

(4) 2.5 meters

123. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	Gregarious, polyphagous pest	(i)	*Asterias*
(b)	Adult with radial symmetry and larva with bilateral symmetry	(ii)	Scorpion
(c)	Book lungs	(iii)	*Ctenoplana*
(d)	Bioluminescence	(iv)	*Locusta*

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

124. Select the **correct** match.

(1)	Sickle cell anaemia	-	Autosomal recessive trait, chromosome-11
(2)	Thalassemia	-	X linked
(3)	Haemophilia	-	Y linked
(4)	Phenylketonuria	-	Autosomal dominant trait

125. In relation to Gross primary productivity and Net primary productivity of an ecosystem, which one of the following statements is **correct** ?

(1) Gross primary productivity and Net primary productivity are one and same.

(2) There is no relationship between Gross primary productivity and Net primary productivity.

(3) Gross primary productivity is always less than net primary productivity.

(4) Gross primary productivity is always more than net primary productivity.

126. Bt cotton variety that was developed by the introduction of toxin gene of *Bacillus thuringiensis* (Bt) is resistant to :

(1) Plant nematodes

(2) Insect predators

(3) Insect pests

(4) Fungal diseases

127. Select the **correct** events that occur during inspiration.

(a) Contraction of diaphragm

(b) Contraction of external inter-costal muscles

(c) Pulmonary volume decreases

(d) Intra pulmonary pressure increases

(1) (a), (b) and (d)

(2) only (d)

(3) (a) and (b)

(4) (c) and (d)

128. Which of the following is **not** an attribute of a population ?

(1) Mortality

(2) Species interaction

(3) Sex ratio

(4) Natality

129. The process responsible for facilitating loss of water in liquid form from the tip of grass blades at night and in early morning is :

(1) Imbibition

(2) Plasmolysis

(3) Transpiration

(4) Root pressure

130. Match the following with respect to meiosis :

(a)	Zygotene	(i)	Terminalization
(b)	Pachytene	(ii)	Chiasmata
(c)	Diplotene	(iii)	Crossing over
(d)	Diakinesis	(iv)	Synapsis

Select the **correct** option from the following :

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

131. If the head of cockroach is removed, it may live for few days because :

(1) the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.

(2) the head holds a $1/3^{rd}$ of a nervous system while the rest is situated along the dorsal part of its body.

(3) the supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen.

(4) the cockroach does not have nervous system.

132. Match the following diseases with the causative organism and select the **correct** option.

	Column - I		**Column - II**
(a)	Typhoid	(i)	*Wuchereria*
(b)	Pneumonia	(ii)	*Plasmodium*
(c)	Filariasis	(iii)	*Salmonella*
(d)	Malaria	(iv)	*Haemophilus*

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

133. The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are :

(1) Ammonia and oxygen

(2) Ammonia and hydrogen

(3) Ammonia alone

(4) Nitrate alone

134. Which of the following hormone levels will cause release of ovum (ovulation) from the graffian follicle ?

(1) Low concentration of LH

(2) Low concentration of FSH

(3) High concentration of Estrogen

(4) High concentration of Progesterone

135. Identify the substances having glycosidic bond and peptide bond, respectively in their structure :

(1) Cellulose, lecithin

(2) Inulin, insulin

(3) Chitin, cholesterol

(4) Glycerol, trypsin

136. A charged particle having drift velocity of 7.5×10^{-4} m s^{-1} in an electric field of 3×10^{-10} Vm^{-1}, has a mobility in $m^2 V^{-1} s^{-1}$ of :

(1) 2.5×10^{-6}

(2) 2.25×10^{-15}

(3) 2.25×10^{15}

(4) 2.5×10^{6}

137. The mean free path for a gas, with molecular diameter d and number density n can be expressed as :

(1) $\frac{1}{\sqrt{2}\, n^2 \pi d^2}$

(2) $\frac{1}{\sqrt{2}\, n^2 \pi^2 d^2}$

(3) $\frac{1}{\sqrt{2}\, n \pi d}$

(4) $\frac{1}{\sqrt{2}\, n \pi d^2}$

138. The energy equivalent of 0.5 g of a substance is :

(1) 1.5×10^{13} J

(2) 0.5×10^{13} J

(3) 4.5×10^{16} J

(4) 4.5×10^{13} J

139. Assume that light of wavelength 600 nm is coming from a star. The limit of resolution of telescope whose objective has a diameter of 2 m is :

(1) 7.32×10^{-7} rad

(2) 6.00×10^{-7} rad

(3) 3.66×10^{-7} rad

(4) 1.83×10^{-7} rad

140. A long solenoid of 50 cm length having 100 turns carries a current of 2.5 A. The magnetic field at the centre of the solenoid is :

($\mu_0 = 4\pi \times 10^{-7}$ T m A^{-1})

(1) 6.28×10^{-5} T

(2) 3.14×10^{-5} T

(3) 6.28×10^{-4} T

(4) 3.14×10^{-4} T

141. The quantities of heat required to raise the temperature of two solid copper spheres of radii r_1 and r_2 ($r_1 = 1.5\ r_2$) through 1 K are in the ratio :

(1) $\frac{3}{2}$

(2) $\frac{5}{3}$

(3) $\frac{27}{8}$

(4) $\frac{9}{4}$

142. The capacitance of a parallel plate capacitor with air as medium is 6 μF. With the introduction of a dielectric medium, the capacitance becomes 30 μF. The permittivity of the medium is :

($\epsilon_0 = 8.85 \times 10^{-12}$ C^2 N^{-1} m^{-2})

(1) 0.44×10^{-10} C^2 N^{-1} m^{-2}

(2) 5.00 C^2 N^{-1} m^{-2}

(3) 0.44×10^{-13} C^2 N^{-1} m^{-2}

(4) 1.77×10^{-12} C^2 N^{-1} m^{-2}

143. A short electric dipole has a dipole moment of 16×10^{-9} C m. The electric potential due to the dipole at a point at a distance of 0.6 m from the centre of the dipole, situated on a line making an angle of 60° with the dipole axis is :

$\left(\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ N m}^2/\text{C}^2\right)$

(1) 400 V

(2) zero

(3) 50 V

(4) 200 V

144. Two particles of mass 5 kg and 10 kg respectively are attached to the two ends of a rigid rod of length 1 m with negligible mass.

The centre of mass of the system from the 5 kg particle is nearly at a distance of :

(1) 67 cm

(2) 80 cm

(3) 33 cm

(4) 50 cm