

89. An element has a body centered cubic (bcc) structure with a cell edge of 288 pm. The atomic radius is :
- (1) $\frac{4}{\sqrt{2}} \times 288$ pm
 - (2) $\frac{\sqrt{3}}{4} \times 288$ pm
 - (3) $\frac{\sqrt{2}}{4} \times 288$ pm
 - (4) $\frac{4}{\sqrt{3}} \times 288$ pm
90. Identify the **correct** statements from the following :
- (a) $\text{CO}_2(\text{g})$ is used as refrigerant for ice-cream and frozen food.
 - (b) The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings.
 - (c) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline.
 - (d) CO is colorless and odourless gas.
- (1) (c) and (d) only
 - (2) (a), (b) and (c) only
 - (3) (a) and (c) only
 - (4) (b) and (c) only
91. 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) | (iv) | (i) | (ii) | (iii) |
| (2) | (ii) | (i) | (iv) | (iii) |
| (3) | (iv) | (iii) | (ii) | (i) |
| (4) | (iii) | (iv) | (ii) | (i) |
92. Which of the following is **not** an attribute of a population ?
- (1) Species interaction
 - (2) Sex ratio
 - (3) Natality
 - (4) Mortality
93. Which of the following is put into Anaerobic sludge digester for further sewage treatment ?
- (1) Activated sludge
 - (2) Primary sludge
 - (3) Floating debris
 - (4) Effluents of primary treatment
94. The roots that originate from the base of the stem are :
- (1) Lateral roots
 - (2) Fibrous roots
 - (3) Primary roots
 - (4) Prop roots
95. Floridean starch has structure similar to :
- (1) Laminarin and cellulose
 - (2) Starch and cellulose
 - (3) Amylopectin and glycogen
 - (4) Mannitol and algin
96. Dissolution of the synaptonemal complex occurs during :
- (1) Leptotene
 - (2) Pachytene
 - (3) Zygotene
 - (4) Diplotene
97. Identify the **correct** statement with reference to human digestive system.
- (1) Vermiform appendix arises from duodenum.
 - (2) Ileum opens into small intestine.
 - (3) Serosa is the innermost layer of the alimentary canal.
 - (4) Ileum is a highly coiled part.

98. 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) Plasmolysis
 - (2) Transpiration
 - (3) Root pressure
 - (4) Imbibition
99. The body of the ovule is fused within the funicle at :
- (1) Chalaza
 - (2) Hilum
 - (3) Micropyle
 - (4) Nucellus
100. How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits ?
- (1) 8
 - (2) 4
 - (3) 2
 - (4) 14
101. 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) (b) and (c)
 - (2) (d) and (c)
 - (3) (c) and (a)
 - (4) (a) and (b)
102. The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are :
- (1) Ammonia and hydrogen
 - (2) Ammonia alone
 - (3) Nitrate alone
 - (4) Ammonia and oxygen
103. The number of substrate level phosphorylations in one turn of citric acid cycle is :
- (1) Three
 - (2) Zero
 - (3) One
 - (4) Two
104. Which of the following regions of the globe exhibits highest species diversity ?
- (1) Amazon forests
 - (2) Western Ghats of India
 - (3) Madagascar
 - (4) Himalayas
105. The specific palindromic sequence which is recognized by EcoRI is :
- (1) 5' - GGATCC - 3'
3' - CCTAGG - 5'
 - (2) 5' - GAATTC - 3'
3' - CTTAAG - 5'
 - (3) 5' - GGAACC - 3'
3' - CCTTGG - 5'
 - (4) 5' - CTTAAG - 3'
3' - GAATTC - 5'
106. 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) (iv) | (iii) | (i) | (ii) |
| (2) (ii) | (iv) | (i) | (iii) |
| (3) (i) | (iii) | (ii) | (iv) |
| (4) (iii) | (ii) | (iv) | (i) |

107. 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)	(ii)	(i)	(iii)	(iv)
(2)	(iii)	(iv)	(ii)	(i)
(3)	(iv)	(i)	(ii)	(iii)
(4)	(i)	(ii)	(iv)	(iii)

108. 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)	<i>Bacillus thuringiensis</i>	

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

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

- (1) Inulin, insulin
- (2) Chitin, cholesterol
- (3) Glycerol, trypsin
- (4) Cellulose, lecithin

110. Select the option including all sexually transmitted diseases.

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

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

- (1) RNA polymerase
- (2) DNA ligase
- (3) DNA helicase
- (4) DNA polymerase

112. Which of the following is correct about viroids ?

- (1) They have free DNA without protein coat.
- (2) They have RNA with protein coat.
- (3) They have free RNA without protein coat.
- (4) They have DNA with protein coat.

113. 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)	(ii)	(iii)	(i)	(iv)
(2)	(ii)	(iv)	(iii)	(i)
(3)	(iii)	(i)	(iv)	(ii)
(4)	(iii)	(iv)	(i)	(ii)

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

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

115. 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) G_2 phase
- (2) M phase
- (3) G_1 phase
- (4) S phase

116. Match the organism with its use in biotechnology.

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

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

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

117. Strobili or cones are found in :

- (1) *Equisetum*
- (2) *Salvinia*
- (3) *Pteris*
- (4) *Marchantia*

118. Identify the **correct** statement with regard to G₁ phase (Gap 1) of interphase.

- (1) Nuclear Division takes place.
- (2) DNA synthesis or replication takes place.
- (3) Reorganisation of all cell components takes place.
- (4) Cell is metabolically active, grows but does not replicate its DNA.

119. The first phase of translation is :

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

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

- | Column - I | | Column - II | |
|------------|--|-------------|-------------------|
| (a) | Gregarious, polyphagous pest | (i) | <i>Asterias</i> |
| (b) | Adult with radial symmetry and larva with bilateral symmetry | (ii) | Scorpion |
| (c) | Book lungs | (iii) | <i>Ctenoplana</i> |
| (d) | Bioluminescence | (iv) | <i>Locusta</i> |
-
- | | | | | |
|-----|------------|------------|------------|------------|
| | (a) | (b) | (c) | (d) |
| (1) | (ii) | (i) | (iii) | (iv) |
| (2) | (i) | (iii) | (ii) | (iv) |
| (3) | (iv) | (i) | (ii) | (iii) |
| (4) | (iii) | (ii) | (i) | (iv) |

121. The enzyme enterokinase helps in conversion of :

- (1) pepsinogen into pepsin
- (2) protein into polypeptides
- (3) trypsinogen into trypsin
- (4) caseinogen into casein

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

- (1) Effect on reproduction
- (2) Nutritive value
- (3) Growth response
- (4) Defence action

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

- | Column - I | | Column - II | |
|------------|------------|-------------|--------------------|
| (a) | Typhoid | (i) | <i>Wuchereria</i> |
| (b) | Pneumonia | (ii) | <i>Plasmodium</i> |
| (c) | Filariasis | (iii) | <i>Salmonella</i> |
| (d) | Malaria | (iv) | <i>Haemophilus</i> |
-
- | | | | | |
|-----|------------|------------|------------|------------|
| | (a) | (b) | (c) | (d) |
| (1) | (iv) | (i) | (ii) | (iii) |
| (2) | (i) | (iii) | (ii) | (iv) |
| (3) | (iii) | (iv) | (i) | (ii) |
| (4) | (ii) | (i) | (iii) | (iv) |

124. Ray florets have :
- (1) Half inferior ovary
 - (2) Inferior ovary
 - (3) Superior ovary
 - (4) Hypogynous ovary
125. The QRS complex in a standard ECG represents :
- (1) Repolarisation of ventricles
 - (2) Repolarisation of auricles
 - (3) Depolarisation of auricles
 - (4) Depolarisation of ventricles
126. Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop.
- (1) Abscisic acid
 - (2) Cytokinin
 - (3) Gibberellin
 - (4) Ethylene
127. 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) only (d)
 - (2) only (a)
 - (3) (a) and (c)
 - (4) (b), (c) and (d)
128. Embryological support for evolution was disapproved by :
- (1) Oparin
 - (2) Karl Ernst von Baer
 - (3) Alfred Wallace
 - (4) Charles Darwin

129. Which of the following pairs is of unicellular algae ?
- (1) *Chlorella* and *Spirulina*
 - (2) *Laminaria* and *Sargassum*
 - (3) *Gelidium* and *Gracilaria*
 - (4) *Anabaena* and *Volvox*
130. Which of the following statements about inclusion bodies is **incorrect** ?
- (1) These represent reserve material in cytoplasm.
 - (2) They are not bound by any membrane.
 - (3) These are involved in ingestion of food particles.
 - (4) They lie free in the cytoplasm.
131. Which of the following would help in prevention of diuresis ?
- (1) Decrease in secretion of renin by JG cells
 - (2) More water reabsorption due to undersecretion of ADH
 - (3) Reabsorption of Na^+ and water from renal tubules due to aldosterone
 - (4) Atrial natriuretic factor causes vasoconstriction
132. Select the **correct** match.
- | | | |
|-------------------------|---|--|
| (1) Thalassemia | - | X linked |
| (2) Haemophilia | - | Y linked |
| (3) Phenylketonuria | - | Autosomal dominant trait |
| (4) Sickle cell anaemia | - | Autosomal recessive trait, chromosome-11 |
133. In relation to Gross primary productivity and Net primary productivity of an ecosystem, which one of the following statements is **correct** ?
- (1) There is no relationship between Gross primary productivity and Net primary productivity.
 - (2) Gross primary productivity is always less than net primary productivity.
 - (3) Gross primary productivity is always more than net primary productivity.
 - (4) Gross primary productivity and Net primary productivity are one and same.

- 134.** Identify the **wrong** statement with reference to transport of oxygen.
- (1) Low $p\text{CO}_2$ in alveoli favours the formation of oxyhaemoglobin.
 - (2) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2 .
 - (3) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.
 - (4) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin.
- 135.** The infectious stage of *Plasmodium* that enters the human body is :
- (1) Male gametocytes
 - (2) Trophozoites
 - (3) Sporozoites
 - (4) Female gametocytes
- 136.** Presence of which of the following conditions in urine are indicative of Diabetes Mellitus ?
- (1) Renal calculi and Hyperglycaemia
 - (2) Uremia and Ketonuria
 - (3) Uremia and Renal Calculi
 - (4) Ketonuria and Glycosuria
- 137.** In light reaction, plastoquinone facilitates the transfer of electrons from :
- (1) PS-I to ATP synthase
 - (2) PS-II to Cytb_6f complex
 - (3) Cytb_6f complex to PS-I
 - (4) PS-I to NADP^+
- 138.** Match the following columns and select the **correct** option.
- | Column - I | Column - II |
|--------------------------------|----------------------|
| (a) 6 - 15 pairs of gill slits | (i) <i>Trygon</i> |
| (b) Heterocercal caudal fin | (ii) Cyclostomes |
| (c) Air Bladder | (iii) Chondrichthyes |
| (d) Poison sting | (iv) Osteichthyes |
- | | (a) | (b) | (c) | (d) |
|-----|------------|------------|------------|------------|
| (1) | (i) | (iv) | (iii) | (ii) |
| (2) | (ii) | (iii) | (iv) | (i) |
| (3) | (iii) | (iv) | (i) | (ii) |
| (4) | (iv) | (ii) | (iii) | (i) |
- 139.** Flippers of Penguins and Dolphins are examples of :
- (1) Natural selection
 - (2) Adaptive radiation
 - (3) Convergent evolution
 - (4) Industrial melanism
- 140.** Snow-blindness in Antarctic region is due to :
- (1) Damage to retina caused by infra-red rays
 - (2) Freezing of fluids in the eye by low temperature
 - (3) Inflammation of cornea due to high dose of UV-B radiation
 - (4) High reflection of light from snow
- 141.** The ovary is half inferior in :
- (1) Plum
 - (2) Brinjal
 - (3) Mustard
 - (4) Sunflower
- 142.** The process of growth is maximum during :
- (1) Dormancy
 - (2) Log phase
 - (3) Lag phase
 - (4) Senescence
- 143.** Which of the following is **not** an inhibitory substance governing seed dormancy ?
- (1) Para-ascorbic acid
 - (2) Gibberellic acid
 - (3) Abscisic acid
 - (4) Phenolic acid
- 144.** The oxygenation activity of RuBisCo enzyme in photorespiration leads to the formation of :
- (1) 1 molecule of 4-C compound and 1 molecule of 2-C compound
 - (2) 2 molecules of 3-C compound
 - (3) 1 molecule of 3-C compound
 - (4) 1 molecule of 6-C compound

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

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

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

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

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

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

- (1) 7 million
- (2) 1.5 million
- (3) 20 million
- (4) 50 million

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

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

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

- (1) Ethidium bromide in infrared radiation
- (2) Acetocarmine in bright blue light
- (3) Ethidium bromide in UV radiation
- (4) Acetocarmine in UV radiation

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

- (1) Inbreeding
- (2) Out crossing
- (3) Mutational breeding
- (4) Cross breeding

151. Bilaterally symmetrical and acoelomate animals are exemplified by :

- (1) Annelida
- (2) Ctenophora
- (3) Platyhelminthes
- (4) Aschelminthes

152. 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) 2.7 meters
- (2) 2.0 meters
- (3) 2.5 meters
- (4) 2.2 meters

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

- (1) Morgan
- (2) Mendel
- (3) Sutton
- (4) Boveri

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

- (1) Exonucleases - Make cuts at specific positions within DNA
- (2) Ligases - Join the two DNA molecules
- (3) Polymerases - Break the DNA into fragments
- (4) Nucleases - Separate the two strands of DNA

- 155.** Identify the **wrong** statement with reference to immunity.
- (1) Foetus receives some antibodies from mother, it is an example for passive immunity.
 - (2) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".
 - (3) When ready-made antibodies are directly given, it is called "Passive immunity".
 - (4) Active immunity is quick and gives full response.
- 156.** 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) only (d)
 - (2) (a) and (b)
 - (3) (c) and (d)
 - (4) (a), (b) and (d)
- 157.** Which of the following statements is **not correct** ?
- (1) Genetically engineered insulin is produced in *E-Coli*.
 - (2) In man insulin is synthesised as a proinsulin.
 - (3) The proinsulin has an extra peptide called C-peptide.
 - (4) The functional insulin has A and B chains linked together by hydrogen bonds.
- 158.** 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) | (i) | (ii) | (iii) | (iv) |
| (2) | (ii) | (iii) | (iv) | (i) |
| (3) | (iii) | (ii) | (i) | (iv) |
| (4) | (iv) | (iii) | (ii) | (i) |
- 159.** 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) | (ii) | (i) | (iv) | (iii) |
| (2) | (iv) | (iii) | (i) | (ii) |
| (3) | (iii) | (ii) | (i) | (iv) |
| (4) | (iii) | (i) | (iv) | (ii) |
- 160.** If the head of cockroach is removed, it may live for few days because :
- (1) the head holds a 1/3rd of a nervous system while the rest is situated along the dorsal part of its body.
 - (2) the supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen.
 - (3) the cockroach does not have nervous system.
 - (4) the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.
- 161.** 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) | (ii) | (iii) | (iv) | (i) |
| (2) | (iv) | (iii) | (i) | (ii) |
| (3) | (i) | (iv) | (ii) | (iii) |
| (4) | (iii) | (ii) | (iv) | (i) |
- 162.** Identify the **wrong** statement with reference to the gene 'I' that controls ABO blood groups.
- (1) Allele 'i' does not produce any sugar.
 - (2) The gene (I) has three alleles.
 - (3) A person will have only two of the three alleles.
 - (4) When I^A and I^B are present together, they express same type of sugar.

- 163.** Which of the following statements is **correct** ?
- (1) Adenine does not pair with thymine.
 - (2) Adenine pairs with thymine through two H-bonds.
 - (3) Adenine pairs with thymine through one H-bond.
 - (4) Adenine pairs with thymine through three H-bonds.
- 164.** Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells ?
- (1) Polysomes
 - (2) Endoplasmic reticulum
 - (3) Peroxisomes
 - (4) Golgi bodies
- 165.** Which one of the following is the most abundant protein in the animals ?
- (1) Insulin
 - (2) Haemoglobin
 - (3) Collagen
 - (4) Lectin
- 166.** 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) (a) and (d)
 - (2) (a) only
 - (3) (a), (b) and (c)
 - (4) (c) and (d)
- 167.** Meiotic division of the secondary oocyte is completed :
- (1) At the time of fusion of a sperm with an ovum
 - (2) Prior to ovulation
 - (3) At the time of copulation
 - (4) After zygote formation
- 168.** 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 root
 - (2) Monocotyledonous stem
 - (3) Monocotyledonous root
 - (4) Dicotyledonous stem
- 169.** Goblet cells of alimentary canal are modified from :
- (1) Compound epithelial cells
 - (2) Squamous epithelial cells
 - (3) Columnar epithelial cells
 - (4) Chondrocytes
- 170.** The sequence that controls the copy number of the linked DNA in the vector, is termed :
- (1) Recognition site
 - (2) Selectable marker
 - (3) Ori site
 - (4) Palindromic sequence
- 171.** 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) | (i) | (ii) | (iv) | (iii) |
| (2) | (ii) | (iii) | (i) | (iv) |
| (3) | (iii) | (i) | (iv) | (ii) |
| (4) | (iv) | (ii) | (i) | (iii) |

172. Identify the basic amino acid from the following.
- (1) Valine
 - (2) Tyrosine
 - (3) Glutamic Acid
 - (4) Lysine
173. 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) | (ii) | (iv) | (iii) | (i) |
| (2) | (iii) | (iv) | (i) | (ii) |
| (3) | (iv) | (iii) | (ii) | (i) |
| (4) | (i) | (ii) | (iv) | (iii) |
174. From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask :
- (1) CH_3 , H_2 , NH_3 and water vapor at 600°C
 - (2) CH_4 , H_2 , NH_3 and water vapor at 800°C
 - (3) CH_3 , H_2 , NH_4 and water vapor at 800°C
 - (4) CH_4 , H_2 , NH_3 and water vapor at 600°C
175. Select the **correct** statement.
- (1) Insulin is associated with hyperglycemia.
 - (2) Glucocorticoids stimulate gluconeogenesis.
 - (3) Glucagon is associated with hypoglycemia.
 - (4) Insulin acts on pancreatic cells and adipocytes.
176. Montreal protocol was signed in 1987 for control of :
- (1) Disposal of e-wastes
 - (2) Transport of Genetically modified organisms from one country to another
 - (3) Emission of ozone depleting substances
 - (4) Release of Green House gases
177. Cuboidal epithelium with brush border of microvilli is found in :
- (1) eustachian tube
 - (2) lining of intestine
 - (3) ducts of salivary glands
 - (4) proximal convoluted tubule of nephron
178. Bt cotton variety that was developed by the introduction of toxin gene of *Bacillus thuringiensis* (Bt) is resistant to :
- (1) Insect predators
 - (2) Insect pests
 - (3) Fungal diseases
 - (4) Plant nematodes
179. Which of the following hormone levels will cause release of ovum (ovulation) from the graffian follicle ?
- (1) Low concentration of FSH
 - (2) High concentration of Estrogen
 - (3) High concentration of Progesterone
 - (4) Low concentration of LH
180. Identify the **incorrect** statement.
- (1) Due to deposition of tannins, resins, oils etc., heart wood is dark in colour.
 - (2) Heart wood does not conduct water but gives mechanical support.
 - (3) Sapwood is involved in conduction of water and minerals from root to leaf.
 - (4) Sapwood is the innermost secondary xylem and is lighter in colour.

H4

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Space For Rough Work