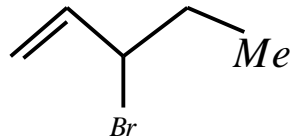


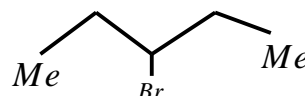
87.  $C_6H_5NO_2 \xrightarrow[Ni]{H_2} A \xrightarrow[0-5^\circ C]{NaNO_2+HCl} B \xrightarrow[\Delta]{C_2H_5OH} C$  (major). The compound C is  
 1)  $C_6H_5NH_2$       2)  $C_6H_5OH$       3)  $C_6H_6$       4)  $C_6H_5CN$
88. The correct order of reactivity towards  $SN^1$  reaction among the following compound is



(A)



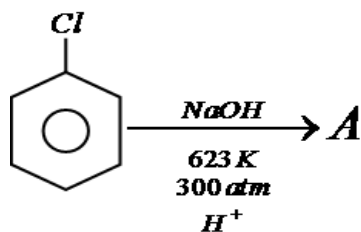
(B)



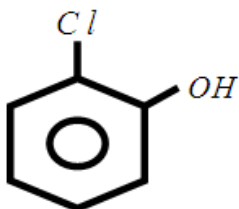
(C)

- 1)  $A > B > C$       2)  $B > C > A$       3)  $B > A > C$       4)  $C > B > A$

89.



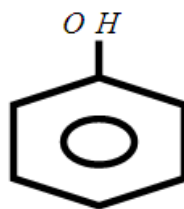
A is



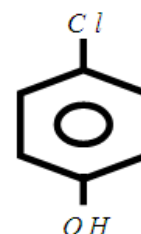
1)



2)



3)



4)

90. The increasing values of  $pK_a$  for the following compounds is
- A. m- nitrophenol      B. Phenol  
 C. P-nitrophenol      D. O- cresol  
 E. m- cresol is
- 1)  $C < A < B < E < D$       2)  $D < E < B < A < C$   
 3)  $C < A < D < E < B$       4)  $D < E < C < A < B$

### BIOLOGY

91. The term taxonomy was coined by  
 1) Ernst Haeckel      2) H. F Copeland      3) A.P. de Candolle      4) Carolus Linnaeus
92. Which one of the following is correct?  
 1) Serum = Blood + Fibrinogen      2) Lymph = Plasma + RBC + WBC  
 3) Blood = Plasma + RBC + WBC + Platelets      4) Plasma = Blood - Lymphocytes
93. Kingdom plantae show following characters  
 A. Cellulosic cell wall  
 B. Starch is reserve food  
 C. Absorptive mode of nutrition  
 1) A and B      2) B and C      3) A and C      4) A, B and C
94. Match the following blood cells with their functions and select the answer from code given below:

Blood cells	Functions
A. Neutrophils	1. Haemostasis
B. Basophils	2. Production of antibodies
C. B lymphocytes	3. Release of histamine
D. Platelets	4. Phagocytosis

1) A=3, B= 4, C=1, D=2

2) A=4, B=3,C=2,D=1

3) A=1, B=2, C=3, D=4

4) A=2, B=3, C=4,D=1

95. Match the following with reference to kingdom Protista

List- I

I. Diatoms

II. Plasmodium

III. Euglenoids

IV. Dinoflagellates

List- 2

A. Multinucleate aggregate plant body of slimemoulds

B. Kieselgur and rejuvenatory spores

C. Protozoan with infectious spore like stage in life cycle

D. Bioluminescence and mesokaryon

E. Proteinaceous pellicle and myxotrophic nutrition

The correct match is

- |    | I | II | III | IV |
|----|---|----|-----|----|
| 1) | B | C  | E   | D  |
| 2) | C | A  | E   | B  |
| 3) | B | A  | C   | E  |
| 4) | D | C  | E   | B  |

96. In urinary system aldosterone takes part in retention of

1)  $K^+$

2)  $Na^+$

3) Water

4) Both 2 & 3

97. Which of the following division of fungi includes club fungi?

1) Deuteromycetes

2) Zygomycetes

3) Basidiomycetes

4) Ascomycetes

98. Statement I : Red muscle can also be called aerobic muscle

Statement II : These muscles contain plenty of mitochondria which can utilize the large amounts of oxygen stored in them.

1) Both statement 1 and statement II are correct

2) Both statement I and statement II are incorrect

3) Statement I is correct but II is incorrect

4) Statement I is incorrect but II is correct

99. Secondary growth occurs in stem and roots of

1) Dicots

2) Gymnosperms

3) Monocots

4) Both 1 & 2

100. Endocrine centre in the brain is

1) Corpus callosum

2) Crura cerebri

3) Cerebral cortex

4) Hypothalamus

101. Select the characters related to Dryopteris

A. Stem is rhizome

B. Young leaves show circinnate vernation

C. Petioles are covered with ramenta

D. The sorus is covered by true indusium

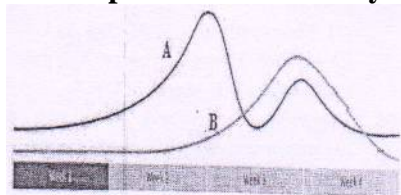
1) A & B only

2) C & D only

3) A, B & C only

4) All the above

102. Observe the following graph with respect to menstrual cycle and identify A and B



Preovulatory phase

post ovulatory phase

1) A- Oestrogen; B- progesterone

2) A- FSH; B- LH

3) A- Progesterone; B- Oestrogen

4) A- LH; B- FSH

103. Cyathium and Hypanthodium are similar in having

1) Achlamydeous flower

2) Bisexual flowers

3) Unisexual flowers

4) Neutral flowers

104. Which of the following is not true about uterus

1) It is attached to the pelvic wall

2) It is an inverted pear shaped structure

3) It opens into vagina through cervix

4) It forms birth canal along with cervix

105. Match the following

List- I

I. Assimilatory roots

II. Nodular roots

III. Fusiform taproot

IV. Complete parasite

With wiry stem

I II III IV

1) C D B A

2) C A B D

3) D A B C

4) C D A B

List- II

A. Cuscuta

B. Radish

C. Taeniophyllum

D. Ground nut

106. Zona pellucida disappears

1) After fertilization

2) Before blastocyst formation

3) Before implantation

4) After morula formation

107. Which of the following vegetative propagules are found in ginger and onion respectively?

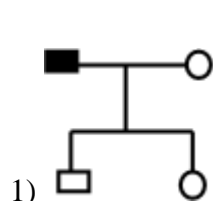
1) Corm, Rhizome

2) Stolene, Sucker

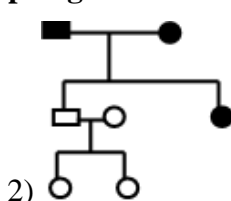
3) Rhizome, Bulb

4) Offsets, Bulb

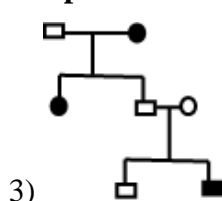
108. Which of the following pedigree can be for haemophilia?



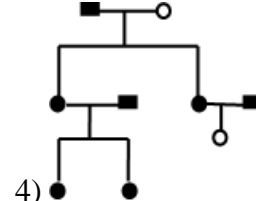
1)



2)



3)



4)

109. Study the following statements and find the correct option

Statement – I (SI) :- In higher plants asexual reproduction can occur both before and during their maturation phase

Statement – II (SII) :- In higher plants uniparental sexual progeny are never observed

1) Both SI & SII are false

2) SI is true but SII is false

3) SI is false but SII is true

4) Both SI & SII are true

110. Match column I with column II regarding human excretory system choose the correct option.

Column –I	Column -II
A. Epithelial cells of Bowman's capsule	1. Juxtamedullary nephron
B. Extension of cortex between the medullary pyramids as real columns	2. Vasa recta
C. Nephrons with long loop of Henle running deep into the medulla	3. Juxtaglomerular apparatus
D. A fine vessel of the peritubular capillaries running parallel to Henel's loop	4. Podocytes
E. A special sensitive region in the DCT and afferent arteriole at the location of their contact	5. Columns of Bertini
	6. Cortical nephron

1) A-5;B-1;C-2;D-3;E-4

2) A-4;B-3;C-6;D-5;E-1

3) A-2;B-4;C-6;D-1;E-3

4) A-4;B-5;C-1;D-2;E-3

111. Choose the correct ascending sequence of the following plants with respect to their life- span

I. Wolffia

II. Carrot

III. Rose plant

IV. Rice plant

V. Royal fern

VI. Banana

VII. Banyan tree

VIII. Moss plant

1) VII, V, III, VI, II, IV, VIII, I

2) I, VIII, IV, II, VI, III, V, VII

3) I, VIII, II, IV, VI, III, VII, V

4) I, VIII, IV, II, III, VI, V, VII

112. Hisardale is a resultant by crossing between

1) Marino ewes and Bikaneri rams

2) Marino ewes and marino rams

3) Bikaneri ewes and Bikaneri rams

4) Bikaneri ewes and marino rams



- 125. The diploid chromosome number of maize is 20. Then the number of Bivalents, chromatids and kinetochores in pachytene stage of its meiocyte**  
 1) 20,40,40                      2) 10,40,40                      3) 10,20,20                      4) 20,20,40
- 126. To which of the following categories does the adipose tissue belong?**  
 1) Epithelial                      2) Connective                      3) Muscular                      4) Neural
- 127. The simple mechanical tissue present in the petioles and young dicot stem is**  
 1) Sclerenchyma                      2) Xylem                      3) Parenchyma                      4) Collenchyma
- 128. Which of the following represents the correct combination without exception?**

Characteristics	Class
1. Mammary gland; hair on body; pinnae; two pairs of limbs	Mammalia
2. Mouth ventral, gills without operculum; skin with placoid scales; persistent notochord	Chondrichthyes
3. Sucking and circular mouth, jaws absent; integument without scales; paired appendages	Cyclostomata
4. Body covered with feathers; skin moist and glandular, forelimbs form wings; lungs with air sacs	Aves

- 129. Analyse the following lists. Choose the correct matching.**

**List- I**

(Vascular bundle types)

**I. Bi collateral vascular bundle**

**II. Radial vascular bundle**

**III. Collateral closed vascular bundle**

**IV. Collateral and open vascular bundle**

**List- II**

(Part of a plant)

**A. Cucurbita root**

**B. Dicot root**

**C. Leaf**

**D. Cucurbita stem**

**E. Sunflower stem**

1) I-A, II-B, III-C, IV-E

3) I-B, II-C, III-D, IV-A

2) I-D, II-B, III-C, IV-E

4) A-D, II-C, III-E, IV-B

- 130. Fertilization in Cockroach occurs in**

1) Ootheca

2) Genital chamber

3) Vestibulum

4) Vagina

- 131. Find the true statements from the following**

**I. Phloem parenchyma and companion cells are nucleated cells**

**II. Phloem is a living tissue except bast fibres**

**III. Both xylem and phloem are useful for conduction and mechanical support**

**IV. The parenchyma in both xylem and phloem is storage in function**

The correct answer is

1) I, II & IV

2) I, II, III

3) II, III, IV

4) I, III, IV

- 132. In malignant tumours, the cells proliferate, grow rapidly and move to other parts of the body to form new tumours. This property of disease is considered as**

1) Metagenesis

2) Mitosis

3) Teratogenesis

4) Metastasis

- 133. The sequence of communities of primary succession in water is:**

1) Phytoplankton, sedges, free- floating hydrophytes, rooted hydrophytes, grasses and trees.

2) Phytoplankton, free- floating hydrophytes, rooted hydrophytes, sedges, grasses and trees.

3) Free- floating hydrophytes, sedges, phytoplankton, rooted hydrophytes, grasses and trees.

4) Phytoplankton, rooted submerged hydrophytes, floating hydrophytes, reed swamp, sedges, meadow and trees.

- 134. The correct path followed by sound waves from external ear to inner ear is:**

1) Eardrum –auditory ossicles- fluid of cochlea- basilar membrane- hair cells

2) Eardrum- basilar membrane- auditory ossicles- fluid of cochlea- hair cells

3) Eardrum- fluid of cochlea- auditory ossicles- hair cells- basilar membrane

4) Eardrum- hair cells- auditory ossicles- basilar membrane- fluid of cochlea

135. The sequence of succession is

- 1) Lichens → Mosses → Grass → Shurbs → Trees
- 2) Trees → Shurbs → Lichens → Mosses → Grass
- 3) Mosses → Shurbs → Trees → Lichens → Grass
- 4) Lichens → Trees → Mosses → Grass → Shurbs

136. Match the following with correct combination:

List- I

- A. Hyaluronidase
- B. Corpus luteum
- C. Gastrulation
- D. Capacitation
- E. Colostrum

List- II

- I. Acrosomal reaction
- II. Morphogenetic movements
- III. Progesterone
- IV. Mammary gland
- V. Sperm activation

- 1) A-V, B- II, C- IV, D- I, E- III
- 2) A- I, B-III, C- II, D-V, E-IV
- 3) A-IV, B- II, C-V, D-III, E-I
- 4) A- I, B- II, C-III, D-IV, E-V

137. A character which is expressed phenotypically in both homozygotes & heterozygotes is

- 1) Recessive character
- 2) Mutant character
- 3) Dominant character
- 4) Pleiotropic character

138. Artificial insemination means:

- 1) Transfer of sperms of husband to a test tube containing ova
- 2) Transfer of sperms of a healthy donor directly into the vagina
- 3) Introduction of sperms of a health donor directly into the ovary
- 4) Transfer of sperms of a healthy donor to a test tube containing ova

139. Choose the incorrect statement

- 1) One DNA helix runs continuously from one end to the other in each chromatid
- 2) Hereditary variations in fruitfly can be seen with low power microscope
- 3) Fruit flies could be grown on simple synthetic medium in the laboratory
- 4) Mendel provided physical proof for the existence of factors.

140. A woman with normal vision, but whose father was colour blind, marries a colour blind man. Suppose that the fourth child of this couple was a boy. This boy

- 1) Must be colour blind
- 2) Must have normal colour vision
- 3) May or may not colour blind
- 4) Will be partially colour blind since he is heterozygous for the colour blind mutant allele

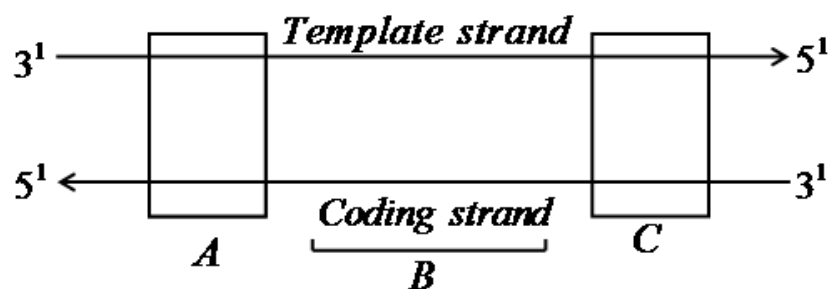
141. Chargaff's rule is applicable to

- 1) Single stranded RNA
- 2) Single stranded DNA and RNA
- 3) Single stranded DNA
- 4) Double stranded DNA and RNA

142. In a population of 1000 individuals 360 belong to genotype AA, 480 to Aa and the remaining 160 to aa. Based on this data, the frequency of allele A in the population is:

- 1) 0.7
- 2) 0.4
- 3) 0.5
- 4) 0.6

143.



'A' in the above transcription unit is

- 1) Promoter
- 2) Terminator
- 3) Structural gene
- 4) Regulator

- 144. Read the following statements:**  
**A. Mammalian lungs are solid and spongy**  
**B. Air enters into the lungs because chest expands**  
**C. In embryo stage breathing rate, residual air are absent**  
**D. Residual volume is volume of air in lungs after forceful expiration**  
**E. Partial pressure of oxygen in expired air is more than inspired air**  
**How many statements are correct?**  
 1) BCD                      2) ABCD                      3) AE                      4) ACD
- 145. A restriction endonuclease breaks bond between the**  
 1) Base pairs of a DNA molecule  
 2) Base pairs of a DNA- RNA hybrid molecule  
 3) sugar and phosphate components of nucleic acid molecule  
 4) Exons and introns of a DNA molecule
- 146. Read the statements A and B given below and choose the correct option:**  
**Statement -I. Human heart transplanted is denervated but still keeps beating**  
**Statement -II. Human heart is myogenic**  
 1) Statement I & Statement II both are correct  
 2) Statement I & Statement II both are incorrect  
 3) Statement I correct Statement II incorrect  
 4) Statement I incorrect Statement II correct
- 147. Length of palindrome which is recognised by ECoRI**  
 1) 20.4 nm                      2) 20.8 A<sup>0</sup>                      3) 21.4 A<sup>0</sup>                      4) 20.4 A<sup>0</sup>
- 148. Which of the following statements is correct with reference to a test tube baby?**  
 1) Fertilization of the egg is completed outside the body; the fertilized egg/ early embryo is then placed in the womb of healthy adult female where the gestation is completed  
 2) Fertilization of the egg is completed in the female genital tract. It is then taken out and grown in a large test tube  
 3) A prematurely born baby is reared in a incubator  
 4) Fertilization of the egg and growth of the embryo is completed in a large test tube
- 149. The cell walls of eukaryotic plant cells can be removed by treatment with**  
**I. Lysozyme                      II. Cellulase                      III. Chitinase**  
 1) I, II & III                      2) I & II only                      3) I & III only                      4) II & III only
- 150. Select the correct option that represents examples of the following types of animals**  
**I. Cold blooded animals**  
**II. Warm blooded animals**  
**III. Animal with dry and cornified skin**  
**IV. Hermaphrodite animal**
- | I         | II     | III         | IV        |
|-----------|--------|-------------|-----------|
| 1) Rabbit | Fish   | Frog        | Earthworm |
| 2) Fish   | Rabbit | Wall lizard | Earthworm |
| 3) Pigeon | Frog   | Crocodile   | Starfish  |
| 4) Fish   | Frog   | Crocodile   | Earthworm |
- 151. Which of the following is a transgenic plant?**  
 1) Flavr Savr                      2) Bacillus thuringiensis  
 3) Meloidogyne incognita                      4) Baculo virus
- 152. Match the following animals with their respiratory organs and select the correct set**
- | Set –I              | Set –II              |
|---------------------|----------------------|
| <b>A. Earthworm</b> | <b>I. gills</b>      |
| <b>B. Human</b>     | <b>II. bookgills</b> |
| <b>C. Prawn</b>     | <b>III. Trachea</b>  |
| <b>D. Insect</b>    | <b>IV. Cutaneous</b> |
|                     | <b>V. pulmonary</b>  |

- |    | A  | B   | C   | D   |
|----|----|-----|-----|-----|
| 1) | IV | V   | III | II  |
| 2) | IV | V   | II  | III |
| 3) | II | III | IV  | V   |
| 4) | IV | V   | I   | III |

**153. Male sterile transgenic Brassica napus is**

- I. Suitable for food processing**
- II. Tolerant to abiotic stresses**
- III. Useful for hybrid seed production**
- IV. Herbicide tolerant**

- 1) II, III, IV                      2) III only                      3) II, III only                      4) III, IV only

**154. If the systolic pressure is 120 mm Hg and diastolic pressure is 80 mm Hg the pulse pressure is**

- 1)  $120 \times 80 = 9600 \text{ mm Hg}$                       2)  $120 + 80 = 200 \text{ mm Hg}$   
 3)  $120 - 80 = 400 \text{ mm Hg}$                       4)  $\frac{120}{80} = 40 \text{ mm Hg}$

**155. N. Borlaug developed semi- dwarf wheat variety in Mexico at**

- 1) International centre for wheat and Rice improvement
- 2) International centre for wheat, Rice and maize
- 3) International centre for wheat and Barley improvement
- 4) International centre for wheat and maize improvement

**156. Match the following and select the correct set**

Skeletal part	Number of bones
<b>A. Cranium</b>	<b>I. 14</b>
<b>B. Back bone</b>	<b>II. 26</b>
<b>C. Face</b>	<b>III. 24</b>
<b>D. Hindlimb</b>	<b>IV. 80</b>
<b>E. Ribs</b>	<b>V. 8</b>
	<b>VI. 30</b>

- |    | A | B  | C   | D   | E   |
|----|---|----|-----|-----|-----|
| 1) | V | II | III | I   | IV  |
| 2) | V | II | I   | III | VI  |
| 3) | I | II | III | IV  | V   |
| 4) | V | II | I   | VI  | III |

**157. The rice variety introduced into India from Philippines is**

- 1) IR8                      2) Sonora                      3) TMV -3                      4) Sweedish

**158. The rate of conduction of impulse will be faster in case of**

- 1) Myelinated nerve fibers                      2) Un myelinated thick fibers  
 3) Nonmyelinated thin nerve fiber                      4) Both 1 & 2

**159. First plant produced during the demonstration of totipotency was**

- 1) Radish                      2) Carrot                      3) Maize                      4) Datura

**160. A pregnant women delivers a baby who suffers from stunted growth mental retardation, low intelligence and abnormal skin. This is the result to**

- 1) Hypo secretion of growth hormone                      2) Over secretion from pars distalis  
 3) Deficiency of iodine                      4) Cancer

**161. Micropropagation is useful**

- I. To generate somaclonal variations which are exploited for crop improvement**
- II. To multiply genetically uniform population**
- III. To generate new species**
- IV. To produce heterozygous plants**

- 1) I & III are correct      2) III & IV are correct      3) I & II are correct      4) II & III are correct

**162. An organism that transfer the infective agent from one primary host to another and allows partial development of infective agent in its body is called**

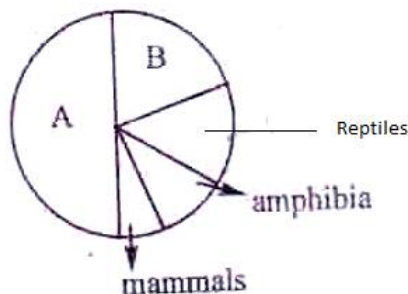
- 1) Mechanical vector      2) Biological vector      3) Reservoir host      4) Uninvited guest



163. Big holes in Swiss cheese are made by

- 1) A machine
- 2) A bacterium that produces methane gas
- 3) A bacterium producing a large amount of carbondioxide
- 4) A Fungus that release a lot of gases during its metabolic activities

164. The given pie diagram represents the proportionate of species of major taxa of vertebrates identify the groups A and B



- 1) A- Reptiles      B- Birds
- 2) A- Fish        B- Birds
- 3) A- Birds        B-Fish
- 4) A- Birds        B-Reptiles

165. Bottle Juices are clarified by the use of

- 1) Lipases                      2) Pectinases                      3) Proteases                      4) 2 & 3

166. Which one of the following is not an ectoparasite- Host association?

- 1) Ticks- dog                      2) Copepods- marine fish
- 3) Pediculus- Human              4) Plasmodium- Man

167. Path of water movement from soil to the xylem is

- 1) Metaxylem → Protoxylem → Cortex → Soil → Root hair
- 2) Cortex → Root hair → Endodermis → Pericycle → Protoxylem → Metaxylem
- 3) Soil → Root hair → Cortex → Endodermis → Pericycle → Protoxylem → Metaxylem
- 4) Pericycle → Soil → Root hair → Cortex → Endodermis → Protoxylem → Metaxylem

168. In male frog vasa efferentia from testis enter the kidney and open into

- 1) Wolffian duct                      2) Mesonephric duct                      3) Ureter                      4) Bidders canal

169. Energy consuming and energy releasing steps in nitrogen cycle respectively are

- 1) Nitrification, nitrogen, fixation                      2) Ammonification, nitrogen fixation
- 3) Ammonification, denitrification                      4) Nitrogen fixation, nitrification

170. Match the following and select the correct set

Column – I

A. Pneumonia

B. Typhoid

C. Common cold

D. Ringworm

Column – II

I. Salmonella

II. Entamoeba

III. Epidermophyta

IV. Haemophilus influenza

V. Rhinoviruses

- |    | A  | B   | C   | D   |
|----|----|-----|-----|-----|
| 1) | I  | III | IV  | V   |
| 2) | IV | I   | III | V   |
| 3) | I  | II  | III | IV  |
| 4) | IV | I   | V   | III |

**171. Enzymes promote rate of chemical reaction by**

- 1) Lowering energy of activation
- 2) Increasing energy of activation
- 3) Maintaining energy of activation
- 4) Without affecting activation energy but increasing reaction time

**172. Verhulst-pearl logistic growth is described by the equation.**

- 1)  $dN = rN \frac{N}{K}$
- 2)  $\frac{dN}{dt} = rN \frac{N}{K}$
- 3)  $\frac{dN}{dt} = rN \left( \frac{K - N}{K} \right)$
- 4)  $\frac{dN}{dt} = kN \left[ 1 - \frac{k}{K} \right]$

**173. Chlorophylls don't absorb this wave length of light**

- 1) Red wave length
- 2) Green wavelength
- 3) Blue wavelength
- 4) Orange wavelength

**174. Which of the following statements are incorrect regarding biomagnification of D.D.T**

**I. Spraying of D.D.T in a agricultural fields is carried by run off water into the near by water bodies**

**II. The water bodies may have a very low concentration but it is accumulated at high concentration in fish**

**III. The birds that consumed this fish have no effect though the accumulation of D.D.T is at maximum level in the birds**

- 1) I and II
- 2) I and III
- 3) II and III
- 4) Only III

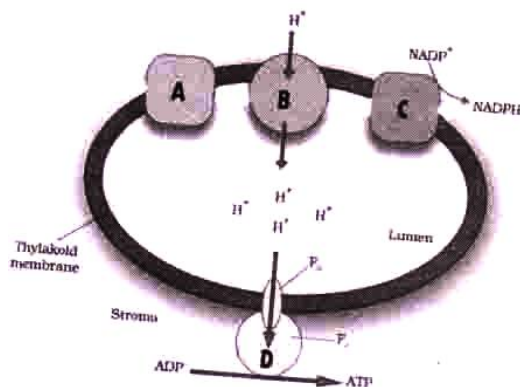
**175. To produce 4 sucrose molecules the number of ATP and NADPH + H<sup>+</sup> required in C<sub>3</sub> plants is**

- 1) 144 & 96
- 2) 120 & 48
- 3) 188, 192
- 4) 72, 46

**176. Which pair of geographical area shows maximum diversity in our country?**

- 1) Sunderbans and Rann of Kutch
- 2) Eastern Ghats and Western Ghats
- 3) Eastern Himalayas and western Ghats
- 4) Kerala and Punjab

**177. From the below figure ATP synthesis through chemiosmotic hypothesis identify ABCD respectively**



- 1) Photoystem- I, Photosystem- II, Cytochromes b& f, ATP synthase
- 2) Photosystem- II, Photosystem- I, Cytochromes b&f, ATP synthase
- 3) Photoystem-I, Cytochromes b & f, ATP synthase, Photoystem- II
- 4) Photoystem- II, Cytochromes b& f, Photosystem- I, ATP synthase

**178. Which of the following are correctly matched with respect to their taxonomic classification?**

- 1) Flying fish, cuttlefish, Silverfish- Pisces
- 2) Centipede, Millipede, Spider, Scorpion- Insecta
- 3) House fly, Butterfly, Tse-tse fly, silverfish- Insecta
- 4) Spiny anteater, Sea urchin, Sea cucumber- Echinodermata

**179. Ratio of total ATPs produced by substrate level phosphorylation in aerobic respiration where substrate is 2 molecules of G-3-P and number of molecules of CO<sub>2</sub> liberated during Krebs cycle is**

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

**180. Lack of relaxation between successive stimuli in sustained muscle contraction is know as:**

- 1) Tonus
- 2) Spasm
- 3) Fatigue
- 4) Tetanus