NEET 2021 Biology P6

131. DNA strands on a gel stained with ethidium bromide when viewed under UV raidation,appear as :
(1) Bright blue bands
(2) Yellow bands
(3) Bright orange bands
(4) Dark red bands

Ans: (3)

Sol: DNA strands on a gel stained with ethidium bromide when viewed under UV radiation appear as bright orange bands.

132. Diadelphous stamens are found in :
(1) China rose and citrus
(2) China rose
(3) Citrus
(4) Pea

Ans: (4)

Sol: Diadelphous stamens are seen in pea (Fabaceae)

133. Which of the following are not secondary metabolites in plants ?
(1) Rubber,gums
(2) Morphine,codeine
(3) Amino acids,glucose
(4) Vinblastin,curcumin

Ans: (3)

Sol: Amino acids and Glucose are primary metabolites but not secondary metabolites as they have some known functions.

134. The amount of nutrients, such as carbon,nitrogen, phosphorus and calcium present in the soil at any given time,is reffered as :
(1) Standing crop
(2) Climax
(3) Climax community
(4) Standing state

Ans: (4)

Sol: The amount of nutrients, such as carbon, nitrogen, phosphorus and calcium present in the soil at any given time is called standing state .

135. Genera like *Selaginella* and *Salvinia* produce two kinds of spores. Such plants are known as :
(1) Heterosporous
(2) Homosorus
(3) Heterosorus
(4) Homosporous

Ans: (1)

Sol: Genera like *Selaginella* and *Salvinia* (Pteridophytes) form two types of spores microspores and megaspores and they are described as heterosporous.

SECTION - B (BIOLOGY : BOTONY)

136. Plasmid pBR322 has Pstl restriction enzyme site within gene amp^R that confers ampicillin resistance. If this enzyme is used for inserting a gene for ß -galactoside production and the recombinant plasmid is inserted in an *E.coli* strain
(1) it will be able to produce a novel protien with dual ability.
(2) it will not be able to confer ampicillin resistance to the host cell.
(3) the transformed cells will have the ability to resist ampicilin as well as produce ß -galactoside.
(4) it will lead to lysis of host cell.

Ans: (2)

Sol: Since the gene is inserted at Pst I of amp^R region of pBR322, the amp^R gene is inactivated which is called as insertional inactivation. Hence the genetically modified *E.coli* strain will not be able to confer ampicillin resistance.

137. In some member of which of the following pairs of families, pollen grains retain their viability for months after release ?
(1) Rosaceae;Leguminosae
(2) Poaceae;Rosaceae
(3) Poaceae;Leguminosae
(4) Poaceae;Solanaceae

Ans: (1)

Sol: In dicot families like Solanaceae, Rosaceae and Leguminosae the viability of pollen grains remain months together after their release.

138. Identify the correct statement.
(1) Split gene arrangement is characteristic of prokaryotes.
(2) In capping,methyl guanosine triphosphate is added to the 3' end of hnRNA.
(3) RNA polymerase binds with Rho factor to terminate the process of transcription in bacteria.
(4) The coding strand in a transcription unit is copied to an mRNA.

Ans: (3)

Sol: Transcription is terminated when Rho factor binds to RNA polymerase in bacteria.

139. Which of the following statements is correct ?
(1) Some of the organisms can fix atmospheric nitrogen in specialized cells called sheath cells.
(2) Fusion of two cells is called Karyogamy.
(3) Fusion of protoplasms between two motile on non-motile gametes is called plasmogamy.
(4) Organisms that depend on living plants are called saprophytes.

Ans: (3)

Sol: Fusion of protoplasms between two motile or non-motile gametes is called as plasmogamy

140. DNA fingerprinting involves identifying differences is some specific regions in DNA sequence, called as :

(1) Polymorphic DNA

(2) Satellite DNA

(3) Repetitive DNA

(4) Single nucleotides

Ans: (3)

Sol. DNA fingerprinting involves identifying differences in some specific regions in DNA sequence called as repetitive DNA, because in these sequences, a small stretch of DNA is repeated many times.

141. Select the correct pair.

(1) Loose parenchyma - Spongy parenchyma cells rupturing the epidermis and forming a lens-shaped opening in bark

(2) Large colorless empty cells in the epidermis of grass leaves - Subsidiary cells

(3) In dicot leaves, vascular bundles are surrounded by large thick-walled cells - Conjunctive tissue

(4) Cells of medullary rays that form part of cambial ring - Interfascicular cambium

Ans: (4)

Sol: Inter fascicular cambium is formed from medullary ray cells which is a part of vascular cambium in dicot stems.

142. Which of the following statements is incorrect ?

(1) Oxidation -reduction reactions produce proton gradient in respiration.

(2) During aerobic respiration, role of oxygen is limited to the terminal stage.

(3) In ETC (Electron Transport Chain), one molecule of $NADH+H^+$ gives rise to 2ATP molecules, and one $FADH_2$ gives rise to 3ATP molecules.

(4) ATP is synthesized through complex V.

Ans: (3)

Sol: In ETC of respiration, oxidation of one molecule of $NADH+H^+$ gives rise 3 ATP and $FADH_2$ produces 2 ATP.

143. Which of the following statements is incorrect?

(1) Cyclic photophosphorylation involves both PS I and PS II

(2) Both ATP and NADPH + H^+ are synthesized during non-cyclic photophosphorylation.

(3) Stroma lamellae have PS I only and lack NADP reductase.

(4) Grana lamelllae have both PS I and PS II.

Ans: (1)

Sol: In Cyclic photophosphorylation only PSI is involved but not PSII.

144. Match Column-I with Column-II.

	Column- I		Column – II
(a)	*Nitrococcus*	i)	Denitrification
(b)	*Rhizobium*	ii)	Conversion of ammonia to nitrite
(c)	*Thiobacillus*	iii)	Conversion of nitrite to nitrate
(d)	*Nitrobacter*	iv)	Conversion of atmospheric nitrogen to ammonia

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

Ans: (2)

Sol: *Nitrococcus* – Conversion of ammonia to nitrite

Rhizobium – Conversion of atmospheric nitrogen to ammonia

Thiobacillus – Denitrification

Nitrobacter – Conversion of Nitrite to Nitrate

145. What is the role of RNA polymerase III in the process of transcription in eukaryotes?

(1) Transcribes only snRNAs

(2) Transcribes rRNAs (28S, 18S and 5.85S)

(3) Transcribes tRNA, 5s rRNA and snRNA

(4) Transcribes precursor of mRNA

Ans: (3)

Sol: RNA polymerase III is involved in transcribing tRNA, 5s rRNA and snRNA.

146. In the exponential growth equation

$N_t = N_0 e^{rt}$. e represents :

(1) The base of geometric logarithms

(2) The base of number logarithms

(3) The base of exponential logarithms

(4) The base of natural logarithms

Ans: (4)

Sol. The integral form of the exponential growth equation as $Nt = N_0 e^{rt}$

Where,

Nt = Population density after time t

N_0 = Population density at time zero

r = intrinsic rate of natural increase

e = the base of natural logarithms (2.71828)

147. Now a days it is possible to detect the mutated gene causing cancer by allowing radioactive probe to hybridise its complimentary DNA in a clone of cells, followed by its detection using autoradiography because:

(1) mutated gene does not appear on photographic film as the probe has complimentarity with it.

(2) mutated gene partially appears on a photographic film

(3) mutated gene completely and clearly appears on a photographic film.

(4) mutated gene does not appear on a photographic film as the probe has no complimentarity with it.

Ans: (4)

Sol. A single stranded DNA or RNA, tagged with a radioactive molecule (probe) is allowed to hybridise to its complementary DNA in a clone of cells followed by detection using autoradiography. The clone having the mutated gene will hence not appear on the photographic film, because the probe will not have complementarity with the mutated gene.

148. Match List - I with List - II

	List - I		List – II
(a)	Protein	i)	C = C double bonds
(b)	Unsaturated fatty acid	ii)	Phosphodiester bonds
(c)	Nucleic acid	iii)	Glycosidic bonds
(d)	Polysaccharide	iv)	Peptide bonds

Choose the correct answer from the options given below.

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

Ans: (2)

Sol: Protein – Peptide bonds

Unsaturated fatty acid – has C = C double bonds

Nucleic acid – Phosphodiester bonds

Polysaccharide – Glycosidic bonds

149. Match List - I with List - II.

	List - I		List – II
(a)	S phase	(i)	Proteins are synthesized
(b)	G_2 phase	(ii)	Inactive phase
(c)	Quiescent stage	(iii)	Interval between mitosis and initiation of DNA replication
(d)	G_1 phase	(iv)	DNA replication

Choose the correct answer from the options given below

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

Ans: (4)

Sol: S phase – DNA replication

G_2 phase – Proteins are synthesized

Quiescent stage – Inactive phase

G_1 phase – Interval between mitosis and initiation of DNA replication.

150. Match Column - I with Column - II.

	Column - I		Column – II
(a)	$\%\,♀\,K_{(5)}C_{1+2+(2)}A_{(9)+1}\underline{G}_1$	(i)	Brassicaceae
(b)	$\oplus ♀\,K_{(5)}\overset{\frown}{C_{(5)}A_5}\underline{G}_2$	(ii)	Liliaceae
(c)	$\oplus ♀\,\overset{\frown}{P_{(3+3)}A_{3+3}}\underline{G}_{(3)}$	(iii)	Fabaceae
(d)	$\oplus ♀\,K_{2+2}C_4A_{2-4}\underline{G}_{(2)}$	(iv)	Solanaceae

Select the correct answer from the option given below.

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

Ans: (2)

Sol:

$\%\,♀\,K_{(5)}C_{1+2+(2)}A_{(9)+1}\underline{G}_1$ - Fabaceae

$\oplus ♀\,K_{(5)}\overset{\frown}{C_{(5)}A_5}\underline{G}_2$ - Solanaceae

$\oplus ♀\,\overset{\frown}{P_{(3+3)}A_{3+3}}\underline{G}_{(3)}$ - Liliaceae

$\oplus ♀\,K_{2+2}C_4A_{2-4}\underline{G}_{(2)}$ - Brassicaceae

ZOOLOGY

SECTION - A

151. Receptors for sperm binding in mammals are present on :
(1) Zona pellucida
(2) Corona radiata
(3) Vitelline membrane
(4) Perivitelline space

Ans: (1)

Sol. One of the glycoproteins in the zona pellucida, called ZP3, acts as a sperm receptor.

152. Which stage of meiotic prophase shows terminalisation of chiasmata as its distinctive feature?
(1) Pachytene
(2) Leptotene
(3) Zygotene
(4) Diakinesis

Ans: (4)

Sol: During Diakinesis of meiotic Prophase I, the distinctive feature of this stage, terminalisation of chiasmata is seen.

153. The organelles that are included in the endomembrane system are :
(1) Golgi complex, Endoplasmic reticulum, Mitochondria and Lysosomes
(2) Endoplasmic reticulum, Mitochondria, Ribosomes and Lysosomes
(3) Endoplasmic reticulum, Golgi complex, Lysosomes and Vacuoles
(4) Golgi complex, Mitochondria, Ribosomes and Lysosomes

Ans: (3)

Sol: Endomembrane system includes Endoplasmic Reticulum, Golgi complex, Lysosomes and Vacuoles.

154. A specific recognition sequence identified by endonucleases to make cuts at specific positions within the DNA is :
(1) Poly(A) tail sequences
(2) Degenerate primer sequence
(3) Okazaki sequences
(4) Palindromic Nucleotide sequences

Ans: (4)

Sol: Palindromic Nucleotide sequence is specific recognition sequence identified by endonucleases to cut the DNA strands at the specific positions.

155. Select the favourable conditions required for the formation of oxyhaemoglobin at the alveoli.
(1) Low pO_2, low pCO_2, more H^+, higher temperature
(2) High pO_2, low pCO_2, Less H^+, lower temperature
(3) Low pO_2, high pCO_2, more H^+, higher temperature
(4) High pO_2, lhigh pCO_2, Less H^+, lower temperature

Ans: (2)

Sol. High pO_2, low pCO_2, lesser H^+ concentration and lower temperature are all favourable factors for the formation of oxyhaemoglobin at the alveoli.

156. Match the following :

	List - I	List – II
(a)	*Physalia*	(i) Pearl oyster
(b)	*Limulus*	(ii) Portuguese Man of war
(c)	*Ancylostoma*	(iii) Living fossil
(d)	*Pinctada*	(iv) Hook worm

Choose the correct answer from the options given below.

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

Ans: (4)

Sol. *Physalia* - Portuguese man-of-war

Limulus (King crab). - Living fossil

Ancylostoma - (Hookworm)

Pinctada - Pearl oyster

157. Dobson units are used to measure thickness of :
(1) Troposphere
(2) CFCs
(3) Stratosphere
(4) Ozone

Ans: (4)

Sol. The thickness of the ozone in a column of air from the ground to the top of the atmosphere is measured in terms of Dobson units (DU).

158. Which one of the following belongs to the family Muscidae ?
(1) House fly
(2) Fire fly
(3) Grasshopper
(4) Cockroach

Ans: (1)

Sol: House fly belongs to family Muscidae

159. Venereal diseases can spread through:
(a) Using sterile needles
(b) Transfusion of blood from infected person
(c) Infected mother to foetus
(d) Kissing
(e) Inheritance
Choose the correct answer from the options given below.
(1) (a) and (c) only
(2) (a), (b) and (c) only
(3) (b), (c) and (d) only
(4) (b) and (c) only

Ans: (4)

Sol. Venereal disease can spread through transfusion of blood from infected person, infected mother to foetus, etc. Kissing can also transmit a few STIs like CMV (cytomegalovirus), HSV (herpes simplex virus) and syphilis.

Note: Kissing also can transmit a few STIs like CMV, herpes and syphilis.

160. Which is the "Only enzyme" that has "Capability to catalyse Initiation, Elongation and Termination in the process of transcription in prokaryotes
(1) DNase
(2) DNA dependent DNA polymerase
(3) DNA dependent RNA polymerase
(4) DNA Ligase

Ans: (3)

Sol: DNA dependent RNA polymerase of prokaryotes has the ability to initiate, elongate and terminate the process of transcription.

161. Match List-I with List-II.

	List - I	List – II
(a)	Vaults	(i) Entry of sperm through Cervix is blocked
(b)	IUDs	(ii) Removal of Vas deferens
(c)	Vasectomy	(iii) Phagocytosis of sperms within the Uterus
(d)	Tubectomy	(iv) Removal of fallopian tube

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

Ans: (3)

Sol. Vaults – Entry of sperms through cervix is blocked
IUD's – Phagocytosis of sperms within the uterus
Vasectomy – Removal of vas deferens
Tubectomy – Removal of fallopian tube

162. Match List-I with List-II.

	List - I	List – II
(a)	*Aspergillus niger*	(i) Acetic Acid
(b)	*Acetobacter aceti*	(ii) Lactic Acid
(c)	*Clostridium butylicum*	(iii) Citric Acid
(d)	*Lactobacillus*	(iv) Butyric Acid

Choose the correct answer from the options given below.

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

Ans: (2)

Sol: *Aspergillus niger* – Citric acid
Acetobacter aceti – Acetic acid
Clostridium butylicum – Butyric acid
Lactobacillus – Lactic acid

163. Identify the incorrect pair.
(1) Drugs - Ricin
(2) Alkaloids - Codeine
(3) Toxin - Abrin
(4) Lectins - Concanavalin A

Ans: (1)

Sol: Ricin is toxin but not drug

164. The partial pressures (in mm Hg) of oxygen (O_2) and carbon dioxide (CO_2) at alveoli (the site of diffusion) are:
(1) $pO_2 = 159$ and $pCO_2 = 0.3$
(2) $pO_2 = 104$ and $pCO_2 = 40$
(3) $pO_2 = 40$ and $pCO_2 = 45$
(4) $pO_2 = 95$ and $pCO_2 = 40$

Ans: (2)

Sol. In the alveolar air, the partial pressures of oxygen (pO_2) is 104 mmHg and that of carbon dioxide (pCO_2) is 40 mmHg.

165. Sphincter of Oddi is present at :
(1) Junction of jejunum and duodenum
(2) Ileo-caecal junction
(3) Junction of hepato-pancreatic duct and duodenum
(4) Gastro-oesophageal junction

Ans: (3)

Sol. Sphincter of Oddi guards the opening of hepatopancreatic duct into duodenum.

166. Which of the following RNAs is not required for the synthesis of protein?
(1) siRNA
(2) mRNA
(3) tRNA
(4) rRNA

Ans: (1)

Sol: siRNA (smaller interference RNA) is involved in preventing the translation of mRNA to form protein. It is associated with pest resistance in plants by RNA interference.

167. Succus entericus is referred to as :
(1) Chyme
(2) Pancreatic juice
(3) Intestinal juice
(4) Gastric juice

Ans: (3)

Sol. Succus entericus is also called intestinal juice. The secretions of the brush border cells of the mucosa along with the secretions of the goblet cells constitute the intestinal juice.

168. Persons with 'AB' blood group are called as "Universal recipients". This is due to :
(1) Absence of antibodies, anti-A and anti-B, in plasma
(2) Absence of antigens A and B on the surface of RBCs
(3) Absence of antigens A and B in plasma
(4) Presence of antibodies, anti-A and anti-B, on RBCs

Ans: (1)

Sol. Persons with 'AB' group can accept blood from persons with AB as well as the other groups of Blood because they do not have anti A and anti B antibodies in their blood plasma.

169. Which of the following characteristics is incorrect with respect to cockroach?
(1) 10^{th} abdominal segment in both sexes, bears a pair of anal cerci.
(2) A ring of gastric caeca is present at the junction of midgut and hind gut.
(3) Hypopharynx lies within the cavity enclosed by the mouth parts.
(4) In females, 7^{th}-9^{th} sterna together form a genital pouch.

Ans: (2)

Sol. A ring of 6-8 blind tubules called hepatic or gastric caeca is present at the junction of foregut and midgut, which secrete digestive juice.

170. Which of the following statements wrongly represents the nature of smooth muscle?
(1) These muscles are present in the wall of blood vessels
(2) These muscle have no striations
(3) They are involuntary muscles
(4) Communication among the cells is performed by intercalated discs

Ans: (4)

Sol. Communication among the cells is performed by intercalated discs in cardiac muscle. Intercalated discs are absent in smooth muscle.

171. Which of the following organisms bears hollow and pneumatic long bones?
(1) *Ornithorhynchus*
(2) *Neophron*
(3) *Hemidactylus*
(4) *Macropus*

Ans: (2)

Sol. In Aves (e.g., Neophron), endoskeleton is fully ossified (bony) and the long bones are hollow with air cavities (pneumatic).

172. If Adenine makes 30% of the DNA molecule, what will be the percentage of Thymine, Guanine and Cytosine in it?
(1) T : 20 ; G : 25 ; C : 25
(2) T : 20 ; G : 30 ; C : 20
(3) T : 20 ; G : 20 ; C : 30
(4) T : 30 ; G : 20 ; C : 20

Ans: (4)

Sol: Thymine – 30%, Guanine – 20%, Cytosine – 20% (Chargaffs nitrogen base pairing rule which states that amount of Adenine is equal to Thymine and Guanine is equal to Cytosine.

173. Which enzyme is responsible for the conversion of inactive fibrinogens to fibrins ?
(1) Thrombokinase
(2) Thrombin
(3) Renin
(4) Epinephrine

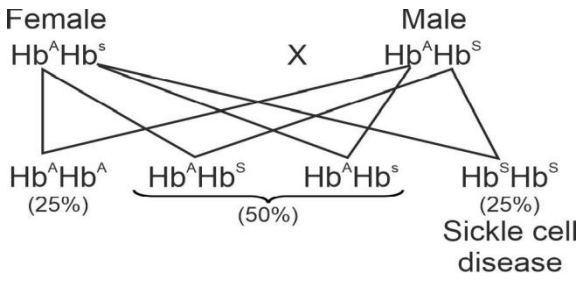
Ans: (2)

Sol. The enzyme thrombin converts inactive fibrinogens in the plasma into fibrins.

174. In a cross between a male and female, both heterozygous for sickle cell anaemia gene, what percentage of the progeny will be diseased ?
(1) 100%
(2) 50%
(3) 75%
(4) 25%

Ans: (4)

Sol.



175. Which one of the following is an example of Hormone releasing IUD ?
(1) Multiload 375
(2) Cu T
(3) LNG 20
(4) Cu 7

Ans: (3)

Sol. LNG 20 is a hormone-releasing intrauterine device. It releases 20 micrograms of levonorgestrel (synthetic progestogen) per day. Progestasert is also a hormone-releasing IUD. Cu T, Cu 7 and Multiload 375 are hormone-releasing IUDs.

176. The centriole undergoes duplication during :
(1) G_2 phase
(2) S-phase
(3) Prophase
(4) Metaphase

Ans: (2)

Sol: Centrioles duplicate in S phase of cell cycle.

177. Chronic autoimmune disorder affecting neuro muscular junction leading to fatigue, weakening and paralysis of skeletal muscle is called as
(1) Gout
(2) Arthritis
(3) Muscular dystrophy
(4) Myasthenia gravis

Ans: (4)

Sol. Myasthenia gravis is an autoimmune disorder affecting neuromuscular junction leading to fatigue, weakening and paralysis of skeletal muscle.

178. For effective treatment of the disease, early diagnosis and understanding its pathophysiology is very important. Which of the following molecular diagnostic techniques is very useful for early detection ?
(1) Hybridization Technique
(2) Western Blotting Technique
(3) Southern Blotting Technique
(4) ELISA Technique

Ans: (4)

Sol. Recombinant DNA technology, Polymerase Chain Reaction (PCR) and Enzyme Linked Immunosorbent Assay (ELISA) are some of the techniques that serve the purpose of early diagnosis.

179. Read the following statements.
(a) Metagenesis is observed in Helminths.
(b) Echinoderms are triploblastic and coelomate animals.
(c) Round worms have organ-system level of body organization.
(d) Comb plates present in ctenophores help in digestion.
(e) Water vascular system is characteristic of Echinoderms.

Choose the correct answer from the options given below.
(1) (b), (c) and (e) are correct
(2) (c), (d) and (e) are correct
(3) (a), (b) and (c) are correct
(4) (a), (d) and (e) are correct

Ans: (1)

Sol. Metagenesis is exhibited by cnidarians (not helminths). Comb plates of ctenophores help in locomotion (not digestion).

180. Erythropoietin hormone which stimulates R.B.C. formation is produced by :
(1) Juxtaglomerular cells of the kidney
(2) Alpha cells of pancreas
(3) The cells of rostral adenohypophysis
(4) The cells of bone marrow

Ans: (1)

Sol. The juxtaglomerular cells of kidney produce a peptide hormone called erythropoietin which stimulates erythropoiesis (formation of RBC).

181. With regard to insulin choose correct options.
(a) C-peptide is not present in mature insulin.
(b) The insulin produced by rDNA technology has C-peptide.
(c) The pro-insulin has C-peptide.
(d) A-peptide and B-peptide of insulin are interconnected by disulphide bridges.

Choose the correct answer from the options given below.
(1) (a) and (d) only
(2) (b) and (d) only
(3) (b) and (c) only
(4) (a), (c) and (d) only

Ans: (4)

Sol. C peptide present in proinsulin is removed during its maturation. The insulin produced by rDNA technology has only A peptide and B peptide.

182. Match List - I with List - II.

	List - I	List – II
(a)	Metamerism	(i) Coelenterata
(b)	Canal system	(ii) Ctenophora
(c)	Comb plates	(iii) Annelida
(d)	Cnidoblasts	(iv) Porifera

Choose the correct answer from the options given below.

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

Ans: (4)

Sol. Metamerism – Annelida
Canal system – Porifera
Comb plates – Ctenophora
Cnidoblasts - Coelenterata

183. Which of the following is not an objective of Biofortification in crops ?

(1) Improve micronutrient and mineral content

(2) Improve protein content

(3) Improve resistance to diseases

(4) Improve vitamin content

Ans: (3)

Sol: Improving resistance to disease in crop is not an objective of Biofortification of crops.

184. During the process of gene amplification using PCR, if very high temperature is not maintained in the beginning, then which of the following steps of PCR will be affected first ?

(1) Ligation

(2) Annealing

(3) Extension

(4) Denaturation

Ans: (4)

Sol: During PCR process, if high temperature is not maintained, the initial step of the process known as denaturation of DNA is not done.

185. The fruit fly has 8 chromosomes (2n) in each cell. During interphase of Mitosis if the number of chromosomes at G_1 phase is 8, what would be the number of chromosomes after S phase ?

(1) 32

(2) 8

(3) 16

(4) 4

Ans: (2)

Sol: During mitotic cell cycle if the chromosome number in G_1 phase is 8, it remains same till Metaphase. Hence, even after S phase same chromosome number 8 is maintained in the cell of fruit fly.

SECTION - B (BIOLOGY : ZOOLOGY)

186. Assertion-(A) : A person goes to high altitude and experiences 'altitude sickness' with symptoms like breathing difficulty and heart palpitations.

Reason-(R) : Due to low atmospheric pressure at high altitude, the body does not get sufficient oxygen.

In the light of the above statements, choose the correct answer from the options given below.

(1) (A) is false but (R) is true

(2) Both (A) and (R) are true and (R) is the correct explanation of (A)

(3) Both (A) and (R) are true and (R) is not the correct explanation of (A)

(4) (A) is true but (R) is false

Ans: (2)

Sol. A person goes to high altitude and experiences altitude sickness with symptoms like breathing difficulty and heart palpitations because in the low atmospheric pressure of high altitudes, the body does not get enough oxygen.

187. Statement-I : The codon 'AUG' codes for methionine and phenylalanine.

Statement-II : 'AAA' and 'AAG' both codons code for the amino acid lysine.

In the light of the above statements, choose the correct answer from the options given below.

(1) Statement-I is incorrect but Statement-II is true

(2) Both Statement-I and Statement-I are true

(3) Both Statement-I and Statement-II are false

(4) Statement-I is correct but Statement-II is false

Ans: (1)

Sol: AUG codes for only methionine but not tryptophan. (A given codon codes for only one amino acid but not more than one amino acids.). AAG and AAA are the two codons for the amino acid Lysine.

188. Following are the statements about prostomium of earthworm.

(a) It serves as a covering for mouth.

(b) It helps to open cracks in the soil into which it can crawl.

(c) It is one of the sensory structures.

(d) It is the first body segment.

Choose the correct answer from the options given below.

(1) (b) and (c) are correct

(2) (a), (b) and (c) are correct

(3) (a), (b) and (d) are correct

(4) (a), (b), (c) and (d) are correct.

Ans: (2)

Sol. Anterior end consists of the mouth and the prostomium, a lobe which serves as a covering for the mouth and as a wedge to force open cracks in the soil into which the earthworm may crawl. The prostomium is sensory in function. The first body segment is called the peristomium (buccal segment) which contains the mouth.

189. Which of the following is not a step in Multiple Ovulation Embryo Transfer Technology (MOET) ?

(1) Fertilized eggs are transferred to surrogate mothers at 8-32 cell stage

(2) Cow is administered hormone having LH like activity for super ovulation

(3) Cow yields about 6-8 eggs at a time

(4) Cow is fertilized by artificial insemination

Ans: (2)

Sol. In MOET a cow is administered hormones, with FSH-like activity, to induce follicular maturation and super ovulation

190. Identify the types of cell junctions that help to stop the leakage of the substances across a tissue and facilitation of communication with neighbouring cells via rapid transfer of ions and molecules.

(1) Adhering junctions and Gap junctions, respectively.

(2) Gap junctions and Adhering junctions, respectively.

(3) Tight junctions and Gap junctions, respectively.

(4) Adhering junctions and Tight junctions, respectively.

Ans: (3)

Sol. Tight junctions help to stop substances from leaking across a tissue. Gap junctions facilitate the cells to communicate with each other by connecting the cytoplasm of adjoining cells, for rapid transfer of ions, small molecules and sometimes big molecules.

191. Which of the following secretes the hormone, relaxin, during the later phase of pregnancy ?

(1) Uterus

(2) Graafian follicle

(3) Corpus luteum

(4) Foetus

Ans: (3)

Sol. Relaxin is produced first by the corpus luteum of the ovary and later by the placenta. It helps in parturition as it increases the flexibility of the pubic symphysis and helps dilate the uterine cervix.

192. During muscular contraction which of the following events occur ?

(a) 'H' zone disappears

(b) 'A' band widens

(c) 'I' band reduces in width

(d) Myosin hydrolyzes ATP, releasing the ADP and Pi

(e) Z-lines attached to actins are pulled inwards

Choose the correct answer from the options given below.

(1) (b), (d), (e), (a) only

(2) (a), (c), (d), (e) only

(3) (a), (b), (c), (d) only

(4) (b), (c), (d), (e) only

Ans: (2)

Sol. During muscle contraction, the cross bridges pull the thin filaments towards the centre of A band. The Z line attached to the actins are also pulled inwards thereby causing a shortening of the sarcomere. The I bands get reduced, whereas the 'A' bands retain the length. Myosin head acts as ATPase.

193. The Adenosine deaminase deficiency results into :

(1) Addison's disease

(2) Dysfunction of Immune system

(3) Parkinson's disease

(4) Digestive disorder

Ans: (2)

Sol. Adenosine deaminase (ADA) is crucial for the immune system to function. Its deficiency causes severe combined immunodeficiency.

194. Match List - I with List - II

	List - I	List – II
(a)	Adaptive radiation	(i) Selection of resistant varieties due to excessive use of herbicides and pesticides
(b)	Convergent evolution	(ii) Bones of forelimbs in Man and Whale
(c)	Divergent evolution	(iii) Wings of Butterfly and Bird
(d)	Evolution by anthropogenic action	(iv) Darwin Finches

Choose the correct answer from the options given below.

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

Ans: (2)

Sol.

Adaptive Radiation	-	Darwin Finches
Convergent evolution	-	Wings of Butterfly and Bird
Divergent evolution	-	Bone of forelimbs in Man and Whale
Evolution by anthropogenic action	-	Selection of resistant varieties due to excessive use of herbicides and pesticides

195. Which of these is not an important component of initiation of parturition in humans ?

(1) Release of Prolactin

(2) Increase in estrogen and progesterone ratio

(3) Synthesis of prostaglandins

(4) Release of Oxytocin

Ans: (1)

Sol. Release of Prolactin is not an important component of initiation of parturition in humans.

Towards the end of pregnancy, the increasing ratio of estrogen to progesterone promotes uterine contractions. Progesterone no longer inhibits them. High levels of estrogens increase the number oxytocin receptors and gap junctions in the myometrium. Prostaglandins induce the softening of uterine cervix and enhance uterine contractile strength.