150. The DNA present in chloroplast is:

(1) Linear, double stranded

(2) Circular, double stranded

(3) Linear, single stranded

(4) Circular, single stranded

Correct Answer: (2) Circular, double stranded

Solution:

The DNA present in chloroplasts is circular and double-stranded, similar to the DNA found in prokaryotes. This is one of the key features of plastids, as they are thought to have evolved from endosymbiotic bacteria.

Thus, the correct answer is option (2).

Quick Tip

Chloroplast DNA is circular and double-stranded, reflecting its prokaryotic origin.

---

151. Match List I with List II:

List I	List II
A. Common cold	I. Plasmodium
B. Haemozoin	II. Typhoid
C. Widal test	III. Rhinoviruses
D. Allergy	IV. Dust mites

Choose the correct answer from the options given below:

(1) A-II, B-IV, C-III, D-I

(2) A-I, B-III, C-II, D-IV

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

(4) A-IV, B-II, C-III, D-I

Correct Answer: (3) A-III, B-I, C-II, D-IV

Solution: The common cold is caused by rhinoviruses (A-III), which are a group of viruses known for their role in upper respiratory infections. Haemozoin is a byproduct of

hemoglobin processing by Plasmodium, the parasite responsible for malaria (B-I). The Widal test is used for diagnosing typhoid fever, caused by the bacterium Salmonella typhi (C-II). Allergies related to dust mites involve immune reactions to proteins in the waste products of dust mites (D-IV). This matching highlights important clinical diagnostics and etiological agents in infectious diseases and allergic reactions.

Quick Tip

Understanding the causative agents of diseases and their diagnostic tests is crucial for effective disease management and prevention.

---

152. Match List I with List II:

List I	List II
A. Cocaine	I. Effective sedative in surgery
B. Heroin	II. Cannabis sativa
C. Morphine	III. Erythroxylum
D. Marijuana	IV. Papaver somniferum

Choose the correct answer from the options given below:

(1) A-IV, B-III, C-I, D-II

(2) A-I, B-III, C-II, D-IV

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

(4) A-III, B-IV, C-I, D-II

Correct Answer: (4) A-III, B-IV, C-I, D-II

Solution: Cocaine is derived from the Erythroxylum coca plant (A-III), heroin is processed from morphine, which comes from Papaver somniferum, the opium poppy (B-IV), morphine is also derived from Papaver somniferum (C-I), and marijuana comes from Cannabis sativa (D-II). This question tests knowledge of the source plants of various drugs, important for understanding their effects and regulation.

Quick Tip

Knowledge of the origins and effects of psychoactive substances can aid in their proper regulation and in public health education.

153. Match List I with List II:

List I	List II
A. Fibrous joints	I. Adjacent vertebrae, limited movement
B. Cartilaginous joints	II. Humerus and Pectoral girdle, rotational movement
C. Hinge joints	III. Skull, don't allow any movement
D. Ball and socket joints	IV. Knee, help in locomotion

Choose the correct answer from the options given below:

(1) A-IV, B-II, C-III, D-I

(2) A-I, B-III, C-II, D-IV

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

(4) A-III, B-I, C-IV, D-II

Correct Answer: (4) A-III, B-I, C-IV, D-II

Solution: Fibrous joints, such as those in the skull, allow no movement (A-III). Cartilaginous joints, like those between adjacent vertebrae, permit limited movement (B-I). Hinge joints, such as the knee, allow movement primarily in one plane (C-IV). Ball and socket joints, found in the shoulder (humerus and pectoral girdle), allow rotational and other movements (D-II). This knowledge is crucial in fields like orthopedics and physical therapy.

Quick Tip

Understanding the types of joints and their movements can aid in diagnosing and treating musculoskeletal disorders.

---

154. Which of the following are Autoimmune disorders?

A. Myasthenia gravis

B. Rheumatoid arthritis

C. Gout

D. Muscular dystrophy

E. Systemic Lupus Erythematosus (SLE)

Choose the most appropriate answer from the options given below:

(1) A, B & D only

(2) A, B & E only

(3) B, C & E only

(4) C, D & E only

Correct Answer: (2) A, B & E only

Solution: Autoimmune disorders are conditions where the immune system mistakenly attacks the body's own tissues. Myasthenia gravis (A) involves antibodies that block or destroy muscle receptor cells, Rheumatoid arthritis (B) is characterized by immune-mediated destruction of joint linings, and Systemic Lupus Erythematosus (E) affects multiple organs with widespread inflammation and tissue damage. Gout and Muscular dystrophy, however, are not autoimmune; gout is a metabolic disorder and muscular dystrophy is a genetic disorder.

Quick Tip

Recognition of autoimmune mechanisms can aid in the development of targeted therapies that modulate the immune response.

---

155. Which of the following is not a component of the Fallopian tube?

(1) Uterine fundus

(2) Isthmus

(3) Infundibulum

(4) Ampulla

Correct Answer: (1) Uterine fundus

Solution: The uterine fundus is not a component of the Fallopian tube (1); it is the top part of the uterus, located above the openings of the Fallopian tubes. The Fallopian tubes, responsible for transporting ova from the ovary to the uterus, include the infundibulum, isthmus, and ampulla, but not the uterine fundus. Understanding the anatomy of the female reproductive system is crucial in fields such as gynecology and reproductive biology.

Quick Tip

Knowledge of reproductive anatomy is essential for diagnosing and treating reproductive health issues.

156. The flippers of the Penguins and Dolphins are an example of:

(1) Adaptive radiation

(2) Natural selection

(3) Convergent evolution

(4) Divergent evolution

Correct Answer: (3) Convergent evolution

Solution: The flippers of penguins and dolphins are a classic example of convergent evolution, where different species develop similar physical features independently because they live in similar environments or have similar ecological roles. Penguins are birds and dolphins are mammals; their evolutionary paths are very different, yet both have developed flippers as adaptations to an aquatic lifestyle. This demonstrates how similar selective pressures can lead to similar adaptations in diverse groups of organisms.

Quick Tip

Convergent evolution illustrates how environmental pressures can guide the evolutionary path leading to similar adaptations in unrelated species.

---

157. Match List I with List II:

List I	List II
A. α–I antitrypsin	I. Cotton bollworm
B. Cry IAb	II. ADA deficiency
C. Cry IAc	III. Emphysema
D. Enzyme replacement therapy	IV. Corn borer

Choose the correct answer from the options given below:

(1) A-II, B-I, C-IV, D-III

(2) A-III, B-I, C-II, D-IV

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

(4) A-II, B-IV, C-I, D-III

Correct Answer: (3) A-III, B-IV, C-I, D-II

Solution: α–I antitrypsin is a protein that protects tissues from enzymes of inflammatory

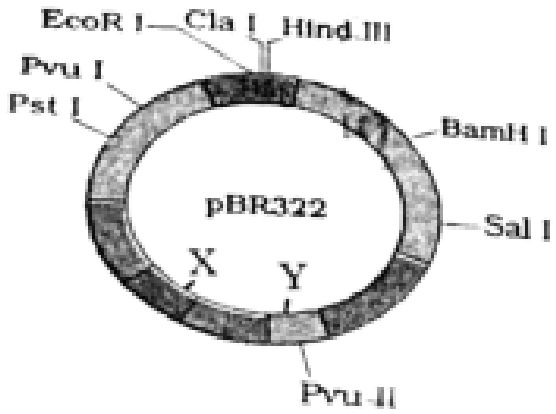
cells, especially in the lungs; deficiency can lead to emphysema (A-III). Cry IAb and Cry IAc are insecticidal proteins produced by Bacillus thuringiensis; Cry IAb targets the corn borer (B-IV) and Cry IAc targets the cotton bollworm (C-I). Enzyme replacement therapy is used to treat various deficiencies, such as ADA deficiency (D-II). This question tests knowledge of biotechnological applications and their impact on medicine and agriculture.

Quick Tip

Biotechnology harnesses cellular and biomolecular processes to develop technologies and products that help improve our lives and the health of our planet.

---

158. The following diagram showing restriction sites in E. coli cloning vector pBR322. Find the role of 'X' and 'Y' genes:



(1) The gene 'X' is responsible for resistance to antibiotics and 'Y' for protein involved in the replication of Plasmid.

(2) The gene 'X' is responsible for controlling the copy number of the linked DNA and 'Y' for protein involved in the replication of Plasmid.

(3) The gene 'X' is for protein involved in replication of Plasmid and 'Y' for resistance to antibiotics.

(4) Gene 'X' is responsible for recognitions sites and 'Y' is responsible for antibiotic resistance.

Correct Answer: (2) The gene 'X' is responsible for controlling the copy number of the linked DNA and 'Y' for protein involved in the replication of Plasmid.

Solution: In the pBR322 vector, gene 'X' typically refers to elements like the rop gene that

helps control the plasmid's copy number within the host cell, whereas gene 'Y' could refer to a gene like the rep gene involved in the initiation of plasmid DNA replication. This setup ensures that the plasmid can maintain itself efficiently within bacterial cells, crucial for its use in cloning and genetic engineering.

Quick Tip

Understanding plasmid functions such as copy number control and replication is critical in biotechnology and genetic engineering.

---

159. Given below are two statements: One is labelled as Assertion (A) and the other is labelled as Reason (R): Assertion (A): Breast-feeding during initial period of infant growth is recommended by doctors for bringing a healthy baby.

Reason (R): Colostrum contains several antibodies absolutely essential to develop resistance for the new born baby.

In the light of the above statements, choose the most appropriate answer from the options given below: (1) Both A and R are correct and R is the correct explanation of A

(2) Both A and R are correct but R is NOT the correct explanation of A

(3) A is correct but R is not correct

(4) A is not correct but R is correct

Correct Answer: (1) Both A and R are correct and R is the correct explanation of A

Solution: Both statements are correct and Reason (R) is the correct explanation for Assertion (A). Breastfeeding is highly recommended as it not only provides complete nutrition but also passes essential antibodies found in colostrum, which protect the newborn against various diseases, boosting their immune system early in life.

Quick Tip

The benefits of breastfeeding extend beyond basic nutrition, including enhanced immunity and improved health outcomes for babies.

---

160. The "Ti plasmid" of Agrobacterium tumefaciens stands for (1) Tumour inhibiting

plasmid

(2) Tumor independent plasmid

(3) Tumor inducing plasmid

(4) Temperature independent plasmid

Correct Answer: (3) Tumor inducing plasmid

Solution: The ”Ti plasmid” in Agrobacterium tumefaciens stands for ”tumor inducing” plasmid. This plasmid is responsible for transferring part of its DNA to plant cells, leading to the formation of tumors or galls. This mechanism has been harnessed in genetic engineering to introduce new genes into plants.

Quick Tip

The manipulation of the Ti plasmid has significant applications in biotechnology, especially in creating genetically modified plants.

---

161. Match List I with List II

List I	List II
A. Pleurobrachia	I. Mollusca
B. Radula	II. Ctenophora
C. Stomochord	III. Osteichthyes
D. Air bladder	IV. Hemichordata

Choose the correct answer from the options given below:

(1) A-IV, B-II, C-III, D-I

(2) A-II, B-I, C-IV, D-III

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

(4) A-IV, B-III, C-II, D-I

Correct Answer: (2) A-II, B-I, C-IV, D-III

Solution: Pleurobrachia belongs to the phylum Ctenophora, known for their distinctive comb-like cilia used for movement (A-II). The radula is a structure found in mollusks, used for feeding by scraping or cutting food (B-I). The stomochord is a structure in Hemichordata, often confused with chordates due to its name but distinct in function and form (C-IV). The

air bladder, or swim bladder, is a gas-filled organ that helps bony fish (Osteichthyes) maintain buoyancy (D-III). This question tests knowledge of biological classification and the anatomical features of different animal phyla.

Quick Tip

Familiarity with the unique structures of animal phyla aids in understanding evolutionary relationships and adaptations.

---

162. Given below are some stages of human evolution. Arrange them in correct sequence. (Past to Recent)

- A. Homo habilis
- B. Homo sapiens
- C. Homo neanderthalensis
- D. Homo erectus

Choose the correct sequence of human evolution from the options given below:
(1) D-A-C-B
(2) B-A-D-C
(3) C-B-D-A
(4) A-D-C-B
Correct Answer: (4) A-D-C-B
Solution: The correct chronological sequence of human evolution, from earliest to most recent, is: Homo habilis (A) as one of the earliest known species using tools, Homo erectus (D) known for significant brain enlargement and use of fire, Homo neanderthalensis (C) known for robust build and adaptability to cold climates, and Homo sapiens (B) which represents modern humans, known for advanced tools and complex social structures.

Quick Tip

Studying human evolution provides insights into our biological history and the evolutionary processes that influence our current form and behaviors.

163. Which of the following is not a steroid hormone?

(1) Cortisol

(2) Testosterone

(3) Progesterone

(4) Glucagon

Correct Answer: (4) Glucagon

Solution: Glucagon is a peptide hormone, not a steroid hormone. It is produced by the alpha cells of the pancreas and plays a critical role in regulating blood glucose levels by promoting the breakdown of glycogen to glucose in the liver. Steroid hormones, like cortisol, testosterone, and progesterone, are derived from cholesterol and are involved in a range of physiological processes from stress response to reproductive functions. Understanding the differences between peptide and steroid hormones is fundamental in endocrinology, emphasizing their distinct synthesis pathways and mechanisms of action.

Quick Tip

Steroid hormones can cross cell membranes due to their lipophilic nature, binding to intracellular receptors, unlike peptide hormones that bind to surface receptors.

---

164. In both sexes of cockroach, a pair of jointed filamentous structures called anal cerci are present on:

(1) 5th segment

(2) 10th segment

(3) 8th and 9th segment

(4) 11th segment

Correct Answer: (2) 10th segment

Solution: In cockroaches, the anal cerci are located at the 10th segment of the abdomen. These structures are sensitive to air currents, helping the cockroach detect movements around it, which is crucial for its survival as it allows the cockroach to respond quickly to potential threats. This anatomical feature is an example of how morphology can be linked to

behavioral adaptations in insects.

Quick Tip

Anal cerci are used in various insects not only for sensing but also in mating rituals, showcasing the diverse functions of similar structures.

---

165. Which one of the following factors will not affect the Hardy-Weinberg equilibrium?

(1) Genetic recombination

(2) Genetic drift

(3) Gene migration

(4) Constant gene pool

Correct Answer: (4) Constant gene pool

Solution: The Hardy-Weinberg equilibrium assumes no change in allele frequencies due to factors like migration, mutation, or selection. A constant gene pool (4), which implies no change in allele frequencies, aligns perfectly with the Hardy-Weinberg conditions and therefore does not disrupt the equilibrium. This principle is a cornerstone of population genetics, providing a foundation for understanding genetic variation and the effects of evolutionary processes.

Quick Tip

Understanding the Hardy-Weinberg equilibrium helps in studying population genetics and the factors that cause evolutionary change.

---

166. Match List I with List II:

List I	List II
A. Pons	I. Provides additional space for Neurons, regulates posture and balance.
B. Hypothalamus	II. Controls respiration and gastric secretions.
C. Medulla	III. Connects different regions of the brain.
D. Cerebellum	IV. Neuro secretory cells

Choose the correct answer from the options given below:

(1) A-II, B-III, C-I, D-IV

(2) A-III, B-IV, C-II, D-I

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

(4) A-II, B-I, C-III, D-IV

Correct Answer: (2) A-III, B-IV, C-II, D-I

Solution: The pons acts as a bridge connecting different regions of the brain, facilitating communication between them (A-III). The hypothalamus contains neurosecretory cells that are crucial for hormone production and regulation of the autonomic nervous system (B-IV). The medulla controls essential autonomic functions such as respiration and digestion (C-II). The cerebellum is critical for motor control, including the regulation of posture and balance (D-I). This question tests knowledge of the functions and locations of major brain structures, important for understanding neural control and integration.

Quick Tip

The central nervous system's complexity is organized functionally and anatomically to optimize neural processing and bodily control.

---

167. Match List I with List II:

List I	List II
A. Down's syndrome	I. 11^{th} chromosome
B. α-Thalassemia	II. X chromosome
C. β-Thalassemia	III. 21^{st} chromosome
D. Klinefelter's syndrome	IV. 16^{th} chromosome

(1) A-I, B-II, C-III, D-IV

(2) A-II, B-III, C-IV, D-I

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

(4) A-IV, B-I, C-II, D-III

Correct Answer: (3) A-III, B-IV, C-I, D-II

Solution: Down's syndrome is associated with an extra copy of the 21st chromosome (A-III), α-Thalassemia is linked to defects on the 16th chromosome (B-IV), β-Thalassemia involves the 11th chromosome (C-I), and Klinefelter's syndrome is characterized by an extra 'X' chromosome (D-II). This question helps in understanding genetic disorders and their chromosomal bases.

Quick Tip

Accurate knowledge of genetic disorders and their chromosomal links is crucial for diagnosis and genetic counseling.

---

168. Which one is the correct product of DNA dependent RNA polymerase to the given template?

3' TACATGGCAAATATCCATTCA 5'

(1) 5' AUGUACCGUUUAUAGGUAAGU 3'

(2) 5' AUGUAAAGUUUAUAGGUAAGU 3'

(3) 5' AUGUACCGUUUAUAGGGAAGU 3'

(4) 5' ATGTACCGTTTATAGGTAAGT 3'

Correct Answer: (1) 5' AUGUACCGUUUAUAGGUAAGU 3'

Solution: The correct RNA sequence is synthesized by RNA polymerase which reads the DNA template strand from 3' to 5' and synthesizes RNA from 5' to 3'. The RNA sequence matching the DNA template 'TACATGGCAAATATCCATTCA' would be 'AUGUACCGUUUAUAGGUAAGU', where each DNA base is transcribed to its complementary RNA base (A to U, T to A, C to G, G to C).

Quick Tip

Understanding transcription fidelity is crucial for techniques in molecular biology, such as RNA synthesis and gene expression studies.

---

169. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R):

Assertion (A): FSH acts upon ovarian follicles in female and Leydig cells in male.

Reason (R): Growing ovarian follicles secrete estrogen in female while interstitial cells secrete androgen in male human being.

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

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

(2) Both A and R are true but R is NOT the correct explanation of A

(3) A is true but R is false

(4) A is false but R is true

Correct Answer: (4) A is false but R is true

Solution: Assertion (A) is false because FSH acts on Sertoli cells in males, not Leydig cells. Leydig cells are stimulated by LH, not FSH. Reason (R) is true as it correctly states the hormones secreted by the ovarian follicles and interstitial cells in females and males respectively.

Quick Tip

Understanding the specific roles of FSH and LH in the reproductive systems of both genders is crucial for studies in endocrinology and reproductive health.

---

170. Which of the following is not a natural/traditional contraceptive method? (1) Coitus interruptus

(2) Periodic abstinence

(3) Lactational amenorrhea

(4) Vaults

Correct Answer: (4) Vaults

Solution: Vaults, or cervical caps, are not traditional methods; they are barrier methods of contraception that involve a device placed over the cervix to prevent sperm from entering the uterus. The other options listed are considered natural or traditional methods, relying on behavior rather than devices.

Quick Tip

Understanding the range of contraceptive methods available can aid individuals in choosing the most appropriate method for their needs.

---

171. Match List I with List II

List I	List II
A. Non-medicated IUD	I. Multiload 375
B. Copper releasing IUD	II. Progestogens
C. Hormone releasing IUD	III. Lippes loop
D. Implants	IV. LNG-20

Choose the correct answer from the options given below:

(1) A-III, B-I, C-II, D-IV

(2) A-I, B-III, C-IV, D-II

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

(4) A-III, B-I, C-IV, D-II

Correct Answer: (4) A-III, B-I, C-IV, D-II

Solution: The correct associations of IUD types and implants are as follows: - Non-medicated IUDs like the Lippes loop (A-III) are simple devices that don't release any hormones or copper. - Copper releasing IUDs, such as Multiload 375 (B-I), release copper to enhance contraceptive effectiveness. - Hormone releasing IUDs, such as LNG-20 (C-IV), release the hormone levonorgestrel to help prevent pregnancy. - Implants like those releasing progestogens (D-II) are subdermal devices that provide long-lasting contraception. These devices demonstrate the variety of contraceptive technologies available and their mechanisms of action.

Conclusion: The correct answer is (4) A-III, B-I, C-IV, D-II.

Quick Tip

Choosing the right contraceptive method involves considering both the mechanism of action and individual health needs.

---

172. Consider the following statements:

A. Annelids are true coelomates

B. Poriferans are pseudocoelomates

C. Aschelminthes are acoelomates

D. Platyhelminthes are pseudocoelomates

Choose the correct answer from the options given below:

(1) B only

(2) A only

(3) C only

(4) D only

Correct Answer: (2) A only

Solution: Annelids are classified as true coelomates, meaning they have a body cavity fully lined with mesoderm (A). - Poriferans do not possess any body cavity and thus cannot be considered pseudocoelomates (B is false). - Aschelminthes are pseudocoelomates, not acoelomates (C is false). - Platyhelminthes are acoelomates, lacking a body cavity (D is false). Understanding these distinctions is important for categorizing and studying various animal groups.

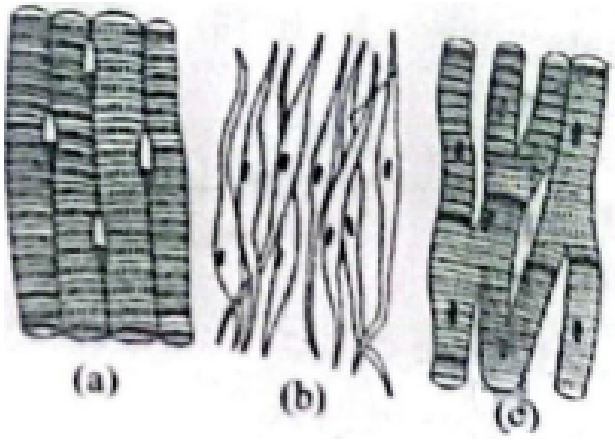
Conclusion: The correct answer is (2) A only.

Quick Tip

Accurate classification based on body cavity type is fundamental in understanding animal phylogeny and evolutionary relationships.

---

173. Three types of muscles are given as a, b, and c. Identify the correct matching pair along with their location in the human body:



Name of muscle/location

(1) (a) Smooth - Toes, (b) Skeletal – Legs, (c) Cardiac – Heart

(2) (a) Skeletal - Triceps, (b) Smooth – Stomach, (c) Cardiac – Heart

(3) (a) Skeletal - Biceps, (b) Involuntary – Intestine, (c) Smooth – Heart

(4) (a) Involuntary – Nose tip, (b) Skeletal – Bone, (c) Cardiac – Heart

Correct Answer: (2) (a) Skeletal - Triceps, (b) Smooth – Stomach, (c) Cardiac – Heart

Solution: The correct matching of muscle types to their locations in the human body is as follows: - (a) Skeletal muscles like the triceps are located in the arms, enabling voluntary movement. - (b) Smooth muscles are found in organs such as the stomach, where they help in involuntary functions like digestion. - (c) Cardiac muscle is found only in the heart, where it is responsible for the contraction and pumping of blood. This knowledge is essential for understanding the function and role of muscle tissues in human physiology.

Conclusion: The correct answer is (2) (a) Skeletal - Triceps, (b) Smooth – Stomach, (c) Cardiac – Heart.

Quick Tip

Knowing the function and location of different muscle types helps in understanding their roles in health and disease.

---

174. Following are the stages of the pathway for conduction of an action potential through the heart:

A. AV bundle

B. Purkinje fibres

C. AV node

D. Bundle branches

E. SA node

Choose the correct sequence of the pathway from the options given below:

(1) E-C-A-D-B

(2) A-E-C-B-D

(3) B-D-E-C-A

(4) E-A-D-B-C

Correct Answer: (1) E-C-A-D-B

Solution: The correct sequence for the conduction of an action potential through the heart begins at the sinoatrial (SA) node (E), the natural pacemaker of the heart. The electrical impulse travels from the SA node to the atrioventricular (AV) node (C), then through the AV

bundle (A), down the bundle branches (D), and finally to the Purkinje fibers (B), which deliver the impulse to the ventricular muscle for contraction. This orderly conduction system ensures synchronized heartbeats and effective blood circulation.

Conclusion: The correct answer is (1) E-C-A-D-B.

Quick Tip

Understanding the conduction pathway of the heart is vital for diagnosing and treating arrhythmias and other cardiac disorders.

---

175. Match List I with List II:

List I	List II
A. Lipase	I. Peptide bond
B. Nuclease	II. Ester bond
C. Protease	III. Glycosidic bond
D. Amylase	IV. Phosphodiester bond

Choose the correct answer from the options given below:

(1) A-IV, B-II, C-III, D-I

(2) A-III, B-II, C-I, D-IV

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

(4) A-IV, B-I, C-III, D-II

Correct Answer: (3) A-II, B-IV, C-I, D-III

Solution: Lipase acts on ester bonds found in lipids (A-II). Nuclease cuts phosphodiester bonds in nucleic acids (B-IV). Protease breaks peptide bonds in proteins (C-I). Amylase breaks down glycosidic bonds in starch (D-III). This question assesses understanding of enzyme specificity and the biochemical reactions they catalyze.

Conclusion: The correct answer is (3) A-II, B-IV, C-I, D-III.

Quick Tip

Recognizing the specific substrates and actions of different enzymes is key in biochemistry, especially for applications in medicine and biotechnology.

176. Match List I with List II:

List I	List II
A. Axoneme	I. Centriole
B. Cartwheel pattern	II. Cilia and flagella
C. Crista	III. Chromosome
D. Satellite	IV. Mitochondria

Choose the correct answer from the options given below:

(1) A-IV, B-III, C-II, D-I

(2) A-IV, B-II, C-III, D-I

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

(4) A-II, B-I, C-IV, D-III

Correct Answer: (4) A-II, B-I, C-IV, D-III

Solution: Axoneme is the structural core of cilia and flagella (A-II), involved in their movement. The cartwheel pattern is associated with the centriole structure (B-I), seen during centriole replication. Cristae are folds within the mitochondria that increase surface area for ATP production (C-IV). Satellites are repetitive DNA sequences found near centromeres of chromosomes (D-III). These cellular structures are key for understanding various functions within the cell.

Conclusion: The correct answer is (4) A-II, B-I, C-IV, D-III.

Quick Tip

Exploring cellular structures in detail can lead to a better understanding of cellular functions and their implications in health and disease.

177. Match List I with List II:

List I (Sub Phases of Prophase I)	List II (Specific Characters)
A. Diakinesis	I. Synaptonemal complex formation
B. Pachytene	II. Completion of terminalisation of chiasmata
C. Zygotene	III. Chromosomes look like thin threads
D. Leptotene	IV. Appearance of recombination nodules

Choose the correct answer from the options given below:

(1) A-IV, B-II, C-III, D-I

(2) A-I, B-II, C-IV, D-III

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

(4) A-IV, B-III, C-II, D-I

Correct Answer: (3) A-II, B-IV, C-I, D-III

Solution: Diakinesis is marked by the completion of terminalisation of chiasmata (A-II), where chromosomes prepare for segregation. Pachytene features the appearance of recombination nodules, which are crucial for crossing over (B-IV). During Zygotene, synaptonemal complexes form, facilitating chromosome pairing (C-I). In Leptotene, chromosomes first become visible as thin threads (D-III). These processes are integral to genetic recombination and chromosome behavior during meiosis.

Conclusion: The correct answer is (3) A-II, B-IV, C-I, D-III.

Quick Tip

Each phase of meiosis has distinctive events that are crucial for accurate genetic segregation and variation.

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178. Which of the following factors are favorable for the formation of oxyhaemoglobin in alveoli?

(1) High pO2 and High pCO2

(2) High pO2 and Lesser H+ concentration

(3) Low pCO2 and High H+ concentration

(4) Low pCO2 and High temperature

Correct Answer: (2) High pO2 and Lesser H+ concentration

Solution: High partial pressure of oxygen (pO2) and lower hydrogen ion (H+) concentration facilitate the formation of oxyhaemoglobin in the alveoli. High pO2 increases the saturation of haemoglobin with oxygen, while lower H+ concentration reduces the Bohr effect, enhancing the uptake of oxygen. These conditions are critical for effective oxygen loading in the lungs.

Conclusion: The correct answer is (2) High pO2 and Lesser H+ concentration.

Quick Tip

Understanding the conditions that favor oxyhaemoglobin formation can help in assessing respiratory efficiency and the oxygen-carrying capacity of the blood.

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179. Match List I with List II:

List I	List II
A. Pterophyllum	I. Hag fish
B. Myxine	II. Saw fish
C. Pristis	III. Angel fish
D. Exocoetus	IV. Flying fish

Choose the correct answer from the options given below:

(1) A-II, B-I, C-III, D-IV

(2) A-III, B-I, C-II, D-IV

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

(4) A-III, B-II, C-I, D-IV

Correct Answer: (2) A-III, B-I, C-II, D-IV

Solution: - Pterophyllum is commonly recognized as the angel fish (A-III), a freshwater fish known for its elegant, flat body. - Myxine, also called hagfish (B-I), are jawless marine animals famous for secreting slime. - Pristis refers to the sawfish (C-II), which has a distinctive, long rostrum resembling a saw. - Exocoetus, known as the flying fish (D-IV), is famous for its ability to glide above the water's surface to evade predators. This question tests knowledge about fish species and their unique characteristics, important for studies in marine biology and ecology.

Conclusion: The correct answer is (2) A-III, B-I, C-II, D-IV.

Quick Tip

Linking scientific names with common names enhances understanding of biodiversity and aids in more effective communication in biological sciences.

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180. Match List I with List II:

List I	List II
A. Typhoid	I. Fungus
B. Leishmaniasis	II. Nematode
C. Ringworm	III. Protozoa
D. Filariasis	IV. Bacteria

Choose the correct answer from the options given below:

(1) A-I, B-III, C-II, D-IV

(2) A-IV, B-III, C-I, D-II

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

(4) A-II, B-IV, C-III, D-I

Correct Answer: (2) A-IV, B-III, C-I, D-II

Solution: - Typhoid is caused by the bacterium *Salmonella typhi* (A-IV). - Leishmaniasis is caused by protozoan parasites of the genus *Leishmania* (B-III). - Ringworm is caused by fungi, not worms, and affects the skin, hair, and nails (C-I). - Filariasis is caused by nematodes (roundworms) of the family *Filarioidea* (D-II), which are transmitted to humans through mosquito bites. This question emphasizes the importance of understanding the causative agents of diseases, which is vital for accurate diagnosis and treatment.

Conclusion: The correct answer is (2) A-IV, B-III, C-I, D-II.

Quick Tip

Correct identification of the causative agents of diseases is essential for appropriate treatment and control measures.

---

181. Which of the following statements is incorrect?

(1) A bio-reactor provides optimal growth conditions for achieving the desired product

(2) Most commonly used bio-reactors are of stirring type

(3) Bio-reactors are used to produce small scale bacterial cultures

(4) Bio-reactors have an agitator system, an oxygen delivery system, and foam control

system

Correct Answer: (3) Bio-reactors are used to produce small scale bacterial cultures

Solution: The statement that bio-reactors are used to produce small-scale bacterial cultures is incorrect (3). Bio-reactors are typically designed for large-scale production of biological products, including pharmaceuticals, chemicals, and food products. They are engineered to provide optimal environmental conditions such as temperature, pH, and oxygen levels, which are crucial for achieving high yields in industrial-scale production.

Conclusion: The correct answer is (3) Bio-reactors are used to produce small scale bacterial cultures.

Quick Tip

Bio-reactors play a crucial role in the biotechnology industry, enabling the mass production of biologically derived substances.

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182. Given below are two statements:

Statement I: In the nephron, the descending limb of the loop of Henle is impermeable to water and permeable to electrolytes.

Statement II: The proximal convoluted tubule is lined by simple columnar brush border epithelium and increases the surface area for reabsorption.

In the light of the above statements, choose the correct answer from the option given below:

(1) Both Statement I and Statement II are true

(2) Both Statement I and Statement II are false

(3) Statement I is true but Statement II is false

(4) Statement I is false but Statement II is true

Correct Answer: (2) Both Statement I and Statement II are false

Solution: Statement I is false because the descending limb of the loop of Henle is actually permeable to water, which allows water to be reabsorbed into the bloodstream, but it is largely impermeable to solutes. Statement II is also false; the proximal convoluted tubule is lined by simple cuboidal epithelium, not columnar, and this lining helps increase surface area for reabsorption of water and solutes. This distinction is important for understanding renal

physiology and the processes of filtration and reabsorption in the nephron.

Conclusion: The correct answer is (2) Both Statement I and Statement II are false.

Quick Tip

Accurate knowledge of nephron structure and function is crucial for understanding kidney function and diagnosing kidney-related diseases.

---

183. Given below are two statements:

Statement I: The presence or absence of hymen is not a reliable indicator of virginity.

Statement II: The hymen is torn during the first coitus only.

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

(1) Both Statement I and Statement II are true

(2) Both Statement I and Statement II are false

(3) Statement I is true but Statement II is false

Correct Answer: (3) Statement I is true but Statement II is false

Solution: Statement I is true because the hymen's appearance can vary greatly between individuals, and it can be absent, stretched, or torn by activities other than sexual intercourse. Statement II is false, as the hymen can be elastic or have natural openings that do not tear during the first sexual encounter. The concept of using the hymen as a marker for virginity is a myth and does not hold scientific merit. This highlights the need for better understanding of human anatomy and debunking cultural myths.

Conclusion: The correct answer is (3) Statement I is true but Statement II is false.

Quick Tip

Educational efforts are essential to dispel myths regarding the hymen and virginity, promoting a more scientifically accurate understanding of human anatomy.

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184. Match List I with List II:

List I	List II
A.Expiratory capacity	I.Expiratory reserve volume + Tidal vol + Inspiratory reserve vol
B. Functional residual capacity	II. Tidal volume + Expiratory reserve volume
C. Vital capacity	III. Tidal volume + Inspiratory reserve volume
D. Inspiratory capacity	IV. Expiratory reserve volume + Residual volume

Choose the correct answer from the options given below:

(1) A-II, B-IV, C-I, D-III

(2) A-III, B-II, C-IV, D-I

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

(4) A-I, B-III, C-II, D-IV

Correct Answer: (1) A-II, B-IV, C-I, D-III

Solution: - Expiratory capacity (A) is calculated as the sum of tidal volume and expiratory reserve volume (A-II), representing the total volume of air expelled from the lungs during a normal exhalation, followed by a forced exhalation. - Functional residual capacity (B) refers to the sum of expiratory reserve volume and residual volume (B-IV), representing the air volume remaining in the lungs after a normal exhalation. - Vital capacity (C) refers to the maximum volume of air that can be exhaled after a maximal inhalation, including tidal volume, inspiratory reserve volume, and expiratory reserve volume (C-I). - Inspiratory capacity (D) is the sum of tidal volume and inspiratory reserve volume (D-III), representing the total volume of air that can be inhaled following a normal exhalation. These capacities are important for understanding respiratory function and diagnosing various pulmonary conditions.

Conclusion: The correct answer is (1) A-II, B-IV, C-I, D-III.

Quick Tip

Lung capacity measurements are essential in diagnosing and monitoring respiratory conditions such as asthma and COPD.

---

185. Following are the stages of cell division:

A. Gap 2 phase

B. Cytokinesis

C. Synthesis phase

D. Karyokinesis

E. Gap 1 phase

Choose the correct sequence of stages from the options given below:

(1) C-E-D-A-B

(2) E-B-D-A-C

(3) B-D-E-A-C

(4) E-C-A-D-B

Correct Answer: (4) E-C-A-D-B

Solution: The correct sequence of the stages in cell division begins with the Gap 1 phase (E), where the cell grows and prepares for DNA replication. This is followed by the Synthesis phase (C), during which DNA replication occurs. After DNA synthesis, the cell enters the Gap 2 phase (A), where it further prepares for mitosis. Karyokinesis (D), or nuclear division, follows, and finally, Cytokinesis (B) occurs, dividing the cytoplasm and forming two daughter cells. Understanding the order of these stages is essential for grasping the process of cell division and its regulation, which is vital in areas such as cancer research and developmental biology.

Conclusion: The correct answer is (4) E-C-A-D-B.

Quick Tip

Disruptions in the cell cycle can lead to diseases such as cancer, making it a critical area of study for medical research.

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186. Given below are two statements: Statement I: Mitochondria and chloroplasts both are double-membrane-bound organelles. Statement II: The inner membrane of mitochondria is relatively less permeable, as compared to chloroplasts.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both Statement I and Statement II are correct.

(2) Both Statement I and Statement II are incorrect.

(3) Statement I is correct but Statement II is incorrect.

(4) Statement I is incorrect but Statement II is correct.

Correct Answer: (3) Statement I is correct but Statement II is incorrect.

Solution: Statement I is correct because both mitochondria and chloroplasts are double-membrane-bound organelles, which are essential for their respective roles in energy

metabolism (mitochondria) and photosynthesis (chloroplasts).

Statement II is incorrect because the inner membrane of mitochondria is more impermeable compared to the outer membrane, whereas in chloroplasts, both membranes are relatively permeable to ions and molecules.

Conclusion: The correct answer is (3) Statement I is correct but Statement II is incorrect.

Quick Tip

Both mitochondria and chloroplasts have double membranes, but their permeability characteristics are different.

---

187. Match List I with List II:

List-I	List-II
A. Mesozoic Era	I. Lower invertebrates
B. Proterozoic Era	II. Fish & Amphibia
C. Cenozoic Era	III. Birds & Reptiles
D. Paleozoic Era	IV. Mammals

Choose the correct answer from the options given below:

(1) A-II, B-I, C-III, D-IV

(2) A-III, B-I, C-II, D-IV

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

(4) A-III, B-I, C-IV, D-II

Correct Answer: (4) A-III, B-I, C-IV, D-II

Solution: A. Mesozoic Era is known for the rise of birds and reptiles, corresponding to III.

B. Proterozoic Era is marked by the evolution of lower invertebrates, corresponding to I.

C. Cenozoic Era is the age of mammals, corresponding to IV.

D. Paleozoic Era is characterized by the emergence of fish and amphibians, corresponding to II.

Conclusion: The correct match is (4) A-III, B-I, C-IV, D-II.

Quick Tip

Each geological era is characterized by the appearance and evolution of different life forms, with the Mesozoic Era famous for dinosaurs and reptiles.

---

188. Given below are two statements:

Statement I: Gause's competitive exclusion principle states that two closely related species competing for different resources cannot exist indefinitely.

Statement II: According to Gause's principle, during competition, the inferior will be eliminated. This may be true if resources are limiting.

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

(1) Both Statement I and Statement II are true.

(2) Both Statement I and Statement II are false.

(3) Statement I is true but Statement II is false.

(4) Statement I is false but Statement II is true.

Correct Answer: (4) Statement I is false but Statement II is true.

Solution: Statement I is false because Gause's competitive exclusion principle actually states that two closely related species competing for the *same* resources cannot coexist indefinitely. Statement II is true as it correctly reflects that in competitive scenarios under limited resources, typically the inferior competitor will be eliminated.

Quick Tip

Understanding ecological principles like Gause's can help in conservation efforts by predicting the outcomes of species interactions.

---

189. Match List I with List II:

List I	List II
A. Unicellular glandular epithelium	I. Salivary glands
B. Compound epithelium	II. Pancreas
C. Multicellular glandular epithelium	III. Goblet cells of alimentary canal
D. Endocrine glandular epithelium	IV. Moist surface of buccal cavity

Choose the correct answer from the options given below:

(1) A-II, B-I, C-III, D-IV

(2) A-IV, B-III, C-I, D-II

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

(4) A-II, B-I, C-IV, D-III

Correct Answer: (3) A-III, B-IV, C-I, D-II

Solution: Unicellular glandular epithelium like goblet cells are found in the alimentary canal (A-III). Compound epithelium is found on moist surfaces like the buccal cavity (B-IV). Multicellular glandular epithelium like that in salivary glands produces various secretions (C-I). Endocrine glandular epithelium, such as in the pancreas, secretes hormones directly into the bloodstream (D-II).

Quick Tip

Understanding the structure and function of different types of epithelial tissue is crucial in anatomy and physiology for insights into how various body systems operate.

---

190. Match List I with List II related to the digestive system of a cockroach:

	List I		List II
A.	The structures used for storing of food	I.	Gizzard
B.	Ring of 6-8 blind tubules at junction of foregut and midgut.	II.	Gastric Caeca
C.	Ring of 100-150 yellow coloured thin filaments at junction of midgut and hindgut.	III.	Malpighian tubules
D.	The structures used for grinding the food.	IV.	Crop

Choose the correct answer from the options given below:

(1) A-IV, B-II, C-III, D-I

(2) A-I, B-II, C-III, D-IV

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

(4) A-III, B-II, C-IV, D-I

Correct Answer: (1) A-IV, B-II, C-III, D-I

Solution: A. The structures used for storing food: The crop is responsible for storing food in a cockroach, corresponding to IV.

B. Ring of 6-8 blind tubules at junction of foregut and midgut: These structures are gastric

caeca, corresponding to II.

C. Ring of 100-150 yellow colored thin filaments at junction of midgut and hindgut: These are Malpighian tubules, corresponding to III.

D. The structures used for grinding the food: The gizzard is responsible for grinding food, corresponding to I.

Conclusion: The correct answer is (1) A-IV, B-II, C-III, D-I.

Quick Tip

In cockroaches, the crop stores food, the gastric caeca aid digestion, the Malpighian tubules excrete waste, and the gizzard grinds food.

---

191. Choose the correct statement given below regarding juxtamedullary nephron.

(1) Juxtamedullary nephrons are located in the columns of Bertini.

(2) Renal corpuscle of juxtamedullary nephron lies in the outer portion of the renal medulla.

(3) Loop of Henle of juxtamedullary nephron runs deep into medulla.

(4) Juxtamedullary nephrons outnumber the cortical nephrons.

Correct Answer: (3) Loop of Henle of juxtamedullary nephron runs deep into medulla.

Solution: Juxtamedullary nephrons are characterized by having a long loop of Henle that extends deep into the renal medulla, which plays a crucial role in the concentration of urine through the countercurrent mechanism.

The renal corpuscle of these nephrons is located near the boundary between the cortex and the medulla, but not in the outer portion of the renal medulla.

Juxtamedullary nephrons do not outnumber the cortical nephrons; actually, they are fewer in number compared to cortical nephrons.

Columns of Bertini refer to the regions in the kidney cortex, but juxtamedullary nephrons are not located here.

Conclusion: The correct answer is (3) Loop of Henle of juxtamedullary nephron runs deep into medulla.

Quick Tip

Juxtamedullary nephrons are essential for producing concentrated urine due to their long loops of Henle.

---

192. Match List I with List II:

List I	List II
A. RNA polymerase III	I. snRNPs
B. Termination of transcription	II. Promotor
C. Splicing of Exons	III. Rho factor
D. TATA box	IV. SnRNAs, tRNA

Choose the correct answer from the options given below:

(1) A-II, B-IV, C-I, D-III

(2) A-III, B-II, C-IV, D-I

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

(4) A-IV, B-III, C-I, D-II

Correct Answer: (4) A-IV, B-III, C-I, D-II

Solution: RNA polymerase III transcribes genes encoding tRNAs and some snRNAs (A-IV). The termination of transcription in prokaryotes often involves the Rho factor (B-III). Splicing of exons is facilitated by snRNPs, which are part of the spliceosome complex (C-I). The TATA box is a core promotor element found in many genes (D-II).

Quick Tip

Familiarity with molecular biology's core concepts, like transcription and splicing, is vital for understanding genetic expression and regulation.

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193. Given below are two statements: Statement I: The cerebral hemispheres are connected by a nerve tract known as the corpus callosum. Statement II: The brain stem consists of the medulla oblongata, pons, and cerebrum.

In light of the above statements, choose the most appropriate answer from the options given below:

(1) Both Statement I and Statement II are correct.

(2) Both Statement I and Statement II are incorrect.

(3) Statement I is correct but Statement II is incorrect.

(4) Statement I is incorrect but Statement II is correct.

Correct Answer: (3) Statement I is correct but Statement II is incorrect.

Solution: Statement I is correct because the corpus callosum is a large bundle of nerve fibers that connects the left and right cerebral hemispheres, allowing communication between them. Statement II is incorrect because the brainstem consists of the medulla oblongata, pons, and midbrain, not the cerebrum. The cerebrum is part of the forebrain, distinct from the brainstem.

Conclusion: The correct answer is (3) Statement I is correct but Statement II is incorrect.

Quick Tip

The brainstem is involved in basic life functions, while the cerebrum is responsible for higher brain functions.

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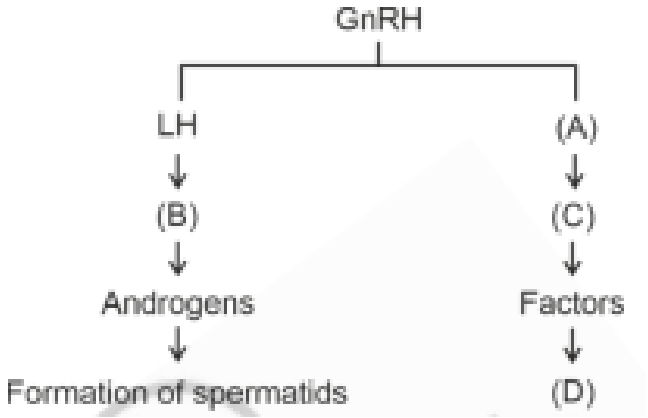
194. Identify the correct option (A), (B), (C), (D) with respect to spermatogenesis.



(1) FSH, Leydig cells, Sertoli cells, spermiogenesis.

(2) ICSH, Interstitial cells, Leydig cells, spermiogenesis.

(3) FSH, Sertoli cells, Leydig cells, spermatogenesis.

(4) ICSH, Leydig cells, Sertoli cells, spermatogenesis.

Correct Answer: (1) FSH, Leydig cells, Sertoli cells, spermiogenesis.

Solution: FSH stimulates Sertoli cells, which in turn support spermatogenesis. Leydig cells,

stimulated by LH (also known as ICSH in males), produce testosterone, crucial for the final stages of spermatogenesis, known as spermiogenesis.

Quick Tip

Understanding hormonal regulation of spermatogenesis is important in fields like endocrinology and reproductive medicine.

---

195. As per ABO blood grouping system, the blood group of father is B+, mother is A+ and child is O+. Their respective genotype can be

A. I^BI^A/ii

B. I^BI^B/I^AI^A

C. I^AI^B/ii

D. I^AI^B/I^AI^i

E. $ii/I^AI^B/I^AI^B$

(1) A only

(2) B only

(3) C & B only

(4) D & E only

Correct Answer: (1) A only

Solution: The father's blood group is B+, which means his genotype can be I_BI_B (homozygous) or I_Bi (heterozygous).

The mother's blood group is A+, which means her genotype can be I_AI_A or I_Ai.

The child's blood group is O+, which must have the genotype ii as O blood type is recessive.

For the child to inherit ii, both parents must contribute an i allele, meaning both parents must be heterozygous: I_Bi (father) and I_Ai (mother).

Quick Tip

For a child to have blood group O, both parents must carry the i allele.

---

196. Given below are two statements:

Statement I: Bone marrow is the main lymphoid organ where all blood cells including lymphocytes are produced.

Statement II: Both bone marrow and thymus provide microenvironments for the development and maturation of T-lymphocytes.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both Statement I and Statement II are correct.

(2) Both Statement I and Statement II are incorrect.

(3) Statement I is correct but Statement II is incorrect.

(4) Statement I is incorrect but Statement II is correct.

Correct Answer: (1) Both Statement I and Statement II are correct.

Solution: - Statement I is accurate because bone marrow is the primary site where all types of blood cells, including lymphocytes, are produced through hematopoiesis. - Statement II is also correct since both bone marrow and thymus play essential roles in T-lymphocyte development. Bone marrow produces the precursor cells, while the thymus is responsible for their maturation into functional T-cells.

Conclusion: Both statements are true, and thus, the correct answer is (1).

Quick Tip

Bone marrow and thymus are vital to the immune system, with the former producing immune cells and the latter maturing T-cells.

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197. Regarding the catalytic cycle of an enzyme action, select the correct sequential steps:

A. Substrate-enzyme complex formation.

B. Free enzyme ready to bind with another substrate.

C. Release of products.

D. Chemical bonds of the substrate broken.

E. Substrate binding to the active site.

Choose the correct answer from the options given below:

(1) E, A, D, C, B

(2) A, E, B, D, C

(3) B, A, C, D, E

(4) E, D, C, B, A

Correct Answer: (1) E, A, D, C, B

Solution: The correct order for the catalytic cycle of enzyme action is:

- E. Substrate binding to the active site: The enzyme's active site binds with the substrate, which initiates the catalytic process.
- A. Substrate-enzyme complex formation: The enzyme and substrate form a complex, facilitating the chemical reaction.
- D. Chemical bonds of the substrate broken: The enzyme catalyzes the breaking of bonds in the substrate, leading to the formation of products.
- C. Release of products: The newly formed products are released from the enzyme's active site.
- B. Free enzyme ready to bind with another substrate: The enzyme is now free and available to catalyze another reaction.

Conclusion: The correct answer is (1) E, A, D, C, B.

Quick Tip

Enzyme catalysis involves the enzyme-substrate complex formation, product release, and the enzyme's ability to catalyze further reactions.

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198. Match List I with List II:

List-I	List-II
A. P wave	I. Heart muscles are electrically silent.
B. QRS complex	II. Depolarization of ventricles.
C. T wave	III. Depolarization of atria.
D. T-P gap	IV. Repolarization of ventricles.

Choose the correct answer from the options given below:

(1) A-I, B-III, C-IV, D-II

(2) A-III, B-II, C-IV, D-I

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

(4) A-IV, B-II, C-I, D-III

Correct Answer: (2) A-III, B-II, C-IV, D-I

Solution: - A. P wave corresponds to the depolarization of the atria, which is listed as III.

- B. QRS complex represents the depolarization of the ventricles, linked to II.

- C. T wave corresponds to the repolarization of the ventricles, represented by IV.

- D. T-P gap is the period when the heart muscles are electrically silent, represented by I.

Conclusion: The correct match is (2) A-III, B-II, C-IV, D-I.

Quick Tip

The ECG (electrocardiogram) records the electrical activity of the heart, showing the processes of atrial and ventricular depolarization and repolarization.

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199. Match List I with List II:

List-I	List-II
A. Exophthalmic goiter	I. Excess secretion of cortisol, moon face & hyperglycemia.
B. Acromegaly	II. Hypo-secretion of thyroid hormone and stunted growth.
C. Cushing's syndrome	III. Hyper secretion of thyroid hormone & protruding eyeballs.
D. Cretinism	IV. Excessive secretion of growth hormone.

Choose the correct answer from the options given below:

(1) A-I, B-III, C-II, D-IV

(2) A-IV, B-II, C-I, D-III

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

(4) A-III, B-IV, C-I, D-II

Correct Answer: (4) A-III, B-IV, C-I, D-II

Solution: - A. Exophthalmic goiter is related to hypersecretion of thyroid hormones, causing protruding eyeballs, corresponding to III.

- B. Acromegaly results from excessive growth hormone secretion, corresponding to IV.

- C. Cushing's syndrome is caused by excess cortisol secretion, leading to symptoms like moon face and hyperglycemia, corresponding to I.

- D. Cretinism results from hypothyroidism in childhood, leading to stunted growth, corresponding to II.

Conclusion: The correct answer is (4) A-III, B-IV, C-I, D-II.

Quick Tip

Exophthalmic goiter is another term for Graves' disease, characterized by hyperthyroidism and protruding eyeballs.

---

200. The following are the statements about non-chordates:

A. Pharynx is perforated by gill slits.

B. Notochord is absent.

C. Central nervous system is dorsal.

D. Heart is dorsal if present.

E. Post-anal tail is absent.

Choose the most appropriate answer from the options given below:

(1) A & C only

(2) A, B & D only

(3) B, D & E only

(4) B, C & D only

Correct Answer: (3) B, D & E only

Solution: - Statement A is true for chordates but not for all non-chordates.

- Statement B is correct for non-chordates as they lack a notochord.

- Statement D is true for many non-chordates, as their heart is dorsal, such as in arthropods.

- Statement E is true for some non-chordates that lack a post-anal tail, like arthropods.

- Statement C is incorrect because the central nervous system of non-chordates is not always dorsal.

Conclusion: The correct answer is (3) B, D & E only.

Quick Tip

Non-chordates typically lack a notochord, dorsal nervous system, and a post-anal tail, distinguishing them from chordates.
