Photo respi excretion n locomotion 4 **Marks: 360**

ANSWER KEY

Botany

Q.1 C	Q.2 D	Q.3 C	Q.4 C	Q.5 A	Q.6 D	Q.7 D	Q.8 B
Q.9 A	Q.10 B	Q.11 D	Q.12 A	Q.13 A	Q.14 C	Q.15 D	Q.16 C
Q.17 C	Q.18 B	Q.19 D	Q.20 A	Q.21 A	Q.22 B	Q.23 A	Q.24 B
Q.25 C	Q.26 B	Q.27 D	Q.28 B	Q.29 B	Q.30 B	Q.31 D	Q.32 B
Q.33 C	Q.34 B	Q.35 C	Q.36 B	Q.37 D	Q.38 A	Q.39 B	Q.40 B
Q.41 A	Q.42 A	Q.43 C	Q.44 B	Q.45 D			

Zoology

Q.46 C	Q.47 D	Q.48 A	Q.49 B	Q.50 B	Q.51 A	Q.52 A	Q.53 B
Q.54 A	Q.55 A	Q.56 D	Q.57 B	Q.58 B	Q.59 B	Q.60 D	Q.61 A
Q.62 B	Q.63 A	Q.64 B	Q.65 C	Q.66 B	Q.67 C	Q.68 D	Q.69 B
Q.70 C	Q.71 A	Q.72 D	Q.73 A	Q.74 C	Q.75 B	Q.76 B	Q.77 B
Q.78 B	Q.79 D	Q.80 A	Q.81 A	Q.82 C	Q.83 B	Q.84 B	Q.85 C
Q.86 B	Q.87 B	Q.88 C	Q.89 B	Q.90 A			

Botany

Q.1 $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O +$ **Energy**

The above equation represents which of the following?

Correct option: (C)

The equation
$C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O + Energy$

represents the process of *complete oxidation* of glucose. This reaction occurs during *cellular respiration*, where glucose is broken down in the presence of oxygen to produce carbon dioxide, water, and energy (ATP). *Complete oxidation* refers to the process where a molecule is completely broken down to its simplest forms, which in this case is carbon dioxide and water. The reaction releases energy, which is used by the cell to perform various functions.

Q.2 **The biosynthetic phase of photosynthesis is also called as dark reaction because**

Correct option: (D)

The dark reactions, also known as the Calvin cycle, are named so because they do not directly require light energy to proceed. While they can occur in the presence of light, they don't need light to function. Instead, they rely on the products of the light-dependent reactions, specifically ATP and NADPH, to drive the synthesis of glucose from carbon dioxide. In essence, the dark reactions harness the energy captured and stored during the light reactions to power the process of carbon fixation and sugar production. Therefore, the correct answer is *it is not dependent on light energy but depends on the products of light reactions*.

Q.3 **Most of the biological energy is supplied by mitochondria through**

Correct option: (C)

Mitochondria are often referred to as the "powerhouses" of the cell because they are responsible for generating most of the cell's supply of adenosine triphosphate (ATP), the primary energy currency, through cellular respiration. While glycolysis, the initial breakdown of sugars (like glucose), occurs in the cytoplasm, the products (pyruvate) are then transported into the mitochondria. Inside the mitochondria, these sugar derivatives are further oxidized through the Krebs cycle (TCA cycle) and oxidative phosphorylation. These mitochondrial processes extract the vast majority of energy from the complete breakdown of sugars, ultimately producing ATP. Therefore, "breaking of sugars" refers to the overall catabolic pathway of carbohydrates that feeds into and culminates in mitochondrial energy production.

Q.4 **Identify the INCORRECT pair with respect to ETS.**

Correct option: (C)

The Electron Transport System (ETS) involves several protein complexes. Complex I is NADH dehydrogenase, Complex II is succinate dehydrogenase, Complex III is the cytochrome bc_1 complex, Complex IV is cytochrome c oxidase, and Complex V is ATP synthase. In option (C), Complex III is incorrectly paired with FADH dehydrogenase. Complex III is also known as the cytochrome bc_1 complex. FADH2, a product of the Krebs cycle, donates its electrons to Complex II (succinate dehydrogenase), not Complex III.

Q.5 **Which of the following statement in WRONG with respect to dark reaction of photosynthesis?**

Correct option: (A)

The dark reaction of photosynthesis (Calvin cycle) is a biochemical process that uses the ATP and NADPH generated during the light-dependent reactions to fix carbon dioxide and synthesize sugars. It is not a photochemical process, as it does not directly utilize light energy. Therefore, statement (A) is WRONG. Let's evaluate the other options: (B) It is independent of light: While it requires products from the light reaction (ATP and

NADPH), it does not directly use light energy, so it's often referred to as light-independent. This statement is generally considered correct. (C) It involves CO_2 fixation: The primary event of the dark reaction is the fixation of CO_2 into organic compounds. This statement is correct. (D) End products are ADP, NADP and glucose: ATP is converted to ADP and NADPH to $NADP^+$ during the dark reaction, which are then recycled back to the light reaction. Glucose (or other carbohydrates) is the main stable organic product formed. This statement is correct.

Q.6 As a result of "light reaction" of photosynthesis,
Correct option: (D)

The overall light reaction consists of non-cyclic and cyclic photophosphorylation reactions. The products of light reaction are ATP, $NADPH_2$ and O_2. O_2 is liberated from the green plants. ATP and $NADPH_2$ are used in dark reaction for the reduction of CO_2 to form carbohydrates.

Q.7 All the given below are the limiting factors for photosynthesis and thus affects rate of photosynthesis, except
Correct option: (D)

Oxygen is a *product* of photosynthesis, not a *reactant*. Photosynthesis is the process by which plants use sunlight, carbon dioxide, and water to produce glucose (sugar) and oxygen. Oxygen is released as a byproduct of this process. The other factors listed (carbon dioxide, temperature, and water) are all *necessary reactants* or *conditions* for photosynthesis to occur.

Q.8 Oxygen evolving complex which is responsible for oxygen evolution during photosynthetic light reactions is physically associated with
Correct option: (B)

The *Oxygen Evolving Complex* (OEC) is located within the *Photosystem II* (PS II). The OEC is a manganese-containing protein complex that catalyzes the oxidation of water molecules to produce oxygen, protons (H+), and electrons. This process, known as *photolysis of water*, is essential for the generation of the electron flow that drives the light-dependent reactions of photosynthesis. PS II is responsible for capturing light energy and using it to drive the oxidation of water. It is therefore directly associated with the OEC, making it the correct answer.

Q.9 In ETS, when electrons pass from one carrier to another via complex I to IV in the electron transport chain, they are coupled to_____ for production of ATP.
Correct option: (A)

During the Electron Transport System (ETS), electrons passing through Complexes I, III, and IV lead to the pumping of protons from the mitochondrial matrix to the intermembrane space, creating a proton gradient. This proton motive force is then utilized by ATP synthase, which is Complex V of the ETS, to synthesize ATP through a process called chemiosmosis.

Q.10 When one glucose molecule is completely oxidized, it changes
Correct option: (B)

When one glucose molecule is completely oxidized, it produces *38 ATP* molecules through cellular respiration. This process involves glycolysis, the Krebs cycle, and oxidative phosphorylation. - Glycolysis yields 2 ATP molecules per glucose molecule. - The Krebs cycle produces 2 ATP molecules per glucose molecule. - Oxidative phosphorylation generates the majority of ATP, producing approximately *34 ATP* molecules per glucose molecule. Therefore, the correct answer is *38 ADP* molecules are converted into *38 ATP* molecules.

Q.11 Which molecule links glycolysis with fermentation as well as TCA cycle? [BCECE 2015]
Correct option: (D) Pyruvic acid

Self Explanatory

Q.12 Which is the primary acceptor of carbon dioxide in C_4 plants?
Correct option: (A)

PEP (phosphoenolpyruvate) is the primary acceptor of carbon dioxide in C_4 plants. In C_4 plants, carbon dioxide is first fixed into a four-

carbon compound, oxaloacetate, by the enzyme PEP carboxylase. PEP carboxylase has a higher affinity for carbon dioxide than RuBisCo, the enzyme responsible for carbon fixation in C_3 plants. This allows C_4 plants to fix carbon dioxide efficiently even under low carbon dioxide conditions. The oxaloacetate is then converted to malate, which is transported to bundle sheath cells, where it is decarboxylated to release carbon dioxide. The carbon dioxide is then fixed by RuBisCo in the Calvin cycle, as in C_3 plants.

Q.13 C_4 plants are adapted to
Correct option: (A)

C_4 plants are adapted to *hot and dry climates* because they have a special mechanism to minimize water loss and maximize CO_2 uptake. This mechanism involves the initial fixation of CO_2 into a 4-carbon compound, which is then transported to bundle sheath cells where it is decarboxylated, releasing CO_2 for use in the Calvin cycle. This process is known as C_4 photosynthesis and it is more efficient than the typical C_3 photosynthesis in hot and dry conditions, as it allows C_4 plants to keep their stomata closed for longer periods, reducing water loss.

Q.14 Cytochromes are found in
Correct option: (C)

Cytochromes are protein complexes that play a crucial role in the electron transport chain, which occurs within the *cristae* of mitochondria. The cristae are the folded inner membranes of mitochondria, providing a large surface area for the electron transport chain to take place.

Q.15 'Respiration is oxidation of organic substrates and release of energy'. How is the energy released?
Correct option: (D)

The correct answer is Breaking of C-C bonds. The breaking of carbon-carbon bonds within the organic substrate is the primary source of energy release during respiration. This process releases energy because it is exothermic and the energy stored in the C-C bonds is released during the breaking of the bond.

Q.16 During vigorous exercise, when oxygen supply is inadequate in muscles, reduction of pyruvic acid to lactic acid is brought about by which of the following enzyme?
Correct option: (C)

Lactate dehydrogenase is the enzyme responsible for the conversion of pyruvate to lactate during anaerobic conditions. When oxygen supply is inadequate, the electron transport chain in mitochondria cannot function properly, leading to a buildup of NADH. Lactate dehydrogenase utilizes NADH to reduce pyruvate to lactate, regenerating NAD^+, which is necessary for glycolysis to continue. This process allows the cells to generate a small amount of ATP, even in the absence of oxygen.

Q.17 Oxidative phosphorylation is production of
Correct option: (C)

Oxidative phosphorylation is the process of ATP production in the mitochondria of cells. This process occurs during cellular respiration, where a series of redox reactions take place, releasing energy. This energy is used to create a proton gradient across the inner mitochondrial membrane, which drives ATP synthesis by ATP synthase. Therefore, the correct answer is *ATP in respiration*.

Q.18 Select the INCORRECT statement with respect to electron transport chain.
Correct option: (B)

The question asks to identify the INCORRECT statement with respect to the electron transport chain (ETC). Let's evaluate each option: (A) Cytochromes are the carriers which transfer the electrons in electron transport system. This statement is **CORRECT**. Cytochromes are heme-containing proteins that function as electron carriers in the ETC. (B) Mitochondrial electron transport chain is called as photo-oxidation. This statement is **INCORRECT**. The mitochondrial electron transport chain is called **oxidative**

phosphorylation because it uses the energy from oxidation of reduced coenzymes (NADH and $FADH_2$) to phosphorylate ADP to ATP. Photo-oxidation refers to oxidation processes driven by light energy, typically in photosynthesis. (C) Electron transport chain is located in inner mitochondrial matrix. This statement is **INCORRECT**. The components of the electron transport chain (respiratory complexes) are located in the **inner mitochondrial membrane**, not in the matrix. (D) The oxidation of NADH + H^+ and $FADH_2$ leads to release and utilization of the stored energy. This statement is **CORRECT**. NADH + H^+ and $FADH_2$ are oxidized in the ETC, releasing electrons and protons. The energy released is used to pump protons, creating a proton gradient that drives ATP synthesis. Since the question asks for the INCORRECT statement, both (B) and (C) are incorrect. This makes the question ambiguous and flawed. However, if a single answer must be chosen, both represent factual errors. The provided solution identifies (B) as the incorrect statement.

Q.19 The complex II of mitochondrial electron transport chain is also known as
Correct option: (D)

The mitochondrial electron transport chain (ETC) consists of four major protein complexes. Complex II is also known as succinate dehydrogenase. It accepts electrons from $FADH_2$ produced during the Kreb's cycle. Let's review the other options: * **Option 1: Cytochrome c oxidase** is Complex IV. * **Option 2: NADH dehydrogenase** is Complex I. * **Option 3: Cytochrome** bc_1 is Complex III.

Q.20 Photosynthetic pigments found in the chloroplasts occur in
Correct option: (A) thylakoid membranes

Self Explanatory

Q.21 Regeneration phase leads to reformation of _____.
Correct option: (A)

Regeneration of the CO_2 acceptor molecule RuBP is crucial for uninterrupted continuation of Calvin cycle.

Q.22 Which of the following is correct sequence in Krebs cycle?
Correct option: (B)

The Krebs cycle (also known as the Citric Acid Cycle or TCA cycle) is a central metabolic pathway in aerobic respiration. Understanding the sequence of its intermediates is crucial. The complete sequence of key intermediates in the Krebs cycle is: Oxaloacetic acid (recycled) + Acetyl-CoA $\rightarrow$ Citric acid $\rightarrow$ Isocitric acid $\rightarrow$ α-ketoglutaric acid $\rightarrow$ Succinyl Co-A $\rightarrow$ Succinic acid $\rightarrow$ Fumaric acid $\rightarrow$ Malic acid $\rightarrow$ Oxaloacetic acid. Let's analyze the given options based on this sequence: (A) Isocitric acid $\rightarrow$ Oxaloacetic acid $\rightarrow$ α-ketoglutaric acid: Incorrect. Isocitric acid converts to α-ketoglutaric acid, not oxaloacetic acid. (B) Oxaloacetic acid $\rightarrow$ Isocitric acid $\rightarrow$ α-ketoglutaric acid: This is the correct sequence. Although oxaloacetic acid first combines with acetyl-CoA to form citric acid, which then isomerizes to isocitric acid, the relative order of appearance of Oxaloacetic acid (as initiator/regenerated), Isocitric acid, and α-ketoglutaric acid is correct. The step Isocitric acid $\rightarrow$ α-ketoglutaric acid is a direct conversion. (C) α -ketoglutaric acid $\rightarrow$ Isocitric acid $\rightarrow$ Malic acid: Incorrect. Isocitric acid is formed before α-ketoglutaric acid. (D) Isocitric acid $\rightarrow$ α-ketoglutaric acid $\rightarrow$ Oxaloacetic acid: Incorrect. α-ketoglutaric acid does not directly lead back to oxaloacetic acid; several intermediates (succinyl-CoA, succinate, fumarate, malate) are involved. Therefore, option (B) represents the correct sequence.

Q.23 Assertion: Photosynthesis takes place only in green plants.
Reason: The presence of chlorophyll is an important factor for photosynthesis to occur.
Correct option: (A)

Assertion: Photosynthesis takes place only in green plants. This assertion is **False**. While green plants are major photosynthetic organisms, photosynthesis also occurs in other organisms such as cyanobacteria (prokaryotes) and various types of algae (protists), which are not classified as green

plants. Reason: The presence of chlorophyll is an important factor for photosynthesis to occur. This reason is **True**. Chlorophyll (or its variants like bacteriochlorophyll in some bacteria) is the primary pigment responsible for absorbing light energy, which is crucial for initiating the process of photosynthesis. Since the Assertion is False and the Reason is True, the correct option type (Assertion is false but Reason is true) is missing from the given choices. The provided options do not allow for an accurate selection based on the factual correctness of both statements.

Q.24 Arrange the following events in non-cyclic photophosphorylation in ascending order of their occurrence.
i. Picking up of electrons by an electron acceptor.
ii. Absorption of 680 nm wavelength of red light by *chlorophyll-a*.
iii. Electrons passed on to the pigments of PS I.
iv. Excitation of electrons.
Correct option: (B)

In non-cyclic photophosphorylation, the photosystem II (PSII) reaction center, P680, absorbs red light of 680 nm wavelength (ii). This absorption excites electrons in the *chlorophyll-a* molecules (iv). These excited electrons are then picked up by a primary electron acceptor (i). From the primary electron acceptor, the electrons are passed down an electron transport chain, eventually reaching the pigments of photosystem I (PS I) (iii). Therefore, the correct ascending order of occurrence is ii, iv, i, iii.

Q.25 Which of the following is NOT true with respect to aerobic respiration?
Correct option: (C)

Aerobic respiration is a process of cellular respiration that requires oxygen. It involves the *complete* oxidation of organic food substances (like pyruvate, the final product of glycolysis) into carbon dioxide and water, releasing a large amount of energy. Let's analyze the options: (A) It requires the final product of glycolysis. This is **true**. Pyruvate, the final product of glycolysis, is transported into the mitochondria for further aerobic oxidation. (B) It occurs within mitochondria. This is **true**. Key stages like the Krebs cycle and oxidative phosphorylation (electron transport chain) take place in the mitochondrial matrix and inner mitochondrial membrane, respectively. (C) It involves incomplete oxidation of pyruvate. This is **false**. Aerobic respiration is characterized by the *complete* oxidation of pyruvate. Incomplete oxidation of pyruvate occurs in anaerobic processes like fermentation. (D) In this process, 3 molecules of CO_2 are released. This is **true** per molecule of pyruvate. One molecule of CO_2 is released during the oxidative decarboxylation of pyruvate to acetyl CoA, and two more molecules of CO_2 are released during one turn of the Krebs cycle. Thus, a total of 3 CO_2 molecules are released per pyruvate molecule. Since the question asks for the statement that is NOT true, option (C) is the correct answer.

Q.26 Choose the correct sequence for the flow of H^+ during ATP synthesis in mitochondria.
i. F_0
ii. Intermembrane space
iii. Matrix
Correct option: (B)

$2H^+$ passes through F_0 from the intermembrane space to the matrix down the electrochemical proton gradient for each ATP molecule produced.

Q.27 Which one of the following is WRONG in relation to photorespiration?
Correct option: (D)

Photorespiration is absent in C_4 plants due to presence of Kranz anatomy.

Q.28 In animal cells, the first stage of glucose breakdown is
Correct option: (B)

Glycolysis is the first stage of glucose breakdown, which occurs in the cytoplasm of cells. It is a metabolic pathway that converts one molecule of glucose into two molecules of pyruvate. The process involves a series of ten enzymatic reactions that are catalyzed by specific enzymes. During glycolysis, glucose is broken down into

smaller molecules, releasing energy in the form of ATP and NADH.

Q.29 In Krebs cycle, during the conversion of (I) to succinic acid, a molecule of (II) is synthesized. This is known as (III) .
Correct option: (B)

The conversion of *succinyl CoA* to *succinate* in the *Krebs cycle* is a crucial step in ATP generation.
This reaction is catalyzed by the enzyme *succinyl CoA synthetase*, which drives the phosphorylation of GDP to GTP. This is an example of *substrate-level phosphorylation*, where the energy for phosphorylating GDP is derived directly from the breakdown of a high-energy substrate (*succinyl CoA*).
The GTP generated in this process is utilized in various metabolic pathways.
Thus, the correct answer is: I -*Succinyl CoA*, II -*GTP*, III -*Substrate-level phosphorylation.*

Q.30 Which one of the following reaction correctly represents photophosphorylation?
Correct option: (B)

The correct option is ADP + Inorganic PO_4 → ATP. Photophosphorylation is the process of using light energy to generate ATP. In this process, ADP (adenosine diphosphate) is converted to ATP (adenosine triphosphate) by adding a phosphate group. This reaction is driven by the light energy absorbed by chlorophyll. The other options are incorrect because they do not involve the conversion of ADP to ATP using light energy. For example, the reaction ADP + AMP → ATP is a simple phosphorylation reaction that does not require light energy. The reaction AMP + Inorganic PO_4 → ATP is also incorrect because it involves the addition of a phosphate group to AMP, not ADP. So, the reaction ADP + Inorganic PO_4 → ATP is the only one that correctly represents photophosphorylation.

Q.31 In the C_4 pathway, the 4C acid produced in the mesophyll cell is transported to the bundle sheath cell through
Correct option: (D)

Plasmodesmata are microscopic channels that directly connect the cytoplasm of adjacent plant cells. They allow for the passage of small molecules, including the 4C acid produced in the mesophyll cells during the C4 pathway, to travel to the bundle sheath cells. This transportation is essential for the efficient operation of the C4 carbon fixation pathway.

Q.32 Which of the following is NOT associated with anaerobic respiration?
Correct option: (B)

Glycolysis is common to both anaerobic and aerobic respiration, whereas Krebs cycle represents the major set of reactions of aerobic respiration. After glycolysis if O_2 is available pyruvic acid enters Krebs cycle.

Q.33 Which of the following is a true statement?
Correct option: (C)

Let's analyze each option: (A) Glycolysis is also known as TCA-cycle. This statement is incorrect. Glycolysis is also known as the EMP pathway, while the TCA cycle is also known as the Krebs cycle or Citric Acid Cycle. (B) Incomplete oxidation of glucose where pyruvic acid is converted to CO_2 and ethanol is known as aerobic respiration. This statement is incorrect. The process described is alcoholic fermentation, which is an anaerobic process. Aerobic respiration involves the complete oxidation of glucose in the presence of oxygen. (C) Fermentation a type of respiration, that occurs in absence of oxygen (anaerobic condition) and is typically seen in prokaryotes and unicellular eukaryotes. This statement is correct. Fermentation is a catabolic process that occurs in the absence of oxygen (anaerobic conditions) and is characteristic of many prokaryotic organisms and unicellular eukaryotes like yeast. (D) Krebs cycle is the source of $NADH_2$ for Glycolysis. This statement is incorrect. The Krebs cycle (TCA cycle) is a major source of $NADH_2$ and $FADH_2$ that are fed into the Electron Transport System (ETS) for ATP production, not for Glycolysis. Glycolysis itself

produces $NADH_2$. Therefore, the only true statement is (C).

Q.34 How many molecules of ATP and NADPH are required for every molecule of CO_2 fixed in the Calvin cycle?

Correct option: (B)

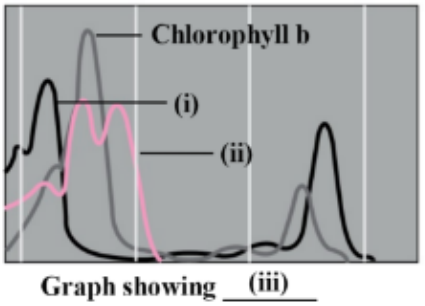
For every molecule of CO_2 fixed in the Calvin cycle (C_3 cycle), a total of 3 molecules of ATP and 2 molecules of NADPH are utilized. This can be broken down into the following stages: 1. **Carboxylation:** Ribulose-1,5-bisphosphate (RuBP) combines with CO_2 catalyzed by RuBisCO. This step does not directly consume ATP or NADPH. 2. **Reduction:** The 3-phosphoglycerate (3-PGA) formed is phosphorylated by ATP and then reduced by NADPH to form glyceraldehyde-3-phosphate (G3P). This stage requires 2 ATP and 2 NADPH molecules per CO_2 fixed. 3. **Regeneration:** For the cycle to continue, RuBP needs to be regenerated from G3P. This regeneration process requires 1 ATP molecule per CO_2 fixed. Therefore, the overall requirement for fixing one molecule of CO_2 is (2 ATP + 1 ATP) = 3 ATP molecules and 2 NADPH molecules.

Q.35 In mitochondria, protons accumulate in the

Correct option: (C)

The *intermembrane space* is the region between the inner and outer membranes of the mitochondria. During oxidative phosphorylation, protons are pumped from the mitochondrial matrix across the inner membrane into the intermembrane space. This creates a proton gradient, which is used by ATP synthase to generate ATP, the energy currency of the cell. The inner membrane is impermeable to protons, which helps to maintain this gradient.

Q.36 Identify the labels i, ii and iii in the given graph.



Graph showing (iii)

Correct option: (B) i – *Chlorophyll-a*, ii – Carotenoids, iii – absorption spectrum

Self Explanatory

Q.37 Which one of the following is not true regarding the release of energy during ATP synthesis through chemiosmosis? It involves:

Correct option: (D)

The *breakdown of electron gradient* is not a process involved in ATP synthesis through chemiosmosis. Chemiosmosis relies on the movement of protons across a membrane, creating a proton gradient. This gradient drives ATP synthesis by powering ATP synthase, which uses the energy stored in the gradient to phosphorylate ADP into ATP. The electron gradient, on the other hand, is a driving force in electron transport chains, which are responsible for pumping protons across the membrane to create the proton gradient. Thus, while the electron gradient is crucial for establishing the proton gradient that drives ATP synthesis, it is not directly involved in the release of energy during ATP synthesis.

Q.38 Photosynthetic pigments found in the chloroplasts occur in AIPMT 1991]

Correct option: (A)

The photosynthetic pigments in chloroplasts, such as chlorophyll, are embedded within the *thylakoid membranes*. These membranes form stacks called grana, which are the sites of light-dependent reactions of photosynthesis.

Q.39 Out of 36 ATP molecules produced per glucose molecule during respiration

Correct option: (B)

Cellular respiration of one glucose molecule yields a net total of 36 or 38 ATP, depending on the

shuttle system used for NADH from glycolysis. Assuming 36 ATP: 1. **Glycolysis**: Occurs in the cytoplasm (outside mitochondria), producing a net of 2 ATP molecules via substrate-level phosphorylation. 2. **Krebs Cycle (TCA cycle) and Oxidative Phosphorylation**: Occur inside the mitochondria. The Krebs cycle directly produces 2 ATP (or GTP which is converted to ATP) per glucose molecule. The majority of ATP (approximately 32 ATP) is generated during oxidative phosphorylation through the electron transport system, utilizing NADH and FADH2

produced during glycolysis and the Krebs cycle. Therefore, 2 ATP molecules are produced outside the mitochondria, and the remaining 34 ATP molecules are produced inside the mitochondria.

Q.40 ATP formation in photosynthesis is known as

Correct option: (B)

Formation of ATP in the presence of sunlight and inorganic phosphate is called as photophosphorylation.

Q.41 What is the ratio of ATP produced in anaerobic and aerobic respiration?

Correct option: (A)

In anaerobic respiration (fermentation), one molecule of glucose is incompletely oxidized, yielding a net of 2 ATP molecules through glycolysis. In aerobic respiration, the complete oxidation of one molecule of glucose yields a net of 36 ATP molecules (some references may state 38 ATP, depending on the shuttle system for mitochondrial NADH transport). Therefore, the ratio of ATP produced in anaerobic respiration to aerobic respiration is:

$$\frac{\text{ATP in Anaerobic Respiration}}{\text{ATP in Aerobic Respiration}} = \frac{2}{36} = \frac{1}{18}$$

Q.42 In non-cyclic photophosphorylation, the photosystem first excited is

Correct option: (A)

In non-cyclic photophosphorylation, photosystem II gets excited first. In PS II, the reaction centre *chlorophyll-a* absorbs 680 nm wavelength of red light causing electrons to become excited.

Q.43 Which technique has helped in investigation of Calvin cycle?

Correct option: (C)

Radioactive isotope technique is used to trace the path of carbon atoms in the Calvin cycle. This technique involves using carbon-14, a radioactive isotope of carbon, as a tracer. The carbon-14 is incorporated into carbon dioxide and then fed to plants. As the plants carry out photosynthesis, the carbon-14 is incorporated into various organic molecules. By tracking the movement of carbon-14 through the Calvin cycle, researchers can determine the order in which different molecules are produced and how they are connected.

Q.44 RuBisCO acts as a carboxylase when concentration of

Correct option: (B)

RuBisCO, or Ribulose-1,5-bisphosphate carboxylase/oxygenase, is an enzyme known for its dual nature. It can act as a *carboxylase* or an *oxygenase*. Its function as a **carboxylase** is to catalyze the fixation of carbon dioxide (CO_2) to

ribulose-1,5-bisphosphate ($RuBP$), initiating the

Calvin cycle for carbon fixation. This activity is favored when the concentration of CO_2 is high

and the concentration of O_2 is low. Conversely,

when O_2 concentration is high relative to CO_2,

RuBisCO acts as an oxygenase, leading to photorespiration. Therefore, for RuBisCO to primarily function as a carboxylase, the conditions must be a higher concentration of CO_2 and a lower

concentration of O_2.

Q.45 What will be the RQ of the following reaction?

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O +$ Energy

Correct option: (D)

The Respiratory Quotient (RQ) is defined as the ratio of the volume of carbon dioxide (CO_2)

evolved to the volume of oxygen (O_2) consumed

during respiration. From the given reaction:

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + Energy$

Volume of CO_2 evolved = 6 molecules (or 6 volumes) Volume of O_2 c molecules (or 6 volumes)

$$RQ = \frac{\text{Volume of } CO_2 \text{ evolved}}{\text{Volume of } O_2 \text{ consumed}} = \frac{6}{6} = 1.0$$

Therefore, the RQ of this reaction is 1.0.

Zoology

Q.46 Sodium ion reabsorption by DCT is increased during which of the following condition?

Correct option: (C)

Increased aldosterone level leads to increased sodium ion reabsorption by the Distal Convoluted Tubule (DCT) because aldosterone is a hormone that acts on the principal cells of the DCT and collecting ducts to stimulate the synthesis and insertion of Na^+/K^+ pumps and epithelial sodium channels (ENaCs) into the cell membranes. This action

enhances

sodium reabsorption from the filtrate back into the blood, thereby

increasing

water reabsorption and blood volume/pressure. Therefore, an

increase

in aldosterone directly correlates with an

increase

in sodium reabsorption in the DCT.

Q.47 Given below are two statements:

Statement I: In the nephron, the descending limb of 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 options given below:

Correct option: (D)

Since the descending limb of the loop of Henle is impermeable to electrolytes and porous to water, Statement I is false. Statement II is false because the simple cuboidal brush border epithelium lines the proximal convoluted tubule. This expands the reabsorption surface area.

Q.48 The main excretory organ of prawn is

Correct option: (A)

The ***green gland*** is the main excretory organ in prawns. These glands are located at the base of the antennae and filter waste products from the hemolymph (the blood-like fluid of crustaceans). They then excrete these waste products through openings near the antennae.

Q.49 An acromion process is characteristically found in the

Correct option: (B)

The acromion process is a bony projection on the scapula (shoulder blade) which is part of the ***pectoral girdle*** of mammals. This bony projection serves as an attachment point for muscles and ligaments, contributing to the shoulder joint's stability and movement.

Q.50 A fall in glomerular filtration rate activates

Correct option: (B)

A fall in glomerular filtration rate (GFR) activates the juxtaglomerular apparatus (JGA). The juxtaglomerular cells within the JGA, specifically the granular cells of the afferent arteriole, detect this drop in GFR and respond by releasing renin. Renin then initiates the Renin-Angiotensin-Aldosterone System (RAAS) which helps in restoring GFR.

Q.51 Humans are

Correct option: (A) ureotelic

Self Explanatory

Q.52 Atrial Natriuretic Factor (ANF) decreases

Correct option: (A)

Atrial Natriuretic Factor (ANF) is a hormone secreted by the atrial wall of the heart in response to increased blood volume and elevated blood pressure. Its primary physiological function is to lower blood pressure. ANF accomplishes this by:

1. **Causing vasodilation:** This relaxes blood

vessels, reducing peripheral resistance and blood pressure. 2. **Increasing sodium (Na^+) and water excretion by the kidneys (natriuresis and diuresis):** This reduces blood volume, thereby decreasing blood pressure. 3. **Inhibiting the release of renin from the juxtaglomerular apparatus of the kidney:** This suppression of the renin-angiotensin-aldosterone system (RAAS) further contributes to the reduction in blood pressure. The question asks what 'Atrial Natriuretic Factor (ANF) decreases'. Let's evaluate the options: (A) **Blood pressure:** ANF's main action is to decrease blood pressure. This is a direct and primary effect. (B) **Secretion of renin:** ANF inhibits renin secretion, meaning it decreases the amount of renin released. This is also a correct effect of ANF. (C) Na^+ **excretion:** ANF *increases* Na^+ excretion; it does not decrease it. (D) **Vasodilation:** ANF *causes* vasodilation; it does not decrease it. While ANF decreases both blood pressure and renin secretion, the decrease in blood pressure is the ultimate physiological outcome and the primary reason for ANF's release. The inhibition of renin is a mechanism through which ANF helps achieve this overall reduction in blood pressure. Therefore, in the context of primary physiological effects, 'blood pressure' is generally considered the most appropriate answer.

Q.53 Match List I with List II:

	List I		List II
i.	Emphysema	a.	Rapid spasms in muscle due to low Ca^{++} in body fluid
ii.	Angina Pectoris	b.	Damaged alveolar walls and decreased respiratory surface
iii.	Glomerulonephritis	c.	Acute chest pain when not enough oxygen is reaching to heart muscle
iv.	Tetany	d.	Inflammation of glomeruli of kidney

Choose the correct answer from the options given below:

Correct option: (B)

Here are the correct matches: * **Emphysema (i)**: This is a chronic respiratory disorder characterized by damage to the alveolar walls, which significantly decreases the respiratory surface area for gas exchange. Thus, (i) matches with (b) 'Damaged alveolar walls and decreased respiratory surface'. * **Angina Pectoris (ii)**: This condition involves acute chest pain that occurs when the heart muscle does not receive enough oxygen, usually due to reduced blood flow to the heart. Thus, (ii) matches with (c) 'Acute chest pain when not enough oxygen is reaching to heart muscle'. * **Glomerulonephritis (iii)**: This is an inflammatory disease primarily affecting the glomeruli, the small filtering units of the kidneys. Thus, (iii) matches with (d) 'Inflammation of glomeruli of kidney'. * **Tetany (iv)**: This disorder is characterized by rapid and involuntary muscle spasms, often caused by abnormally low levels of calcium ions (Ca^{++}) in the body fluids. Thus, (iv) matches with (a) 'Rapid spasms in muscle due to low Ca^{++} in body fluid'.

Based on these matches, the correct combination is i-b, ii-c, iii-d, iv-a.

Q.54 The joint between atlas and axis is called

Correct option: (A)

The joint between the atlas (C1) and axis (C2) vertebrae in the neck is a *pivot joint*. This type of joint allows for rotation of the head from side to side. The *odontoid process* (dens) of the axis projects upwards and fits into a ring formed by the atlas. This arrangement provides a strong pivot point for head rotation.

Q.55 Read the following statements and select the correct option.

i. The Malpighian corpuscle and DCT of the nephron are situated in the medulla region of the kidney.

ii. The loop of Henle connects to the collecting tubule.

iii. Cortical nephrons have short loop of Henle which does not penetrate deeply

into medulla.

iv. Juxta medullary nephrons have long loop of Henle which penetrate deeply into the medulla.

Correct option: (A)

i. The Malpighian corpuscle and DCT of the nephron are situated in the cortical region of the kidney.

ii. The loop of Henle connects to the DCT.

Q.56 The osmolarity of inner medulla of kidney is around

Correct option: (D)

The osmolarity of the inner medulla of the kidney is around 1200 mOsmol/L. This high osmolarity is essential for the concentration of urine. The inner medulla contains the loop of Henle and collecting ducts, which play a crucial role in regulating water reabsorption. The high osmolarity is created by a countercurrent multiplier mechanism, where the loop of Henle continuously pumps sodium ions out of the ascending limb, creating a concentration gradient. This gradient drives water reabsorption from the descending limb and collecting duct, resulting in concentrated urine.

Q.57 The joint found in head of upper arm and pectoral girdle is

Correct option: (B)

The joint found in the head of the upper arm (humerus) and the pectoral girdle (shoulder blade or scapula) is a *ball and socket joint*. This type of joint allows for a wide range of motion, including flexion, extension, abduction, adduction, rotation, and circumduction. The head of the humerus (the ball) fits into the glenoid cavity of the scapula (the socket). This allows for the arm to move in almost any direction.

Q.58 Which of the following is called 'thin' filaments?

Correct option: (B) Actin

Self Explanatory

Q.59 Micturition is a process by which urine is

Correct option: (B) released

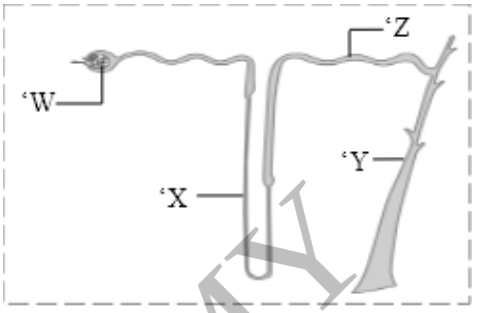
Self Explanatory

Q.60 The DCTs of many nephrons open into a straight tube called

Correct option: (D)

The *collecting duct* is the straight tube that receives filtrate from multiple nephrons. It plays a crucial role in regulating water and electrolyte balance in the body.

Q.61



In the given diagram, water absorption does NOT occur in part labelled as

Correct option: (A) W

The part labelled as 'W' is Malpighian body which does not absorb water but carries out ultrafiltration. Water reabsorption is done by PCT, DCT, collecting tubule and descending limb of loop of Henle.

Q.62 Which of the following is NOT a bone present in the middle ear?

Correct option: (B)

Occipital condyle is present at the base of the skull and articulate with the first verterbra.

Q.63 Assertion (A): Wall of heart of man releases the atrial natriuretic factor.

Reason (R): Increased flow of blood into the atria.

The correct option among the following is:

Correct option: (A)

The wall of the heart releases the atrial natriuretic factor in response to increased blood flow into the atria. This is because the heart senses the increased blood volume and releases ANF to help reduce it. Thus, both assertion and reason are true and reason is the correct explanation of assertion. So, *A is true, R is true and R is the correct explanation for A* is the correct option.

Q.64 Which of the following hormone is secreted by the atria of heart?

Correct option: (B)

ANF (Atrial Natriuretic Factor) is a hormone secreted by the atria of the heart. It helps regulate blood pressure and volume by promoting sodium and water excretion by the kidneys. This decreases the blood volume and thus blood pressure.

Q.65 Match the following parts of a nephron with their function:

i.	Descending limb of Henle's loop	a.	Reabsorption of salts only
ii.	Proximal convoluted tubule	b.	Reabsorption of water only
iii.	Ascending limb of Henle's loop	c.	Conditional reabsorption of sodium ions and water
iv.	Distal convoluted tubule	d.	Reabsorption of ions, water and organic nutrients

Select the correct option from the following:

Correct option: (C)

The correct matches for the parts of the nephron and their functions are as follows:

1. The *Descending limb of Henle's loop* is permeable to water but largely impermeable to solutes. Therefore, its primary function is **Reabsorption of water only**. This matches (i) with (b).
2. The *Proximal convoluted tubule* (PCT) is the site where most of the filtrate's essential substances are reabsorbed. This includes a significant portion of **Reabsorption of ions, water and organic nutrients**. This matches (ii) with (d).
3. The *Ascending limb of Henle's loop* is impermeable to water but actively transports salts out of the filtrate. Hence, its function is **Reabsorption of salts only**. This matches (iii) with (a).
4. The *Distal convoluted tubule* (DCT) is involved in conditional reabsorption and secretion, influenced by hormones. It performs **Conditional reabsorption of sodium ions and water**. This matches (iv) with (c).

Combining these matches, the correct option is i-b, ii-d, iii-a, iv-c.

Q.66 _____ is a flat bone on the ventral midline of thorax.

Correct option: (B)

The *Sternum* is a flat bone located in the center of the chest, forming the front of the rib cage. It is situated on the ventral midline of the thorax, providing attachment for the ribs and contributing to the chest's structural integrity.

Q.67 Removal of proximal convoluted tubule from the nephron will result in

Correct option: (C)

Since about 70-80% of electrolytes and water are reabsorbed by the Proximal Convoluted Tubule (PCT), its removal will lead to production of more diluted urine.

Q.68 Which of the following is NOT a property of skeletal muscle?

Correct option: (D) Rigidity

Self Explanatory

Q.69 Myasthenia gravis is

Correct option: (B)

Myasthenia gravis is an *autoimmune disorder* characterized by weakness and rapid fatigue of skeletal muscles. It occurs when the body's immune system mistakenly attacks the receptors for acetylcholine, a neurotransmitter that is essential for muscle contraction. This leads to impaired communication between nerves and muscles, resulting in muscle weakness.

Q.70 Striated muscles are also called

Correct option: (C)

Striated muscles are also known as *skeletal muscles*. They are attached to bones and are responsible for voluntary movements. The striations in skeletal muscle refer to the alternating light and dark bands that are visible under a microscope. These bands are created by the arrangement of proteins called actin and myosin, which are responsible for muscle contraction. So, the correct option is **skeletal muscles**.

Q.71 Muscles are classified on the basis of location as

Correct option: (A)

Muscles are classified based on their location, hence the correct option is skeletal, visceral, cardiac. Skeletal muscles are attached to bones, visceral muscles are found in internal organs, and cardiac muscles are specific to the heart.

Q.72 Arrange the vertebral bones from head to leg direction and select the correct option.

Correct option: (D)

The vertebral column is formed by 26 serially arranged bones called vertebrae. It is differentiated into five regions, arranged from the head to the leg (superior to inferior) in the following order: 1. **Cervical vertebrae (C)**: 7 vertebrae, located in the neck region. 2. **Thoracic vertebrae (T)**: 12 vertebrae, located in the chest region. 3. **Lumbar vertebrae (L)**: 5 vertebrae, located in the lower back. 4. **Sacrum (S)**: 1 bone formed by the fusion of 5 sacral vertebrae, located between the hips. 5. **Coccyx (Co)**: 1 bone formed by the fusion of 3-5 coccygeal vertebrae, also known as the tailbone. Therefore, the correct arrangement from head to leg is Cervical $\rightarrow$ Thoracic $\rightarrow$ Lumbar $\rightarrow$ Sacrum $\rightarrow$ Coccygeal.

Q.73 Glomerular filtrate is

Correct option: (A)

Glomerular filtrate is the fluid that is filtered from the blood in the glomerulus of the kidney. It is essentially *deproteinized plasma*. This means that it contains all the components of plasma except for the large proteins, which are too big to pass through the filtration barrier in the glomerulus. The other options are incorrect because:

- *Proteinised plasma* is the plasma that contains proteins.
- *Blood plasma* is the fluid component of blood, which contains proteins.
- *Urine stored in urinary bladder* is the final product of urine formation, which is different from glomerular filtrate.

Therefore, the correct answer is *deproteinised plasma*.

Q.74 The muscle fatigue occurs due to accumulation of

Correct option: (C) lactic acid

During muscle fatigue, due to deposition of lactic acid, cytoplasm becomes acidic, thereby enzyme activity stops and food is not oxidized and as the energy is not available, muscular contraction stops.

Q.75 Read the following statements and choose the correct option.

Statement I: Glucose present in the glomerular filtrate is reabsorbed by passive transport.

Statement II: Water is reabsorbed passively in the initial segments of the nephron.

Correct option: (B)

Statement I: Glucose present in the glomerular filtrate is reabsorbed almost completely in the proximal convoluted tubule (PCT) by secondary active transport, specifically Na+-glucose co-transport. This is an active process that requires energy (indirectly from the Na+/K+ pump). Therefore, Statement I is incorrect. Statement II: Water is reabsorbed passively by osmosis in the initial segments of the nephron, particularly the PCT and the descending limb of the loop of Henle. This passive movement follows the active reabsorption of solutes like Na+ and glucose, which creates an osmotic gradient. Therefore, Statement II is correct.

Q.76 _____ is commonly called as collar bone.

Correct option: (B)

The *Clavicle* is commonly known as the collar bone. It's a long, S-shaped bone that connects the shoulder blade (scapula) to the breastbone (sternum). It's responsible for providing support and stability to the shoulder joint.

Q.77 Which one of the following is the CORRECT matching of three items and their grouping category?

Correct option: (B)

Let's evaluate each option: * **(A) Items: Malleus, incus and cochlea; Group: Pyrimidines** * Malleus and Incus are ear ossicles. Cochlea is part

of the inner ear, but not an ear ossicle. Pyrimidines are nitrogenous bases (Cytosine, Uracil, Thymine). This matching is incorrect. * **(B) Items: Ilium, ischium and pubis; Group: Bones of pelvic girdle** * Ilium, Ischium, and Pubis are the three bones that fuse to form the coxal bone, which constitutes half of the pelvic girdle. This matching is correct. * **(C) Items: Actin, myosin and rhodopsin; Group: Muscle proteins** * Actin and Myosin are muscle proteins. Rhodopsin is a visual pigment found in the rod cells of the retina in the eye, not a muscle protein. This matching is incorrect. * **(D) Items: Cytosine, Uracil and Thiamine; Group: Ear ossicles** * Cytosine and Uracil are pyrimidines. Thiamine is Vitamin B1, not a pyrimidine. The ear ossicles are Malleus, Incus, and Stapes. This matching is incorrect. Therefore, the only correct matching is option (B).

Q.78 Medullary pyramids are

Correct option: (B)

The medullary pyramids are cone-shaped structures located within the renal medulla of the kidney. They are formed by collecting ducts and are responsible for collecting urine from the nephrons and transporting it to the renal pelvis. The *conical masses projecting into the calyces* accurately describes the shape and location of the medullary pyramids. They are *conical* in shape and *project* into the *calyces*, which are cup-like structures that collect urine from the renal pelvis.

Q.79 Identify the U-shaped bone present at the base of buccal cavity.

Correct option: (D)

The Hyoid bone is a U-shaped bone situated at the base of the buccal cavity. This bone is unique in that it does not articulate with any other bone, it is held in place by muscles and ligaments. Its primary function is to support the tongue and facilitate swallowing.

Q.80 Which of the following joints allow considerable movement?

Correct option: (A)

Synovial joints are characterized by a fluid-filled joint cavity that allows for a wide range of motion. This is because the synovial fluid acts as a lubricant, reducing friction between the bones. This joint type is found in the limbs, allowing for movements such as flexion, extension, abduction, adduction, rotation, and circumduction. ***Cartilaginous joints***, on the other hand, are connected by cartilage, providing limited movement. ***Fibrous joints*** are connected by fibrous connective tissue and are generally immovable. Therefore, synovial joints are the only type of joint that allows for considerable movement.

Q.81 Glycosuria and ketonuria are indicative of

Correct option: (A)

Glycosuria (excess glucose in the urine) and ketonuria (excess ketones in the urine) are classic signs of diabetes mellitus. This occurs when the body can't properly regulate blood sugar levels. In diabetes mellitus, either the pancreas isn't producing enough insulin (Type 1) or the body is resistant to insulin (Type 2). Without sufficient insulin, glucose can't enter cells for energy, leading to high blood sugar levels. This excess glucose spills over into the urine (glycosuria). The body also starts to break down fat for energy, producing ketones. These ketones are also excreted in the urine (ketonuria).

Q.82 Removal of proximal convoluted tubule from the nephron will result in [AIPMT 2015]

Correct option: (C) more diluted urine

Since about 70-80% of electrolytes and water are reabsorbed by the Proximal Convoluted Tubule (PCT), its removal will lead to production of more diluted urine.

Q.83 Major protein in the thick filament of skeletal muscle fibre is

Correct option: (B)

The thick filament of skeletal muscle fibers is primarily composed of *myosin*. Myosin is a motor protein responsible for generating force and movement during muscle contraction. It forms thick filaments that interact with thin filaments (composed of actin) to produce muscle shortening.

Q.84 Atrial natriuretic factor

Correct option: (B)

Atrial natriuretic factor (ANF) is a hormone secreted by the heart's atria in response to high blood pressure. ANF acts to *reduce blood pressure* and volume by:

- **Vasodilation**: ANF relaxes blood vessels, allowing more blood to flow through them, which lowers blood pressure.
- **Increased sodium excretion**: ANF promotes sodium excretion by the kidneys, which reduces blood volume and blood pressure.

Therefore, the correct answer is: **causes dilation of blood vessels and reduces blood pressure**.

Q.85 Femur, tibia and fibula are the

Correct option: (C)

Femur, tibia and fibula are the *bones of lower limb*. Femur is the largest and strongest bone in the human body and is located in the thigh. Tibia and fibula are the two bones that make up the lower leg. The tibia is larger and thicker than the fibula. They help to support the body's weight and allow for movement of the lower limb.

Q.86 Select the correct statement with respect to locomotion in humans.

Correct option: (B)

Let's evaluate each statement: * **(A) A decreased level of progesterone causes osteoporosis in old people.** This statement is incorrect. Osteoporosis, particularly in older women, is primarily linked to a decreased level of **estrogen**, not progesterone, leading to reduced bone density and increased fracture risk. * **(B) Accumulation of uric acid crystals in joints causes their inflammation.** This statement is **correct**. This condition is known as Gout, a common type of arthritis characterized by sudden, severe attacks of pain, swelling, redness, and tenderness in one or more joints, often the big toe. * **(C) The vertebral column has 10 thoracic vertebrae.** This statement is incorrect. The human vertebral column typically has **12 thoracic vertebrae** (T1-T12). * **(D) The joint between adjacent vertebrae is a fibrous joint.** This statement is incorrect. The joints between adjacent vertebrae (intervertebral disc joints) are **cartilaginous joints** (specifically symphyses), which allow limited movement, unlike fibrous joints (e.g., sutures in the skull) that are immovable. Therefore, the only correct statement is (B).

Q.87 Name the ion responsible for unmasking of active sites for myosin for cross-bridge activity during muscle contraction. [Phase II 2016]

Correct option: (B) Calcium

Self Explanatory

Q.88 Normally, the sweat produced by the sweat glands contain all of these, except

Correct option: (C)

Sweat, produced by sweat glands, consists primarily of water, along with electrolytes such as sodium chloride (NaCl), metabolic wastes like urea, and organic compounds such as lactic acid. Bilirubin, on the other hand, is a yellow pigment that is a product of heme breakdown and is secreted by the liver as a component of bile, not sweat.

Q.89 Three of the following pairs of the human skeletal parts are correctly matched with their respective inclusive skeletal category and one pair is not matched. Identify the non-matching pair.

Correct option: (B)

Clavicle and glenoid cavity fall into the category of pectoral girdle.

Q.90 The joint of radius-ulna with the upper arm is

Correct option: (A) hinge joint

A hinge joint allows bones to move forward or backward only in one direction. It occurs in knee and elbow.