

CUET PG 2024 Sports - Physiology Question Paper with Solutions

Time Allowed :1 Hour 45 Mins	Maximum Marks :300	Total Questions :75
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General Instructions

Read the following instructions very carefully and strictly follow them:

1. The examination duration is 105 minutes. Manage your time effectively to attempt all questions within this period.
2. The total marks for this examination are 300. Aim to maximize your score by strategically answering each question.
3. There are 75 mandatory questions to be attempted in the Library & Information Science paper. Ensure that all questions are answered.
4. Questions may appear in a shuffled order. Do not assume a fixed sequence and focus on each question as you proceed.
5. The marking of answers will be displayed as you answer. Use this feature to monitor your performance and adjust your strategy as needed.
6. You may mark questions for review and edit your answers later. Make sure to allocate time for reviewing marked questions before final submission.
7. Be aware of the detailed section and sub-section guidelines provided in the exam. Understanding these will aid in effectively navigating the exam.

1. Carbon, Hydrogen, Oxygen, Nitrogen represent the primary structural unit of:

- (1) Fat
- (2) Protein
- (3) Carbohydrate
- (4) Lipids

Correct Answer: (2) Protein

Solution:

Proteins are composed of amino acids, which primarily consist of Carbon (C), Hydrogen (H), Oxygen (O), and Nitrogen (N). These elements form the fundamental structure of proteins, making them essential for biological functions such as growth, tissue repair, and immune system support. While fats, carbohydrates, and lipids also contain some of these elements, their structural composition differs significantly. Thus, the correct answer is protein.

 Quick Tip

Proteins play a vital role in growth, repair, and overall body functions, with their structure primarily composed of Carbon, Hydrogen, Oxygen, and Nitrogen.

2. Which of the following is not a part of Macronutrient?

- (1) Fat
- (2) Amino Acid
- (3) Carbohydrate
- (4) Vitamin

Correct Answer: (4) Vitamin

Solution:

Macronutrients are essential nutrients that the body needs in large quantities for energy production and growth. These include fats, carbohydrates, and proteins. In contrast, vitamins are classified as micronutrients, as they are required in smaller amounts to facilitate various physiological functions. Hence, the correct answer is Vitamin, as it does not fall under the category of macronutrients.

 Quick Tip

Macronutrients supply energy and support growth, whereas micronutrients like vitamins and minerals aid in regulating bodily functions.

3. The enzyme "turns on" when its:

- (1) Active site joins in an "Imperfect fit" with substrates
- (2) Active site joins in a "perfect fit" with another enzyme
- (3) Inactive site joins in a "perfect fit" with substrates
- (4) Inactive site joins in a "perfect fit" with substrate's site

Correct Answer: (1) Active site joins in an "Imperfect fit" with substrates

Solution:

Enzymes operate based on the "induced fit" model, where the active site adjusts its shape to accommodate the substrate. Initially, the enzyme may not perfectly match the substrate, but upon binding, the active site undergoes a conformational change, ensuring a precise fit. This

structural adjustment activates the enzyme's catalytic function, making the imperfect initial fit a crucial step in the activation process.

 Quick Tip

Enzymes enhance their catalytic activity by slightly altering their shape when binding to a substrate, ensuring a more effective interaction.

4. Which of the following statement is true about saturated fatty acids:

- (1) One Single Bond Between Carbon Atoms
- (2) Double Carbon Bond between Carbon Atoms
- (3) Tri Carbon Bond between Carbon Atoms
- (4) Double Carbon Bond between Hydrogen Atoms

Correct Answer: (1) One Single Bond Between Carbon Atoms

Solution:

Saturated fatty acids are characterized by having single bonds between carbon atoms, making them "saturated" with hydrogen atoms. This saturation results in a straight chain structure, which allows the fatty acids to pack tightly together, making them solid at room temperature. In contrast, unsaturated fatty acids contain one or more double bonds between carbon atoms. Thus, the correct answer is that saturated fatty acids contain one single bond between carbon atoms.

 Quick Tip

Saturated fats have single bonds between carbon atoms, while unsaturated fats have at least one double bond.

5. Select the synthetic drug which is used to enhance the production of RBCs:

- (1) Anabolic Steroids
- (2) Beta-Blockers
- (3) Erythropoietin
- (4) Amphetamine

Correct Answer: (3) Erythropoietin

Solution:

Erythropoietin is a hormone responsible for stimulating the production of red blood cells (RBCs) in the bone marrow. It is commonly used to treat anemia and, in some cases, to enhance athletic performance by increasing RBC count, thereby improving oxygen delivery to muscles. In contrast, anabolic steroids promote muscle growth, beta-blockers regulate heart conditions, and amphetamines act as stimulants, but none of these directly influence RBC production. Thus, the correct answer is erythropoietin.

 Quick Tip

Erythropoietin plays a vital role in RBC production and is often used as a treatment for anemia.

6. Which of the following Chemical Senses are associated with Smell and Taste?

- (A). Audioception
- (B). Opthelmoceptiol
- (C). Olfactory Receptor
- (D). Gustatory Cells

Choose the correct answer from the options given below:

- (1) (A) and (C) only.
- (2) (C) and (D) only.
- (3) (B) and (D) only
- (4) (A) and (D) only.

Correct Answer: (2) (C) and (D) only.

Solution:

To determine which chemical senses are associated with smell and taste, let's evaluate each option:

Audioception: This refers to the sense of hearing and is not related to smell or taste, as it does not involve chemical detection.

Opthelmoceptiol: This is not a recognized scientific term and does not correspond to any known sensory function.

Olfactory Receptor: These receptors, located in the nasal cavity, detect odor molecules and are essential for the sense of smell.

Gustatory Cells: Found in the taste buds on the tongue, these cells are responsible for detecting taste molecules and enabling the sense of taste.

Thus, the correct answer is (C) Olfactory Receptor for smell and (D) Gustatory Cells for taste.

💡 Quick Tip

Smell and taste are chemical senses that depend on specific receptors detecting molecules. Olfactory receptors detect odors, while gustatory cells recognize taste.

7. Which of the following civilization comes under Indus Valley Civilization?

- (A) Aryan civilization
- (B) Harappan civilization
- (C) Vedic civilization
- (D) Mohenjo-daro civilization

Choose the correct answer from the options given below:

- (1) (A) and (B) only
- (2) (A), (B) and (D) only
- (3) (B) and (D) only
- (4) (B), (C) and (D) only

Correct Answer: (3) (B) and (D) only

Solution:

The Harappan Civilization, also known as the Indus Valley Civilization, encompassed ancient cities like Harappa and Mohenjo-daro. In contrast, the Aryan and Vedic civilizations developed later and were not part of the Indus Valley Civilization.

Thus, the correct answer is (B) and (D) only: Harappan Civilization and Mohenjo-daro Civilization.

 Quick Tip

The Indus Valley Civilization, commonly referred to as the Harappan Civilization, included major cities such as Harappa and Mohenjo-daro.

8. Trait Centered Orientation contends that motivated behaviour of sportsperson is primarily influenced by:

- (A) Personality Makeup
- (B) Environmental Push
- (C) Needs and Goals
- (D) Competitive Drive

Choose the correct answer from the options given below:

- (1) (A) and (D) only
- (2) (A) and (B) only
- (3) (A) and (C) only
- (4) (B) and (D) only

Correct Answer: (1) (A) and (D) only

Solution:

Trait-Centered Orientation suggests that an athlete's motivated behavior is primarily shaped by their personality traits and internal factors, such as their competitive drive. While external elements like environmental influences, needs, and goals may play a role, they are not the main determinants in this approach.

Thus, the correct answer is (A) and (D) only: Personality Makeup and Competitive Drive.

 Quick Tip

Trait-Centered Orientation emphasizes intrinsic factors, such as personality and competitive drive, rather than external influences.

9. Which of the following Theories of Motivation are not considered under Internal Stimulation:

- (A) Grand Theory
- (B) Expectancy Theory
- (C) Opponent Theory
- (D) Attribution Theory

Choose the correct answer from the options given below:

- (1) (A) and (C) only
- (2) (C) and (D) only
- (3) (A) and (D) only
- (4) (B) and (D) only

Correct Answer: (1) (A) and (C) only

Solution:

The Grand Theory and the Opponent Theory are not classified under Internal Stimulation as they do not primarily focus on internal motivation processes. In contrast, Expectancy Theory and Attribution Theory emphasize cognitive mechanisms related to motivation, making them

part of Internal Stimulation theories.

Thus, the correct answer is (A) and (C) only: Grand Theory and Opponent Theory.

 Quick Tip

Internal Stimulation theories center on cognitive processes influencing motivation, whereas Grand and Opponent Theories do not primarily focus on internal motivation.

10. Arrange the following psycho-sexual developmental stages of Men proposed by Segment Freud under his personality theory:

- (A) Genital Stage
- (B) Anal Stage
- (C) Phallic Stage
- (D) Oral Stage

Choose the correct answer from the options given below:

- (1) (D), (B), (C), (A)
- (2) (A), (B), (C), (D)
- (3) (B), (A), (D), (C)
- (4) (C), (B), (D), (A)

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

Solution:

Freud's stages of psycho-sexual development follow a specific sequence:

- 1. Oral Stage (D)
- 2. Anal Stage (B)
- 3. Phallic Stage (C)
- 4. Genital Stage (A)

Thus, the correct order is (D), (B), (C), (A).

 Quick Tip

Freud's stages are based on psychosexual development, with each stage focusing on different erogenous zones.

11. Arrange the following provisions of Food Safety Acts as per their establishment years from recent to beginning:

- (A) Indian Penal Court 1860
- (B) Consumer Protection Act
- (C) Export Amendment Act
- (D) Environment Protection Act
- (E) The Insecticides Act

Choose the correct answer from the options given below:

- (1) (A), (B), (D), (E), (C)
- (2) (C), (B), (D), (E), (A)
- (3) (B), (C), (A), (D), (E)
- (4) (B), (C), (D), (E), (A)

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

Solution:

The correct chronological order of the provisions of Food Safety Acts based on their establishment years is:

- (B) Consumer Protection Act - 1986
- (C) Export Amendment Act - 1963
- (D) Environment Protection Act - 1986
- (E) The Insecticides Act - 1968
- (A) Indian Penal Code 1860

Thus, the correct order from recent to beginning is (B), (C), (D), (E), (A).

💡 Quick Tip

Remember that the provisions of food safety laws follow a historical timeline and are influenced by national events and policies.

12. According to the "Attribution theory", identify the factors categorized as Internal Attribution:

- (A) Ability
- (B) Task Difficulty
- (C) Luck
- (D) Efforts

Choose the correct answer from the options given below:

- (1) (A) and (B) only.
- (2) (A) and (C) only.
- (3) (A) and (D) only.
- (4) (C) and (D) only.

Correct Answer: (3) (A) and (D) only.

Solution:

Internal attribution refers to the factors that people attribute their success or failure to that are within their control. According to Attribution Theory, factors like Ability (A) and Efforts (D) are internal attributions. These factors are within the individual's control, unlike external factors like Task Difficulty (B) and Luck (C), which are classified as external attributions.

💡 Quick Tip

Internal attributions focus on personal control, such as efforts and abilities, whereas external attributions are related to outside factors like task difficulty or luck.

13. The Angular Inertia of the pendulum consists of its:

- (A) Shape
- (B) Mass (Weight)
- (C) Length
- (D) Gravity

Choose the correct answer from the options given below:

- (1) (A) and (B) only.
- (2) (A) and (C) only.

(3) (B) and (C) only.

(4) (B) and (D) only.

Correct Answer: (3) (B) and (C) only.

Solution:

The angular inertia (or moment of inertia) of a pendulum is influenced by its mass (B) and its length (C), as these factors determine how the pendulum resists rotational acceleration. The shape (A) is a consideration in different types of objects but not directly in the case of a pendulum. Gravity (D) affects the motion of the pendulum but not its angular inertia. Therefore, the correct answer is (B) and (C).

 Quick Tip

Angular inertia depends on mass distribution and the distance from the pivot, which is captured by mass and length in the case of a pendulum.

14. Arrange the Sequence of evolutionary stages of Group Dynamics:

(A) Storming

(B) Norming

(C) Forming

(D) Performing

Choose the correct answer from the options given below:

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

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

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

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

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

Solution:

The sequence of evolutionary stages in group dynamics is as follows: 1. (C) Forming: This is the first stage where the group is getting to know each other. 2. (A) Storming: The group faces conflicts as members challenge each other. 3. (B) Norming: The group starts to establish norms and roles. 4. (D) Performing: The group begins to work effectively toward goals. Thus, the correct order is (C), (A), (B), (D).

 Quick Tip

In group dynamics, the storming phase can be challenging, but it is necessary for team growth and cohesion.

15. Find the incorrect statement about DNA:

(A). It replicates itself exactly before a cell division

(B). Provides instructions in building protein

(C). It is always located outside the nucleus

(D). DNA is formed by Nucleotides

Choose the correct answer from the options given below:

(1) (A)

(2) (B)

(3) (C)

(4) (D)

Correct Answer: (3) (C)

Solution:

The incorrect statement is (C) "It is always located outside the nucleus". This is false because DNA is primarily located in the nucleus of eukaryotic cells. Statements (A), (B), and (D) are correct because DNA replicates before cell division, provides instructions for protein synthesis, and is formed by nucleotides.

 Quick Tip

DNA is primarily found inside the nucleus, and it is crucial for storing genetic information.

16. Match List I with List II

LIST I		LIST II	
A.	Science of Heredity	I.	Gastrin
B.	Hormone that stimulate gastric secretion	II.	Genitalia
C.	External Sex Organ	III.	Gene
D.	Biological Unit of Heredity	IV.	Genetics

Choose the correct answer from the options given below:

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

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

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

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

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

Solution:

Let's match each term in List I with its corresponding definition in List II:

A. Science of Heredity: Genetics is the scientific study of heredity and variation of inherited characteristics. Therefore, A matches with IV.

B. Hormone that stimulate gastric secretion: Gastrin is a hormone that stimulates the secretion of gastric acid by parietal cells in the stomach. Thus, B matches with I.

C. External Sex Organ: Genitalia refers to the external sex organs. Hence, C matches with II.

D. Biological Unit of Heredity: A gene is the basic physical and functional unit of heredity, composed up of DNA. So, D matches with III.

Therefore, the correct matching is: A - IV (Genetics) B - I (Gastrin) C - II (Genitalia) D - III (Gene)

 Quick Tip

When matching terms, carefully consider the definitions and relationships between the items in the lists. Understand the fundamental concepts of each term.

17. Match List I with List II

LIST I (Proposed Theory)		LIST II (Thinker)	
A.	Drive Theory	I.	Clark Hull
B.	Need Theory	II.	Abraham Maslow
C.	Instinct Theory	III.	William McDougal
D.	Opponent-Process Theory	IV.	Richard Solomon

Choose the correct answer from the options given below:

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

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

Solution:

Drive Theory (A) was proposed by Clark Hull (I). Hull's theory explains how biological drives (like hunger or thirst) motivate behavior. Need Theory (B), which was developed by Abraham Maslow (II), focuses on the hierarchy of human needs, where physiological needs are the foundation. Instinct Theory (C), associated with William McDougal (III), claims that behaviors are motivated by instincts. Opponent-Process Theory (D) was proposed by Richard Solomon (IV), describing how people respond to stimuli by developing opposing reactions. Thus, the correct answer is (2): (A) - (I), (B) - (II), (C) - (III), (D) - (IV).

💡 Quick Tip

Understanding each theorist's core contributions helps in matching their theories to their names accurately.

18. Match List I with List II

LIST I		LIST II	
A.	Force of Rotation	I.	Gravity
B.	What causes our Weight	II.	Centre of Gravity
C.	Balance Point	III.	Torque
D.	A simple tool or machine	IV.	Lever

Choose the correct answer from the options given below:

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

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

Solution:

The Force of Rotation (A) is best explained by Torque (III), as torque is the force that causes rotation in an object.

What causes our weight (B) is directly related to Gravity (I), which is the force exerted by Earth on all objects. The Balance Point (C) is associated with the Centre of Gravity (II), as the balance point of an object lies at its center of gravity. A simple tool or machine (D) refers to a Lever (IV), a basic mechanical tool that amplifies force.

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

 Quick Tip

Linking physical concepts like torque, gravity, and balance points can help with matching terms.

19. Match List I with List II

LIST I		LIST II	
A.	Mustard Oil	I.	Papaya Seeds
B.	Milk & Curd	II.	Argemone Oil
C.	Pulses	III.	Starch Powder
D.	Black Pepper	IV.	Dyes Chemical & Lead Chromate

Choose the correct answer from the options given below:

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

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

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

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

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

Solution:

A. Mustard Oil is often adulterated with II. Argemone Oil. Argemone oil is toxic and can cause serious health problems.

B. Milk & Curd are commonly adulterated with III. Starch Powder to increase their thickness and volume.

C. Pulses are sometimes adulterated with IV. Dyes Chemical & Lead Chromate to enhance their color and make them appear more appealing. D. Black Pepper can be adulterated with I. Papaya Seeds as they look similar and are cheaper.

Therefore, the correct matching is:

- A - II
- B - III
- C - IV
- D - I

 Quick Tip

Understanding the natural sources of products like oils and dyes helps in matching them correctly.

20. Arrange the following Pre-Natal and Post-Natal stages in a sequential order from the First to Last:

- (A) Embryo
- (B) Parturata
- (C) Zygote
- (D) Neonate

(E) Fetus

Choose the correct answer from the options given below:

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

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

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

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

Correct Answer: (3) (C), (A), (E), (B), (D)

Solution:

The correct sequence of Pre-Natal and Post-Natal stages is as follows:

Zygote (C) is the initial stage after fertilization.

Embryo (A) follows, as the fertilized egg divides and develops into an embryo.

Fetus (E) follows the embryonic stage, marking a stage where the body parts start to form more distinctly.

Parturata (B) refers to the labor and delivery process.

Neonate (D) is the newborn, after birth.

Thus, the correct answer is (1): (C), (A), (E), (D), (B).

 Quick Tip

The sequence of prenatal and postnatal stages is critical for understanding human development.

21. Select the Psychological Signs which are associated with the Use of Drug:

(A) Disordered Thinking

(B) Denial of Problems

(C) Chronic Fatigue

(D) Thought of Suicide

(E) Bloodshot Eyes

Choose the correct answer from the options given below:

(1) (A), (B), (D) only.

(2) (A), (C), (D) only.

(3) (B), (D), (E) only.

(4) (A), (D), (E) only.

Correct Answer: (1) (A), (B), (D) only.

Solution:

Psychological signs that are commonly associated with drug use include disordered thinking (A), denial of problems (B), and thoughts of suicide (D). Chronic fatigue and bloodshot eyes are physical signs rather than psychological. Thus, the correct answer is (A), (B), (D).

 Quick Tip

Drug use can cause various mental and emotional issues. Being aware of psychological signs like disordered thinking and suicidal thoughts is crucial for early intervention.

22. Which of the following Cells does not contain a Nucleus:

- (A) Myofiber
- (B) Neuron
- (C) Osteocytes
- (D) Red Blood Cells

Choose the correct answer from the options given below:

- (1) (A) and (B) only.
- (2) (B) and (C) only.
- (3) (A) and (D) only.
- (4) (D) only.

Correct Answer: (4) (D) only.

Solution:

Red blood cells (D) are unique in that they lack a nucleus, allowing for more space to carry oxygen. Myofibers (A), Neurons (B), and Osteocytes (C) all contain a nucleus. Therefore, the correct answer is (D) only.

 Quick Tip

While most cells in the body have a nucleus, red blood cells are an exception, evolving to be more efficient at carrying oxygen by discarding their nucleus.

23. Match List I with List II

LIST I		LIST II	
A.	Force	I.	Newton.Meter
B.	Pressure	II.	Newton.Second
C.	Impulse	III.	Pascal
D.	Torque	IV.	Newton

Choose the correct answer from the options given below:

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

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

Solution:

In physics, Force is measured in Newtons (IV), Pressure in Pascals (III), Impulse in Newton-Seconds (II), and Torque in Newton-Meters (I). Matching these terms with the correct units gives the solution as (A) - (IV), (B) - (I), (C) - (II), (D) - (III).

 Quick Tip

Understanding the correct units for physical quantities is essential for solving problems in mechanics and thermodynamics.

24. Match List I with List II

LIST I		LIST II	
A.	Emotion Resulting from harms, losses, threats	I.	Happiness
B.	Border line cases	II.	Challenge
C.	Emotion resulting from benefits	III.	Hope
D.	Non-Emotions	IV.	Anger

Choose the correct answer from the options given below:

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

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

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

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

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

Solution:

Emotion resulting from harms, losses, and threats is Anger (IV), borderline cases are classified as Challenge (II), emotion resulting from benefits is Hope (III), and non-emotions are Happiness (I). Thus, the correct answer is (A) - (IV), (B) - (II), (C) - (III), (D) - (I).

Quick Tip

Understanding emotional responses can help in personal development and managing interpersonal relationships.

25. Which of the following is a Trace Mineral?

(1) Sodium

(2) Calcium

(3) Iron

(4) Potassium

Correct Answer: (3) Iron

Solution:

Iron is a trace mineral, which means it is required by the body in very small amounts but is essential for processes like oxygen transport. Sodium, Calcium, and Potassium are major minerals, needed in larger quantities. Therefore, the correct answer is Iron.

Quick Tip

Trace minerals like iron are crucial for the proper functioning of enzymes and the transport of oxygen in the body.

26. Match List I with List II

LIST I		LIST II	
A.	Intrinsic Motivation	I.	Need to Eat
B.	Primary Motivation	II.	Becoming Proficient in French Language
C.	Extrinsic Motivation	III.	Self Responsibility about Task
D.	Secondary Motivation	IV.	Cash Reward of Tournament

Choose the correct answer from the options given below:

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

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

Solution:

Let's match each term in List I with its corresponding definition in List II:

A. Intrinsic Motivation: This refers to motivation that comes from within, such as the satisfaction of performing a task itself. Self Responsibility about Task (III) aligns with this.

B. Primary Motivation: These are basic biological needs. Need to Eat (I) is a fundamental primary motivation.

C. Extrinsic Motivation: This is motivation driven by external rewards. Cash Reward of Tournament (IV) represents an external reward.

D. Secondary Motivation: These are learned or acquired motivations. Becoming Proficient in French Language (II) is a learned motivation.

Therefore, the correct matching is:

A - III (Self Responsibility about Task)

B - I (Need to Eat)

C - IV (Cash Reward of Tournament)

D - II (Becoming Proficient in French Language)

💡 Quick Tip

Understand the distinctions between intrinsic and extrinsic motivations, as well as primary and secondary motivations. Remember that primary motivations are innate, while secondary motivations are learned.

27. Match List I with List II

LIST I		LIST II	
A.	Perimysium	I.	The basic functional unit of Myofibril
B.	Sarcomeres	II.	A sheath of connective tissue that cover each muscle fibers
C.	Epimysium	III.	A sheath of connective tissue that cover each fascicles
D.	Endomysium	IV.	It surrounds the entire muscle

Choose the correct answer from the options given below:

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

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

Solution:

Perimysium (A) is the connective tissue that surrounds fascicles, so it corresponds to (III) "A sheath of connective tissue that covers each fascicle."

Sarcomeres (B) are the functional units of myofibrils and are best matched with (I) "The basic functional unit of myofibril."

Epimysium (C) surrounds the entire muscle, making it match with (II) "A sheath of

connective tissue that covers each muscle fiber.”

Endomysium (D) surrounds individual muscle fibers, making it match with (IV) ”It surrounds the entire muscle.”

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

 Quick Tip

Understanding the structure of muscle tissue helps in associating the correct types of connective tissue.

28. Match List I with List II

LIST I		LIST II	
A.	Down Syndrome	I.	47,XXY
B.	Turner Syndrome	II.	45,X
C.	Klinefelter Syndrome	III.	Defective Chromosomes - 5
D.	Cri-du-chat Syndrome	IV.	Trisomy-21

Choose the correct answer from the options given below:

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

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

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

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

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

Solution:

Down Syndrome (A) is caused by Trisomy-21, where there is an extra chromosome 21, so it matches with (IV).

Turner Syndrome (B) is caused by a missing X chromosome, so it is matched with (II), 45,X.

Klinefelter Syndrome (C) occurs when males have an extra X chromosome, leading to 47,XXY, so it matches with (I).

Cri-du-chat Syndrome (D) is caused by a deletion of part of chromosome 5, thus it corresponds with (III), ”Defective Chromosomes - 5.”

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

 Quick Tip

Chromosomal disorders can be identified by the number of chromosomes or specific deletions.

29. Match List I with List II

LIST I		LIST II	
A.	Albumin	I.	Transports Copper
B.	Trans Thyretin	II.	Transports Calcium
C.	Trans Ferrin	III.	Transports Vitamin A
D.	Ceruloplasmin	IV.	Transports Iron

Choose the correct answer from the options given below:

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

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

Solution:

Albumin (A) is a protein that transports various substances, but it is primarily known for its ability to transport calcium, so it corresponds with (II).

Trans Thyretin (B) is responsible for the transport of Vitamin A, so it corresponds with (III).

Trans Ferrin (C) is a transport protein for iron, so it is matched with (IV).

Ceruloplasmin (D) is involved in copper transport, hence it matches with (I).

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

 Quick Tip

Proteins can serve as transporters for different minerals and vitamins. Knowing the primary function helps in matching.

30. The Muscle fibers which are fast oxidative, contain high myoglobin content and high density of blood capillaries and are resistant to fatigue are:

- (1) Type-I
- (2) Type-IIa
- (3) Type-IIb
- (4) Type-IIx

Correct Answer: (2) Type-IIa

Solution:

Type-IIa muscle fibers are known as fast oxidative fibers, as they possess a high density of blood capillaries and myoglobin content. These fibers are resistant to fatigue and are typically used in endurance activities. They have both oxidative and glycolytic properties, making them efficient for both aerobic and anaerobic activities.

Thus, the correct answer is (2): Type-IIa fibers.

 Quick Tip

Type-IIa fibers are a balance between speed and endurance, suitable for activities requiring both strength and stamina.

31. Ephedrina Drug contributes in:

- (A) Increased Fat Loss

- (B) Does not promote Fat Loss
- (C) Raises the Level of Concentration
- (D) Reduces the Level of Concentration

Choose the correct answer from the options given below:

- (1) (B) and (C) only.
- (2) (C) and (D) only.
- (3) (A) and (D) only.
- (4) (B) and (D) only.

Correct Answer: (1) (B) and (C) only.

Solution:

Ephedrina drug is known for its effects on increasing concentration (C) and not promoting fat loss (B). It has been used to improve alertness and focus. Therefore, the correct answer is (B) and (C).

 Quick Tip

Ephedrina has stimulant properties and is used in increasing concentration but does not contribute to fat loss as often perceived.

32. The system consisting of nerves that transmit information to and from the Central Nervous System is:

- (1) Brain
- (2) Spinal Cord
- (3) Cerebellum
- (4) Peripheral Nervous System

Correct Answer: (4) Peripheral Nervous System

Solution:

The Peripheral Nervous System (PNS) consists of nerves that extend from the brain and spinal cord, transmitting information to and from the Central Nervous System. The brain, spinal cord, and cerebellum are part of the Central Nervous System. Thus, the correct answer is the Peripheral Nervous System.

 Quick Tip

The Peripheral Nervous System connects the brain and spinal cord to the rest of the body, enabling communication and sensory input.

33. The Metacarpal bones are also usually associated with injury which is known as:

- (1) Carpal Syndrome
- (2) Fractured Clavicle
- (3) Boxer's Wrist
- (4) Boxer's Fracture

Correct Answer: (4) Boxer's Fracture

Solution:

Boxer's Fracture refers to a fracture of the metacarpal bones, commonly occurring due to punching or impact to the fist. Carpal Syndrome affects the wrist, and fractured clavicle is unrelated to the metacarpals. Therefore, the correct answer is Boxer's Fracture.

 Quick Tip

Boxer's Fracture is a common injury resulting from improper fist impact. It's important to use proper form to avoid injury.

34. Arrange the following Solid Items in an ascending order in respect to Speed of Sound:

- (A) Aluminium
 - (B) Copper
 - (C) Granite
 - (D) Steel
- (1) (B), (D), (A), (C).
 - (2) (A), (C), (B), (D).
 - (3) (A), (C), (D), (B).
 - (4) (B), (D), (C), (A).

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

Solution:

The speed of sound varies based on the material's density and elasticity. Copper (B) has the highest speed of sound, followed by steel (D), aluminium (A), and granite (C) with the slowest speed of sound. Thus, the correct order is (B), (D), (A), (C).

 Quick Tip

The speed of sound is faster in denser and more elastic materials. Metals like copper and steel allow sound to travel faster.

35. Which of the following disease is associated with Psychosomatic Disorder?

- (1) Diabetes
- (2) Asthma
- (3) Cardiovascular Disease
- (4) Tuberculosis

Correct Answer: (3) Cardiovascular Disease

Solution:

Psychosomatic disorders are physical diseases that are caused or worsened by mental factors. Cardiovascular disease is commonly linked to stress, anxiety, and depression, which are key components of psychosomatic disorders. The other diseases are less directly connected to psychological factors.

 Quick Tip

Psychosomatic disorders show how mental health can influence physical health, especially in conditions like cardiovascular disease.

36. Which of the following categories of skills, girls acquire speedily and more accurately as compared to their male counterpart in same age group?

- (1) Conceptual skills
- (2) Coordinative Skills
- (3) Communication Skills
- (4) Precision Skills

Correct Answer: (3) Communication Skills

Solution:

Let's analyze each option to determine which skills girls tend to acquire more speedily and accurately compared to boys of the same age group: Conceptual skills: These involve understanding abstract ideas and concepts. While girls and boys may develop these at different rates, it's not generally considered a skill where girls have a consistent, significant advantage. Coordinative Skills: These involve coordinating movements, often related to physical activities. While there may be slight differences, it's not a category where girls are consistently faster or more accurate. Communication Skills: Girls often demonstrate earlier development in language and communication skills. They tend to have larger vocabularies, better articulation, and more effective use of language in social interactions. Precision Skills: These involve fine motor skills and accuracy in tasks. While girls may sometimes excel in certain fine motor tasks, it's not as consistently pronounced as communication skills. Therefore, the most accurate answer is that girls acquire communication skills more speedily and accurately compared to boys in the same age group.

 Quick Tip

Remember that while there might be general trends, individual differences are significant. Focus on the typical developmental patterns observed in large groups.

37. Formula of Velocity is:

- (1) Velocity = Change in displacement / Time
- (2) Velocity = Total Distance / Time
- (3) Velocity = Change in Displacement / Speed
- (4) Velocity = Time / Change in Displacement

Correct Answer: (1) Velocity = Change in displacement / Time

Solution:

The formula for velocity is given by the change in displacement divided by the time taken. This is a vector quantity that measures the rate at which an object changes its position. Unlike speed, which is the total distance traveled over time, velocity accounts for the direction of motion. Therefore, the correct formula is:

$$\text{Velocity} = \frac{\text{Change in Displacement}}{\text{Time}}$$

Thus, the correct answer is (1): $\text{Velocity} = \text{Change in displacement} / \text{Time}$.

 Quick Tip

Remember, velocity is a vector, which means it includes both magnitude and direction, while speed only refers to the magnitude.

38. When a joint moves and reduces its angle, the resultant movement is known as:

- (1) Protraction
- (2) Flexion
- (3) Pronation
- (4) Extension

Correct Answer: (2) Flexion

Solution:

Flexion is a movement that reduces the angle between two body parts. It typically occurs in joints like the elbow or knee when they bend. This movement decreases the angle, such as bending the arm at the elbow or the leg at the knee. In contrast, extension increases the angle between body parts. Therefore, the correct answer is Flexion.

Thus, the correct answer is (2): Flexion.

 Quick Tip

To differentiate between flexion and extension, remember that flexion decreases the angle, while extension increases it.

39. From the point of view of Biomechanics, Gravity is Squarely responsible for our:

- (1) Volume
- (2) Weight
- (3) Stability
- (4) Equilibrium

Correct Answer: (2) Weight

Solution:

From a biomechanical perspective, gravity is primarily responsible for weight. Weight is the force exerted on an object due to gravity. It is calculated by multiplying the mass of the object by the acceleration due to gravity. While gravity also affects stability and equilibrium, it is directly responsible for weight. Therefore, the correct answer is weight.

Thus, the correct answer is (2): Weight.

 Quick Tip

Weight is always the result of gravity's pull on an object, while stability and equilibrium involve additional factors like posture and balance.

40. In the Cardiac Muscles, the Heart Beat is Controlled by Non-Contractile Cells in the Heart which are known as:

- (1) Purkinje Fibers
- (2) Sinoatrial Node
- (3) Atrioventricular Node
- (4) Septum

Correct Answer: (2) Sinoatrial Node

Solution:

The heart's rhythm is regulated by specialized non-contractile cells in the sinoatrial (SA) node, which is located in the right atrium of the heart. These cells generate electrical impulses that initiate the heartbeat, causing the heart muscle to contract. The impulses travel through the atria to the atrioventricular (AV) node and then to the ventricles. Thus, the SA node is responsible for controlling the heartbeat.

Thus, the correct answer is (2): Sinoatrial Node.

💡 Quick Tip

The Sinoatrial node is the natural pacemaker of the heart and ensures rhythmic contraction of the heart.

41. Identify the factors, besides Glycogen Depletion, which contributes to the On-Set of Fatigue:

- (A) Decreased Blood PH
- (B) Lactic Acid Accumulation
- (C) Oxygen Depletion
- (D) Muscular Tension
- (E) Dehydration

Choose the correct answer from the options given below:

- (1) (A), (B), (C), and (E) only.
- (2) (A), (B), (C), and (D) only.
- (3) (B), (C), (D), and (E) only.
- (4) (A), (C), (D), and (E) only.

Correct Answer: (1) (A), (B), (C), and (E) only.

Solution:

Fatigue during exercise occurs due to multiple factors, not just glycogen depletion. Key contributors to fatigue include:

(A) Decreased Blood PH: Blood pH drops during intense exercise, leading to acidosis. This can interfere with muscle contractions and lead to fatigue.

(B) Lactic Acid Accumulation: When muscles work at high intensity and oxygen is limited, lactic acid is produced as a byproduct, causing discomfort and fatigue.

(C) Oxygen Depletion: During intense exercise, oxygen delivery to muscles may not meet the demand, resulting in fatigue as the body switches to anaerobic metabolism.

(E) Dehydration: Dehydration reduces blood volume, impairs thermoregulation, and diminishes muscle function, contributing to fatigue.

Therefore, the correct answer is (A), (B), (C), and (E).

Quick Tip

During exercise, fatigue is caused by a combination of metabolic byproducts, oxygen deficits, and dehydration. Keep hydrated and pace yourself to reduce the impact of these factors.

42. One egg contains grams of Protein.

- (1) 25.9 gram
- (2) 19.3 gram
- (3) 6.3 gram
- (4) 18.5 gram

Correct Answer: (3) 6.3 gram

Solution:

One large egg contains about 6.3 grams of protein, making it an excellent source of high-quality protein. This protein is highly bioavailable, meaning the body can absorb and use it efficiently. The protein in eggs is essential for muscle repair, growth, and overall body function.

Egg white contains the majority of the protein, while the yolk provides fats and other essential nutrients like vitamins and minerals.

Eggs are a staple for those seeking a balanced diet, especially for muscle building and weight management.

Thus, the correct answer is 6.3 grams of protein.

Quick Tip

Eggs are an affordable and nutritious source of protein. If you're trying to build muscle, consider incorporating them into your diet.

43. Which of the following are water-soluble vitamins?

- (1) Vitamin B & C
- (2) Vitamin A & D
- (3) Vitamin E & K
- (4) Vitamin D & E

Correct Answer: (1) Vitamin B & C

Solution:

Water-soluble vitamins include Vitamin B and Vitamin C. These vitamins are readily absorbed into the bloodstream and are not stored in the body for long periods, meaning they must be replenished regularly through the diet.

Vitamin B group: Includes B1 (Thiamine), B2 (Riboflavin), B3 (Niacin), B6, B12, Folate, etc. They play key roles in energy production, brain function, and red blood cell formation.

Vitamin C: Also known as ascorbic acid, it is vital for immune function, skin health, and the repair of tissues.

Vitamin A, D, E, and K are fat-soluble vitamins, stored in the body's fatty tissue and liver. Thus, the correct answer is Vitamin B & C.

💡 Quick Tip

Water-soluble vitamins are important for maintaining energy levels, immune function, and cellular health. They need to be regularly consumed as the body cannot store them.

44. During intense exercise, when hydrogen oxidation does not keep pace with its production, the pyruvate temporarily binds with which molecule to form lactate?

- (1) Oxygen
- (2) NADH
- (3) Hydrogen
- (4) FADH

Correct Answer: (2) NADH

Solution:

During intense exercise, the production of hydrogen ions (H^+) increases faster than oxygen can be delivered to the muscles for oxidation. As a result, NADH (nicotinamide adenine dinucleotide) donates electrons to pyruvate, leading to the formation of lactate (lactic acid). This reaction allows the regeneration of NAD^+ so that glycolysis can continue and produce energy in the absence of sufficient oxygen (anaerobic conditions).

The formation of lactate helps the body cope with the energy demands during high-intensity exercise, but the accumulation of lactate contributes to muscle fatigue.

Thus, the correct molecule that pyruvate binds with is NADH.

💡 Quick Tip

Lactate formation during anaerobic exercise is a natural process that helps generate energy, but it can also lead to muscle soreness and fatigue.

45. Which Nutrient deficiency in diet will rapidly deplete Muscle and Liver Glycogen and profoundly affect the capacity for both Intense Anaerobic Exercise and Long Duration Aerobic Exercise?

- (1) Protein
- (2) Fat
- (3) Carbohydrate
- (4) Fatty Acid

Correct Answer: (3) Carbohydrate

Solution:

Carbohydrate deficiency is the primary cause of rapid depletion of muscle and liver glycogen. Glycogen is the stored form of carbohydrate in muscles and the liver and is the primary fuel source during both anaerobic exercise (e.g., weightlifting, sprinting) and aerobic exercise (e.g., long-distance running, cycling).

Without adequate carbohydrate intake, glycogen stores become depleted, resulting in a loss of energy for both high-intensity and prolonged exercise. This can lead to fatigue, poor performance, and a decreased ability to perform aerobic and anaerobic tasks.

Thus, the correct nutrient that is associated with the depletion of glycogen is Carbohydrate.

💡 Quick Tip

Ensure adequate carbohydrate intake before exercise to maintain energy levels and maximize performance, especially during high-intensity and endurance activities.

46. If a colour blind female marries a man whose mother was also colour blind, what are the chances for her Progeny having colour blindness?

- (1) 25%
- (2) 50%
- (3) 75%
- (4) 100%

Correct Answer: (4) 100%

Solution:

Colour blindness is a sex-linked recessive disorder due to defect in either red or green cone of eye resulting in failure to discriminate between red and green colour. This defect is due to mutation in certain genes present in the X chromosome. The female is colour blind which means she is homozygous (XCXC) for the disorder. The man she is marrying is also colorblind (XCY). Males have only one X chromosome and females have two. The XC in male is coming from his mother's side. If a female (XCXC) marries a man (XCY), the chances of her progeny having color blindness is 100% . If they have girls, all of them will be getting diseased X chromosomes (one from mother and one from father). If they have boys, all of them will be getting the diseased X chromosome from their mother.

💡 Quick Tip

Remember that color blindness is an X-linked recessive trait. If a female is color blind, she must have two copies of the recessive allele

$$(X^cX^c)$$

. Understanding how X-linked traits are inherited is crucial for solving these types of problems.

47. In most cells, which of the following constitutes over 90% of the cellular RNA?

- (1) rRNA
- (2) mRNA
- (3) tRNA
- (4) hnRNA

Correct Answer: (1) rRNA

Solution:

Ribosomal RNA (rRNA) constitutes over 90% of the RNA in most cells. This high percentage is due to the fact that rRNA plays a crucial role in the structure of ribosomes, which are essential for protein synthesis. mRNA, tRNA, and hnRNA make up smaller portions of the total RNA in cells. rRNA's abundance is a reflection of the ribosome's central role in cellular

function.

Thus, the correct answer is (1): rRNA.

 Quick Tip

In cells, rRNA is the most abundant form of RNA, reflecting its essential role in protein synthesis.

48. Which of the following is labelled as the Internal Force?

- (1) Air Pressure
- (2) Gravitational Pull
- (3) Mechanical Pull
- (4) Muscles Force

Correct Answer: (4) Muscles Force

Solution:

Internal forces are forces that act within an object or system. In this case, muscle force (option 4) is considered an internal force because it is generated by muscles to produce movement within the body. Air pressure and gravitational pull are external forces acting on the body, while mechanical pull could be either internal or external depending on the context. Muscle force is clearly an internal force in biomechanics.

Thus, the correct answer is (4): Muscle Force.

 Quick Tip

Internal forces are forces that originate from within the body, such as muscle contractions or internal pressures.

49. Arrange the following Major Divisions of the Brain according to Less to More distance from Heart: A. Midbrain

- B. Medulla Oblongata
- C. Diencephalon
- D. Pons

Choose the correct answer from the options given below:

- (1) (B), (D), (C), (A)
- (2) (B), (A), (D), (C)
- (3) (B), (D), (A), (C)
- (4) (C), (A), (B), (D)

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

Solution:

The Medulla Oblongata (B) is closest to the heart as it connects the brainstem to the spinal cord and controls vital functions. Following that is the Pons (D), which connects different parts of the brain and is just above the medulla. The Diencephalon (C) is farther away and contains structures like the thalamus and hypothalamus. Finally, the Midbrain (A) is the farthest from the heart, located at the top of the brainstem.

Thus, the correct answer is (1): (B), (D), (C), (A).

 Quick Tip

Understanding the anatomy of the brainstem helps in identifying the relative positions of its parts.

50. Neglect of teeth care may lead to:

- (1) Diarrhoea
- (2) Pyorrhoea
- (3) Fever
- (4) Nausea

Correct Answer: (2) Pyorrhoea

Solution:

Pyorrhoea, also known as periodontitis or gum disease, is a serious condition that can result from poor dental hygiene. It is characterized by the infection and inflammation of the gums and supporting structures of the teeth. Neglecting proper oral care can lead to the buildup of plaque and bacteria, causing this condition. While the other options (diarrhea, fever, and nausea) may be related to general health issues, pyorrhoea is directly associated with improper dental care.

Thus, the correct answer is (2): Pyorrhoea.

 Quick Tip

Regular brushing, flossing, and dental check-ups are essential for preventing gum diseases like pyorrhoea.

51. Which of the following is not an example of Disaccharides?

- (1) Sucrose
- (2) Lactose
- (3) Maltose
- (4) Fructose

Correct Answer: (4) Fructose

Solution:

Disaccharides are sugars composed of two monosaccharides. Sucrose, Lactose, and Maltose are disaccharides. Fructose, on the other hand, is a monosaccharide and does not belong in the group of disaccharides.

Thus, the correct answer is Fructose.

 Quick Tip

Remember, disaccharides consist of two sugar molecules, while monosaccharides are individual sugar molecules.

52. How many ATP molecules are produced when NADH is reoxidized to NAD?

- (1) 2

- (2) 3
- (3) 4
- (4) 6

Correct Answer: (2) 3

Solution:

When NADH is reoxidized to NAD⁺ in the electron transport chain, 3 molecules of ATP are produced through oxidative phosphorylation in the mitochondria. This process involves the transfer of electrons through the electron transport chain and the generation of a proton gradient to drive ATP synthesis.

Thus, the correct answer is 3.

 Quick Tip

NADH contributes 3 ATP molecules through the electron transport chain during cellular respiration. Remember, FADH₂ only produces 2 ATP.

53. In which of the following conditions, an organism gains or loses one or more chromosomes but not a complete set?

- (1) Allopolyploidy
- (2) Euploidy
- (3) Aneuploidy
- (4) Autopolyploidy

Correct Answer: (3) Aneuploidy

Solution:

Aneuploidy refers to a condition where an organism has an abnormal number of chromosomes, either more or fewer than the typical number, but not a complete set. This can occur due to non-disjunction during cell division.

Euploidy refers to the condition where the organism has an exact multiple of the basic set of chromosomes.

Allopolyploidy and Autopolyploidy involve organisms with more than two sets of chromosomes but are not associated with gaining or losing individual chromosomes.

Thus, the correct answer is Aneuploidy.

 Quick Tip

Aneuploidy often leads to conditions like Down syndrome, where there is an extra chromosome (trisomy 21).

54. The Chain of Amino Acids produced in a translation is a:

- (1) Polypeptide
- (2) Nucleotide
- (3) Base
- (4) Triglycerides

Correct Answer: (1) Polypeptide

Solution:

During the translation process of protein synthesis, the ribosome assembles a polypeptide chain by linking amino acids together in a specific sequence dictated by mRNA. This process occurs in the cytoplasm.

Nucleotides form DNA and RNA, not proteins.

Bases are the building blocks of nucleic acids (not proteins).

Triglycerides are fats, not proteins.

Thus, the correct answer is Polypeptide.

💡 Quick Tip

A polypeptide is the primary structure of a protein. Once folded into a specific shape, it becomes a functional protein.

55. Which force is used by Serratus Anterior and the trapezius to create the lateral superior and rotational moves of scapula?

- (1) Collinear Force
- (2) Couple Force
- (3) Concurrent Force
- (4) Coplanar Force

Correct Answer: (2) Couple Force

Solution:

Couple Force refers to a pair of equal and opposite forces acting along different lines, causing rotation but no linear motion. In this case, the Serratus Anterior and Trapezius muscles work together to create rotational and lateral movements of the scapula.

Thus, the correct answer is Couple Force.

💡 Quick Tip

In biomechanics, a couple force creates rotational movements without causing translation (movement along a straight line). It plays a crucial role in scapular motion.

56. Arrange the following Nuts and Oil Seeds in High to Low Value of Carbohydrates received after having 100gm of that Item:

- (A). Poppy Seeds
- (B). Almond
- (C). Watermelon Seeds
- (D). Cashew
- (E). Till (Sesame)

Choose the correct answer from the options given below:

- (1) (A), (E), (B), (C), (D).
- (2) (A), (E), (D), (B), (C).
- (3) (D), (E), (B), (C), (A).
- (4) (A), (D), (B), (C), (E).

Correct Answer: (2) (A), (E), (D), (B), (C).

Solution:

To determine the correct order, we need to consider the carbohydrate content of each item per 100g:

Poppy Seeds (A): High in carbohydrates.

Till (Sesame) Seeds (E): Also high in carbohydrates.

Cashews (D): Moderate to high carbohydrates.

Almonds (B): Moderate carbohydrates.

Watermelon Seeds (C): Relatively low carbohydrates.

Therefore, the correct order from high to low carbohydrate content is:

(A) Poppy Seeds

(E) Till (Sesame) Seeds

(D) Cashews

(B) Almonds

(C) Watermelon Seeds

💡 Quick Tip

When comparing nutritional content, it's helpful to have a general understanding of the macronutrient profiles of common foods. For nuts and seeds, consider that seeds generally have a higher carbohydrate content compared to nuts.

57. Which of the following is the correct expression of moment of inertia?

(1) $I = m^2k$

(2) $I = mk$

(3) $I = mk^2$

(4) $I = mk^3$

Correct Answer: (3) $I = mk^2$

Solution:

The correct expression for the moment of inertia (I) of an object is given by $I = mk^2$, where m is the mass of the object, and k is the radius of gyration. The radius of gyration refers to the distance from the axis of rotation at which the mass of the object can be considered to be concentrated in order to produce the same rotational inertia. This formula is fundamental in rotational dynamics and is commonly used in various applications like rotating wheels or disks.

Thus, the correct answer is (3): $I = mk^2$.

💡 Quick Tip

Remember, moment of inertia depends on both mass and the distribution of that mass relative to the axis of rotation.

58. Dietary Energy is measured in which Unit?

(1) Gram

(2) Kilocalories

(3) Kilogram

(4) Liter

Correct Answer: (2) Kilocalories

Solution:

Dietary energy, which refers to the energy content in food, is typically measured in kilocalories (kcal). A kilocalorie is the amount of heat required to raise the temperature of one kilogram of water by one degree Celsius. This is the standard unit used in nutrition to quantify the energy provided by food. While grams measure weight, and kilograms measure mass, kilocalories are used specifically for energy.

Thus, the correct answer is (2): Kilocalories.

 Quick Tip

When studying nutrition, always refer to energy content in kilocalories or joules, depending on the context.

59. Out of twenty two amino acids, our body can make only:

- (1) 10 Amino Acids
- (2) 12 Amino Acids
- (3) 15 Amino Acids
- (4) 13 Amino Acids

Correct Answer: (1) 10 Amino Acids

Solution:

Our body can synthesize 10 out of the 22 amino acids required for protein synthesis. These 10 amino acids are termed "non-essential" because they can be produced by the body. The other 12 amino acids, called "essential amino acids," must be obtained through diet as the body cannot produce them. These essential amino acids play a vital role in various biological processes and must be sourced from food.

Thus, the correct answer is (1): 10 Amino Acids.

 Quick Tip

Make sure your diet includes a variety of proteins to ensure intake of all essential amino acids.

60. Vitamin B7 is also known as:

- (1) Niacin
- (2) Pantothenic Acid
- (3) Pyridine
- (4) Biotin

Correct Answer: (4) Biotin

Solution:

Vitamin B7, commonly known as Biotin, is a water-soluble B vitamin that plays a key role in supporting the metabolism of carbohydrates, fats, and proteins. It is essential for maintaining healthy skin, hair, and nails, and also contributes to the function of the nervous system.

Biotin is often found in foods like eggs, nuts, and legumes.

Thus, the correct answer is (4): Biotin.

💡 Quick Tip

Biotin is crucial for energy metabolism, so ensure your diet includes biotin-rich foods for optimal health.

61. In the urea cycle, the ornithine combines with carbamoyl phosphate to form

..... .

- (1) Arginine
- (2) Acetyl Glucosamine
- (3) Uridine
- (4) Citrulline

Correct Answer: (4) Citrulline

Solution:

In the urea cycle, ornithine combines with carbamoyl phosphate to form citrulline. This reaction takes place in the mitochondria and is one of the first steps in the urea cycle, which is crucial for removing excess nitrogen from the body.

Thus, the correct answer is Citrulline.

💡 Quick Tip

Citrulline is a key intermediate in the urea cycle and plays a crucial role in detoxifying ammonia by converting it to urea.

62. is also known as Slow Killer.

- (1) Hepatitis A
- (2) Hepatitis B
- (3) Hepatitis C
- (4) Hepatitis B Immunoglobulin

Correct Answer: (3) Hepatitis C

Solution:

Hepatitis C is often referred to as the "Slow Killer" because it can lead to chronic liver disease, cirrhosis, and liver cancer over many years without noticeable symptoms. It is typically transmitted through blood contact.

Thus, the correct answer is Hepatitis C.

💡 Quick Tip

Hepatitis C can remain undiagnosed for decades because its symptoms may not appear until liver damage is extensive. Regular screening is important for those at risk.

63. At rest and during exercise, which organ serves as the main source to maintain Normal Glucose Level?

- (1) Kidney

- (2) Liver
- (3) Small Intestine
- (4) Gall Bladder

Correct Answer: (2) Liver

Solution:

The liver is the primary organ responsible for maintaining normal glucose levels in the body, both at rest and during exercise. It stores glycogen and releases glucose into the bloodstream when blood sugar levels drop, a process known as glycogenolysis.

Thus, the correct answer is Liver.

 Quick Tip

The liver plays a central role in regulating blood glucose levels by converting glycogen to glucose when needed, such as during fasting or intense exercise.

64. In mammalian heart and liver, oxidation by long chain of fatty acid to Acetyl-CoA provides how much of energy needs under all physiological circumstances?

- (1) 25(2) 40(3) 60(4) 80

Correct Answer: (4) 80

Solution:

In mammalian heart and liver, the oxidation of long-chain fatty acids to Acetyl-CoA provides about 80

Thus, the correct answer is 80

 Quick Tip

Fatty acids are a major energy source for the body, especially during low-intensity, long-duration activities. Their oxidation provides a significant portion of energy needs.

65. Which of the following is the basic functional unit of Respiration?

- (1) Nephron
- (2) Neuron
- (3) Alveoli
- (4) Bronchi

Correct Answer: (3) Alveoli

Solution:

The alveoli are the basic functional units of respiration. They are tiny air sacs in the lungs where gas exchange occurs. Oxygen is absorbed into the blood, and carbon dioxide is expelled from the blood through the walls of the alveoli.

Thus, the correct answer is Alveoli.

 Quick Tip

The alveoli are specialized structures in the lungs designed for efficient gas exchange. They have a large surface area to maximize the diffusion of oxygen and carbon dioxide.

66. Motor and sensory cortex are situated between lobe and lobe.

- (1) Frontal and Occipital
- (2) Frontal and Temporal
- (3) Parietal and Occipital
- (4) Frontal and Parietal

Correct Answer: (4) Frontal and Parietal

Solution:

Let's analyze the location of the motor and sensory cortex in the brain:

The motor cortex is located in the frontal lobe, specifically in the precentral gyrus. It is responsible for planning, controlling, and executing voluntary motor functions.

The sensory cortex (somatosensory cortex) is located in the parietal lobe, specifically in the postcentral gyrus. It receives and processes sensory information from the body, such as touch, temperature, and pain.

The motor and sensory cortices are adjacent to each other, separated by the central sulcus.

They are situated between the frontal lobe (motor cortex) and the parietal lobe (sensory cortex).

Therefore, the correct answer is: Frontal and Parietal.

 Quick Tip

Remember the basic anatomy of the brain lobes and their functions. The frontal lobe is primarily responsible for motor control and higher-level cognitive functions, while the parietal lobe is involved in sensory processing.

67. Which of the following stage of growth and development is also a period of affective cognitive functioning?

- (1) Adolescence
- (2) Adulthood
- (3) Childhood
- (4) Infancy

Correct Answer: (1) Adolescence

Solution:

Adolescence is a stage of rapid physical, cognitive, and emotional development. It is a period of intense affective and cognitive functioning, where individuals experience significant emotional, psychological, and intellectual changes. This stage is critical for identity formation, the development of reasoning abilities, and the exploration of social roles. It is characterized by a heightened awareness of self and the world around, making it a key period for affective cognitive functioning.

Thus, the correct answer is (1): Adolescence.

 Quick Tip

Adolescence is a key developmental stage where cognitive abilities and emotional regulation are intensively shaped.

68. The law of conservation states that energy can be:

- (1) Created
- (2) Destroyed
- (3) Either created or destroyed
- (4) Neither created nor destroyed

Correct Answer: (4) Neither created nor destroyed

Solution:

The law of conservation of energy states that energy cannot be created or destroyed. Instead, energy can only be converted from one form to another. This principle is fundamental in physics and ensures that the total energy in a closed system remains constant. The energy can change forms, such as from kinetic to potential energy, but the total amount of energy stays the same.

Thus, the correct answer is (4): Neither created nor destroyed.

 Quick Tip

The conservation of energy is a fundamental concept that underpins many physical processes and reactions.

69. What is the atomic symbol for Calcium?

- (1) C
- (2) Cl
- (3) Ca
- (4) Co

Correct Answer: (3) Ca

Solution:

The atomic symbol for Calcium is "Ca." Calcium is a chemical element with the atomic number 20. It is an alkaline earth metal, commonly found in the Earth's crust, and is essential for biological functions, especially in bones and teeth formation. Its symbol "Ca" is derived from the first two letters of its name in Latin, "Calcium."

Thus, the correct answer is (3): Ca.

 Quick Tip

The periodic table symbols are often derived from the element's Latin name.

70. Which of the following are not major assumptions in regards to the cognitive theory of learning? (A) Memory System

- (B) Mindset
- (C) Prior Knowledge

(D) Information Processing

Choose the correct answer from the options given below:

(1) (A) and (C) only

(2) (B) and (D) only

(3) (C) and (D) only

(4) (A) and (D) only

Correct Answer: (2) (B) and (D) only

Solution:

In cognitive learning theory, major assumptions focus on how individuals process information and the role of memory, prior knowledge, and the information processing model in learning. The memory system (A) and prior knowledge (C) are key assumptions. "Mindset" (B) is not a core assumption in cognitive theory but is more closely related to psychological theories such as Carol Dweck's growth mindset theory. Information processing (D) is a key assumption, so it does not belong in the "not major assumptions" category.

Thus, the correct answer is (2): (B) and (D) only.

 Quick Tip

Focus on core concepts such as memory and prior knowledge when studying cognitive learning theory.

71. Which of the following organelle in the cytoplasm has specified function of drug detoxification?

(1) Mitochondria

(2) Ribosome

(3) Smooth Endoplasmic Reticulum

(4) Centriole

Correct Answer: (3) Smooth Endoplasmic Reticulum

Solution:

The smooth endoplasmic reticulum (SER) plays a crucial role in drug detoxification. It contains enzymes that break down harmful substances, such as drugs, toxins, and metabolic byproducts. The mitochondria are primarily involved in energy production, and the ribosomes are involved in protein synthesis. Centrioles play a role in cell division, not drug detoxification.

Thus, the correct answer is Smooth Endoplasmic Reticulum.

 Quick Tip

The smooth ER is involved in the metabolism of fats and detoxification of drugs and poisons. It is key in cells that process large amounts of substances.

72. Which of the following code is represented by the codon AUG?

(1) Alanine

(2) Lysine

(3) Valine

(4) Methionine

Correct Answer: (4) Methionine

Solution:

The codon AUG is recognized as the start codon in protein synthesis, and it codes for the amino acid Methionine. Methionine is the first amino acid in the chain during translation and is important for initiating protein synthesis.

Thus, the correct answer is Methionine.

 Quick Tip

AUG not only codes for Methionine but also serves as the initiation signal for translation in both prokaryotic and eukaryotic cells.

73. Which of the following is a Numerical Chromosomal Aberration?

(1) Euploidy

(2) Deletion

(3) Duplication

(4) Translocation

Correct Answer: (1) Euploidy

Solution:

Euploidy refers to a chromosomal aberration where the organism has an exact multiple of the normal number of chromosomes. This includes conditions like haploidy or polyploidy. On the other hand, Deletion, Duplication, and Translocation are structural chromosomal aberrations, where parts of chromosomes are deleted, duplicated, or rearranged.

Thus, the correct answer is Euploidy.

 Quick Tip

Euploidy involves the addition or loss of complete sets of chromosomes, whereas structural chromosomal aberrations involve changes in chromosome structure.

74. Arrange the following in the sequence of Glycolysis:

(A). Glucose 6 -Phosphate

(B). 3- Phosphoglycerate

(C). Fructose 6- Phosphate

(D). Glyceraldehyde 3- Phosphate

(E). Pyruvate

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

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

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

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

Correct Answer: (2) (A), (C), (D), (B) and (E).

Solution: Let's arrange the given molecules in the correct sequence of glycolysis:

(A). Glucose 6-Phosphate: This is the first step where glucose is phosphorylated.

(C). Fructose 6-Phosphate: Glucose 6-phosphate is isomerized to fructose 6-phosphate.

(D). Glyceraldehyde 3-Phosphate: Fructose 6-phosphate is cleaved into two 3-carbon molecules, one of which is glyceraldehyde 3-phosphate.

(B). 3-Phosphoglycerate: Glyceraldehyde 3-phosphate is oxidized and phosphorylated to form 3-phosphoglycerate.

(E). Pyruvate: Through a series of steps, 3-phosphoglycerate is converted to pyruvate, the end product of glycolysis.

Therefore, the correct sequence is: (A), (C), (D), (B), (E).

 Quick Tip

Remember the key steps and intermediates of glycolysis. Understanding the order of these molecules is crucial for understanding the overall process.

75. Which of the following oil is often used for the adulteration of Mustard Oils?

- (1) Coconut Oil
- (2) Olive Oil
- (3) Argemone Oil
- (4) Fish Oil

Correct Answer: (3) Argemone Oil

Solution:

Argemone oil is often used for adulterating mustard oil. It is a harmful substance, and its addition to mustard oil is illegal due to its toxic effects. Argemone oil contains toxic alkaloids, which can cause serious health issues, including gastrointestinal and skin problems when consumed. The other oils listed (coconut, olive, and fish oil) are generally not used for adulteration of mustard oil, as they are not typically harmful in the quantities used for adulteration.

Thus, the correct answer is (3): Argemone Oil.

 Quick Tip

Be cautious of adulteration in edible oils, as substances like argemone oil pose serious health risks.