CUET-UG Physical Education Sample Paper-3

Duration: 1 Hour **Maximum Marks: 250**

Instructions

- This paper contains a total of 50 Multiple Choice Questions.
- Each correct answer carries **+5 marks**.
- Each incorrect answer carries **-1 mark**.
- No negative marking for unattempted questions.

Q1. The 'A' in the acronym 'PERMA' model of well-being, which is often applied to sports psychology to enhance athlete performance, stands for:

(A) Altruism

(B) Achievement

(C) Aggression

(D) Adaptation

Q2. In the context of the National Health Mission, the 'Janani Suraksha Yojana' (JSY) is a 100% centrally sponsored scheme that integrates cash assistance with delivery and post-delivery care.

(A) True

(B) False

Q3. Arrange the following awards in the chronological order of their institution by the Government of India: (A) Dronacharya Award (B) Arjuna Award (C) Major Dhyan Chand Khel Ratna Award (D) Rashtriya Khel Protsahan Puruskar

(A) (B), (A), (C), (D)

(B) (B), (C), (A), (D)

(C) (A), (B), (D), (C)

(D) (C), (A), (B), (D)

Q4. Which of the following describes a 'Greenstick Fracture', frequently discussed in pediatric sports medicine?

(A) The bone is shattered into multiple small fragments.

(B) The bone bends and cracks, instead of breaking completely into separate pieces.

(C) The broken ends of the bone are driven into each other.

(D) An incomplete break caused by overuse or repetitive stress.

Q5. Match List-I (Test Item) with List-II (Fitness Component measured):

List-I	List-II
(A) 600m Run/Walk	(I) Flexibility
(B) Partial Curl-Up	(II) Cardiovascular Endurance
(C) Sit and Reach	(III) Agility and Speed
(D) $4 \times 10 m Shuttle Run$	(IV) Abdominal Strength and Endurance

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

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

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

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

Q6. According to the 'Big Five' personality theory, an athlete who remains calm, even-tempered, and less likely to feel tense during a high-stakes penalty shootout would score low on which scale?

(A) Conscientiousness

(B) Agreeableness

(C) Neuroticism

(D) Extraversion

Q7. In a single knock-out tournament of 27 teams, calculate the number of matches to be played and the number of byes to be given in the first round respectively.

(A) 26 matches, 5 byes

(B) 27 matches, 4 byes

(C) 26 matches, 3 byes

(D) 28 matches, 6 byes

Q8. The 'Shatkarma' known as 'Trataka' involves focusing the gaze on a small point or candle flame to improve concentration and mental clarity.

(A) True

(B) False

Q9. When an athlete performs a 'Leg Extension' exercise on a machine, the quadriceps act as the agonist. Which muscle group acts as the antagonist in this specific movement?

(A) Gastrocnemius

(B) Hamstrings

(C) Gluteus Maximus

(D) Rectus Abdominis

Q10. Identify the correct sequence of the stages of 'General Adaptation Syndrome' (GAS) as described by Hans Selye in the context of sports training load:

(A) Alarm Reaction $\rightarrow$ $Exhaustion$ $\rightarrow$ $Resistance$

(A) Resistance $\rightarrow$ $AlarmReaction$ $\rightarrow$ $Exhaustion$

(A) Alarm Reaction $\rightarrow$ $Resistance$ $\rightarrow$ $Exhaustion$

(A) Exhaustion $\rightarrow$ $Resistance$ $\rightarrow$ $AlarmReaction$

Q11. Which type of lever is being utilized at the ankle joint when a basketball player rises on their toes (plantar flexion) to take a jump shot?

(A) First Class Lever

(B) Second Class Lever

(C) Third Class Lever

(D) Fourth Class Lever

Q12. In 'Circuit Training', the primary physiological objective of keeping the 'Rest-to-Work' ratio low is to develop:

(A) Maximum Strength

(B) Muscular Hypertrophy

(C) Cardiovascular and Muscular Endurance

(D) Static Flexibility

Q13. What is the official weight of the 'Javelin' used in the men's and women's categories respectively in international athletics competitions?

(A) 800g and 600g

(B) 700g and 500g

(C) 900g and 700g

(D) 800g and 500g

Q14. Which component of the NRHM (National Rural Health Mission) focuses specifically on providing 24-hour delivery services at Primary Health Centres (PHCs)?

(A) RMNCH+A

(B) ASHA workers

(C) Rogi Kalyan Samiti

(D) Indian Public Health Standards (IPHS)

Q15. The 'Somatotype' characterized by a round body shape, high fat storage, and a slow metabolism, often making endurance sports more challenging, is termed as:

(A) Ectomorph

(B) Mesomorph

(C) Endomorph

(D) Xenomorph

Q16. Which of the following describes the 'Extroversion' trait in Sheldon's personality theory related to the Mesomorph body type?

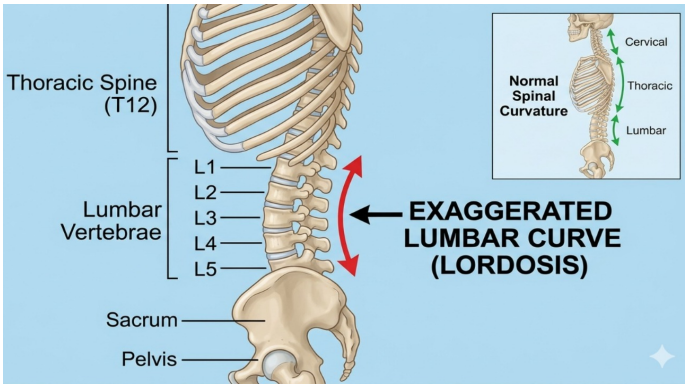
(A) Quiet, restrained, and non-assertive.

(B) Assertive, energetic, and risk-taking.

(C) Sociable, relaxed, and affectionate.

(D) Analytical, shy, and sensitive.

Q17. Look at the image below showing a specific postural deformity of the spine. Identify the condition where there is an increased forward curve in the lumbar region:



(A) Kyphosis

(B) Scoliosis

(C) Lordosis

(D) Genu Valgum

Q18. Match List-I (Communicable Disease) with List-II (Mode of Transmission):

List-I	List-II
(A) Tuberculosis	(I) Vector-borne (Mosquito)
(B) Cholera	(II) Droplet Nuclei (Airborne)
(C) Malaria	(III) Direct contact with contaminated soil
(D) Tetanus	(IV) Water-borne (Contaminated food/water)

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

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

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

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

Q19. The physiological term 'Stroke Volume' refers to the amount of blood pumped by the heart's left ventricle in:

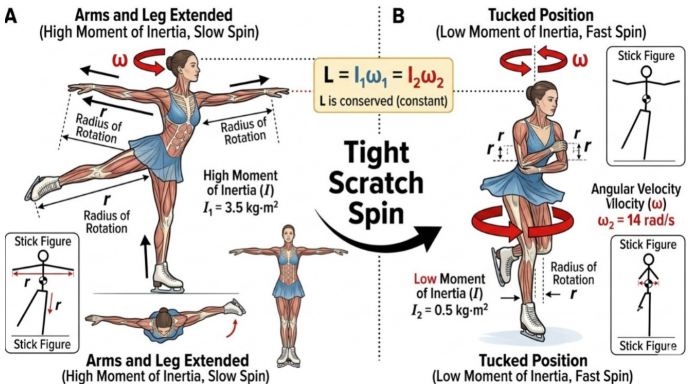
(A) One minute

(B) One single beat

(C) One hour

(D) The duration of an exercise session

Q20. Identify the sports technique illustrated in the biomechanical diagram below where the athlete uses the principle of 'Conservation of Angular Momentum':



(A) Long Jump landing

(B) High Jump (Fosbury Flop)

(C) Tuck position in diving/gymnastics

(D) Sprinting start

Q21. In the context of the Midday Meal Scheme, the government aims to provide at least how many calories and grams of protein per day to primary school children (Class I-V)?

(A) 300 calories and 8-10g protein

(B) 450 calories and 12g protein

(C) 700 calories and 20g protein

(D) 500 calories and 15g protein

Q22. Which specific Kriya in Yoga is primarily used to cleanse the frontal sinuses and improve eyesight by using a salted water solution?

(A) Vamana Dhauti

(B) Jala Neti

(C) Kapalbhati

(D) Nauli

(E)

Q23. The 'Flamingo Balance Test' is specifically used to measure which component of physical fitness?

(A) Dynamic Balance

(B) Static Balance

(C) Power

(D) Reaction Time

Q24. What is the standard width of a lane in an international 400m synthetic athletics track?

(A) 1.15 meters

(B) 1.25 meters

(C) 1.22 meters

(D) 1.50 meters

Q25. Which type of training method involves alternating periods of high-intensity work with low-intensity recovery periods, focusing on the heart's recovery rate?

(A) Continuous Method

(B) Interval Method

(C) Fartlek Method

(D) Isometric Method

Q26. In the Newton's Third Law of Motion (Action and Reaction), when a sprinter pushes back against the starting blocks, the blocks push:

(A) Downward on the track

(B) Forward on the sprinter

(C) Backward on the sprinter

(D) Upward against gravity

Q27. The 'Rikli and Jones Test' was specifically designed to assess the functional fitness of which population group?

(A) Elite Athletes

(B) Adolescent Students

(C) Senior Citizens

(D) Children with Special Needs (CWSN)

Q28. Which of the following nutrients is considered a 'Micro-nutrient' necessary for bone health and blood clotting?

(A) Carbohydrates

(B) Calcium

(C) Fats

(D) Proteins

Q29. The deformity known as 'Flat Foot' (Pes Planus) is characterized by the absence of which arch of the foot?

(A) Transverse Arch

(B) Longitudinal Arch

(C) Metatarsal Arch

(D) Posterior Arch

Q30. In a round-robin tournament of 8 teams, how many total matches will be played in the league stage?

(A) 56

(B) 28

(C) 32

(D) 14

Q31. Who was the first Indian woman to win two Olympic medals in an individual event, and what was her specific achievement in the Tokyo 2020 Olympics?

(A) Mirabai Chanu – Silver in Weightlifting

(B) P.V. Sindhu – Bronze in Badminton

(C) Lovlina Borgohain – Bronze in Boxing

(D) Mary Kom – Bronze in Boxing

Q32. In the context of current international sports, the 'Mascot' for the Paris 2024 Olympic and Paralympic Games is designed after which traditional cultural symbol?

(A) The Olympic Flame

(B) The Phrygian Cap (Phryges)

(C) The French Rooster

(D) The Eiffel Tower

Q33. The Government of India recently introduced the 'Target Olympic Podium Scheme' (TOPS). What is the primary objective of this program?

(A) To build 100 new stadiums across rural India.

(B) To provide customized training and financial support to elite athletes for Olympic success.

(C) To make Physical Education mandatory in all primary schools.

(D) To organize the Khelo India Youth Games annually.

Q34. Which specific vitamin is synthesized in the skin through exposure to ultraviolet radiation and is essential for the absorption of calcium in the body?

(A) Vitamin A

(B) Vitamin K

(C) Vitamin D

(D) Vitamin B12

Q35. In the context of Soft Tissue Injuries, the acronym 'P.R.I.C.E.R.' is used for immediate treatment. What does the 'E' and 'R' stand for?

(A) Exercise and Recovery

(B) Elevation and Referral

(C) Extension and Reaction

(D) Endurance and Rest

Q36. Identify the 'Asana' where the body resembles a 'Cobra' and is highly beneficial for correcting Kyphosis and improving respiratory capacity:

(A) Shalabhasana

(B) Bhujangasana

(C) Vajrasana

(D) Chakrasana

Q37. A condition where a person's knees touch each other while standing in a normal position, but there is a wide gap between the ankles, is called:

(A) Genu Varum (Bow Legs)

(B) Genu Valgum (Knock Knees)

(C) Scoliosis

(D) Kyphosis

Q38. Calculate the number of matches in a league tournament for 12 teams using the cyclic method for scheduling.

(A) 66

(B) 132

(C) 24

(D) 60

Q39. Which of the following is a non-communicable disease often managed through regular physical activity and a low-glycemic diet?

(A) Influenza

(B) Diabetes Mellitus

(C) Typhoid

(D) Hepatitis B

Q40. The primary function of 'Platelets' (Thrombocytes) in the human blood during a sports-related injury is:

(A) Transporting Oxygen

(B) Fighting Infection

(C) Blood Clotting

(D) Regulating Body Temperature

Q41. Passage 1: Case Study on Biomechanics in High Jump

An elite high jumper utilizes the 'Fosbury Flop' technique. During the approach, the athlete runs in a 'J-shaped' curve to build centripetal force. At takeoff, the athlete converts horizontal velocity into vertical lift. While arching over the bar, the jumper ensures their 'Center of Gravity' actually passes underneath the bar while their body segments pass over it.

According to the passage, why does the athlete run in a curve during the approach?

(A) To reduce air resistance.

(B) To build centripetal force for an effective takeoff.

(C) To increase the distance of the run.

(D) To confuse the judges.

Q42. What happens to the athlete's 'Center of Gravity' during a successful Fosbury Flop?

(A) It stays high above the bar.

(B) It passes through the bar.

(C) It passes underneath the bar.

(D) It disappears momentarily.

Q43. The transition from horizontal velocity to vertical lift at takeoff is an application of which Newton's Law?

(A) First Law (Inertia)

(B) Second Law (Acceleration)

(C) Third Law (Action-Reaction)

(D) Law of Gravitation

Q44. Arching the back over the bar involves which anatomical movement of the spine?

(A) Flexion

(B) Extension/Hyperextension

(C) Adduction

(D) Rotation

Q45. Which component of fitness is most critical for the 'Takeoff' phase mentioned in the passage?

(A) Aerobic Endurance

(B) Explosive Power

(C) Static Flexibility

(D) Muscular Endurance

Q46. Passage 2: Psychology and Aggression in Sports

In a high-intensity football match, a player experiences 'Hostile Aggression' after a hard tackle. Unlike 'Instrumental Aggression,' where the primary goal is to achieve a sports objective (like taking the ball), Hostile Aggression is intended to cause injury. The 'Frustration-Aggression Hypothesis' suggests that such behavior occurs when an athlete's goal is blocked, leading to an emotional outburst.

Based on the passage, what is the primary goal of 'Instrumental Aggression'?

(A) To cause physical harm to the opponent.

(B) To achieve a specific game-related objective or goal.

(C) To vent frustration.

(D) To get a red card.

Q47. Which type of aggression is characterized by the intent to cause injury and is fueled by anger?

(A) Instrumental Aggression

(B) Hostile Aggression

(C) Assertive Behavior

(D) Tactical Aggression

Q48. What triggers aggression according to the 'Frustration-Aggression Hypothesis'?

(A) Winning a match.

(B) The blocking of a goal-directed behavior.

(C) Following the coach's instructions.

(D) Positive reinforcement from the crowd.

Q49. In sports psychology, 'Assertive Behavior' differs from aggression because it:

(A) Involves the intent to harm.

(B) Uses legitimate physical force within the rules without intent to injure.

(C) Is always verbal.

(D) Is prohibited by the referee.

Q50. A player who intentionally trips an opponent to stop a certain goal (without anger, purely for the win) is exhibiting:

(A) Hostile Aggression

(B) Instrumental Aggression

(C) Catharsis

(D) Altruism

Detailed Solutions

Q1.

Solution

Concept:

The PERMA model is a scientific framework developed by Martin Seligman for understanding and measuring well-being. In sports, it is used to help athletes maintain a positive mindset and sustain high performance levels through five core elements.

Solution:

(a) P stands for Positive Emotion.

(b) E stands for Engagement.

(c) R stands for Relationships.

(d) M stands for Meaning.

(e) A stands for Accomplishment (or Achievement).

(f) Therefore, Achievement is the correct element representing the 'A' in PERMA.

Final Answer: The function is Achievement.

Answer: (B)

Q2.

Solution

Concept:

The Janani Suraksha Yojana (JSY) is a safe motherhood intervention under the National Rural Health Mission (NRHM). It is a major healthcare initiative in India aimed at reducing maternal and neonatal mortality.

Solution:

(a) JSY is a 100

(b) Its primary objective is to promote institutional delivery among poor pregnant women.

(c) It provides cash assistance for delivery and post-delivery care to encourage women to give birth in medical facilities.

(d) The statement accurately describes the core nature and funding of the scheme.

Final Answer: The statement is True.

Answer: (A)

Q3.

Solution

Concept:
National Sports Awards are instituted by the Government of India to recognize excellence in sports. Knowing the years of establishment is essential for understanding the history of sports recognition in the country.
Solution:

(a) Arjuna Award (B): Established in 1961 to recognize outstanding achievement in National sports.

(b) Dronacharya Award (A): Established in 1985 to honor eminent coaches.

(c) Major Dhyan Chand Khel Ratna Award (C): Established in 1991–1992 (formerly Rajiv Gandhi Khel Ratna).

(d) Rashtriya Khel Protsahan Puruskar (D): Established in 2009 to encourage involvement of corporates and sports bodies.

(e) The chronological order is (B) 1961 $\rightarrow (A)1985 \rightarrow (C)1991 \rightarrow (D)2009$.

Final Answer: The order is (B), (A), (C), (D).

Answer: (A)

Q4.

Solution

Concept:
Bone fractures are classified based on the nature of the break. Greenstick fractures are unique to children because their bones are softer and more flexible than adult bones.
Solution:

(a) A Greenstick fracture is an incomplete fracture.

(b) It occurs when the bone is bent and cracks on only one side, similar to how a green (moist) branch of a tree would break.

(c) It does not result in separate fragments (Comminuted) or ends driven together (Impacted).

(d) This type of fracture is common in children because their bone tissue has not yet fully ossified.

Final Answer: The bone bends and cracks.

Answer: (B)

Q5.

Solution

Concept:

Physical fitness testing batteries, such as the AAPHER test or motor fitness tests, use specific exercises to isolate and measure individual components of fitness like strength, speed, and endurance.

Solution:

(a) 600m Run/Walk (A): A standard test for Cardiovascular (Aerobic) Endurance. (A-II)

(b) Partial Curl-Up (B): Measures the strength and endurance of the abdominal muscles. (B-IV)

(c) Sit and Reach (C): The most common test for lower back and hamstring flexibility. (C-I)

(d) $4 \times 10 mShuttleRun(D) : Measuresagility(theabilitytochangedirectionquickly)andspeed.(D-III)$

(d) Matching leads to (A)-(II), (B)-(IV), (C)-(I), (D)-(III).

Final Answer: The matching is (A)-(II), (B)-(IV), (C)-(I), (D)-(III).

Answer: (A)

Q6.

Solution

Concept:

The Big Five personality traits (OCEAN) provide a comprehensive framework for understanding human personality. Neuroticism, specifically, refers to the degree of emotional stability and the tendency to experience negative emotions such as anxiety, anger, or depression. In competitive sports, this trait is critical as it determines how an athlete perceives and reacts to high-pressure environments, such as final matches or sudden-death scenarios.

Solution:

(a) The question describes an athlete who remains calm, even-tempered, and less likely to feel tense during a high-stakes penalty shootout.

(b) These characteristics are the direct opposites of high Neuroticism. A person high in Neuroticism often feels vulnerable, self-conscious, and prone to "choking" under pressure due to excessive worry.

(c) Conversely, an individual who scores low on Neuroticism is emotionally resilient. They possess a high degree of emotional stability, allowing them to maintain focus on the task at hand rather than being distracted by internal emotional distress.

(d) While Conscientiousness involves being organized, and Extraversion involves social energy, it is the emotional regulation aspect of Neuroticism that defines the calmness described.

(e) Therefore, a low score on the Neuroticism scale is the defining factor for the composure shown by the athlete in the scenario.

Final Answer: The scale is Neuroticism.

Answer: (C)

Q7.

Solution

Concept:

Tournament organization requires precise mathematical calculations to ensure fair play and efficiency. In a single knock-out (elimination) tournament, any team that loses a match is immediately out of the competition. Key formulas include $N - 1$ for the total number of matches (where N is the number of teams) and calculating byes based on the next highest power of two to ensure the bracket balances in the second round.

Solution:

(a) Total number of teams (N) = 27.

(b) To find the number of matches: The formula is $N - 1$.

(c) Calculation: $27 - 1 = 26$ total matches to determine a single winner.

(d) To find the number of byes: We look for the next power of two (2^n) greater than 27. The powers of two are 2, 4, 8, 16, 32...

(e) The next power of two after 27 is 32 (2^5).

(f) Total Byes = $32 - 27 = 5$ byes.

(g) In the first round, since 5 teams get byes, the remaining $27 - 5 = 22$ teams will play. These 22 teams will form 11 matches in the first round.

(h) The 5 teams with byes skip the first round and join the 11 winners in the second round, creating a perfect bracket of 16 teams.

Final Answer: 26 matches and 5 byes.

Answer: (A)

Q8.

Solution

Concept:

In Hatha Yoga, 'Shatkarmas' are the six purification techniques intended to cleanse the body and prepare the mind for higher practices like meditation. Trataka is the only Shatkarma that focuses on the sensory organ of sight (eyes) and serves as a bridge between physical cleansing and mental concentration (Dharana).

Solution:

(a) Trataka is defined as the practice of intense, steady gazing at a specific point or object without blinking.

(b) Common objects for practice include a candle flame, a black dot on a white wall, or the tip of the nose.

(c) Physiologically, it strengthens the eye muscles and cleanses the tear ducts.

(d) Mentally, it is highly regarded for its ability to still the "monkey mind," improve memory, and enhance the power of concentration.

(e) The practice is divided into 'Bahir Trataka' (External gazing) and 'Antar Trataka' (Internal visualization).

(f) The statement in the question accurately identifies both the method (focusing on a point/flame) and the objective (improving concentration), making the statement correct.

Final Answer: The statement is True.

Answer: (A)

Q9.

Solution

Concept:

Muscle coordination during movement involves a relationship between the 'Agonist' (prime mover) and the 'Antagonist' (opposing muscle). This is known as reciprocal inhibition. When the agonist contracts to create movement, the antagonist must relax and lengthen to allow that movement to occur smoothly.

Solution:

(a) During a 'Leg Extension' at the knee joint, the quadriceps (located on the front of the thigh) contract concentrically to straighten the leg.

(b) Because the quadriceps are the muscles primarily responsible for this action, they are the Agonists.

(c) The hamstrings (located on the back of the thigh) are the muscles that perform the opposite action—knee flexion (bending the leg).

(d) For the leg to extend fully, the hamstrings must relax and yield to the force of the quadriceps.

(e) Therefore, in the specific context of knee extension, the hamstrings function as the Antagonist.

(f) Other muscles like the Gluteus Maximus are involved in hip extension, while the Gastrocnemius is primarily involved in plantar flexion at the ankle.

Final Answer: The antagonist group is Hamstrings.

Answer: (B)

Q10.

Solution

Concept:

The General Adaptation Syndrome (GAS) is a biological model that explains how the body responds to stress, whether physical (training load) or psychological. In sports science, coaches use this principle to plan "periodization"—the systematic loading and recovery of athletes to ensure they improve without overtraining.

Solution:

(a) Stage 1: Alarm Reaction – This is the initial response when a new or increased training load is applied. The body experiences a temporary drop in performance or "shock" as it recognizes the stressor.

(b) Stage 2: Resistance – If the stress continues but is manageable, the body begins to adapt. It repairs tissues and increases energy stores, leading to "supercompensation" where the athlete becomes stronger than before.

(c) Stage 3: Exhaustion – If the stressor (training load) is too intense or applied for too long without adequate rest, the body's resources are depleted. This leads to overtraining, injury, or illness.

(d) The sequence must logically follow from the initial shock to the adaptation and finally to the potential breakdown.

(e) Therefore, the correct chronological sequence is Alarm Reaction $\rightarrow$ *Resistance* $\rightarrow$ *Exhaustion*.

Final Answer: The sequence is Alarm Reaction, Resistance, Exhaustion.

Answer: (C)

Q11.

Solution

Concept:

In biomechanics, a lever is a rigid bar (bone) that turns around a fixed point called a fulcrum (joint). Levers are classified into three types based on the relative positions of the Fulcrum (F), the Effort or Force (E), and the Resistance or Load (R). Understanding these classes is vital in sports to analyze how the body generates power or speed. A Second Class Lever is characterized by having the Load (Resistance) located between the Fulcrum and the Effort. This arrangement is often referred to as a "power lever" because it provides a mechanical advantage, allowing a smaller effort to move a larger load.

Solution:

(a) When a basketball player rises on their toes, the foot acts as a lever system to lift the entire body weight.

(b) The Fulcrum (F) in this movement is the ball of the foot (metatarsophalangeal joints), which stays in contact with the ground.

(c) The Load (R) is the body weight, which is concentrated and acts downward through the middle of the foot via the tibia.

(d) The Effort (E) is the upward pull provided by the calf muscles (gastrocnemius and soleus) via the Achilles tendon at the heel.

(e) Since the body weight (Load) is positioned between the ball of the foot (Fulcrum) and the heel (Effort), it perfectly matches the definition of a Second Class Lever (F-R-E).

(f) This specific lever setup allows athletes to lift their heavy body weight efficiently, although at the cost of range of motion compared to third-class levers.

Final Answer: The ankle joint acts as a Second Class Lever.

Answer: (B)

Q12.

Solution

Concept:

Circuit training is a versatile training method developed by Morgan and Adamson in 1953. It consists of a series of specific exercises (stations) performed in a sequence with minimal rest in between. The configuration of a circuit—including the choice of exercises, the number of repetitions, and most importantly, the rest intervals—determines the primary physiological adaptation. By keeping the rest-to-work ratio low, the body is forced to operate under conditions of incomplete recovery, which targets the oxidative and glycolytic energy systems simultaneously.

Solution:

(a) The primary goal of reducing rest intervals in circuit training is to keep the heart rate elevated throughout the entire duration of the session.

(b) High-intensity work with short rest periods (e.g., 30 seconds of work followed by 15 seconds of rest) challenges the heart's ability to pump blood and the muscles' ability to utilize oxygen, thereby improving cardiovascular endurance.

(c) Simultaneously, the repetitive nature of the exercises against moderate resistance builds muscular endurance, which is the ability of a muscle group to perform repeated contractions without fatiguing.

(d) While circuit training can build some strength, it is not the optimal method for maximum strength or hypertrophy, which require longer rest periods and much higher loads.

(e) Therefore, the low rest-to-work ratio is specifically designed to enhance the athlete's aerobic and anaerobic capacity, making "Cardiovascular and Muscular Endurance" the correct objective.

Final Answer: The objective is Cardiovascular and Muscular Endurance.

Answer: (C)

Q13.

Solution

Concept:

Track and field events are governed by strict technical specifications set by World Athletics (formerly IAAF) to ensure fair competition and standardized records. The Javelin throw is a unique field event where the equipment's weight, length, and center of gravity are precisely regulated. These specifications vary between the men's and women's categories to account for physiological differences in explosive power and upper body strength, ensuring the implement remains aerodynamically viable for both genders.

Solution:

(a) For the Men's category, the official javelin must have a minimum weight of 800 grams. It typically measures between 2.60 and 2.70 meters in length.

(b) For the Women's category, the official javelin must have a minimum weight of 600 grams. It is slightly shorter, measuring between 2.20 and 2.30 meters.

(c) These weights (800g/600g) have been the international standard for decades and are used in all major competitions including the Olympics and World Championships.

(d) It is important to note that youth and junior categories may use lighter javelins (such as 700g or 500g), but the "official" weights usually refer to the senior international standard.

(e) Choosing the correct weight is crucial because the center of gravity of the javelin is designed specifically around these weights to ensure the javelin lands tip-first.

Final Answer: The weights are 800g and 600g.

Answer: (A)

Q14.

Solution

Concept:

The National Rural Health Mission (NRHM), launched in 2005, aimed to provide accessible, affordable, and quality healthcare to the rural population. A critical strategy within this mission was the "Indian Public Health Standards" (IPHS). These standards act as a benchmark for the infrastructure, human resources, and service delivery expected at various levels of healthcare, from Sub-Centres to District Hospitals. The IPHS was specifically designed to ensure that Primary Health Centres (PHCs) are upgraded to provide "round-the-clock" services, particularly for maternal health.

Solution:

(a) The NRHM identified that high maternal mortality was partly due to the lack of 24-hour facility-based care in rural areas.

(b) To address this, the IPHS guidelines were introduced to mandate that PHCs (Primary Health Centres) must be equipped with adequate staff (including multiple staff nurses and doctors) to handle 24-hour deliveries and emergency primary care.

(c) While ASHA workers act as the link to the community, they do not provide the clinical delivery service themselves.

(d) Rogi Kalyan Samitis (RKS) are management committees for hospital affairs, and RMNCH+A is a broader strategic framework, but the specific operational standard requiring 24-hour PHC services is grounded in the IPHS.

(e) Therefore, IPHS is the correct component that ensures PHCs function as 24/7 delivery points to reduce the burden on higher-level hospitals and ensure safer births.

Final Answer: The component is Indian Public Health Standards (IPHS).

Answer: (D)

Q15.

Solution

Concept:

W.H. Sheldon's Somatotype theory classifies human physiques into three fundamental categories: Endomorphy, Mesomorphy, and Ectomorphy. Each type is associated with certain physical characteristics and metabolic tendencies. In sports psychology and physiology, understanding these types helps in talent identification and tailoring training programs. The Endomorph body type is characterized by a prevalence of digestive organs and fat tissue over muscle and bone, leading to a specific set of challenges and advantages in physical activities.

Solution:

(a) An Endomorph is characterized by a soft, round body shape, wide hips, and a tendency to store fat easily.

(b) Physiologically, Endomorphs often have a slower basal metabolic rate (BMR), which means they gain weight more quickly and may find it harder to lose body fat compared to Ectomorphs (who are lean) or Mesomorphs (who are muscular).

(c) Because of the higher percentage of body fat and typically shorter limbs, Endomorphs may face higher energy costs during weight-bearing endurance activities like long-distance running.

(d) However, they often possess significant strength and a low center of gravity, which can be an advantage in sports like shot put, wrestling, or certain positions in rugby.

(e) Mesomorphs are defined by high muscle mass and athletic build, while Ectomorphs are characterized by long limbs and low body fat.

Final Answer: The somatotype is Endomorph.

Answer: (C)

Q16.

Solution

Concept:

W.H. Sheldon developed a system of somatotyping that linked physical body builds to specific temperamental traits, a concept known as constitutional psychology. He identified three primary temperaments: Viscerotonia (linked to Endomorphs), Somatotonia (linked to Mesomorphs), and Cerebrotonia (linked to Ectomorphs). For the Mesomorph—the athletic, muscular build—the corresponding temperament is Somatotonia. This psychological profile is highly valued in competitive sports that require dominance, physical courage, and a high activity level.

Solution:

(a) Mesomorphs are characterized by a rectangular body shape, large bones, and significant muscle mass.

(b) According to Sheldon, the Somatotonic personality (Mesomorph) is naturally assertive, competitive, and vigorous.

(c) They are often described as "extroverts" in a physical sense—thriving on physical adventure, risk-taking, and a need for power or dominance.

(d) Unlike the Endomorph (who is sociable and relaxed) or the Ectomorph (who is shy and restrained), the Mesomorph is energetic and direct in their interactions.

(e) In a sports context, this personality often manifests as a natural leader or a highly aggressive competitor who is not afraid of physical confrontation or high-pressure stakes.

Final Answer: Assertive, energetic, and risk-taking.

Answer: (B)

Q17.

Solution

Concept:

Postural deformities are deviations from the normal skeletal alignment, often caused by weak muscles, poor habits, or malnutrition. Lordosis is a common postural condition that affects the lower back. It is often referred to as "swayback" because the lower spine curves inward significantly. This condition is frequently observed in individuals with weak abdominal muscles and tight hip flexors, which causes the pelvis to tilt forward (anterior pelvic tilt).

Solution:

(a) The spine has natural curves, but Lordosis involves an exaggerated inward curvature of the lumbar vertebrae.

(b) This deformity pushes the abdomen forward and the buttocks backward, creating a noticeable "hollow" in the lower back.

(c) It is different from Kyphosis, which is an exaggerated outward curve of the upper (thoracic) spine, and Scoliosis, which is a lateral or "S-shaped" curvature of the spine.

(d) Common causes include obesity, pregnancy, or carrying heavy loads improperly, all of which place excessive strain on the lumbar region.

(e) Corrective measures for Lordosis include strengthening the core/abdominal muscles and performing asanas like Dhanurasana (Bow Pose) or Halasana (Plough Pose) to improve spinal flexibility and alignment.

Final Answer: The condition is Lordosis.

Answer: (C)

Q18.

Solution

Concept:

Communicable diseases are illnesses caused by pathogens (bacteria, viruses, parasites) that can be spread from one person to another or from animals to humans. Understanding the "Chain of Infection" or the mode of transmission is vital for public health and sports hygiene. Diseases can be spread via airborne droplets, contaminated vehicles (food/water), biological vectors (insects), or direct contact with the environment.

Solution:

(a) Tuberculosis (A) is a bacterial infection of the lungs. It is spread through "Droplet Nuclei" when an infected person coughs or sneezes, making it Airborne. (A-II)

(b) Cholera (B) is an acute diarrheal infection caused by ingestion of food or water contaminated with the bacterium Vibrio cholerae. (B-IV)

(c) Malaria (C) is a parasitic disease transmitted to humans through the bite of infected female Anopheles mosquitoes, acting as a Vector. (C-I)

(d) Tetanus (D) is caused by bacteria often found in soil or dust. It enters the body through direct contact with a wound or skin break. (D-III)

(e) Matching these correctly gives the sequence (A)-(II), (B)-(IV), (C)-(I), (D)-(III).

Final Answer: (A)-(II), (B)-(IV), (C)-(I), (D)-(III).

Answer: (A)

Q19.

Solution

Concept:

Cardiovascular physiology in sports measures the efficiency of the heart as a pump. Two critical metrics are Heart Rate (HR) and Stroke Volume (SV). While Heart Rate is the frequency of contractions, Stroke Volume represents the volume of blood ejected with each individual contraction. Together, they determine Cardiac Output ($Q = HR \times SV$), which is the total volume of blood circulated by the heart per minute.

Solution:

(a) Stroke Volume is specifically the amount of oxygenated blood pumped out of the left ventricle of the heart to the rest of the body.

(b) This measurement occurs during a single ventricular contraction (systole) or "one single beat."

(c) In a healthy sedentary adult, the resting stroke volume is approximately 70 ml.

(d) For trained endurance athletes, the stroke volume is significantly higher (often over 100–110 ml at rest) because their heart muscle is stronger and the ventricular cavity is larger.

(e) This allows the athlete's heart to pump more blood with fewer beats, which is why elite athletes often have a very low resting heart rate (bradycardia).

Final Answer: It is the amount pumped in one single beat.

Answer: (B)

Q20.

Solution

Concept:

Angular momentum is a physics principle defined as the product of the Moment of Inertia (I) and Angular Velocity (ω). The principle of 'Conservation of Angular Momentum' states that if no external torque acts on a body, its total angular momentum remains constant. In sports, athletes manipulate their "Moment of Inertia" (how their mass is distributed relative to the axis of rotation) to change their speed of rotation while in the air.

Solution:

(a) When an athlete (like a diver or gymnast) moves from an open position to a "tuck" position, they bring their arms and legs closer to the axis of rotation (their center of mass).

(b) This action decreases their Moment of Inertia (I).

(c) Because Angular Momentum ($L = I \times \omega$) must remain constant, the decrease in I must be balanced by an increase in Angular Velocity (ω).

(d) Consequently, the athlete spins faster. To slow down before landing, they "open up" their body, increasing I and decreasing ω.

(e) This principle is most visibly demonstrated in the tuck position used in diving, gymnastics, or figure skating spins, where the athlete's rotation speed changes drastically based on their body shape.

Final Answer: The tuck position in diving/gymnastics.

Answer: (C)

Q21.

Solution

Concept:

The Midday Meal Scheme (now known as PM POSHAN) is a massive school meal program in India designed to better the nutritional status of school-age children nationwide. The program serves multiple purposes: it encourages school attendance, improves concentration during classes by reducing "classroom hunger," and addresses malnutrition. To ensure these goals are met, the Ministry of Education has set specific nutritional norms that specify the minimum amount of energy (calories) and protein that must be provided in each meal, varying by the age group of the children.

Solution:

(a) For children in the Primary stage (Classes I to V), the scheme mandates a meal that provides at least 450 calories of energy.

(b) In addition to the energy requirement, the meal must contain 12 grams of protein to support muscle growth and repair during these critical developmental years.

(c) For comparison, children in the Upper Primary stage (Classes VI to VIII) are allocated a higher nutritional intake, requiring 700 calories and 20 grams of protein per meal due to their increased metabolic demands.

(d) These nutrients are typically derived from a combination of food grains (100g for primary), pulses (20g), vegetables (50g), and oil/fat (5g).

(e) Ensuring these levels are met is essential for physical education and overall health, as proper nutrition is the foundation for physical activity and prevents stunted growth and anemia among rural and underprivileged populations.

Final Answer: 450 calories and 12g protein.

Answer: (B)

Q22.

Solution

Concept:

In the tradition of Hatha Yoga, 'Shatkarmas' or 'Shatkriyas' are six groups of purification practices. These kriyas are intended to balance the three 'doshas' (Vata, Pitta, and Kapha) in the body and prepare the practitioner for pranayama and meditation. Neti is the process of cleansing the nasal passages. It is particularly relevant in modern physical education for respiratory health and managing allergies or sinus issues that might hinder an athlete's breathing efficiency.

Solution:

(a) Jala Neti is the specific technique where lukewarm isotonic saline water (salted water) is poured into one nostril using a 'Neti Pot' and allowed to flow out through the other nostril.

(b) The salt in the water is crucial as it matches the body's natural salinity, preventing irritation of the mucous membranes.

(c) This process flushes out mucus, pollutants, and allergens from the nasal tract and the frontal sinuses.

(d) Regular practice is said to improve 'Divya Drishti' (eyesight) and clarity of mind by reducing the cooling pressure on the brain and improving airflow.

(e) Other kriyas mentioned serve different purposes: Vamana Dhauti is for cleansing the stomach (vomiting), Kapalbhati is a breathing technique for the frontal brain/lungs, and Nauli involves abdominal churning for digestive health.

Final Answer: The Kriya is Jala Neti.

Answer: (B)

Q23.

Solution

Concept:

Balance is a fundamental component of motor fitness and is categorized into two types: Static and Dynamic. Static balance is the ability to maintain the body's center of gravity within its base of support while the body is stationary. This is crucial in sports like gymnastics (holding a pose), archery, or shooting. The Flamingo Balance Test is a widely recognized standardized test used in the Eurofit battery and other physical education assessments to quantify this specific ability.

Solution:

(a) In the Flamingo Balance Test, the subject stands on their preferred leg on a thin metal beam (or a flat firm surface in modified versions).

(b) The other leg is flexed at the knee and held at the ankle by the hand on the same side, resembling the stance of a flamingo.

(c) The test measures how many times the subject loses their balance (touches the ground or lets go of the foot) within a one-minute period.

(d) Because the subject remains in a fixed position without moving across space, the test specifically targets 'Static Balance.'

(e) High scores in this test indicate excellent neuromuscular coordination and core stability. It is often used to assess children's motor development and the stability of athletes in various sports disciplines.

Final Answer: The test measures Static Balance.

Answer: (B)

Q24.

Solution

Concept:

The design of an athletics track is governed by strict regulations set by World Athletics to ensure consistency and safety for athletes globally. A standard outdoor track is 400 meters in length, consisting of two straights and two curves. Each lane within this track must have a specific width to accommodate the athlete's stride and allow for safe passing without interference. This standardization is critical for calculating 'staggers'—the starting positions in races like the 200m and 400m—where outer lane runners start further ahead to compensate for the longer radius of the curves.

Solution:

(a) The standard width for a lane on an international competition track is 1.22 meters (which is approximately 4 feet).

(b) This width includes the 5cm wide white line on the right side of the lane.

(c) Maintaining exactly 1.22m is essential because even a small deviation would change the distance covered by an athlete in the curves, rendering the staggered start lines inaccurate.

(d) For example, in a 400m race, the stagger for Lane 2 is calculated as $w(n-1) - 0.10 \times 2\pi$, where '$w$' is this specific lane width (1.22m).

(e) While some community or school tracks might have narrower lanes (such as 1.00m or 1.15m) due to space constraints, 1.22m remains the mandatory requirement for all Class 1 and Class 2 certified synthetic tracks used in professional athletics.

Final Answer: The standard width is 1.22 meters.

Answer: (C)

Q25.

Solution

Concept:

Training methods are categorized based on how intensity and duration are manipulated to achieve physiological adaptations. The Interval Training method, popularized by coach Emil Zátopek and later refined scientifically, is based on the principle of "effort and recovery." Unlike continuous training, where an athlete works at a steady pace, interval training breaks the session into segments of high-intensity work followed by periods of lower-intensity activity or rest. This method is highly effective for improving both aerobic and anaerobic power.

Solution:

(a) In the Interval Method, the "rest" or recovery period is not a full rest; it is usually a "walking" or "slow jogging" phase.

(b) A key feature of this method is that the next work interval begins before the athlete has fully recovered. Usually, the next bout starts when the heart rate drops to about 120–130 bpm.

(c) This process trains the heart to recover quickly and increases the stroke volume, making the cardiovascular system more efficient.

(d) Fartlek (Speed Play) also involves varying intensities but is usually performed in a natural environment without strict timing or set distances, making it more spontaneous than the structured Interval Method.

(e) Continuous training lacks these high-intensity spikes, and Isometrics involve no movement at all. Therefore, structured alternating periods of work and recovery define the Interval Method.

Final Answer: The method is the Interval Method.

Answer: (B)

Q26.

Solution

Concept:

Newton's Third Law of Motion, often called the Law of Action and Reaction, states that for every action, there is an equal and opposite reaction. In sports, this law explains how athletes interact with their environment to produce movement. When an athlete applies a force (action) against a surface or object, the surface or object simultaneously applies a force of the same magnitude but in the opposite direction (reaction) back onto the athlete. This reactive force is what actually propels the athlete in the desired direction of travel.

Solution:

(a) When a sprinter is in the starting blocks, they exert a powerful force by pushing their feet backward and downward against the blocks. This is the 'Action' force.

(b) According to Newton's Third Law, the starting blocks (which are anchored to the track) must provide an equal and opposite 'Reaction' force.

(c) Since the sprinter pushes backward, the blocks push the sprinter forward. Since the sprinter pushes downward, the blocks push the sprinter upward.

(d) The resultant reactive force from the blocks is what provides the acceleration needed for the sprinter to drive out of the blocks and begin the race.

(e) Without this opposing force, the sprinter's feet would simply slide backward (as seen on a slippery surface like ice), and no forward motion would be achieved.

(f) Therefore, the blocks push forward on the sprinter, matching the direction opposite to the sprinter's push.

Final Answer: The blocks push forward on the sprinter.

Answer: (B)

Q27.

Solution

Concept:

Functional fitness refers to the physical capacity of an individual to perform daily activities safely and independently without undue fatigue. As individuals age, their physiological systems—including muscular strength, flexibility, and cardiovascular endurance—undergo changes that can affect their quality of life. The Rikli and Jones Senior Citizen Fitness Test (also known as the Fullerton Functional Fitness Test) was developed by Dr. Roberta Rikli and Dr. Jessie Jones to specifically address the need for a safe and effective way to measure these components in the elderly population.

Solution:

(a) Unlike standard fitness tests for youth (which might involve strenuous activities like pull-ups or 12-minute runs), the Rikli and Jones battery consists of simple, functional movements.

(b) The battery includes items such as the 'Chair Stand Test' (to measure lower body strength), 'Arm Curl Test' (upper body strength), 'Chair Sit and Reach' (lower body flexibility), and the '6-Minute Walk Test' (aerobic endurance).

(c) These tests are designed to be performed by "Senior Citizens" or older adults, typically aged 60 and above.

(d) The primary objective is to identify if an older adult has the "functional reserve" necessary to perform tasks like climbing stairs, carrying groceries, or getting out of a chair.

(e) By using this test, physical educators and healthcare providers can design specialized exercise programs to help senior citizens maintain their independence and prevent falls.

Final Answer: It was designed for Senior Citizens.

Answer: (C)

Q28.

Solution

Concept:

Nutrients are chemical substances found in food that the body requires for energy, growth, repair, and regulation of life processes. They are classified into two broad categories: Macro-nutrients and Micro-nutrients. Macro-nutrients (Carbohydrates, Proteins, and Fats) are needed in large quantities to provide energy and structural building blocks. Micro-nutrients (Vitamins and Minerals), on the other hand, are required in much smaller quantities (milligrams or micrograms) but are absolutely essential for biochemical reactions, immune function, and maintaining tissue integrity.

Solution:

(a) Calcium is a vital mineral, and because it is required in small daily amounts compared to grams of protein or carbs, it is classified as a Micro-nutrient.

(b) It plays a primary role in the mineralization of bones and teeth, providing the structural strength necessary to withstand the physical stress of sports.

(c) Beyond bone health, Calcium is critical for the "sliding filament mechanism" of muscle contraction; without it, muscles could not contract.

(d) It also acts as a "co-factor" in the blood clotting process (coagulation), ensuring that wounds heal and internal bleeding is prevented.

(e) In contrast, Carbohydrates, Fats, and Proteins are Macro-nutrients because they provide the bulk of our caloric intake and physical mass. Therefore, Calcium is the correct micro-nutrient identified in the options.

Final Answer: The micro-nutrient is Calcium.

Answer: (B)

Q29.

Solution

Concept:

The human foot is a complex structure consisting of 26 bones and a network of ligaments and tendons that form several arches. These arches—primarily the medial longitudinal arch—act as a "spring" or shock absorber, distributing the body's weight across the foot and providing leverage during walking and running. A common postural deformity known as Flat Foot (Pes Planus) occurs when these arches collapse or fail to develop properly, causing the entire sole of the foot to touch the ground when standing.

Solution:

(a) Flat Foot is specifically characterized by the loss or flattening of the 'Longitudinal Arch' (especially the medial side).

(b) In a normal foot, this arch creates a visible curve on the inner side of the foot. When this arch is absent, the foot loses its ability to absorb the shock of impact with the ground efficiently.

(c) This deformity can lead to pain in the feet, ankles, and even the lower back, as the body's alignment is altered.

(d) In sports, athletes with flat feet may experience quicker fatigue or be prone to injuries like shin splints.

(e) Corrective measures include performing exercises like "towel curls" with the toes, walking on the heels, and practicing yoga asanas like Tadasana or Vajrasana. Orthopedic shoes or arch supports are also commonly used to manually create the necessary lift.

Final Answer: The missing arch is the Longitudinal Arch.

Answer: (B)

Q30.

Solution

Concept:

A Round-robin tournament (or League tournament) is a competition format where each participant meets every other participant in turn. This is considered the fairest way to determine a winner because it eliminates the element of "luck of the draw" found in knock-out tournaments. In a single round-robin, each team plays every other team once. To manage such a tournament, organizers use a mathematical formula to determine the total number of matches, which helps in scheduling venues, officials, and time slots.

Solution:

(a) For a round-robin tournament, the formula to calculate the total number of matches is $\frac{n(n-1)}{2}$, where 'n' represents the total number of teams.

(b) In this case, the number of teams (n) is 8.

(c) Applying the formula: $\frac{8\times(8-1)}{2} = \frac{8\times7}{2}$.

(d) Calculation: $\frac{56}{2} = 28$ matches.

(e) This means that to complete the league stage where every team has faced everyone else exactly once, a total of 28 matches must be conducted.

(f) If it were a "double" round-robin (where teams play each other home and away), the formula would simply be $n(n-1)$, resulting in 56 matches. However, in standard league stages unless specified otherwise, a single round-robin is assumed.

Final Answer: 28 matches will be played.

Answer: (B)

Q31.

Solution

Concept:

In the landscape of Indian sports history, the 2020 Tokyo Olympics (held in 2021) was a landmark event. Talent identification and the professionalization of training led to several firsts for India. P.V. Sindhu, an elite badminton player, has become a symbol of consistency and mental fortitude. Her career path illustrates the transition of Indian sports from participation-oriented to podium-oriented on the global stage.

Solution:

(a) The question asks for the first Indian woman to win two Olympic medals in an individual event.

(b) P.V. Sindhu achieved this feat by winning the Bronze medal in Tokyo 2020, following her Silver medal victory at the Rio 2016 Olympics.

(c) While Mirabai Chanu and Lovlina Borgohain also won medals in Tokyo, they were their first Olympic medals.

(d) Sindhu's Bronze medal match was against China's He Bingjiao, which she won in straight sets.

(e) This achievement placed her alongside Sushil Kumar as the only other Indian to have won two individual Olympic medals.

(f) Understanding such current affairs is crucial in Physical Education as it highlights the success of national sports policies and female empowerment in sports.

Final Answer: P.V. Sindhu – Bronze in Badminton.

Answer: (B)

Q32.

Solution

Concept:

Olympic Mascots are more than just friendly characters; they are carefully selected symbols that reflect the culture, history, and values of the host nation and the Olympic movement. For the Paris 2024 Games, the organizers moved away from the traditional choice of an animal or a humanoid figure, choosing instead an object of profound historical and revolutionary significance to the French Republic.

Solution:

(a) The mascots for Paris 2024 are called "The Phryges" (pronounced free-jes).

(b) They are modeled after the Phrygian cap, a traditional small hat that has symbolized freedom and liberty in France for centuries.

(c) These caps were worn during the French Revolution and are seen on 'Marianne,' the national personification of the French Republic.

(d) The choice of this mascot emphasizes the "Olympic Revolution" and the idea that sport can change everything—socially and individually.

(e) By choosing a symbol of liberty, the organizers aimed to connect the ancient spirit of the Olympics with the modern values of French democracy and inclusivity.

Final Answer: The Phrygian Cap (Phryges).

Answer: (B)

Q33.

Solution

Concept:

The Target Olympic Podium Scheme (TOPS) is a flagship program of the Ministry of Youth Affairs and Sports, Government of India. Launched in 2014 and significantly revamped in recent years, it represents a shift toward a high-performance sports ecosystem. The scheme recognizes that elite athletes require specialized support that goes beyond standard national camp facilities to compete at the world-class level required for an Olympic podium finish.

Solution:

(a) The primary objective of TOPS is to identify and provide support to India's top athletes who have the potential to win medals in the Olympic and Paralympic Games.

(b) Under this scheme, selected athletes receive customized training from world-renowned coaches, access to international competitions for exposure, and top-tier sports science and medical support.

(c) It also provides a monthly out-of-pocket allowance (₹ 50,000 for elite and ₹ 25,000 for developmental athletes) to cover daily expenses and specialized equipment.

(d) While programs like 'Khelo India' focus on broad-based talent identification at the grassroots level, TOPS is strictly for the "elite" layer of the sporting pyramid.

(e) The success of TOPS was evident in India's record-breaking performance at the Tokyo Olympics and the subsequent Asian Games.

Final Answer: To provide customized support to elite athletes for Olympic success.

Answer: (B)

Q34.

Solution

Concept:

Vitamins are essential organic compounds that the body needs for various physiological functions. Vitamin D, often called the "Sunshine Vitamin," is unique because it functions more like a pro-hormone than a traditional vitamin. It is vital for athletes and the general population alike due to its role in bone metabolism and muscular function. Deficiency in this vitamin can lead to weakened bones (Rickets in children, Osteomalacia in adults) and increased risk of stress fractures in sports.

Solution:

(a) Vitamin D is synthesized when the skin is exposed to UVB radiation from sunlight. This radiation triggers the conversion of cholesterol derivatives in the skin into an active form of the vitamin.

(b) Its most critical role in the body is facilitating the absorption of Calcium and Phosphorus from the small intestine.

(c) Without sufficient Vitamin D, even a diet high in calcium will not lead to strong bones because the body cannot utilize the mineral effectively.

(d) In the context of Physical Education, maintaining optimal Vitamin D levels is essential for bone density, muscle contraction strength, and even immune system regulation.

(e) While other vitamins like B12 are found in animal products and Vitamin A in colorful vegetables, Vitamin D remains the only one primarily linked to solar exposure.

Final Answer: The vitamin is Vitamin D.

Answer: (C)

Q35.

Solution

Concept:

Acute soft tissue injuries, such as sprains (ligament tears) and strains (muscle tears), require immediate "First Aid" to minimize swelling, pain, and further tissue damage. The traditional 'R.I.C.E.' protocol (Rest, Ice, Compression, Elevation) has been updated to 'P.R.I.C.E.R.' to provide a more comprehensive approach to injury management in sports medicine. These steps are designed to control the inflammatory response during the first 48 to 72 hours following an injury.

Solution:

(a) P stands for Protection: Preventing further injury by using a splint or crutches.

(b) R stands for Rest: Avoiding activity that causes pain to allow the healing process to begin.

(c) I stands for Ice: Applying cold to constrict blood vessels and reduce swelling and pain.

(d) C stands for Compression: Using an elastic bandage to limit internal bleeding and edema.

(e) E stands for Elevation: Keeping the injured part above the level of the heart to reduce fluid accumulation.

(f) R stands for Referral: Consulting a doctor or physiotherapist for a professional diagnosis and a long-term rehabilitation plan.

(g) Therefore, the 'E' and 'R' specifically stand for Elevation and Referral.

Final Answer: Elevation and Referral.

Answer: (B)

Q36.

Solution

Concept:

Yoga asanas are often classified by their physical shape and the physiological impact they have on the body. Bhujangasana, derived from the Sanskrit words 'Bhujanga' (Cobra) and 'Asana' (Pose), is a foundational back-bending posture. In the context of remedial physical education, back-bending asanas are the primary tools used to counteract 'Forward Head Posture' and 'Thoracic Kyphosis.' These conditions are increasingly common due to modern lifestyle habits such as prolonged sitting and excessive use of digital devices, which lead to a rounded upper back.

Solution:

(a) In Bhujangasana, the practitioner lies prone and lifts the chest off the floor using the spinal muscles, mimicking a cobra with its hood raised.

(b) This movement results in an intense extension of the thoracic spine. By stretching the pectoral muscles and strengthening the erector spinae, it directly reverses the "hunchback" effect associated with Kyphosis.

(c) Furthermore, the expansion of the chest during this pose increases the space in the thoracic cavity. This allows for deeper diaphragmatic breathing and increases the vital capacity of the lungs, significantly improving respiratory efficiency.

(d) Unlike Vajrasana (a sitting pose) or Shalabhasana (which focuses more on the lower back/lumbar), Bhujangasana specifically targets the upper and middle back.

(e) Regular practice also tones the adrenal glands and improves blood circulation to the spinal column, making it a comprehensive exercise for both structural alignment and metabolic health.

Final Answer: The asana is Bhujangasana.

Answer: (B)

Q37.

Solution

Concept:

Genu Valgum, commonly known as "Knock Knees," is a common postural deformity of the lower limbs. It is defined as a condition where the knees angle in and touch each other when the legs are straightened, but the medial malleoli (inner ankle bones) remain significantly apart. This condition can be congenital, caused by nutritional deficiencies like Vitamin D or Calcium (Rickets), or developed due to obesity and improper footwear that places uneven stress on the knee joints during the developmental years.

Solution:

(a) In a person with Genu Valgum, the line of gravity passes through the lateral (outer) part of the knee joint. This creates an imbalance where the lateral collateral ligaments are compressed and the medial collateral ligaments are stretched.

(b) The most visible clinical sign is the touching of the knees while a gap of 3 to 4 inches or more exists between the ankles.

(c) This is the direct opposite of Genu Varum (Bow Legs), where the knees stay wide apart while the ankles touch.

(d) Physically, knock knees can interfere with an athlete's running gait, leading to 'medial knee pain' and increasing the risk of ACL (Anterior Cruciate Ligament) injuries due to the increased valgus stress on the joint.

(e) Corrective measures include strengthening the hip abductors, performing 'Horse Riding' asanas, and using corrective braces or surgical intervention in severe cases. Keeping the knees healthy is vital for maintaining mobility and athletic longevity.

Final Answer: The condition is Genu Valgum.

Answer: (B)

Q38.

Solution

Concept:

In a league or round-robin tournament, the 'Cyclic Method' is one of the most organized ways to prepare a fixture or schedule. It ensures that every team plays every other team exactly once. While the fixture shows the pairings for each round, the total number of matches remains constant regardless of whether one uses the staircase, cyclic, or tubular method. The formula for the total number of matches is a combination calculation, as we need to find how many ways we can pair two teams out of the total number of teams.

Solution:

(a) The formula to calculate the total number of matches (N) in a single round-robin league is $N = \frac{n(n-1)}{2}$, where 'n' is the number of teams.

(b) Here, $n = 12$.

(c) Substituting the values: $N = \frac{12\times(12-1)}{2} = \frac{12\times11}{2}$.

(d) Calculation: $N = \frac{132}{2} = 66$ matches.

(e) In the cyclic method, specifically for 12 teams (an even number), the number of rounds will be $n - 1$, which is 11 rounds. In each round, there will be $n/2$ matches, which is 6 matches.

(f) Multiplying 11 rounds by 6 matches per round also gives $11 \times 6 = 66$ matches.

(g) Understanding this calculation is essential for tournament directors to estimate the total time, number of officials, and budget required for the entire event duration.

Final Answer: 66 matches.

Answer: (A)

Q39.

Solution

Concept:

Non-communicable diseases (NCDs), also known as chronic diseases, are medical conditions that are not transmissible directly from one person to another. They are typically of long duration and are the result of a combination of genetic, physiological, environmental, and behavioral factors. Diabetes Mellitus is one of the most prevalent NCDs globally. It occurs when the pancreas no longer produces enough insulin (Type 1) or when the body cannot effectively use the insulin it produces (Type 2), leading to elevated blood glucose levels (hyperglycemia).

Solution:

(a) Diabetes is fundamentally a metabolic disorder. Unlike Influenza, Typhoid, or Hepatitis B, which are caused by pathogens (viruses or bacteria), Diabetes is primarily linked to lifestyle.

(b) Physical activity is a cornerstone of diabetes management because muscle contraction stimulates glucose uptake even without insulin, thereby lowering blood sugar levels naturally.

(c) A 'low-glycemic' diet—rich in fiber and complex carbohydrates—prevents sharp spikes in blood glucose, making it easier for the body to maintain homeostasis.

(d) Regular exercise also helps in managing body weight and improving cardiovascular health, which is critical because diabetics are at a higher risk of heart disease and strokes.

(e) In the field of Physical Education, understanding the management of NCDs like Diabetes is crucial for designing safe and effective 'Exercise is Medicine' programs for the general population.

Final Answer: The disease is Diabetes Mellitus.

Answer: (B)

Q40.

Solution

Concept:

Human blood is a specialized fluid consisting of plasma and three primary types of formed elements: Red Blood Cells (RBCs), White Blood Cells (WBCs), and Platelets (Thrombocytes). Platelets are small, disc-shaped cell fragments produced in the bone marrow. In the context of sports and physical activity, injuries like abrasions, cuts, or internal contusions are common. The body's immediate survival mechanism depends on the efficiency of these platelets to prevent excessive blood loss.

Solution:

(a) The primary physiological function of platelets is 'Hemostasis,' the process of stopping bleeding.

(b) When a blood vessel is damaged during an injury, platelets are chemically attracted to the site. They undergo a transformation, becoming "sticky" and adhering to the broken vessel wall to form a temporary "platelet plug."

(c) Simultaneously, they release chemical factors that trigger the 'Coagulation Cascade,' eventually leading to the formation of a fibrin mesh that traps RBCs and creates a stable blood clot.

(d) While RBCs (Erythrocytes) are responsible for oxygen transport and WBCs (Leukocytes) for immunity, platelets are the dedicated units for clotting.

(e) For an athlete, a healthy platelet count is essential for quick recovery from minor injuries. A deficiency in platelets (thrombocytopenia) can lead to easy bruising and prolonged bleeding, which can be dangerous in contact sports like boxing or football.

Final Answer: The function is Blood Clotting.

Answer: (C)

Q41.

Solution

Concept:

The approach run in the high jump is not a mere sprint; it is a sophisticated biomechanical maneuver designed to set the stage for vertical lift. The transition from a straight-line run to a curved path (the 'J-approach') introduces centripetal forces. In physics, centripetal force is the inward force required to keep an object moving in a circular path. For a high jumper, this curve creates a specific 'lean' away from the bar, which is essential for the technical execution of the Fosbury Flop.

Solution:

(a) As the athlete runs along the curved portion of the 'J,' they experience a centripetal force directed toward the center of the curve.

(b) To maintain balance against the resulting centrifugal tendency, the athlete leans away from the high jump bar.

(c) This lean allows the athlete to lower their center of gravity slightly without bending the knees excessively, effectively "cocking" the body like a spring.

(d) At the moment of takeoff, the athlete suddenly moves from this leaned position to an upright position.

(e) This rapid change allows the athlete to harness the built-up centripetal force and convert it into a powerful vertical thrust.

(f) Without this curve, the athlete would struggle to achieve the necessary body rotation required to lay flat over the bar.

(g) Therefore, the curve is a strategic tool used specifically to generate centripetal force and set up the ideal body angle for the vertical jump phase.

Final Answer: To build centripetal force for an effective takeoff.

Answer: (B)

Q42.

Solution

Concept:

The Center of Gravity (CoG) is the theoretical point where the entire weight of the body is concentrated. In biomechanics, the relative position of the CoG depends on the distribution of the body's segments in space. One of the most fascinating aspects of the Fosbury Flop is that it allows an athlete to clear a bar even if their CoG never actually rises above the level of that bar. This is a classic example of mechanical efficiency in sports, where the shape of the body is manipulated to overcome physical limits.

Solution:

(a) During the Fosbury Flop, the athlete arches their back intensely as they pass over the crossbar.

(b) Because the head and shoulders are descending on one side of the bar while the legs are still rising on the other, the body takes on a 'U' or 'banana' shape.

(c) Biomechanically, when a body is curved in this manner, the Center of Gravity can actually fall outside the physical mass of the body.

(d) In a perfectly executed jump, the athlete's CoG passes underneath the bar, even though every individual part of the athlete's body (head, torso, then legs) passes over it sequentially.

(e) This means the athlete does not have to jump as high as they would in a 'scissors' jump, where the CoG must pass over the bar.

(f) This efficiency is why the Fosbury Flop revolutionized the sport, allowing for much higher clearances relative to the energy expended at takeoff.

Final Answer: It passes underneath the bar.

Answer: (C)

Q43.

Solution

Concept:

The takeoff in high jump is the most critical phase where the athlete interacts with the ground to change their state of motion. Newton's Third Law of Motion states that for every action, there is an equal and opposite reaction. In the context of the jump, the athlete applies a massive downward and slightly backward force against the ground using the takeoff leg. The ground, being immovable, provides a reactive force that determines the trajectory of the jump.

Solution:

(a) At the point of plant, the athlete's foot hits the ground with a force several times their body weight. This is the 'Action' force.

(b) The ground exerts an equal 'Reaction' force upward through the athlete's skeletal system.

(c) Because the athlete has built horizontal momentum during the run-up, this reactive force from the ground acts as a pivot.

(d) This ground reaction force is what abruptly stops the horizontal motion and redirects the athlete's velocity upward into the air.

(e) Additionally, the swinging of the free leg and arms upward at the moment of takeoff increases the downward force on the ground, which in turn increases the upward reactive force received by the athlete.

(f) This interplay between the athlete's physical push and the ground's resistance is the fundamental application of Newton's Third Law that makes the jump possible.

Final Answer: Third Law (Action-Reaction).

Answer: (C)

Q44.

Solution

Concept:

Anatomical movements are described relative to the joint's neutral position. The spine is capable of several movements, including flexion (bending forward) and extension (bending backward). In the high jump, specifically the Fosbury Flop, the athlete must navigate the transition from a vertical takeoff to a horizontal clearance. This requires a specific manipulation of the spinal column to ensure the torso clears the bar without dislodging it.

Solution:

(a) As the athlete's shoulders clear the bar, they must raise their hips to ensure the mid-section does not hit the crossbar.

(b) To achieve this "arch," the athlete performs a deep spinal extension (or hyperextension).

(c) Extension is the movement that increases the angle between body parts; in the spine, this means bending the back toward the rear.

(d) This extension allows the hips to rise while the head and feet remain lower, facilitating the "draping" effect over the bar.

(e) If the athlete were to perform flexion (bending forward), their hips would drop, and they would immediately hit the bar.

(f) Once the hips have cleared the bar, the athlete then quickly flexes their neck and hips (the 'kickout') to bring the legs up and over the bar to complete the clearance.

(g) Thus, the arching phase itself is purely a result of spinal extension and hyperextension.

Final Answer: Extension/Hyperextension.

Answer: (B)

Q45.

Solution

Concept:

Physical fitness components are categorized based on the type of metabolic and muscular demand. For the high jump, the 'Takeoff' phase is an explosive movement that occurs in a fraction of a second. This requires the muscles to generate the maximum amount of force in the shortest possible time. This combination of speed and strength is known as 'Explosive Power' or 'Plyometric Strength.' While other factors like flexibility and coordination are important, they are secondary to the raw power required to lift the body into the air.

Solution:

(a) Explosive power is the ability to expend energy in one maximum effort or a series of such efforts.

(b) In high jump, the muscles of the takeoff leg (primarily the quadriceps, gluteals, and gastrocnemius) must undergo a rapid eccentric contraction followed by an immediate concentric contraction.

(c) This "Stretch-Shortening Cycle" generates the vertical velocity needed to overcome gravity.

(d) Aerobic endurance is irrelevant because the event is over in seconds, and muscular endurance is not tested as it is a single-repetition maximum effort.

(e) While flexibility (especially in the spine) helps in clearing the bar, it cannot substitute for the power needed to reach the height of the bar.

(f) Therefore, explosive power is the primary determinant of success during the takeoff phase, as it directly dictates the height of the jump's peak.

Final Answer: Explosive Power.

Answer: (B)

Q46.

Solution

Concept:

Aggression in sports is a complex psychological construct often categorized by the underlying intent of the athlete. Instrumental Aggression is a specific form of behavior where physical force or aggressive actions are used as a "tool" to achieve a non-aggressive goal. In this context, the aggression is not fueled by anger or a desire to cause pain, but rather by the strategic necessity of the game. It is often seen in contact sports like rugby, American football, or ice hockey, where high-intensity physical contact is a legitimate and expected part of the competitive environment.

Solution:

(a) The passage defines Instrumental Aggression as behavior where the primary goal is to achieve a sports objective, such as gaining possession of the ball or stopping an opponent's progress.

(b) Unlike Hostile Aggression, the "instrumental" athlete does not view the opponent as an enemy to be harmed, but as an obstacle to be bypassed or moved within the rules of the game.

(c) For example, a "hard tackle" in football that is aimed solely at winning the ball is instrumental. The player uses force to succeed in the play, even if the opponent accidentally falls or feels pain as a result.

(d) The lack of anger and the presence of a tactical motive are the hallmarks of this type of behavior.

(e) It is a calculated and often reinforced behavior because it leads to successful outcomes (e.g., winning the game, getting a trophy).

(f) Therefore, the primary goal is achieving a specific game-related objective, not the infliction of injury.

Final Answer: To achieve a specific game-related objective or goal.

Answer: (B)

Q47.

Solution

Concept:

Hostile Aggression, often referred to as "Reactive Aggression," is the second major category of aggressive behavior in sports. It is characterized by an emotional outburst, usually triggered by a perceived provocation, such as a hard foul, a verbal taunt, or a frustrating loss. The primary psychological driver is anger, and the ultimate objective is to inflict physical or psychological harm on the opponent. In sports ethics, this is considered a significant deviation from "Fair Play" and is usually met with severe disciplinary action by officials.

Solution:

(a) Hostile Aggression is "person-oriented" rather than "task-oriented." The athlete's focus shifts from winning the match to hurting the individual who caused them distress.

(b) It is often impulsive and occurs in the "heat of the moment" when an athlete loses emotional control.

(c) A clear example would be a player throwing a punch at an opponent after being tripped, or a player deliberately using their cleats to injure a rival out of spite.

(d) This type of aggression is often explained by the 'Frustration-Aggression Hypothesis,' where the build-up of tension leads to an explosion of negative behavior.

(e) Because the intent is purely to cause injury and the emotional state is one of anger, it is categorized as Hostile Aggression.

(f) In contrast, 'Assertive Behavior' uses force without the intent to harm, and 'Tactical Aggression' is usually a synonym for instrumental aggression.

Final Answer: The type is Hostile Aggression.

Answer: (B)

Q48.

Solution

Concept:

The 'Frustration-Aggression Hypothesis' was originally proposed by Dollard et al. in 1939 and later refined by Leonard Berkowitz. It is one of the most famous theories explaining why athletes "snap" during competition. The theory posits that aggression is not an innate drive but a consequence of frustration. In a sports setting, frustration occurs when an athlete's path to a desired goal—such as scoring a goal, winning a race, or performing a skill—is blocked by an opponent, a referee's decision, or even their own failure.

Solution:

(a) According to this hypothesis, the blocking of a "goal-directed behavior" creates a state of frustration within the athlete.

(b) This frustration leads to an increase in arousal and psychological tension.

(c) If this tension is not managed through constructive means, it serves as a "drive" that leads to an aggressive act.

(d) For instance, if a striker is repeatedly fouled by a defender (blocking their goal of scoring), the striker becomes frustrated. This frustration may eventually manifest as a retaliatory aggressive act toward the defender.

(e) Modern versions of the theory suggest that frustration creates a "readiness" for aggression, and actual aggression occurs when certain "cues" (like a provocative gesture) are present.

(f) Therefore, the core trigger is the interruption or blocking of an athlete's attempt to reach their objective.

Final Answer: The blocking of a goal-directed behavior.

Answer: (B)

Q49.

Solution

Concept:

In sports psychology, a clear distinction is made between Aggression and Assertive Behavior. While the public often uses these terms interchangeably, they represent different psychological and ethical realities. Assertiveness is highly encouraged in competitive sports; it involves playing with high intensity, focus, and physical vigor while remaining within the rules of the game. It is the "optimal" competitive state where an athlete is physically dominant but mentally composed and respectful of the opponent's safety.

Solution:

(a) Assertive behavior is characterized by the use of legitimate physical force as permitted by the rules of the sport (e.g., a legal shoulder charge in soccer or a clean tackle in rugby).

(b) The defining difference is the "Intent." In assertive behavior, there is zero intent to injure the opponent.

(c) The athlete's energy is directed entirely toward the task (task-oriented) and the ball, rather than toward the opponent's body (person-oriented).

(d) Unlike aggression, which is often fueled by anger or a desire to gain an unfair advantage through fear, assertiveness is fueled by confidence and determination.

(e) An assertive player is "tough but fair." They do not seek to harm the opponent, and they accept the consequences of their physical play without emotional outbursts.

(f) Therefore, using legitimate force within the rules without intent to injure is what separates assertiveness from aggression.

Final Answer: It uses legitimate force without intent to injure.

Answer: (B)

Q50.

Solution

Concept:

This question presents a specific scenario to test the ability to distinguish between types of aggression based on the provided definitions. When an athlete commits a foul—such as tripping an opponent—to prevent a certain goal, they are engaging in a calculated, non-emotional act. This is often referred to as a "professional foul." The psychological profile of such an act is purely instrumental; the athlete has weighed the cost (a yellow or red card) against the benefit (preventing the opponent from scoring) and chosen the aggressive action as a means to an end.

Solution:

(a) In the given scenario, the player acts "without anger." This immediately rules out 'Hostile Aggression,' which requires an emotional state of anger or hostility.

(b) The act is performed "purely for the win," indicating that the move was a strategic decision to achieve a game-related goal (preventing the loss of a goal).

(c) Because the trip is a "tool" or an "instrument" used to facilitate a specific competitive outcome, it fits the definition of Instrumental Aggression perfectly.

(d) While the act is illegal under the rules of the game and may be unsportsmanlike, its psychological classification remains instrumental because the intent is game-related, not injury-related.

(e) Catharsis refers to the release of pent-up emotion through aggression, which does not apply here as the player is not acting out of emotional frustration.

(f) Thus, the cold, calculated nature of the foul confirms it is instrumental.

Final Answer: The player exhibits Instrumental Aggression.

Answer: (B)

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	A	3	A	4	B	5	A
6	C	7	A	8	A	9	B	10	C
11	B	12	C	13	A	14	D	15	C
16	B	17	C	18	A	19	B	20	C
21	B	22	B	23	B	24	C	25	B
26	B	27	C	28	B	29	B	30	B
31	B	32	B	33	B	34	C	35	B
36	B	37	B	38	A	39	B	40	C
41	B	42	C	43	C	44	B	45	B
46	B	47	B	48	B	49	B	50	B