Test Booklet No. ____________

This booklet consists of 100 questions and __ printed pages.

RGUCET/2025/30-33

Series A

RGUCET 2025

Common Entrance Test, 2025

MASTER OF SCIENCE IN PHYSIOLOGY, SPORTS BIOMECHANICS, STRENGTH TRAINING AND CONDITIONING

Full Marks: 100 **Time: 2 Hours**

Roll No.

Day and Date of Examination: ____________________________________

Signature of Invigilator(s) ____

Signature of Candidate ____

General Instructions:

PLEASE READ ALL THE INSTRUCTIONS CAREFULLY BEFORE MAKING ANY ENTRY.

1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. Candidate must write his/her Roll Number on the space provided.
3. This Test Booklet contains 100 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark. There shall be negative marking of 0.25 against each wrong attempt.
4. Please check the Test Booklet to verify that the total pages and total number of questions contained in the test booklet are the same as those printed on the top of the first page. Also check whether the questions are in sequential order or not.
5. Candidates are not permitted to enter into the examination hall after the commencement of the entrance test or leave the examination hall before completion of Examination.
6. Making any identification mark in the OMR Answer Sheet or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.
7. Candidates shall maintain silence inside and outside the examination hall. If candidates are found violating the instructions mentioned herein or announced in the examination hall, they will be summarily disqualified from the entrance test.
8. In case of any dispute, the decision of the Entrance Test Committee shall be final and binding.
9. The OMR Answer Sheet consists of two copies, the Original copy and the Student's copy

RGUCET 2025
Sports Science

<table>
<tr><td>1</td><td colspan="4">Which sentence represents the correct indirect speech conversion of "She said, 'I am going to the market'"?</td><td></td></tr>
<tr><td></td><td>a) She said that she was going to the market</td><td>b) She said that I am going to the market</td><td>c) She told that she is going to the market</td><td>d) She said that she is going to the market</td><td>a</td></tr>
<tr><td>2</td><td colspan="4">Matching pairs:<table><tr><td>A. Finite clause</td><td>i. Having finished the task</td></tr><tr><td>B. Non-finite clause</td><td>ii. To complete the assignment</td></tr><tr><td>C. Gerund</td><td>iii. When they arrived home</td></tr><tr><td>D. Participle</td><td>iv. Swimming is good exercise</td></tr></table></td><td></td></tr>
<tr><td></td><td>a) A-iii, B-ii, C-iv, D-i</td><td>b) A-ii, B-iii, C-i, D-iv</td><td>c) A-iv, B-i, C-ii, D-iii</td><td>d) A-i, B-iv, C-iii, D-ii</td><td>a</td></tr>
<tr><td>3</td><td colspan="4">Rearrange the following sentences to form a coherent paragraph:
I. However, many experts believe this approach is flawed.
II. Traditional education focuses primarily on memorization.
III. Critical thinking and problem-solving are more valuable skills.
IV. Modern teaching methods aim to develop these capabilities.</td><td></td></tr>
<tr><td></td><td>a) II, I, III, IV</td><td>b) III, IV, II, I</td><td>c) II, III, I, IV</td><td>d) I, II, III, IV</td><td>a</td></tr>
<tr><td>4</td><td colspan="4">Which option correctly transforms the active voice sentence "The chef is preparing dinner" to passive voice?</td><td></td></tr>
<tr><td></td><td>a) Dinner was being prepared by the chef</td><td>b) Dinner is being prepared by the chef</td><td>c) Dinner has been prepared by the chef</td><td>d) Dinner will be prepared by the chef</td><td>b</td></tr>
<tr><td>5</td><td colspan="4">Who is credited with the first circumnavigation of the Earth?</td><td></td></tr>
<tr><td></td><td>a) Christopher Columbus</td><td>b) Ferdinand Magellan</td><td>c) Vasco da Gama</td><td>d) James Cook</td><td>b</td></tr>
<tr><td>6</td><td colspan="4">True/False statements:
A. Arunachal Pradesh shares borders with Bhutan, China, and Myanmar.
B. Majuli in Assam is the world's largest river island.
C. Manipur is known as the "Land of Jewels."
D. Nagaland became a state before Mizoram.</td><td></td></tr>
<tr><td></td><td>a) A-True, B-True, C-False, D-True</td><td>b) A-True, B-False, C-True, D-True</td><td>c) A-False, B-True, C-True, D-False</td><td>d) A-True, B-True, C-True, D-True</td><td>d</td></tr>
<tr><td>7</td><td colspan="4">Which nation won the 2023 ICC Cricket World Cup?</td><td></td></tr>
<tr><td></td><td>a) India</td><td>b) Australia</td><td>c) England</td><td>d) New Zealand</td><td>b</td></tr>
<tr><td>8</td><td colspan="4">True/False statements:
A. The COVID-19 pandemic has been officially declared over by the WHO.</td><td></td></tr>
</table>

<table>
<tr><td></td><td colspan="4">B. mRNA vaccines were first developed for human use during the COVID-19 pandemic.
C. Telemedicine usage significantly increased during the global pandemic.
D. Antimicrobial resistance is no longer considered a major global health threat.</td><td></td></tr>
<tr><td></td><td>a) A-True, B-True, C-True, D-False</td><td>b) A-True, B-False, C-True, D-False</td><td>c) A-False, B-False, C-True, D-False</td><td>d) A-False, B-True, C-False, D-True</td><td>c</td></tr>
<tr><td>9</td><td colspan="4">True/False statements:
A. The median is always one of the values in the data set.
B. The mean is always greater than the mode.
C. Standard deviation measures the spread of data around the mean.
D. Quartiles divide a data set into four equal parts.</td><td></td></tr>
<tr><td></td><td>a) A-True, B-False, C-True, D-True</td><td>b) A-False, B-False, C-True, D-True</td><td>c) A-True, B-True, C-False, D-False</td><td>d) A-False, B-True, C-True, D-False
(a)</td><td>a</td></tr>
<tr><td>10</td><td colspan="4">Assertion and justification:
A: If a car travels at 60 km/h for 2.5 hours, it will cover a distance of 150 km.
B: Distance traveled equals speed multiplied by time.</td><td></td></tr>
<tr><td></td><td>a) Both A and B are true, and B explains A</td><td>b) Both true, but B doesn't explain A</td><td>c) A is true, B is false</td><td>d) A is false, B is true</td><td>a</td></tr>
<tr><td>11</td><td colspan="4">If all cats have tails, and Tom is a cat, which conclusion must be true?</td><td></td></tr>
<tr><td></td><td>a) All animals with tails are cats</td><td>b) Tom has a tail</td><td>c) If an animal has a tail, it must be Tom</td><td>d) Some cats don't have tails</td><td>b</td></tr>
<tr><td>12</td><td colspan="4">Alok walks 55m North, 85m West, 100m South, and 25m East. How far from start?</td><td></td></tr>
<tr><td></td><td>a) 85m</td><td>b) 75m</td><td>c) 65m</td><td>d) 95m</td><td>b</td></tr>
<tr><td>13</td><td colspan="4">Which process involves the transfer of genetic material via bacteriophages?</td><td>Answer</td></tr>
<tr><td></td><td>a) Conjugation</td><td>b) Transduction</td><td>c) Transformation</td><td>d) Replication</td><td>(b)</td></tr>
<tr><td>14</td><td colspan="4">Matching pairs:
<table><tr><td>A) Linkage</td><td>i) Non-nuclear DNA inheritance</td></tr><tr><td>B) Crossing over</td><td>ii) Exchange of genetic material</td></tr><tr><td>C) Extrachromosomal</td><td>iii) Genes on the same chromosome</td></tr></table></td><td>Answer</td></tr>
<tr><td></td><td>a) A-iii, B-ii, C-i</td><td>b) A-i, B-iii, C-ii</td><td>c) A-ii, B-i, C-iii</td><td>d) A-iii, B-i, C-ii</td><td>(a)</td></tr>
</table>

<table>
<tr><td>15</td><td colspan="4">True False statements:
A) DNA replication is semi-conservative.
B) Transcription occurs in the cytoplasm.
C) Frameshift mutations alter reading frames.
D) Population genetics studies individual traits.</td><td>Answer</td></tr>
<tr><td></td><td>a) A-True, B-False, C-True, D-False</td><td>b) A-False, B-False, C-True, D- True</td><td>c) A-False, B-False, C-True, D- False</td><td>d) A-False, B-False, C-False, D- False</td><td>(a)</td></tr>
<tr><td>16</td><td colspan="4">True False statements:
A) RDA defines maximum nutrient intake.
B) Legumes are rich in protein.
C) Fats provide 4 kcal/g.
D) Jaggery is unrefined sugar.</td><td>Answer</td></tr>
<tr><td></td><td>a) A-True, B-False, C-False, D-True</td><td>b) A-True, B-False, C-False, D- False</td><td>c) A-False, B-True, C-False, D-True</td><td>d) A-True, B-False, C-True, D-True</td><td>(c)</td></tr>
<tr><td>17</td><td colspan="4">A: Dietary fiber aids gastrointestinal health.
B: It regulates bowel movements.</td><td>Answer</td></tr>
<tr><td></td><td>a) Both true, B explains A</td><td>b) Both true, no relation</td><td>c) A false, B true</td><td>d) A true, B false</td><td>(a)</td></tr>
<tr><td>18</td><td colspan="4">Calculate BMI for a 70 kg person (1.75 m tall).</td><td>Answer</td></tr>
<tr><td></td><td>a) 20.0</td><td>b) 24.5</td><td>c) 22.9</td><td>d) 18.5</td><td>(c)</td></tr>
<tr><td>19</td><td colspan="4">Which mutation type affects a single nucleotide?</td><td>Answer</td></tr>
<tr><td></td><td>a) Frameshift</td><td>b) Point</td><td>c) Chromosomal</td><td>d) Insertion</td><td>(b)</td></tr>
<tr><td>20</td><td colspan="4">Matching pairs:<table><tr><td>A) Replication</td><td>i) mRNA synthesis</td></tr><tr><td>B) Transcription</td><td>ii) DNA synthesis</td></tr><tr><td>C) Translation</td><td>iii) Protein synthesis</td></tr></table></td><td>Answer</td></tr>
<tr><td></td><td>a) A-i, B-ii, C-iii</td><td>b) A-ii, B-i, C-iii</td><td>c) A-iii, B-ii, C-i</td><td>d) A-ii, B-iii, C-i</td><td>(b)</td></tr>
<tr><td>21</td><td colspan="4">True False statements:
A) Conjugation requires direct cell contact.
B) DNA repair fixes all mutations.
C) tRNA carries amino acids.
D) Crossing over reduces genetic diversity.</td><td>Answer</td></tr>
<tr><td></td><td>a) A-False, B-True, C-True, D-False</td><td>b) A-True, B-False, C-True, D-True</td><td>c) A-True, B-False, C-True, D-False</td><td>d) A-True, B-True, C-False, D-False</td><td>(c)</td></tr>
<tr><td>22</td><td colspan="4">A: Extra-chromosomal inheritance follows non-Mendelian patterns.
B: It involves mitochondrial DNA.</td><td>Answer</td></tr>
<tr><td></td><td>a) Both true, B explains A</td><td>b) Both true, no relation</td><td>c) A false, B true</td><td>d) A true, B false</td><td>(a)</td></tr>
</table>

23	If a gene has a 10% recombination frequency, it indicates:				Answer
	a) Tight linkage	b) Independent assortment	c) Complete linkage	d) High mutation rate	(a)
24	Calculate energy (kcal) from 20g protein, 10g fat, 50g CHO.				Answer
	a) 330	b) 350	c) 370	d) 390	(c)
25	What is the process by which bacterial cells take up free DNA from their environment?				Answer
	a) Conjugation	b) Transformation	c) Transduction	d) Replication	(b)
26	Matching pairs:				Answer
	A) Mutation	i) Change in DNA sequence			
	B) Transcription	ii) RNA synthesis from DNA			
	C) Translation	iii) Protein synthesis from mRNA			
	a) A-i, B-iii, C-ii	b) A-ii, B-i, C-iii	c) A-iii, B-i, C-ii	d) A-i, B-ii, C-iii	(d)
27	True False statements: A) Crossing over occurs during meiosis. B) Linkage refers to genes on different chromosomes. C) DNA repair mechanisms fix damaged DNA. D) Population genetics studies gene frequency changes.				Answer
	a) A-False, B-False, C-True, D-False	b) A-True, B-False, C-True, D-False	c) A-True, B-True, C-True, D-False	d) A-True, B-False, C-True, D-True	(d)
28	A: Linkage reduces independent assortment of genes. B: Linked genes are located close on the same chromosome.				Answer
	a) Both true, B explains A	b) Both true, no relation	c) A false, B true	d) A true, B false	(a)
29	If in a population, p = 0.7 (dominant allele frequency), what is the frequency of heterozygotes (2pq)?				Answer
	a) 0.42	b) 0.21	c) 0.49	d) 0.09	(a)
30	What is the term for a change in chromosome number?				Answer
	a) Mutation	b) Aneuploidy	c) Translocation	d) Inversion	(b)
31	Matching pairs:				Answer
	A) Replication	i) DNA copying			
	B) Transduction	ii) Virus-mediated gene transfer			
	C) Conjugation	iii) Direct cell-to-cell gene transfer			

	a) A-ii, B-iii, C-i	b) A-i, B-ii, C-iii	c) A-iii, B-i, C-ii	d) A-i, B-iii, C-ii	(b)
32	True False statements: A) Transcription produces mRNA. B) Translation occurs in the nucleus. C) Crossing over increases genetic variation. D) Mutation always causes disease.				Answer
	a) A-True, B-True, C-False, D-False	b) A-True, B-True, C-False, D-True	c) A-False, B-True, C-False, D-True	d) A-True, B-False, C-True, D-False	(d)
33	A: DNA repair mechanisms are essential for genome stability. B: They correct errors during replication and damage from environmental factors.				Answer
	a) Both true, B explains A	b) Both true, no relation	c) A false, B true	d) A true, B false	(a)
34	If 16% of a population shows recessive phenotype, what is the frequency of the dominant allele?				Answer
	a) 0.6	b) 0.8	c) 0.4	d) 0.2	(b)
35	Which vitamin deficiency causes night blindness?				Answer
	a) Vitamin A	b) Vitamin C	c) Vitamin D	d) Vitamin B6	(a)
36	Matching pairs: A) Cereals — i) Rich in carbohydrates B) Milk — ii) Source of calcium C) Oil seeds — iii) Rich in fats				Answer
	a) A-i, B-ii, C-iii	b) A-ii, B-iii, C-i	c) A-iii, B-i, C-ii	d) A-i, B-iii, C-ii	(a)
37	True False statements: A) Water-soluble vitamins include B-complex and C. B) Minerals are organic compounds. C) Fats are stored energy reserves. D) Deficiency of iron causes anemia.				Answer
	a) A-True, B-False, C-True, D-False	b) A-True, B-False, C-True, D-True	c) A-True, B-True, C-True, D-False	d) A- False, B-False, C-True, D-False	(b)
38	Assertion and justification: A: Potable water is essential for food safety. B: Contaminated water causes foodborne illnesses.				Answer
	a) Both true, B explains A	b) Both true, no relation	c) A false, B true	d) A true, B false	(a)
39	Calculate the RDA for protein for a 60 kg adult (RDA = 0.8 g/kg).				Answer
	a) 40 g	b) 48 g	c) 50 g	d) 60 g	(b)
40	Which muscle acts as an antagonist during elbow flexion?				Answer

<table>
<tr><td></td><td>a) Biceps brachii</td><td>b) Brachialis</td><td>c) Triceps brachii</td><td>d) Brachioradialis</td><td>(c)</td></tr>
<tr><td>41</td><td colspan="4">Matching pairs:
<table><tr><td>A. Hinge joint</td><td>i. Hip</td></tr><tr><td>B. Ball-and-socket</td><td>ii. Elbow</td></tr><tr><td>C. Pivot joint</td><td>iii. Thumb carpometacarpal</td></tr><tr><td>D. Saddle joint</td><td>iv. Atlas-axis</td></tr></table></td><td>Answer</td></tr>
<tr><td></td><td>a) A-i, B-iv, C-iii, D-ii</td><td>b) A-ii, B-i, C-iv, D-iii</td><td>c) A-iii, B-ii, C-i, D-iv</td><td>d) A-iv, B-iii, C-ii, D-i</td><td>(b)</td></tr>
<tr><td>42</td><td colspan="4">True False statements:
A. Concentric contractions generate force while shortening.
B. Fibrous joints are found in the skull.
C. The frontal plane divides the body into anterior/posterior.
D. The line of gravity passes posterior to the knee joint.</td><td>Answer</td></tr>
<tr><td></td><td>a) A-False, B-True, C-True, D-False</td><td>b) A-True, B-False, C-True, D-False</td><td>c) A-True, B-True, C-True, D-False</td><td>d) A-True, B-True, C-False, D-False</td><td>(c)</td></tr>
<tr><td>43</td><td colspan="4">A: The sagittal plane is critical for analyzing walking.
B: It captures flexion/extension movements like knee motion.</td><td>Answer</td></tr>
<tr><td></td><td>a) Both true, B explains A</td><td>b) Both true, no relation</td><td>c) A false, B true</td><td>d) A true, B false</td><td>(a)</td></tr>
<tr><td>44</td><td colspan="4">A force of 300 N is applied to lift a load using a lever with MA = 2.5. What is the load?</td><td>Answer</td></tr>
<tr><td></td><td>a) 750 N</td><td>b) 120 N</td><td>c) 300 N</td><td>d) 600 N</td><td>(a)</td></tr>
<tr><td>45</td><td colspan="4">What determines "base of support" in balance?</td><td>Answer</td></tr>
<tr><td></td><td>a)Area between body parts in contact with the ground</td><td>b)Height of the center of gravity</td><td>c)Muscle strength</td><td>d)Joint flexibility</td><td>(a)</td></tr>
<tr><td>46</td><td colspan="4">Matching pairs:
<table><tr><td>A. Isometric</td><td>i. Holding a plank</td></tr><tr><td>B. Concentric</td><td>ii. Lowering a weight</td></tr><tr><td>C. Eccentric</td><td>iii. Lifting a dumbbell</td></tr><tr><td>D. Synergist</td><td>iv. Assists agonist</td></tr></table></td><td>Answer</td></tr>
<tr><td></td><td>a) A-ii, B-iv, C-iii, D-i</td><td>b) A-iii, B-i, C-iv, D-ii</td><td>c) A-iv, B-ii, C-i, D-iii</td><td>d) A-i, B-iii, C-ii, D-iv</td><td>(d)</td></tr>
</table>

<table>
<tr><td>47</td><td colspan="4">True False statements:
A. The coronal plane is synonymous with the frontal plane.
B. Tendons connect bone to bone.
C. The rectus femoris crosses both the hip and knee joints.
D. Third-class levers prioritize speed over force.</td><td>Answer</td></tr>
<tr><td></td><td>a) A-True, B-False, C-True, D-False</td><td>b) A-True, B-False, C-True, D-True</td><td>c) A-False, B-False, C-True, D-True</td><td>d) A-True, B-False, C-False, D-True</td><td>(b)</td></tr>
<tr><td>48</td><td colspan="4">A: The hip joint is more stable than the shoulder joint.
B: The hip has a deeper acetabulum and stronger ligaments.</td><td>Answer</td></tr>
<tr><td></td><td>a) Both true, B explains A</td><td>b) Both true, no relation</td><td>c) A false, B true</td><td>d) A true, B false</td><td>(a)</td></tr>
<tr><td>49</td><td colspan="4">If angular displacement of a knee joint is 120 degrees in 0.4 seconds, what is angular velocity?</td><td>Answer</td></tr>
<tr><td></td><td>a) 300 deg/s</td><td>b) 30 rad/s</td><td>c) 3 rad/s</td><td>d) 48 deg/s</td><td>(a)</td></tr>
<tr><td>50</td><td colspan="4">Which plane is used to analyze a cartwheel?</td><td>Answer</td></tr>
<tr><td></td><td>a) Sagittal</td><td>b) Transverse</td><td>c) Frontal</td><td>d) Oblique</td><td>(c)</td></tr>
<tr><td>51</td><td colspan="4">Matching pairs:<table><tr><td>A. Stabilizer</td><td>i. Prevents unwanted movement</td></tr><tr><td>B. Neutralizer</td><td>ii. Opposes agonist</td></tr><tr><td>C. Antagonist</td><td>iii. Stabilizes the origin of a prime mover</td></tr><tr><td>D. Fixator</td><td>iv. Fixes a body part</td></tr></table></td><td>Answer</td></tr>
<tr><td></td><td>a) A-ii, B-iv, C-i, D-iii</td><td>b) A-iv, B-ii, C-iii, D-i</td><td>c) A-i, B-iii, C-iv, D-ii</td><td>d) A-iii, B-i, C-ii, D-iv</td><td>(d)</td></tr>
<tr><td>52</td><td colspan="4">True False statements:
A. Synovial fluid reduces friction in joints.
B. The sternoclavicular joint is a saddle joint.
C. The iliopsoas is a hip flexor.
D. Eccentric contractions consume less energy than concentric.</td><td>Answer</td></tr>
<tr><td></td><td>a) A-False, B-False, C-True, D-False</td><td>b) A-True, B-False, C-True, D-False</td><td>c) A-True, B-True, C-True, D-False</td><td>d) A-True, B-False, C-True, D-True</td><td>(b)</td></tr>
<tr><td>53</td><td colspan="4">A: Isometric contractions do not produce joint movement.
B: Muscle tension equals the resistance force.</td><td>Answer</td></tr>
<tr><td></td><td>a) Both true, B explains A</td><td>b) Both true, no relation</td><td>c) A false, B true</td><td>d) A true, B false</td><td>(a)</td></tr>
<tr><td>54</td><td colspan="4">Calculate torque if a muscle exerts 200 N of force at 0.15 m from the joint axis.</td><td>Answer</td></tr>
<tr><td></td><td>a) 30 Nm</td><td>b) 15 Nm</td><td>c) 1333 Nm</td><td>d) 200 Nm</td><td>(a)</td></tr>
<tr><td>55</td><td colspan="4">Newton’s First Law of Motion is also called:</td><td>Answer</td></tr>
</table>

	a) Law of Acceleration	b) Law of Inertia	c) Law of Action-Reaction	d) Law of Gravitation	(b)
56	Matching pairs: A. Torque — i. Rate of doing work B. Centripetal Force — ii. Rotational force C. Momentum — iii. Mass × Velocity D. Power — iv. Force directed toward the center of rotation				Answer
	a) A-iii, B-i, C-iv, D-ii	b) A-ii, B-iv, C-iii, D-i	c) A-i, B-iii, C-ii, D-iv	d) A-iv, B-iii, C-i, D-iii	(b)
57	True False statements: A. Acceleration is a vector quantity. B. Angular displacement is measured in radians. C. Kinetic energy depends on an object's height. D. Inertia is independent of mass.				Answer
	a) A-True, B-True, C-False, D-True	b) A-True, B-True, C-True, D-False	c) A- False, B-True, C-False, D-False	d) A-True, B-True, C-False, D-False	(d)
58	A: A sprinter leans forward at the start of a race. B: This shifts the center of gravity to maximize horizontal force.				Answer
	a) Both true, B explains A	b) Both true, no relation	c) A false, B true	d) A true, B false	(a)
59	A ball is thrown vertically upward with a velocity of 20 m/s. Calculate it's time to reach the highest point ($g = 10\ m/s^2$).				Answer
	a) 2 s	b) 4 s	c) 1 s	d) 0.5 s	(a)
60	What is gait analysis primarily used for in sports biomechanics?				Answer
	a)Measuring heart rate	b)Analyzing walking and running patterns	c)Testing muscle strength	d)Assessing lung capacity	(b)
61	Matching pairs: A. Walking — i. Propulsion and drag B. Jumping — ii. Stride length and cadence C. Throwing — iii. Take-off angle and force D. Swimming — iv. Release velocity and angle				Answer
	a) A-iv, B-i, C-ii, D-iii	b) A-ii, B-iii, C-iv, D-i	c) A-iii, B-iv, C-i, D-ii	d) A-i, B-ii, C-iii, D-iv	(b)
62	True False statements: A. Kinematic analysis involves measuring joint angles. B. Gait cycle includes stance and swing phases. C. Fluid drag always aids movement in water. D. Biomechanical models can help prevent injuries.				Answer

<table>
<tr><td></td><td>a) A-True, B-True, C-False, D-False</td><td>b) A-True, B-True, C-False, D-True</td><td>c) A-False, B-True, C-False, D-True</td><td>d) A-True, B-False, C-False, D-True</td><td>(b)</td></tr>
<tr><td>63</td><td colspan="4">A: Force plates are used to measure ground reaction forces.
B: Ground reaction force data helps analyze movement mechanics.</td><td>Answer</td></tr>
<tr><td></td><td>a) Both true, B explains A</td><td>b) Both true, no relation</td><td>c) A false, B true</td><td>d) A true, B false</td><td>(a)</td></tr>
<tr><td>64</td><td colspan="4">A runner’s stride length is 1.2 m, and cadence is 180 steps/min. What is running speed?</td><td>Answer</td></tr>
<tr><td></td><td>a) 2.6 m/s</td><td>b) 3.6 m/s</td><td>c) 4.6 m/s</td><td>d) 5.6 m/s</td><td>(b)</td></tr>
<tr><td>65</td><td colspan="4">What is meant by “balance” in biomechanics?</td><td>Answer</td></tr>
<tr><td></td><td>a) Equal muscle strength</td><td>b) Ability to maintain the body’s center of gravity within its base of support</td><td>c) Symmetrical limb length</td><td>d) Equal distribution of body weight</td><td>(b)</td></tr>
<tr><td>66</td><td colspan="4">Matching pairs:<table>
<tr><td>A. Stability</td><td>i. Adjusting environment for efficiency and safety</td></tr>
<tr><td>B. Ergonomics</td><td>ii. Resistance to disturbance of equilibrium</td></tr>
<tr><td>C. Sports injury</td><td>iii. Use of banned substances</td></tr>
<tr><td>D. Doping</td><td>iv. Damage to body due to physical activity</td></tr>
</table></td><td>Answer</td></tr>
<tr><td></td><td>a) A-ii, B-i, C-iv, D-iii</td><td>b) A-iii, B-ii, C-i, D-i</td><td>c) A-iv, B-iii, C-ii, D-i</td><td>d) A-i, B-iv, C-iii, D-ii</td><td>(a)</td></tr>
<tr><td>67</td><td colspan="4">True False statements:
A. Flexibility is the range of motion at a joint.
B. Sports nutrition focuses only on protein intake.
C. Rehabilitation aims to restore function after injury.
D. All sports injuries are acute.</td><td>Answer</td></tr>
<tr><td></td><td>a) A-True, B-False, C-True, D-False</td><td>b) A-True, B-False, C-True, D-True</td><td>c) A-True, B-True, C-True, D-False</td><td>d) A- False, B-False, C-True, D-False</td><td>(a)</td></tr>
<tr><td>68</td><td colspan="4">A: Proper equipment design can reduce injury risk.
B: Ergonomically designed equipment minimizes harmful forces on the body.</td><td>Answer</td></tr>
<tr><td></td><td>a) Both true, B explains A</td><td>b) Both true, no relation</td><td>c) A false, B true</td><td>d) A true, B false</td><td>(a)</td></tr>
<tr><td>69</td><td colspan="4">If an athlete’s daily energy expenditure is 3000 kcal and their intake is 2500 kcal, what is their daily energy deficit?</td><td>Answer</td></tr>
<tr><td></td><td>a) 250 kcal</td><td>b) 500 kcal</td><td>c) 750 kcal</td><td>d) 1000 kcal</td><td>(b)</td></tr>
</table>

70	What is the primary role of the nucleus?				Answer
	a) Protein production	b) Storage of waste	c) Genetic information storage	d) Detoxification	(c)
71	Which organelle plays a key role in producing ATP through aerobic respiration?				Answer
	a) Nucleus	b) Mitochondria	c) Ribosomes	d) Peroxisomes	(b)
72	Which molecule is the primary immediate source of energy for muscle contraction during exercise?				Answer
	a) Glucose	b) ATP	c) Glycogen	d) Fatty acids	(b)
73	Which metabolic pathway takes place in the mitochondria and produces the most ATP?				Answer
	a) Glycolysis	b) Phosphagen system	c) Krebs cycle and electron transport chain	d) Anaerobic glycolysis	(c)
74	What is the term for the use of banned substances to enhance athletic performance?				Answer
	a) Doping	b) Supplementation	c) Rehabilitation	d) Conditioning	(a)
75	The use of substances or methods to unfairly improve athletic performance is considered a violation of:				Answer
	a) Sportsmanship	b) IOC Ethics	c) Olympic Charter	d) WADA Code	(d)
76	Which type of muscle contraction occurs when the muscle changes length during contraction?				Answer
	a) Isometric only	b) Isotonic and Concentric	c) Eccentric only	d) Concentric and Eccentric	(d)
77	Smooth muscle is mainly found in which systems of the human body?				Answer
	a) Respiratory and digestive systems	b) Skeletal and nervous systems	c) Endocrine and immune system	d) Muscular and integumentary systems	(a)
78	Which structure is the primary site of gas exchange in the lungs?				Answer
	a) Trachea	b) Bronchi	c) Alveoli	d) Bronchioles	(c)
79	Which part of the brain is primarily responsible for coordination and balance during physical activity?				Answer
	a) Cerebrum	b) Brainstem	c) Cerebellum	d) Hypothalamus	(c)
80	Which statements are true? A. The ATP-PCr system can sustain high-intensity exercise for several minutes. B. Anaerobic glycolysis produces lactic acid as a by-product. C. The oxidative system primarily uses carbohydrates and fats for ATP production. D. The glycolytic system is slower than the oxidative system in producing ATP.				Answer
	a) B, D only	b) A, B, D only	c) B, C only	d) A, C, D only	(c)
81	Choose the correct statement that determines the strength of a muscle contraction in the body.				Answer

	A. The frequency of electrical impulses to a single motor neuron. B. The size of the motor neuron. C. The number of motor neurons that are recruited. D. The strength of the electrical impulse to a motor neuron.				
	a) A, B only	b) C only	c) A, D only	d) A, B, C, D	(b)
82	Which statements are true about and internal and external respiration: A. Internal respiration occurs in the alveoli of the lungs where oxygen enters the blood. B. External respiration refers to the exchange of gases between the blood and tissues. C. Internal respiration is responsible for oxygenating the blood. D. External respiration involves the movement of oxygen from the alveoli into the blood and carbon dioxide from the blood into the alveoli.				Answer
	a) A, B only	b) B only	c) A, C only	d) A, D only	(d)
83	**Assertion**: Macronutrients are essential for providing energy, supporting growth, and maintaining body functions. **Justification**: Carbohydrates, proteins, and fats are the three primary macronutrients that supply the body with energy, promote cell growth, and help maintain tissue repair and function. Select the correct answer from the following codes:				Answer
	a) Both Assertion and Justification are true, and they are related	b) Assertion is true, but the justification is false	c) Assertion is false, but the Justification is true	d) Both Assertion and Justification are false.	(a)
84	**Assertion**: Human blood plays a crucial role in transporting oxygen, nutrients, and waste products throughout the body. **Justification**: The blood contains red blood cells that carry carbon dioxide, plasma that transport oxygen and white blood cells that are involved in body movements. Select the correct answer from the following codes:				Answer
	a) Both Assertion and Justification are true, and they are related	b) Assertion is true, but the justification is false	c) Assertion is false, but the Justification is true	d) Both Assertion and Justification are false.	(b)
85	**Assertion:** Skeletal muscles are responsible for voluntary movement and are composed of fibers that contract in response to neural stimulation. **Justification:** Skeletal muscle fibers are single-nucleated, smooth, and contract through the process of peristalsis.				Answer
	a) Both Assertion and Justification are true, and they are related	b) Assertion is true, but the justification is false	c) Assertion is false, but the Justification is true	d) Both Assertion and Justification are false.	(b)
86	Match Column A with Column B and select the correct answer using the code given below:				Answer

Column A	Column B
A. Vitamin A	I. Helps in collagen formation and iron absorption
B. Vitamin C	II. Important for bone health and calcium absorption

	C. Vitamin D — III. Support vision, immune function, and skin health D. Iron — IV. Essential for red blood cell production and oxygen transport				
	a) A-III, B-I, C-IV, D-II	b) A-I, B-III, C-IV, D-II	c) A-III, B-I, C-II, D-IV	d) A-II, B-I, C-IV, D-III	(c)
87	Match Column A with Column B and select the correct answer using the code given below: **Column A** — **Column B** A. Plasma — I. Stimulates water reabsorption in kidney B. Lymph — II. Carries oxygen, nutrients, and hormones throughout the body C. Antidiuretic hormone (ADH) — III. Transports immune cells and proteins, part of immune response D. Insulin — IV. Regulates blood glucose levels and promotes cell uptake of glucose				Answer
	a) A-II, B-IV, C-I, D-III	b) A-III, B-II, C-IV, D-II	c) A-I, B-III, C-IV, D-II	d) A-II, B-III, C-IV, D-I	(a)
88	What technique is most appropriate for measuring muscle fiber type distribution in response to different training modalities?				Answer
	a) Electromyography	b) Muscle biopsy	c) Blood lactate analysis	d) VO_2 max testing	(b)
89	What is the primary mechanism of heat exchange through the skin when exposed to cold environment conditions?				Answer
	a) Radiation	b) Conduction	c) Convection	d) Evaporation	(c)
90	Which of the following best defines psychology?				Answer
	a) The study of human diseases and their treatments	b) The scientific study of behavior and mental processes	c) The study of physical growth and development	d) The analysis of political and economic behavior	(b)
91	Who is considered the “father of modern psychology” and established the first psychological laboratory?				Answer
	a) Sigmund Freud	b) William James	c) Wilhelm Wundt	d) B.F. Skinner	(c)
92	Which psychological perspective focuses on how behavior is learned through rewards, punishments, and observation?				Answer
	a) Cognitive psychology	b) Psychoanalytic psychology	c) Behavioral psychology	d) Humanistic psychology	(c)
93	Which part of the brain is primarily responsible for higher cognitive functions such as reasoning and problem-solving?				Answer
	a) Cerebellum	b) Hippocampus	c) Brainstem	d) Frontal lobe	(d)
94	Which psychological disorder is characterized by persistent feelings of sadness, loss of interest, and changes in appetite and sleep patterns?				Answer

	a) Depression	b) Generalized Anxiety Disorder	c) Schizophrenia	d) Obsessive-Compulsive Disorder (OCD)	(a)
95	Which of the following is a psychological technique used to enhance performance by focusing on positive outcomes and visualizing success?				Answer
	a) Biofeedback	b) Progressive muscle relaxation	c) Positive imagery or visualization	d) Cognitive restructuring	(c)
96	What is the term used to describe the mental state where an athlete experiences a high level of focus, control, and optimal performance?				Answer
	a) Flow state	b) Anxiety	c) Stress	d) Cognitive dissonance	(a)
97	Which psychological concept refers to an athlete's belief in their ability to succeed in specific situations?				Answer
	a) Self-esteem	b) Self-confidence	c) Self-actualization	d) Locus of control	(b)
98	Which of the following is an example of an intrinsic motivation in sports?				Answer
	a) Training to win a gold medal	b) Playing a sport for personal enjoyment and satisfaction	c) Competing to earn money or sponsorships	d) Playing to gain recognition from peers and coaches	(b)
99	Which of the following best defines personality?				Answer
	a) The ability to adapt to new situations and challenges	b) The mental processes involved in problem-solving and decision-making	c) The unique and enduring patterns of thoughts, feelings, and behaviors in an individual	d) The genetic and environmental factors that influence human growth	(c)
100	Which statements are true? A. Behaviorism emphasizes the study of observable behaviors. B. The amygdala is involved mainly in regulating hunger and thirst. C. Humanistic psychology focuses on individual potential and self-growth. D. A positive correlation means that as one variable increases, the other decreases.				Answer
	a) A, C only	b) A, B, D only	c) B, D only	d) A, C, D only	(a)