

19BP43

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Name:

Reg. No:

FOURTH YEAR B.P.Ed. (INTEGRATED) DEGREE EXAMINATIONS, APRIL 2023

(Regular/Supplementary/Improvement)

CC15U BPE4 T19 / CC19U BPE4 T19 – BIOMECHANICS

(2015 Admission onwards)

Time: Three Hours

Maximum: 75 Marks

I. Answer any *one* of the following.

1. State Newton's laws of motion and write two sports application for each law.

Or

2. Comment on the importance of biomechanics in competitive sports.

(1 × 15 = 15 Marks)

II. Write short notes on the following.

3. Definitions of biomechanics.
4. Factors affecting trajectory of projectile.
5. Mechanical analysis of walking.

(3 × 5 = 15 Marks)

III. Describe the following.

6. Spin.
7. Definition and types of motion.
8. Definition and classes of lever.

(3 × 5 = 15 Marks)

IV. Fill in the blanks.

9. _____ refers to the upward force that opposes the weight of an immersed object.
10. _____ is in a state of balance but will not remain in that state if perturbed slightly.
11. _____ is the point at which the entire weight of a body can be considered to act.
12. The _____ of a projectile is the path it follows through space.
13. _____ class of lever is predominant in human body.

(5 × 1 = 5 Marks)

V. State true or false.

14. A second-class lever has the fulcrum located between the effort arm and the resistance arm.
15. The spin is the rotation of a body around its center of mass.
16. The force is a vector quantity.

17. Newton's first law of motion is also known as "Law of acceleration".
18. Equilibrium refers to a state in which object continues to move with a constant velocity.

(5 × 1 = 5 Marks)

VI. Write the answer in one word.

19. A state of balance or stability in a system that is constantly changing or moving is refers to?
20. Force that causes an object to rotate around an axis or pivot point refers to as?
21. In which class of lever, the resistance arm is always greater than force arm?
22. Movement of an object around a fixed point or axis refers to as?
23. The angle between the direction of force applied to an object and the line of action of the lever or structure that the object is connected refers to?
24. The base of support, center of gravity and Mass and weight distribution are the factor affecting what?
25. The point where mass distribution is uniform in all directions is?
26. The type of motion involves the movement of an object along a trajectory is called?
27. What is the value of force when a mass of 10 kg is accelerated at a rate of 5 m/s^2 ?
28. Which class of lever is used while performing a biceps curl?

(10 × 1 = 10 Marks)

VII. Match the following.

- | | | |
|--|---|------------------------|
| 29. f | - | a. top spin |
| 30. g | - | b. mass |
| 31. Unstable equilibrium | - | c. path of a javelin |
| 32. Tennis serve | - | d. set position |
| 33. Fluid density | - | e. trampoline |
| 34. Newton's 1 st law of motion | - | f. standing calf raise |
| 35. Trajectory | - | g. buoyancy |
| 36. II nd class lever | - | h. $m \times a$ |
| 37. Newton's 2 nd law motion | - | i. 9.8 m/s^2 |
| 38. Projectile | - | j. inertia |

(10 × 1 = 10 Marks)
