FOURTH YEAR B.P.Ed. (INTEGRATED) DEGREE EXAMINATIONS, APRIL 2024

(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. Discuss the three types of levers, providing examples of each from everyday life.

Or

   2. How does Newton's   laws of motion apply to various sports activities? Provide specific examples for each law and explain how athletes can utilize these principles to enhance their performance.

(1 × 15 = 15 Marks)

II. Write short notes on the following:

   3. Types of Motion.

   4. Types of Spin.

   5. Types of Equilibrium.

(3 × 5 = 15 Marks)

III. Describe the following:

   6. Principles of force absorption.

   7. Mechanical analysis of Jumping.

   8. Define biomechanics and its role in sports performance.

(3 × 5 = 15 Marks)

IV. Fill in the blanks:

   9. Lift force created by spin is called ………….

   10. The path of a projectile is called ………….

   11. Double support phase is the characteristic of ………….

   12. On set command sprinter is in …………. equilibrium.

   13. If an object's center of gravity neither rises nor falls and stays at the same height, when its displaced, it's in the state of ………….

(5 × 1 = 5 Marks)

V. State true or false:

   14. Arm cocking is an action related to Throwing.

15. The wrestler in a defensive position is an example of unstable equilibrium

16. Nail cutter belongs to 2nd class lever.

17. Time of descent is the time taken by a projectile to land from the peak height.

18. If the ball having top spin, the direction of magnus force is downward.

(5 × 1 = 5 Marks)

VI. Write answer in one word:

19. Maximum vertical distance above the ground that a projectile reaches during its flight path.

20. Translational motion along a curved line is described as.

21. The branch of mechanics that describe the cause of motion.

22. Phase of Non-support is the characteristic of.

23. The force exerted by a fluid that opposes the weight of an immersed object.

24. What is the point at which the lever rotates?

25. In which direction does gravity act?

26. Object's tendency to resist change.

27. The S.I Unit of Force.

28. Center seeking force.

(10 × 1 = 10 Marks)

VII. Match the following:

29. Acceleration   -   Stapler

30. Third class lever   -   meter/second

31. Momentum   -   mass

32. Second class lever   -   ma

33. Displacement   -   meter.

34. Inertia   -   Door

35. Velocity   -   Plier

36. First class lever   -   mv

37. Weight   -   meter/second^2

38. Force   -   mg

(10 × 1 = 10 Marks)

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