

15BP43

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Name:.....

Reg. No.....

FOURTH YEAR B.P.Ed. (INTEGRATED) DEGREE EXAMINATIONS, APRIL 2019

CC15U BPE4 T19 - BIOMECHANICS

(2015 Admission Regular)

Time: Three Hours

Maximum: 75 Marks

I. Answer any *one* of the following:

1. State the principles of force application and describe them in detail.

Or

2. Define biomechanics. Describe the role of biomechanics in physical education and sports.

(1 x 15 = 15 Marks)

II. Write short notes on the following:

1. Types of motion.
2. Optimum conditions for projection.
3. Buoyancy.

(3 x 5 = 15 Marks)

III. Describe the following:

1. Factors affecting equilibrium.
2. Mechanical analysis of throwing.
3. Anatomical levers.

(3 x 5 = 15 Marks)

IV. Fill in the blanks:

1. _____ is brought about as a result of application of off centre force.
2. In general, the muscles perform _____ contraction during force absorption.
3. _____ is the angle between the line of pull of the muscle and the bone on which it inserts.
4. _____ levers favour production of speed at the cost of additional force.
5. The _____ is temporarily influenced by specific body position.

(5 x 1 = 5 Marks)

V. State true or false:

1. Both feet support on the surface is not an important characteristics of run.
2. In equilibrium, the sum of all the forces acting on the body is always greater than 1.
3. The horizontal distance covered by the projectile is called range.

4. In speed levers the force is applied between resistance and axis.
5. While a ball is moving through air with back spin, the pressure builds up at the top of the ball.

(5 x 1 = 5 Marks)

VI. Write answer in one word:

1. In which class of lever the force arm is always greater than resistance arm?
2. In which axis the ball spin around to produce top spin?
3. The point at which the entire weight of a body may be considered as concentrated.
4. What equals to $F \times FA$ in a balanced lever?
5. Name the type of equilibrium in which the object has a tendency to move away from its original position to new position when imbalanced force applied.
6. Name the type of motion in which all parts of the body move the same distance in the same time.
7. State the principle in which the lever operates as a machine.
8. Name the type of motion in which the axis of rotation is around the centre of mass.
9. The vertical line passes through the centre of gravity.
10. What should be the optimum angle of release to achieve height in projection?

(10 x 1 = 10 Marks)

VII. Match the following:

- | | |
|---------------------------|------------------------|
| 1. Centre of gravity | a. Jumping |
| 2. Law of acceleration | b. Archimedes |
| 3. Stapler | c. Trajectory |
| 4. Throwing | d. Summation of forces |
| 5. Law of reaction | e. Friction |
| 6. Type II Lever | f. Weight |
| 7. Force exerted by water | g. Momentum |
| 8. Vector quantity | h. Class three lever |
| 9. Stability | i. Biceps curl |
| 10. Path of projectile | j. Force |

(10 x 1 = 10 Marks)
