[LH 0815] **AUGUST 2015** **Sub. Code: 2406**

BACHELOR IN PROSTHETICS AND ORTHOTICS

SECOND YEAR

PAPER VI – BIOMECHANICS - I

Q.P. Code: 802406

Time: Three Hours **Maximum: 100 Marks**

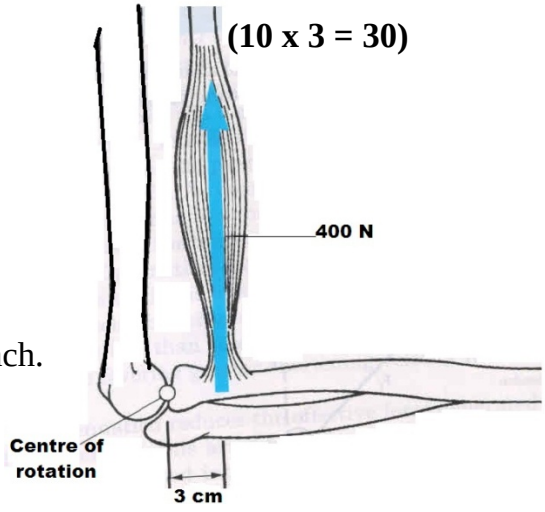
Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Explain biomechanics of normal ankle- foot complex.
2. Classify different types of levers. Give atleast one anatomical example for each one of them (draw figures).
3. Explain normal human locomotion in details.

II. Write notes on: **(8 x 5 = 40)**

1. Explain three point force principle and give any one orthotic example.
2. Explain the bench alignment of trans-tibial prosthesis.
3. How will you classify the bones?
4. Define and explain the concept of centre of gravity and write a note on the position of centre of gravity in human.
5. Draw and explain the anatomical planes.
6. Explain parallel and concurrent force system.
7. Justify the statement “pressure is a determinant of comfort in trans-tibial socket”.
8. How much torque is produced at the elbow joint by the bicep brachii inserting at an angle of 90 degree, the tension in the muscle is 400 N and the muscle attachment to the radius is 3 cm from the centre of rotation at elbow joint as shown in below figure?



III. Short answers on: **(10 x 3 = 30)**

1. Define Power and give its S.I Unit.
2. Define Velocity and Acceleration.
3. Define Cadence.
4. Describe the concept of free body diagram.
5. Define motion and explain the types of motion.
6. Describe about body segment parameters.
7. Define tendon and ligament. Give one function for each.
8. Write in short about EMG studies.
9. Define stability and instability.
10. Define terms Kinesiology and Biomechanics.

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