

[LH 0815]

AUGUST 2015

Sub.Code :2415

**BACHELOR IN PROSTHETICS AND ORTHOTICS
SECOND YEAR
PAPER V – BIO – MECHANICS - II**

Q.P. Code: 802415

Time: Three Hours

Maximum : 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. Explain the biomechanical principles that led to design and development of quadrilateral Socket.
2. Discuss the Biomechanics of Residual limb-socket Interface.
3. Analyze KAFO from a Biomechanical perspective under following heads
 - a) Alignment of Joint Axes
 - b) Forces
 - c) Joint Motion

II. Write notes on:

(8 x 5 = 40)

1. How would you assess the energy expenditure in walking with unilateral hybrid KAFO?
2. Outline the KAFO Gait Deviations due to various Pathological Conditions.
3. Explain the Biomechanical principles of anterior floor reaction Orthosis in a CP child.
4. Assess the maximum deflection for a Metallic KAFO in genu valgum.
5. What are the biomechanical reasons of Stirrup failure?
6. Explain the biomechanical theory of any one through knee socket design.
7. Describe ICR and its applications in P/O.
8. Describe 4-point force and its applications with relevant examples.

III. Short answers on:

(10 x 3 = 30)

1. Structural testing standards in P/O designs.
2. BIS Certification of P/O devices.
3. How would you achieve stance flexion in a prosthetic knee?
4. Mechanics of Alignment.
5. Effects of Mal-alignment.
6. Design of thigh cuff in KAFO for Male Paraplegics.
7. Biomechanical advantages of Eccentric knee orthoses.
8. Biomechanical Effects of trimlines variations in an AFO.
9. Axes of Lower limb and their relationships.
10. Biomechanical deficits in Scissoring gait.
