

[AHS 0321]

MARCH 2021

Sub. Code: 2454

(AUGUST 2020 EXAM SESSION)

**BACHELOR IN PROSTHETICS AND ORTHOTICS****FIRST YEAR (Regulation 2017-2018)****PAPER IV – APPLIED MECHANICS AND STRENGTH OF MATERIALS*****Q.P. Code : 802454*****Time: Three hours****Answer ALL Questions****Maximum: 100 Marks****I. Elaborate on:****(3 x 10 = 30)**

1. Stress and Strain Curve
2. With neat sketch, describe the various types of beams with different loads.
3. Control Theory and its applications in Prosthetics and Orthotics.

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

1. Newton's Laws of Motion.
2. State and derive Lami's Theorem.
3. Hooke's Law and Elastic Limit.
4. Determine the stress induced in the circular shaft of the dimensions 20 mm diameter and length 100 mm is subjected to an axial load of 5 kN.
5. Torque, Friction, Moment of Inertia.
6. Safety Factor and Pollution.
7. Open Helical Spring and its diagram.
8. Ergonomics Principles with examples.

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

1. Scalar and Vector Quantity.
2. Force and Force Systems.
3. Strain.
4. Poisson's Ratio.
5. Shear Force.
6. Inertia.
7. Bending Moment.
8. Buckling.
9. Control Systems.
10. Noise Pollution.

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