[LM 0218] FEBRUARY 2018 **Sub. Code: 2404**

BACHELOR IN PROSTHETICS AND ORTHOTICS
FIRST YEAR
PAPER IV – APPLIED MECHANICS AND STRENGTH OF MATERIALS

Q.P. Code: 802404

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

Answer All questions

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

1. State Hook's Law. Explain stress and strain diagram for tension.
2. A simply supported beam of 3 meter span carries two loads of 5 kN each at 1 meter and 2 meter from left hand support. Draw shear force and bending moment diagram for beam.
3. Explain about moment and moment of inertia. Find the moment of inertia of a rectangular section 30 mm wide and 40 mm deep about X-X axis and Y-Y axis.

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

1. State parallelogram law of forces. Find the resultant of two forces equals to 50N and 100N acting at an angle 30°.
2. What is centre of gravity? Find CG of a I section top flange 100x20 mm web is 200x30mm and bottom flange is 300x40 mm.
3. Angle of friction and co efficient of friction.
4. Ergonomics and its laws.
5. Air pollution and its causes and preventive measure
6. Work and power.
7. A steel rod 1 met long 20mmx20 mm cross section is subjected to tensile force 40kN. Determine elongation of rod if modulus of elasticity 200Gpa.
8. Section modulus.

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

1. Define factor of safety.
2. Differentiate between scalar and vector quantity.
3. Represent vector AB if A and B coordinates are (0,-3) and (2,4)respectively.
4. What is inertia of rest? Give example.
5. Define shear force and bending moment.
6. What is stiffness of a spring?
7. Differentiate between open loop and close loop control system.
8. What you understand by Bio cybernetics?
9. Write down three factors responsible for noise pollution.
10. Define Poisson's ratio.

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