|  |  |  |  |
| --- | --- | --- | --- |
| **B. TECH 2nd SEMESTER** | **T** | **P** | **C** |
| **3** | **-** | **3** |
| **BTME2T02 ENGINEERING MECHANICS** |

**UNIT – I:**

**SYSTEM OF FORCES:** Introduction, Laws of Mechanics, Co-planar concurrent forces, Parallelogram Law, Triangle Law, Polygon Law, Free Body Diagram, Lami’s Theorem, Moment of Forces and its applications, Couples, resultant of Force systems, Components in Space.

**UNIT – II:**

**FRICTION:**

Introduction, Angle of Repose, Laws of Friction, and Friction of Bodies moving Up and Down on an Inclined Plane, Wedge Friction, Screw Jack.

**UNIT – III:**

**CENTROID AND CENTER OF GRAVITY:** Centroid of simple figures and Centroid of Composite figures. Center of Gravity of simple Bodies and Center of Gravity of Composite Bodies, Pappus Theorem.

**UNIT – IV:**

**MOMENT OF INERTIA:** Introduction, Polar Moment of Inertia, Radius of Gyration, Parallel Axis Theorem, Moment of Inertia of Composite Areas, Product of Inertia.

**MASS MOMENT OF INERTIA:** Introduction, Radius of Gyration, Transfer Formula for Composite Bodies.

**UNIT – V:**

**KINETICS AND KINEMATICS:**

**KINETICS:** Analysis as a Particle and analysis as a Rigid Body in Translation – Central Force Motion – Equations of Plane Motion – Fixed Axis Rotation – Rolling Bodies.

**KINEMATICS:** Rectilinear and Curvilinear Motion – Velocity and Acceleration – Motion of Rigid Body – Types and their Analysis in Planar Motion.

**UNIT – VI:**

**WORK-ENERGY METHOD:**

Equations for Translation, Work-Energy Applications to Particle Motion, Connected System-Fixed Axis Rotation and Plane Motion. Impulse momentum method.

**TEXT BOOKS:**

1. ENGINEERING MECHANICS -A.K.TAYAL – UMESH Publications.
2. ENGINEERING MECHANICS -BASUDEB BHATTACHARYA – Oxford University Press.
3. ENGINEERING MECHANICS -A. NELSON, Mc Graw Hill Publications.

**REFERENCE BOOKS:**

1. ENGINEERING MECHANICS - S. Timoshenko & D.H. Young, McGraw Hill
2. ENGINEERING MECHANICS - Ferdinand L. Singer, Harper Collins Publishers
3. ENGINEERING MECHANICS - S. S. Bhavikatti, New Age Publishers.