

PAU5I101 DESIGN OF MACHINE COMPONENTS

[Only specified data book as mentioned in the syllabus is permitted during examination]

Module- I (9hrs)

INTRODUCTION AND DESIGN OF RIVETTED JOINTS

Classification of design – Engineering materials and their physical properties as applied to design – Selection of materials, Factors of safety in design – Endurance limit of materials – Determination of endurance limit for ductile materials – Notch sensitivity – Principle of design optimization – Future trends – CAD, Design of Riveted Joints.

Module- II DESIGN OF COLUMN AND BOLTED JOINTS (9hrs)

Euler's formula – Rankine's formula – Tetmajer's formula – Johnson formula – Design of push rods and eccentricity loaded columns – Reduction of stress concentration. Threaded fasteners - Design of bolted joints including eccentric loading – theory of bonded joints.

Module- III DESIGN OF SHAFTS AND BEARING (9hrs)

Fit and tolerance- Material and design stresses –Design of shafts on the basis of strength – Design of shaft on the basis of rigidity – Design of hollow shafts. Types of Bearings- Design of journal bearings - Ball and Roller bearings – Types of Roller bearings – Bearing life – Static load capacity – Dynamic load capacity – Bearing material – Boundary lubrication – Oil flow and temperature rise.

Module-IV SPRINGS AND FLYWHEELS (9hrs)

Design of close coiled helical spring subjected to axial loading – Torsion of helical springs. Determination of the mass of a flywheel for a given co-efficient of speed fluctuation. Engine flywheels stresses of rim of flywheels. Design of hubs and arms of flywheel – Turning moment diagram.

TEXTBOOKS:

1. Jain,R.K., “Machine Design”, Khanna Publishers, 1992.
2. Sundararaja Murthy,T.V., “Machine Design”, Khanna Publishers, New Delhi, 1991.
3. Bhandari,V.B., “Design of Machine Elements”, Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1990.

REFERENCE BOOKS:

1. Machine Design, P.Kanaiah, Scietech Publications
2. Fundamentals of Machine Component Design by R.C.Juvinall and K.M.Marshek, John Wiley & Sons
3. Machine Drawing by N.Sidheswar, McGraw-Hill
4. Machine Design, P.C.Sharma and D.K.Agrawal, S.K.Kataria & Sons
5. Machine Design, Pandya and Shah, Charotar Book Stall
6. Machine Design, Robert L. Norton, Pearson Education Asia.
7. Design of Machine Elements by C. S. Sharma and K. Purohit, PHI

DESIGN DATA HAND BOOKS:

1. P.S.G. Design Data Hand Book, PSG College of Tech Coimbatore
2. Design Data Hand Book, K. Lingaiah, McGraw Hill, 2nd Ed. 2003.
3. Design Hand Book by S.M.Jalaluddin ; Anuradha Agencies Publications
4. Design Data Hand Book by K.Mahadevan and B.Reddy,CBS Publishers