QUESTION BANK

BASICS OF STRESS AND STRAIN

1. Give definition about stress and strain. Explain different types of stress and strain.
2. Explain stress-strain diagram.
3. What is center of gravity? Give name of different method to find center of gravity.
4. What is moment of inertia? Explain perpendicular and parallel axis theorem for moment of inertia.

FLEXURAL STRESS

1. What is the bending stress? Prove the equation for bending stress.
2. What is the section of modulus? Write equation for different section.
3. Which assumptions are to be considered for torsional stresses?
4. Compare the strength of hollow shaft and solid shaft.

INTRODUCTION TO MD

1. What is general procedure in machine design?
2. What is standardization? Which standards are used in mechanical engineering?
3. Give classification of different types of considerations. Explain all consideration for mechanical engineering.
4. Enlist different types of mechanical properties and give definitions for all.

DESIGN AGAINST STATIC LOAD

1. What is the factor of safety? What is the importance of FOS?
2. Explain principle plane and principle stresses.
3. Explain different types of failure theory.
4. What is eccentric loading?
5. Explain cotter joint and knuckle joints in brief.
6. What is lever? Explain different types of lever.

BEAMS AND COLOUMN

1. Explain euler's column theory.
2. What is the slanderness ratio? Give the limitation of euler's theory.
3. Explain rankine's column formula.
4. Explain design of piston rod and connecting rod.

SHAFT AND KEY

1. Explain design of shafts based on twisting moment and bending moment.
2. Design of shaft based on combined twisting moment and bending moment.
3. Give the classification of key. Explain about all keys.
4. Design of shafts based on rigidity based.

POWER SCREW

1. Discuss about different types of screw fastening.
2. What is power screw? Give the application of power screw.
3. Give the definition of different types of terminology for power screw.
4. Derive the equation for the torque required to raise the load.
5. Derive the equation for the torque required to lower the load.
6. Prove the efficiency of power screw is maximum 0.5 or 50%.
7. What is the self locking and over-hauling condition for power screw?

FLUCTATING STRESS

1. Explain stress concentration.
2. Discuss different types of method to reduce stress concentration.
3. Explain design for reversed stresses.
4. Describe design for fluctuating stresses.
5. Explain modified goodman diagram.