

- Q.18 State and explain laws of machine.
- Q.19 Define angle of friction, angle of repose and cone of friction.
- Q.20 Explain first moment of inertia and second moment of inertia.
- Q.21 Compare solid and hollow shaft with respect to their strength and weight.
- Q.22 State parallelogram law of forces.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Derive bending equation with the help of neat and clean diagram.
- Q.24 Find the moment of inertia of a T section having dimensions 60 mm x 80 mm x 10 mm about the horizontal and vertical axis of your choice.
- Q.25 Define stress. Explain different types of stresses.

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2nd Sem / Mechanical (Tool & Die Design)

Subject : Mechanics of Solids

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 A force is completely defined when we specify its-
- a) Point of application
 - b) Magnitude and direction
 - c) Magnitude, direction, sense and point of application.
 - d) None of above
- Q.2 Rotational Tendency of a force is called-
- a) Shear Force
 - b) Moment
 - c) Centroid
 - d) Couple

- Q.3 The maximum friction which comes into play when a body just begins to slide over the surface of another body is called-
- a) Dynamic friction b) Rolling friction
c) Kinetic friction d) Limiting friction
- Q.4 Which of the following is dimensionless-
- a) Velocity ratio
b) Mechanical advantage
c) Efficiency d) All of the above
- Q.5 The centroid of a body is always calculated with reference to some assumed axis known-
- a) Plane of reference b) Point of reference.
c) Axis of reference d) None of these
- Q.6 Elastic limit is the point.
- a) Up to which if the load is removed, original volume and shapes are regained
b) up to which stress is proportional to strain.
c) At which elongation takes place without application of additional load.
d) None of these

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Define stress.
- Q.8 SI unit of force is_____.
- Q.9 Centroid of a triangle is at the intersection of_____
- Q.10 It is always easier to pull a roller on the ground than to push it. (True/False)
- Q.11 Poisson's ratio is the ratio of_____
- Q.12 SI unit of torque is_____

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Define strain energy
- Q.14 Classify and explain simple levers.
- Q.15 What is screw jack? Define its principal of working.
- Q.16 Define Young's modulus and bulk Modulus.
- Q.17 Explain different force system and Lami's theorem.