

- 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 Drive 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-
- Point of application
 - Magnitude and direction
 - Magnitude, direction, sense and point of application.
 - None of above
- Q.2 Rotational Tendency of a force is called-
- Shear Force
 - Moment
 - Centroid
 - 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-
- Dynamic friction
 - Rolling friction
 - Kinetic friction
 - Limiting friction
- Q.4 Which of the following is dimensionless-
- Velocity ratio
 - Mechanical advantage
 - Efficiency
 - All of the above
- Q.5 The centroid of a body is always calculated with reference to some assumed axis known-
- Plane of reference
 - Point of reference.
 - Axis of reference
 - None of these
- Q.6 Elastic limit is the point.
- Up to which if the load is removed, original volume and shapes are regained
 - up to which stress is proportional to strain.
 - At which elongation takes place without application of additional load.
 - 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 principle of working.
- Q.16 Define Young's modulus and bulk Modulus.
- Q.17 Explain different force system and Lami's theorem.