

- Q.32 Write the methods of reducing friction.
- Q.33 Derive the expression to find M.A, V.R. and efficiency of simple screw jack.
- Q.34 What is moment and give its classification.
- Q.35 Explain the first system of pulleys and find its M.A and V.R.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Two men carry a weight of 200 N by means of two ropes fixed to the weight. One rope is inclined at 45 degree and other at 30 degree with the vertical. Find the tension in each rope.
- Q.37 In a certain machine, an effort of 100N is just able to lift a load of 500N. calculate:
- Efficiency of the machine.
 - Loss of effort due to friction.
 - Loss of load due to friction
 - Ideal effort
- V.R. is taken as 10
- Q.38 Find the centroid of I section of top flange 10 cm x 2cm, web 15 cm x 2cm and bottom flange 15 cm x 2 cm.

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2nd Sem / Agri, Auto, Chem, P & P, Civil, Mech, T & D, Plastic, Prod, Mechatronics, GE, CAD/CAM, CNC, Metallurgy, F & F, Civil Constr, Pack Tech, Printing Tech, Power Eltx, Elect & Eltx Engg, Paint Tech, Ruber Tech, Polymer Engg, Highway Engg. Fab. Tech, AME

Subject:- Applied Mechanics

Time : 3Hrs.

M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Kinematics is the branch of
- Statics
 - dynamics
 - kinetics
 - None of these
- Q.2 Effect of a force on a body depends upon its
- Magnitude
 - Direction
 - Point of action
 - All of the above
- Q.3 The angle between two forces when the resultant is maximum and minimum respectively, are
- 0° and 180°
 - 180° and 0°
 - 90° and 180°
 - 90° and 0°
- Q.4 An ideal machine is one whose efficiency is
- Between 60-70%
 - Between 70-80%
 - Between 80-90%
 - 100%

- Q.5 The rotational tendency of a force is called
 a) Moment b) shear force
 c) centroid d) couple
- Q.6 Dynamic friction as compare to static friction is
 a) More b) less
 c) Same d) has no correlation
- Q.7 Force of friction depends on the
 a) Area of contact
 b) direction of normal force
 c) Shape of the body
 d) Normal reaction
- Q.8 The center or gravity of a triangle is at a distance of _____ from its base
 a) $h/4$ b) $h/3$
 c) $3h/4$ d) $3h/5$
- Q.9 Mechanical advantage should always have a value
 a) Less than 1 b) More than 1
 c) Equal to 1 d) zero
- Q.10 Velocity ratio of simple screw jack is
 a) $2\pi l/p$ b) $2pp/I$
 c) $\pi l/p$ d) $pl/2P$

SECTION-B

Note: Objective type questions. All questions are compulsory. $(10 \times 1 = 10)$

- Q.11 Density is a _____ quantity.
- Q.12 The forces whose plane of action is same are known as _____.

- Q.13 Output of a machine = _____ x _____
- Q.14 Define sliding friction.
- Q.15 Point through which the whole area of a plane figure is assumed to act is known as _____
- Q.16 Angle of friction is always _____ than 90° .
- Q.17 Define the Mechanical advantage.
- Q.18 Define Triangle law.
- Q.19 State law of moments.
- Q.20 Define statics.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. $(12 \times 5 = 60)$

- Q.21 Explain different systems of units.
- Q.22 Define coplanar force system and classify it.
- Q.23 Find the magnitude of the resultant force, if forces of magnitude 3N, 4N, 5N and 6N are acting along the lines joining the centre of square to its vertices.
- Q.24 Define centroid and center of gravity.
- Q.25 Find the resultant of two like parallel forces and two unlike parallel forces.
- Q.26 State ideal machine and write its any two characteristics.
- Q.27 Define centroidal axis, axis of reference and axis of symmetry.
- Q.28 Write the uses of machines.
- Q.29 Define force and state its effects.
- Q.30 Define mechanical advantage and velocity ratio.
- Q.31 Explain 2nd system of pulleys with diagram.