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3rd Sem / Branch : Auto,Civil,Mech.

Subject:- Applied Mechanics

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Which of the following is a scalar quantity
a) Time b) Mass
c) Work d) All of the above

Q.2 The component of a force in a direction making and angle "theta" with it is equal to _____
a) Sin theta b) Sec theta
c) Tan theta d) Cos theta

Q.3 Unit of force in SI system is _____
a) Kilogram b) Gram
c) Newton d) Pound

Q.4 Which of the following is an example of lever?
a) Crow bar b) See-saw
c) Bolt clippers d) All of the above

Q.5 Friction is _____ in engineering applications
a) Desirable b) Undesirable
c) Active and Passive d) Both a and b

Q.6 Area of quadrant is given by_____
a) (3.14´ R´ R)/4 b) (3.14´ R´ R)/2
c) (3.14´ R´ R)/3 d) None of these

Q.7 Volume of cylinder is given by_____
a) 2´ 3.14´ R´ H
b) 3.14´ R´ R´ H
c) 3.14´ R´ L
d) (4/3)(3.14´ R´ R´ R)

Q.8 The efficiency of an ideal machine is _____
a) 100% b) 85%
c) 50% d) 25%

Q.9 The work done on a machine by the effort is called____
a) Output
b) Resistance
c) Mechanical advantage
d) Input

Q.10 The triangle law of forces gives the resultant of
a) 2 forces b) 3 forces
c) Many forces d) None of the above

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 A scalar quantity has_____

Q.12 Dynamics is the branch of_____, which _____

Q.13 The sense of forces is indicated by a _____

Q.14 Define resolution of forces.

Q.15 Define rocker arm lever.

Q.16 Give an example of rolling friction in practical life.

Q.17 The position of C.G. of triangle lies at_____

Q.18 The function of machine is to _____

Q.19 The law of machine is_____

Q.20 Is inclined plane a machine ? (TRUE/FALSE)

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Write down the seven base unit and two supplementary units in SI systems.

Q.22 Describe various effects of force

Q.23 Explain Lamis' theorem of equilibrium.

Q.24 State the laws of moments.

Q.25 Draw Free body diagram of a ladder placed against a smooth vertical wall but rough horizontal floor. Assume that the ladder is uniform so that its weight.

Q.26 Differentiate between centroid and center of gravity

Q.27 Write short note on simple levers

Q.28 What are the advantages of machines?

Q.29 What is the principle of transmissibility of forces?

Q.30 Explain any one method of determination of equilibrant forces for a number of forces.

Q.31 Discuss the advantages and disadvantages of friction.

Q.32 State the conditions of equilibrium of coplanar concurrent forces

Q.33 Explain the types of forces

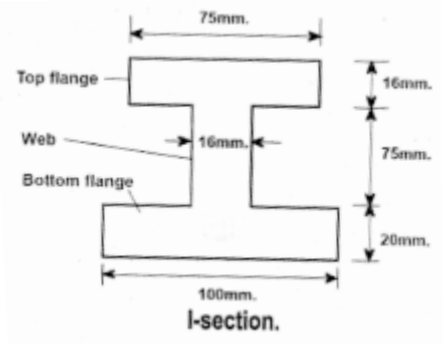
Q.34 Explain terms: Limiting friction, coefficient of friction

Q.35 Derive the relation between load, effort, velocity ratio and efficiency.

SECTION-D

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

Q.36 Find the C.G. of the following section



Q.37 Two forces, F1 is double than other F2, have a resultant of 260 N. If the direction of F1 force is reserved the resultant is reduced to 180 N. Determine the magnitude of forces and the angle between them.

Q.38 Discuss the working principle of a screw jack.