Q.27 Explain the principle of momentum.

Q.28 Derive the condition for the reversibility of a machine.

Q.29 Differentiate between gradual loading & sudden loading.

Q.30 Define bending moment and write its sign conventions with suitable diagram.

Q.31 Classify different types of beams.

Q.32 Explain the concept of moment of inertia and its importance.

Q.33 Differentiate between buckling load & crushing load.

Q.34 Differentiate between torque & torsion.

Q.35 Define principle of leaf spring. Give formula for calculating deflection and energy stored in leaf spring.

SECTION-D

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

Q.36 What is parallelogram law of forces? Explain.

Q.37 Define screw jack. Explain the construction and working of screw jack with th help of neat sketch.

Q.38 A rod 25mm in diameter & 5m long is subjected to an axial pull of 75 KN. If E=210x1000000N/m^2 of the material of the rod, then determine stress , strain & elongation

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2nd Year / Branch : Advance Diploma in Tool and Die Making

Subject:- Applied Mechanics & Strength of Materials

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 The quantity which has the only magnitude is called_____

a) A scalar quantity
b) A vector quantity
c) A chemical quantity
d) A magnitude quantity

Q.2 What does Newton's second law states?

a) The rate of change of momentum is equal to the force applied
b) For every reaction there is an opposite reacion
c) The body is tend to be rotated if the force is applied tangentially
d) The body is rest until a force is applied

Q.3 The point through which the whole weight of the body acts is called_____

a) Inertial point b) Center of gravity
c) Centroid d) Central point

Q.4 What are the types of kinetic friction?

a) Sliding friction, rolling friction and adhesive friction
b) Sliding friction and rolling friction
c) Rolling friction and adhesive friction
d) Sliding friction and adhesive friction

Q.5 The unit of linear acceleration is
a) kg-m b) m/s
c) m/s^2 d) rad/s^2

Q.6 How many classes of levers are there?
a) 2 b) 3
c) 4 d) 5

Q.7 Which point on the stress strain curve occurs after the ultimate point?
a) Last point b) Breaking point
c) Elastic limit d) Material limit

Q.8 Where is the necking region?
a) The area between lower yield point and upper yield point
b) The area between the plastic limit and elastic limit
c) The area between the ultimate point and initial point
d) The are between the ultimate point and rupture

Q.9 Stress in a beam due to simple bending is_____
a) Directly proportional
b) Inversely proportional
c) Curvillinearly related
d) None of the mentioned

Q.10 If a spring has plain ends then number of inactive coils is?
a) 1 b) 2
c) 3 d) 0

SECTION-B

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

Q.11 Define derived quantities
Q.12 Define free body diagram.
Q.13 Describe resultant force
Q.14 Define centroid
Q.15 Define limiting friction.
Q.16 Define second law of motion.
Q.17 Define proof stress
Q.18 Define bending moment.
Q.19 Define slenderness ratio.
Q.20 What is torsional rigidity?

SECTION-C

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

Q.21 What is CGS and SI systems of units?
Q.22 What is triangle law of forces? Explain.
Q.23 Explain the method to find the resultant of two like parallel forces.
Q.24 Explain Varigon's theorem of moments.
Q.25 Differentiate between centroid and centre of gravity. Name the methods of finding them also.
Q.26 Explain the methods of reducing the friction.