Q.25 Explain five advantages of friction.
Q.26 Write a short note on Newton's second law of motion.
Q.27 Give working principle and applications of a simple screw jack.
Q.28 Derive an expression for stress induced in a body. Which is subjected to sudden loading.
Q.29 Discuss the difference between proof Resilience and modulus of resilience.
Q.30 Define Bending moment and write its sign conventions with suitable diagrams.
Q.31 What are the assumptions made in theory of simple bending?
Q.32 Explain the parallel axis theorem.
Q.33 Write a short note on Euler theory of column.
Q.34 Explain the significance of torsion equation.
Q.35 Define springs. Write any four functions of springs.

SECTION-D

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

Q.36 State and prove Lami's theorem.
Q.37 Define moments in engineering field. Explain the types of moments, law of moments in detail.
Q.38 A simply supported beam has a span of 9 m supports a uniformly distributed load of 20kN/m run over the whole span and also two concentrated load of 30 KN and 40 KN at points 6 m and 7.5 m respectively from the left support. Draw the bending moment and shear force diagrams

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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 Which of the following is also known as the law of inertia?

a) Newton's second law of motion
b) Newton's third law of motion
c) Aristotelian law of motion
d) Newton's first law of motion

Q.2 Walking off a man is an example of _____

a) Resolution of forces
b) Addition of vectors
c) Subtraction of vectors
d) Multiplication of vectors

Q.3 Volume is best given by _____.

a) Product of mass and density
b) Ratio of mass to density
c) Addition of mass and density
d) Subtraction of mass and density

Q.4 The center of gravity is the ratio of_____to_____

a) The product of centroid and weight to the total weight
b) The addition of centroid and weight to the total weight
c) The subtraction of centroid and weight to the total weight
d) The Product of centroid and weight to the total mass

Q.5 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.6 In which of the following states does a body possess kinetic energy ?

a) Rest
b) Motion
c) When placed on a platform
d) In zero gravity

Q.7 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 area between the ultimate point and rupture

Q.8 What is the stress-strain curve?

a) It is the percentage of stress and stain
b) It is the relationship between stress and strain
c) It is the difference between stress and strain
d) None of the mentioned

Q.9 In simple bending_____is constant.

a) Shear force b) Loading
c) Deformation d) Bending moment

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 scalar quantities.
Q.12 Define resolution of forces.
Q.13 Describe principle of stability.
Q.14 Define principle of momentum.
Q.15 Define velocity ratio for a simple machine
Q.16 Define breaking stress.
Q.17 Define resilience.
Q.18 Define radius of gyration.
Q.19 Define crushing load.
Q.20 Write the types of helical spring.

SECTION-C

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

Q.21 What are various systems of units. Explain.
Q.22 Explain the system of forces and its applications.
Q.23 Explain the method to find the resultant of two like parallel forces.
Q.24 Differentiate between centroid and centre of gravity. Name the methods of finding them also.