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Roll No.....

4th Semi, **Branch :** Auto Engg/Mechengg.

Subject : Strength of Materials

Time : 3 Hrs.

M.M. : 100

SECTION-A

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

- Q.1 What is tensile strain? (CO-1)
a) The ratio of change in length to the original length.
b) The ratio of original length to the change in length.
c) The ratio of tensile force to the change in length.
d) The ratio of change in length to the tensile force applied
- Q.2 The property by which a body returns to its original shape after removal of the force is called _____. (CO-1)
a) Plasticity b) Elasticity
c) Ductility d) Malleability
- Q.3 Which law is also called as the elasticity law? (CO-1)
a) Bernoulli's law b) Stress law
c) Hooke's law d) Poission's law
- Q.4 In Euler's formula, the column fails due to _____ alone. (CO-8)
- Q.5 a) Shear b) Torsion
c) Tension d) Bucking
The strain energy stored in a specimen when strained within the elastic limit is known as _____. (CO-3)
- Q.6 a) Resilience b) Plasticity
c) Malleability d) Stain energy
What is the unit of radius of gyration? (CO-4)
a) m^4 b) m
c) N d) m^2
- Q.7 Hogging is _____. (CO-5)
a) Negative bending moment
b) Positive shear force.
c) Positive bending moment
d) Negative shear force
- Q.8 The shear stress is _____ at the axis of the shaft. (CO-6)
a) Minimum b) Maximum
c) Zero d) Uniform
- Q.9 Springs are used. (CO-9)
a) To absorb shocks and vibrations
b) To store and release energy.
c) To measure force.
d) For any of the above functions.
- Q.10 Moving train is an example of _____ load. (CO-1)
a) Point load b) Cantered load
c) Rolling load d) Uniformly varying load

SECTION-B

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

- Q.11 Define compressive Strain. (CO-1)

- Q.12 Define Stress And Strain. (CO-1)
 Q.13 Define Modulus of Elasticity? (CO-1)
 Q.14 Give Example for suddenly Applied Load? (CO-3)
 Q.15 State theorem of perpendicular axis? (CO-4)
 Q.16 Define continuous beam? (CO-5)
 Q.17 Define buckling load? (CO-8)
 Q.18 Write the expression for power transmitted a shaft and its unit? (CO-6)
 Q.19 Define spring index? (CO-9)
 Q.20 Define Shearing load? (CO-1)

SECTION-C

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

- Q.21 Define free body diagram of a steel rod subjected to a no of tensile and compressive forces at different sections along the length of the body? (CO-1)
 Q.22 State Beam and types of beam with neat diagram? (CO-5)
 Q.23 What is sagging bending moment and hogging bending moment explain in brief? (CO-5)
 Q.24 Differentiate between strut and column? (CO-1)
 Q.25 Draw and explain stress strain curve for a brittle material. (CO-1)
 Q.26 Define Spring. What are its different types? Explain. (CO-9)
 Q.27 What are various assumption in simple bending? (CO-5)
 Q.28 Differentiate between resilience, proof resilience and modulus of resilience. (CO-3)
 Q.29 Explain briefly theorem of Parallel axis. (CO-4)

- Q.30 Explain end conditions of the columns. (CO-8)
 Q.31 What are the functions of springs? (CO-9)
 Q.32 What is the difference between torque and torsion? (CO-6)
 Q.33 A hollow shaft is of 80mm external diameter and 30mm internal diameter. Find its section modulus. (CO-6)
 Q.34 What will be shape of the shearing force diagram if a cantilever beam is loaded with
 a) U.d.l. Throughout its length.
 b) Point load at the free end (CO-5)
 Q.35 Explain the terms elasticity, elastic limit, limit of proportionality. (CO-1)

SECTION-D

Note: Long Answer type question. Attempt any two questions. (2x10=20)

- Q.36 A simply supported beam 5m long is subjected to two point loads of 2KN and 3 KN each of distances of 1m and 3m respectively from the left hand support. Draw SFD and BMD. (CO-5)
 Q.37 Explain different mechanical properties of materials. (CO-1)
 Q.38 Explain torsion equation for solid shafts. (CO-6)