

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)
- The ratio of change in length to the original length.
 - The ratio of original length to the change in length.
 - The ratio of tensile force to the change in length.
 - 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)
- Plasticity
 - Elasticity
 - Ductility
 - Malleability
- Q.3 Which law is also called as the elasticity law? (CO-1)
- Bernoulli's law
 - Stress law
 - Hooke's law
 - Poisson's law
- Q.4 In Euler's formula, the column fails due to _____ alone. (CO-8)

- Shear
- Torsion
- Tension
- Buckling

- Q.5 The strain energy stored in a specimen when strained within the elastic limit is known as _____. (CO-3)
- Resilience
 - Plasticity
 - Malleability
 - Strain energy
- Q.6 What is the unit of radius of gyration? (CO-4)
- m^4
 - m
 - N
 - m^2
- Q.7 Hogging is _____. (CO-5)
- Negative bending moment
 - Positive shear force.
 - Positive bending moment
 - Negative shear force
- Q.8 The shear stress is _____ at the axis of the shaft. (CO-6)
- Minimum
 - Maximum
 - Zero
 - Uniform
- Q.9 Springs are used. (CO-9)
- To absorb shocks and vibrations
 - To store and release energy.
 - To measure force.
 - For any of the above functions.
- Q.10 Moving train is an example of _____ load. (CO-1)
- Point load
 - Cantered load
 - Rolling load
 - 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 (CO-5)
 - a) U.d.l. Throughout its length.
 - b) Point load at the free end
- 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)