4th Sem / Arch
Subject:- Structural Mechanics

Time : 3Hrs.   M.M. : 100

SECTION-A

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

Q.1   The Material which doesn't regain its original position after the removal of external load is called...

a)   Elastic material

b)   Plastic material

c)   Isotropic material

d)   Homogeneous material

Q.2   A brittle material has............

a)   No elastic zone

b)   No plastic zone

c)   Yield point

d)   Breaking point

Q.3   The deformation per unit length is called.....

a)   Strain   b)   Stress

c)   Elasticity   d)   None of these

Q.4   The unit of moment of intertia is

a)   mm   b) mm^3

c) mm^2 d) mm^4

Q.26 Define (a) Ductility (b) Malleability (c) Brittleness (d) Hardness

Q.27 Define Hook's law

Q.28 Define Strain. What is the unit of strain? What are the different types of strains? Define them.

Q.29 Define beam. Write different types of beams with sketches.

Q.30 Define volumetric and shear strain.

Q.31 Define trusses. Write the uses of trusses. Name different types of frames with sketches.

Q.32 Define shear force and bending moment in connection with beam.

Q.33 State Theorem of Parallel Axis with diagram.

Q.34 State Poison's ratio and Varigon's theorem.

Q.35 Define force system and names various types of force system.

SECTION-D

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

Q.36 Draw the S.F.D and B.M.D. of a simply supported beam carrying a point load at the Mid span.

Q.37 Where does the moment of inertia of the following bodies lie? Rectangle, Triangle, Circle, Semi-Circle, Quadrant.

Q.38 What are the assumptions made in Theory of simple Bending?

Q.5 If n>(2j-3), then the frame is a.........

a) Perfect frame   b) Deficient frame

c) Redundant frame   d) None of these

Q.6 The B.M.D for a cantilever beam with u.d.I over the whole span will be...........

a) A triangle   b) A parabola

c) A cubic curve   d) None of these

Q.7 Bending stressed are due to............

a) Shear forces   b) Bending Moment

c) Thrust   d) None of the above

Q.8 Neutral Axis of a beam is the axis _____

a) Zero stress   b) of maximum stress

c) Negative stress   d) of positive stress

Q.9 The ratio of lateral strain to longitudinal strain is called.......

a) Modulus of elasticity

b) Modulus of rigidity

c) bulk modulus

d) Poisson's ratio

Q.10 Which of the following material is more elastic ?

a) Rubber   b) Glass

c) Wood   d) Steel

SECTION-B

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

Q.11 Unit of strain is _____

Q.12 Name of any two types of Pin Jointed frames

Q.13 The rate of change of bending moment is equal to _____

Q.14 Example of ductile material _____

Q.15 Unit of section modulus is _____

Q.16 The positive bending moment is called _____ moment

Q.17 A force can be resolved into _____ number of pairs of component

Q.18 Bending stresses are also known as _____

Q.19 Point of contraflexure occurs in _____

Q.20 The basic perfect frame is _____

SECTION-C

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

Q.21 Define force. Write advantages of a force. What are effects of force?

Q.22 State polygon law of forces with neat sketch.

Q.23 Define (a) Parallel axis   (b) Center of gravity

(c) Moment of inertia

Q.24 Define Bending stress. Write it's SI unit. Name different types of stresses.

Q.25 Explain different types of support with the help of neat sketch.