Q.34 Write different end condition of a loaded column along with their diagram.

Q.35 What are the assumption made in the analysis of truss.

SECTION-D

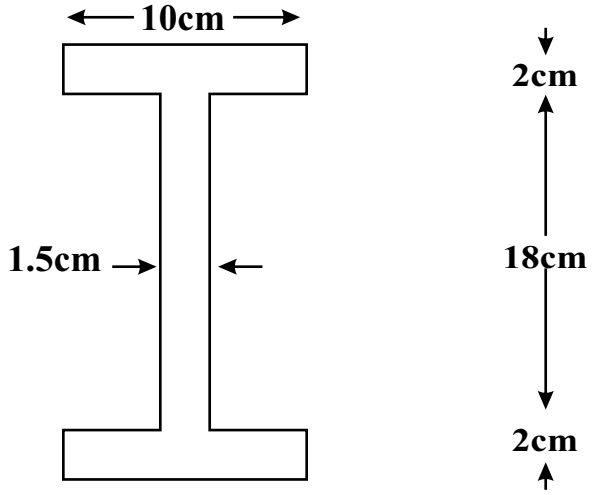
Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 A rod 2 m long and 30mm diameter is subjected to an anxial pull of 30 kN. If the youn's modulus of the material of the rod is 20X10 N/mm^2, determine.

a) Stress b) Strain c) Elongation of the rod

Q.37 Explain the different type of end support of abeam along with their Diagram.

Q.38 Calculate the M.O.I of the I-Section about horizontal and vertical centroid axis.



Roll No. .....

4th Sem / Branch : Civil Engineering
Sub.: Structural Mechanics

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 The material which does not regain its original position after the removal of external load is called

a) Elastic Material b) Plastic Material
c) Malleable Material d) All the above

Q.2 The ratio of lateral strain to longitudinal strains is called

a) Poisson's Ration
b) Bulk modulus
c) Modulus of Elasticity
d) Modulus of Rigidity

Q.3 The point contra flexure is called

a) Hinge
b) F.O.S.
c) The point of inflexion
d) All the above

Q.4 The strength of the beam depend on

a) Section modulus b) Bending Moment
c) Its weight d) C.g. Of the section

Q.5 The moment of inertia of rectangular section about neutral axis is given by

a) $bd^3/36$ b) $bd^3/12$
c) $bd^2/3$ d) $bd^2/12$

Q.6 The ratio of average shear stress to maximum shear stress for a circular section

a) 2/3 b) 3/2
c) 3/4 d) 1/2

Q.7 The column that fail due to direct stress is known as

a) Long Column b) Short Coloum
c) Medium Column d) Composite Column

Q.8 The Ranking formula hold goods for

a) Long column
b) Short column
c) Medium column
d) Both short & Long column

Q.9 If n > (2J-3) than the frame is a

a) Perfect frame b) Deficient frame
c) Redundant frame d) None of these

Q.10 The basic perfect frame is a

a) Triangle b) Square
c) Pentagon d) Hexagon

SECTION-B

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

Q.11 Fatigue of metal is caused by _____.
Q.12 Define Ductile Material.
Q.13 Define strain.
Q.14 _____ is defined as the algebraic sum of all the vertical forces acting on one side of the section.
Q.15 Unit of radius of gyration is _____.
Q.16 Write the expression for simple bending equation.
Q.17 The shear stress at the N.A. Is _____.

Q.18 Define Slenderness Ratio.
Q.19 Define Buckling load.
Q.20 Define perfect Frame.

SECTION-C

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

Q.21 Write the classification of Material and Explain any one of them.
Q.22 Draw the stress-strain diagram for Mild Steel.
Q.23 Define Temperature stress & strain.
Q.24 Define & Explain Hook's Law.
Q.25 Draw the SFD & BMD for a cantilever beam carrying point load at free end.
Q.26 Explain the different types of load along with neat sketches.
Q.27 Define Theorem of perpendicular axis.
Q.28 Define Bending Equation.
Q.29 Draw the detail shear stress distribution diagram for a rectangular section.
Q.30 A simply supported beam of length 5m carry a UDL, of 9KN/m over the entire length. It also carries a concentrated load 20KN at the centre of span. Calculate the maximum slope of the beam.
Q.31 Write the assumption made in the theory of simple bending.
Q.32 Explain type of frame.
Q.33 A member of pin jointed structure is 1.5m long with a cross section 10mm by 25mm. Determine the loa at which it will buckle. Take E for the material is = 70 GPa.