Q.31 Define temperature stress and temperature strain.

Q.32 Classify the beams.

Q.33 Explain Euler's Formula for calculating Crippling Load.

Q.34 A mild steel rod 20 mm diameter is subjected to an axial pull of 40KN. Determine the tensile strength induced in the road.

Q.35 Differentiate between column and strut.

SECTION-D

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

Q.36 Derive the torsion equation by stating its assumptions.

Q.37 Explain the tensile test on a mild steel specimen with neat sketch

Q.38 Draw SFD and BMD for a simply supported beam of span 5m carrying a u.d.l. of 2KN/m for a length of 2m starting from a distance of 1m from the right hand support.

Roll No. .....

1st Sem / Mech. Engg.(MSIL)
Subject:- Strength of Materials

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 The deformation per unit length is called.

a) Strain b) Elasticity
c) Ductility d) All of the above

Q.2 Hook's law holds good up to.

a) Elastic limit
b) Plastic limit
c) Limit of proportionality
d) None of the above

Q.3 The unit of moment of inertia is.

a) m^2 b) m^3
c) m^4 d) m

Q.4 At the point of contraflexure.

a) B.M. is minimum b) B.M. changes sign
c) B.M. is maximum d) None of the above

Q.5 Neutral axis of the beam is the axis.

a) of zero stress b) of maximum stress
c) of negative stress d) None of the above

Q.6 The strength of a beam depends upon.

a) Its section modulus
b) Permissible bending stress
c) Both (a) and (b)
d) None of the above

Q.7 A column whose slenderness ratio is greater than 120 is called as.

a) Long column b) Short column
c) Medium column d) Mix column

Q.8 Rankine formula is generally used when slenderness ratio lies in between.

a) 0-60 b) 0-80
c) 0-100 d) any value

Q.9 The shafts are generally made of.

a) Alloy steel b) Mild steel
c) Copper alloy d) Any of the above

Q.10 The spring used in mechanical toys is.

a) Leaf spring b) Spiral spring
c) Helical spring d) All of the above

SECTION-B

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

Q.11 Name different types of strains.

Q.12 Define shearing stress.

Q.13 State Hook's law.

Q.14 Define proof resilience.

Q.15 Define section modulus.

Q.16 Define UDL.

Q.17 Define slenderness ratio of a column.

Q.18 Define Factor of Safety.

Q.19 What do you mean by equivalent length of a column?

Q.20 Define torque.

SECTION-C

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

Q.21 Explain stress with its types.

Q.22 Define ductility and brittleness of materials.

Q.23 Derive an expression for strain energy stored in a material due to gradually applied load.

Q.24 Explain theorem of Parallel axis.

Q.25 Explain types of end supports of beams.

Q.26 Give formula for the MOI of a rectangle and circle about its centroidal axis.

Q.27 Explain end conditions considered for columns.

Q.28 Explain the use of springs.

Q.29 What are the types of springs?

Q.30 Differentiate between torque and torsion