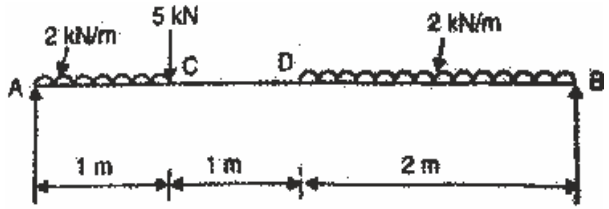
SECTION-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)

Q.23 Explain Euler's theorem of Long Coloumn. Derive Eulers load formulae for various conditions. (CO4)

Q.24 Draw SFD and BMD of the loaded beam as shown in figure. (CO3)



Q.25 Write Short Notes on (CO5)

a) Crank and Slotted Lever Quick Return Motion.

b) Limitation of Euler's theory.

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6th Sem. / Automation & Robotics
Sub.: Solid Mechanics & Mechanism

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (6x1=6)

Q.1 Ability of a material to be drawn into thin wires is (CO1)

a) Malleability b) Ductility

c) Hardness d) Shear Stress

Q.2 Tensile strength of a material is obtained by dividing the maximum load during the test by the (CO1)

a) Areas at the time of fracture

b) Original Cross-Sectional area

c) Average of (A) & (B)

d) Minimum area after fracture

Q.3 The cylinder of an Ic engine is a (CO5)

a) Rotating Link b) Fixed Link

c) Movable Link d) None of the above

Q.4 A steel bar of 5mm is heated from 25°C to 45°C and it is free to expand. The bar will induce (CO1)

a) No stress b) Shear stress

c) Tensile stress d) Compressive stress

Q.5 The assumption made in Euler's column theory is that (CO4)

a) The failure of column occurs due to buckling alone

b) The length of column is very larges as compared to its cross-sectional dimensions

c) The column material obeys Hooke's law.

d) All of the above

Q.6 In lower pair, there is (CO5)

a) Surface contact b) A point contact

c) A line contact d) Unpredictable

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 The neutral axis of the cross-section a beam is that axis at which the bending stress is _____. (CO2)

Q.8 Oldham Coupling is an inversion of _____. (CO5)

Q.9 The point of contra flexure is a point where _____. (CO3)

Q.10 Hardening is a _____. (CO1)

Q.11 The ratio of lateral strain to the linear strain within elastic limit is known as _____. (CO2)

Q.12 The property of a material by virtue of which a body returns to its original, shape after removal of the load is called_____. (CO1)

SECTION-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)

Q.13 What are the assumptions made in bending theory? (CO3)

Q.14 Explain the inversion of Double Slider Crank Chain Mechanism? (CO5)

Q.15 What is the difference between Gradual Loading and Sudden loading? (CO2)

Q.16 Draw a shear force diagram of a point load acting on the end of a cantilever.

Q.17 Differentiate between machine and structure. (CO5)

Q.18 What is Principal Stress and Principal Strain? (CO2)

Q.19 Explain any 5 Mechanical Properties. (CO1)

Q.20 What is Slenderness Ratio and Effective Length? (CO4)

Q.21 What is annealing. Explain its type. (CO1)

Q.22 What are the Factors effecting strength of column? (CO4)