

2 MARKS QUESTION

- Ques) Describe the purpose of Scavenging in IC Engine?
- Ques) Differentiate between dry bulb and wet bulb temperature.
- Ques) Differentiate between accuracy and precision.
- Ques) What is a transducer? Describe with any one Example.
- Ques) State Hooke's Law?
- Ques) Write any four properties of fluid?
- Ques) Differentiate between active and passive transducer.
- Ques) Explain Poisson's Ratio.
- Ques) What are Newtonian and Non-Newtonian fluids?
- Ques) What are Internal Combustion Engine?
- Ques) Explain COP of refrigerator?
- Ques) Explain Coplanar Concurrent forces.
- Ques) What is difference b/w stress and strain?
- Ques) What is difference b/w shear force and bending moment.
- Ques) State Lami's theorem?
- Ques) What are statically determinate beam?

Ques, Prove that $(COP)_R + 1 = (COP)_{HP}$

Ans, What is Heat pump.

Ans, Define Erosion? Also its type?

Ans, Define Calibration?

Ans, Write two difference 2 stroke and 4 stroke.

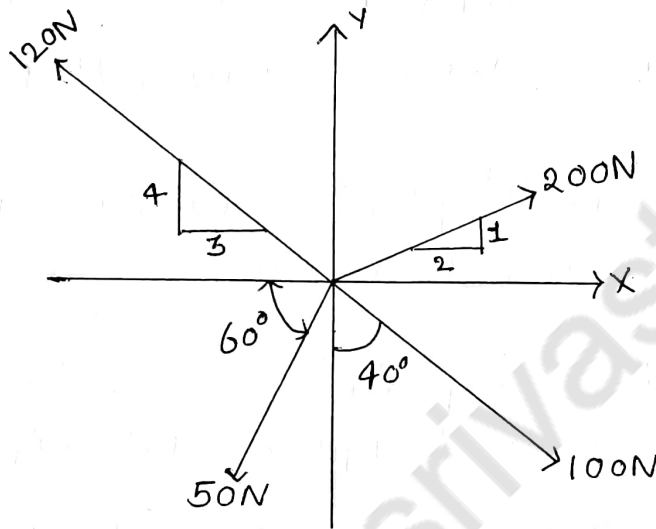
Ans, What is HEV?

Ques, Calculate the specific weight, density and specific gravity of 1L of liquid whose weight is 7N.

5 MARKS QUESTION

Ques) Draw the Stress-Strain Curve for mild steel and describe its salient points. Also, draw the stress curve for a ductile Material, a brittle Material, and a plastic Material.

Ques) A system of four forces acting on a body is as shown in figure. Determine the resultant.



Ques) With the help of neat sketch discuss the Construction and working principle of a 4-Stroke SI-Engine.

Ques) Define Coefficient of performance (COP) for a refrigeration system. Why do we express the performance in terms of (COP) instead of efficiency? Also, Compare the COPs of a refrigerator and heat pump.

Ques) Explain Pascal's Law with help of a neat sketch. What are its practical applications? The small piston of a hydraulic lift has an area of 0.20 m^2 . A car weighing $1.2 \times 10^4 \text{ N}$ sits on a stack mounted on the large piston. The large piston has an area of 0.90 m^2 . How large force must be applied to the small piston

to support the car.

Ques) Describe the working of Centrifugal or reciprocating pump.

Ques) Discuss the various key elements of a Mechatronics system and write any four-Mechatronics system.

Ques) Develop the relationship between E (Young's Modulus), C (Shear Modulus), K (Bulk Modulus), μ (Poisson ratio)

Ques) What are Turbine? Explain Construction details of Pelton Turbine with diagram.

Ques) What are Sensor? Explain classification of sensors based on various inputs and outputs.

Ques) Explain the working of domestic refrigerator with the neat sketch.

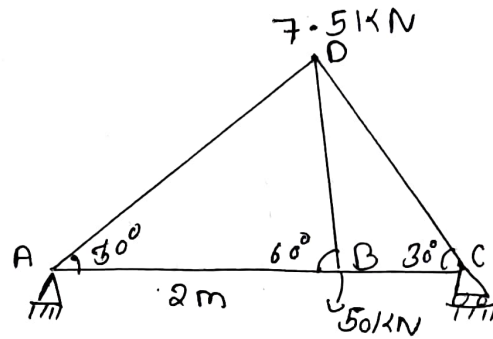
Ques) What Autronics, Bionics and Avionics? Write their applications?

Ques) With a neat and sketch Explain the working of four stroke CI Engine.

Ques) What are hydrolic turbine? How are they classified? Write their advantage and disadvantages.

Ques) With a neat sketch Explain the working of two stroke SI Engine.

Ques) Determines the force in each member of the truss as shown in Fig.



Ques) Discuss the working principle of an electric vehicle. What are the Major merits of these vehicles.

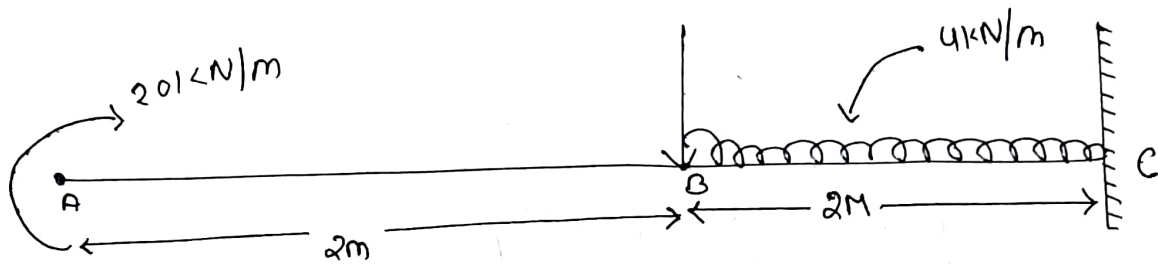
Ques) At an axial load of 22 kN, a 45-mm-wide by 1.5 mm thick polyimide polymer bar elongates 5.0 mm while the bar width contracts 0.25 mm. The bar is 200 mm long. At the 22 kN load, the stress in the polymer bar is less than its proportional limit.

Determine,

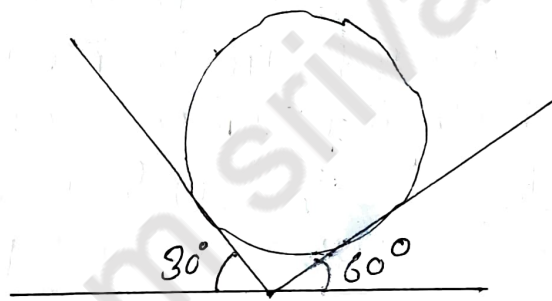
- i) The Modulus of Elasticity
- ii) Poisson's Ratio
- iii) The change in the bar thickness.

Ques) What are pressure? Write classification of pressure Measurement instruments. Explain the working of bourdon tube pressure gauge with neat sketch.

Ques) Draw shear force and bending moment diagram for a given centilever beam.



Ques) A ball of Weight 120N rests in a right angled groove, as shown in Fig. The sides of the groove are inclined to an angle of 30° and 60° to the horizontal. If all the surfaces are smooth, then determine the reactions at the point of contact.



Ques) Draw shear forces and bending moment diagram for the beam as shown in Fig. below. Also find the point of Contraflexure if any.

