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1. One end of a 30-cm long aluminium rod is exposed to a temperature of 500 â„ƒ while the other end is maintained at 20 â„ƒ. The rod has the diameter of 2.5 cm. If heat is conducted through the rod at the rate of 164.9J/s, calculate the thermal conductivity of aluminium of the aluminium rod.

209.9 W/mÂ°C

2. The heat from the sun travels to the earth through the process of:

radiation

3. A young scientist tries to obtain the parameters of a satellite orbit using the method of dimensional analysis and obtained the formula Q=gRe2RcÂ½, where the orbital radius is Rc, radius of the earth is Re and acceleration due to gravity is g. What does Q represents.

Orbital speed of the satellite

4. Calculate the temperature at which the root-mean-square speed of oxygen molecules will have the value of 640 m/s. [1 kilomole of oxygen has a mass of 32kg].

252.5 â„ƒ

5. 4000 J

6. An object of mass 200 g oscillates horizontally without friction at the end of a horizontal spring for which k=7.0 N/m. The mass is stretched 5.0 cm from equilibrium and released. Find its maximum speed.

0.30 m/s

7. T1=20 N and T2=203 N

8. The fundamental force in nature which accounts for the existence of bulk matter is:

electromagnetic interaction

9. 25 J

10. Which of the following physical principles explains why curved shape of an aerofoil or the wings of an aircraft creates a faster flow of air over its top surface than the lower surface?

Bernoulliâ€™s principle

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