1. (a) Fill in the blanks:
   (i) 30 degree is equal to ..................... radians.
   (ii) One micron is equal to ..................... centimeters.
   (iii) Unit of power is .....................
   (iv) Force = ..................... X acceleration.
   (v) LCM of 4, 5 and 20 is equal to .....................

(b) State whether ‘TRUE’ or ‘FALSE’. In case of ‘FALSE’ correct the statement:
   (i) Lead = N X Pitch.
   (ii) Conduction is the method of heat propagation in fluids.
   (iii) Negative acceleration is known as retardation.
   (iv) Hooke’s law is a relationship between stress and strain.
   (v) Copper is a ferrous metal.

2. (a) Simplify:
   \[ 12 - [\neg 21 - (28 - (15 - 4))] \]

(b) Calculate the hypotenuse of a right angled triangle whose base is 8 cm and height is 12 cm.

3. The cost of 5 computers and 2 printers is Rs. 1,20,000. The cost of 3 computers and 1 printer is Rs. 70,000. Find the cost of each item.

4. (a) Prove that:
   \[ \sin 2A/(1 - \cos 2A) = \cot A \]

5. (a) Define:
   (i) Mechanical advantage and
   (ii) Efficiency of a simple machine

(b) A force of 20 N is applied at the end of a spanner at right angles. If the effective length of a spanner is 150 mm, what is the applied torque?

6. (a) Define Specific heat. What is the unit of Specific heat?

(b) A copper rod of 40 mm diameter is subjected to tensile load of 500 N. Calculate the stress.

7. Write short notes on any FOUR:
   (i) Specific gravity
   (ii) Modulus of Elasticity
   (iii) Coefficient of friction
   (iv) Longitudinal Stress in pipes
   (v) Ferrite
   (vi) Shear Force Diagram (SFD)