



07/A/C

(D)

(WORKSHOP CALCULATION & SCIENCE)

Time : 3 Hours

Marks : 50

NOTE :—Attempt FIVE questions in all. Q.No. 1 is COMPULSORY. All questions carry EQUAL marks.

1. Fill in the blanks :—

(a)  $20^{\circ}\text{C} = \dots\dots\dots^{\circ}\text{F}$ ;

(b) Area of trapezium = .....

(c) Feeler gauge is used to measure .....

(d)  $\frac{5}{16}$  inch = .....

(e) Ring gauges are used to measure the .....

(f) V. R. of a simple pulley is .....

(g) The ratio of perimeter of a circle to its radius is .....

(h) ..... is used to measure the profile of the thread.

(i) Specific gravity of water is .....

(j)  $90^{\circ}\text{C} = \dots\dots\dots$  radians.

2. (a) What do you mean by ductility and malleability? Give two examples for each.

(b) Find the total surface area of a sphere of radius 3 cm.

3. (a) State different methods of fastening the machine components. Give the different types of rivets and riveted joints.

(b) List different types of keys and their uses.

4. (a) Define stress-strain and explain the stress-strain diagram of a mild steel specimen in tensile test.

(b) A 150 mm P.C.D. gear meshes with 50 mm P.C.D. gear. If the larger gear has 30 teeth, find out the teeth of smaller gear.

5. Solve :—

(a)  $\frac{3x+7}{4x+3} = \frac{5x+4}{2x+6}$

(b) With the help of log table find out the value of :

$\frac{5}{2} \sqrt{7} \times 18.76$

6. Find the cost of constructing an office, if the office room is  $15 \times 15 \times 8$  feet with front door of  $8 \times 6$  feet. The construction cost of walls is Rs. 3000 per square meter, roof Rs. 5000 per square meter and door Rs. 2000 per square meter.

7. (a) What is friction? State the laws of friction and the methods of reducing the friction between machine parts.

(b) What is a boiler? What are its different classification?