PAPER – II
DRAUGHTSMAN (CIVIL)/ DRAUGHTSMAN (MECHANIC)/ FITTER/ MACHINIST/ MACHINIST GRINDER/ MECH. AGRICULTURE MACHINERY/ MECH. MACHINE TOOL MAINTENANCE/ MECH. MOTOR VEHICLE/ MECHANIC (REFRIGERATION & AIR-CONDITIONER)/ OPERATOR ADVANCE MACHINE TOOL/ TOOL & DIE MAKER (DIES & MOULDS)/ TOOL & DIE MAKER (PRESS, TOOLS, JIGS & FIXTURE)/ TURNER/ REFRACTORY TECHNICIAN (WORKSHOP CALCULATION AND SCIENCE) SEMESTER – IV

TIME: 3 HRS.

Note: Attempt all questions.
All questions carry equal marks.
This paper carries negative marking, 25% marks will be deducted for each wrong answer.

Choose the correct answer.

1. What is the correct value of \( \pi \)?
   a) \( \frac{22}{7} \)  
   b) \( \frac{7}{22} \)  
   c) 3.4  
   d) \( \frac{3}{4} \)

2. The outer diameter of a pipe is 100cm, and then the outer circumferences will be
   a) 62.8 \text{ m}^2  
   b) 628.32 \text{ mm}^2  
   c) 6283.2 \text{ m}^2  
   d) 628.32 \text{ cm}^2

3. The pressure is given by
   a) Force/ Area  
   b) Area/ Force  
   c) Stress/ Strain  
   d) Strain/ Stress

4. 2.5 tonnes can be expressed in kg as
   a) 250 kg  
   b) 25 \text{ kN}  
   c) 250 N  
   d) 2500 kg

5. \( \tan \theta \) is equal to
   a) \( \cos \theta/ \sin \theta \)  
   b) Opposite/ Adjacent side  
   c) Adjacent side/ Hypotenuse  
   d) Opposite/ Hypotenuse

6. What is the correct value of \( \frac{22}{7} \times 350 \times 2? \)
   a) 1100  
   b) 1200  
   c) 1800  
   d) 2200

7. The area of an equilateral triangle of side 8 mm is equal to
   a) 27.7 mm\(^2\)  
   b) 27.7 cm\(^2\)  
   c) 2.7 cm\(^2\)  
   d) 88 mm\(^2\)

8. The area of a half circle, with radius \( r \), is given by
   a) \( \frac{\pi r^2}{4} \)  
   b) \( \pi r^2 \)  
   c) \( \frac{\pi r^2}{3} \)  
   d) \( \frac{\pi r^2}{2} \)

Contd...2/-
9. 100° C can be written as
   a) 100 F  b) 212 F  c) 36 F  d) 222 F

10. Mass/ Volume, refers to
    a) Specific gravity  b) Density  c) Young modulus  d) Bulk modulus

11. What is the appropriate SI unit for distance?
    a) Centimeters  b) Inches  c) Meters  d) Kilometres

12. A homogenous material is defined as being
    a) An element  b) Any material with uniform composition  c) Synonymous with “Solution”
    d) More than one of these

13. One horse power is equal to
    a) 475 W  b) 1000 W  c) 746 W  d) 876 W

14. The sum of the internal angle of a triangle is
    a) 90  b) 180  c) 360  d) 270

15. 1 Gallon is equal to
    a) 3.785 litres  b) 3  c) 4  d) 5.5

16. Brass is an alloy of
    a) Copper and Zinc  b) Bronze and Iron  c) Iron and Steel  d) Aluminium and Copper

17. 110 F can be written as
    a) 37  b) 40  c) 43.33  d) 27

18. A 50 cm radius and 250 cm height cylinder is melted to for a square cube, what will be
    the side of the cube so formed?
    a) 100 cm  b) 125 cm  c) 150 cm  d) 200 cm

19. If the value of tanθ = 1, then the value of cosθ will be
    a) 1  b) 0  c) 1/2  d) 1/√2

20. One sq.m is equal to
    a) 100  b) 1000  c) 10000  d) 10

21. The formula (Force x Displacement)/ Time, refers to
    a) Power  b) Energy  c) Time  d) Work

22. An object can store energy as the result of its position. This stored energy of position is
    referred to as
    a) Potential energy  b) Kinetic energy  c) Mechanical energy  d) Work

Contd...3/-
23. The unit of volume is
   a) Sq.m  b) cu.m  c) cusec  d) m

24. Length, Mass and Time are known as
   a) Fundamental quantities  b) Derived quantities  c) Similitude  d) SI Unit

25. Surface area of a cylinder is
   a) \( \pi DH \)  b) \( \pi D \)  c) \( \pi H \)  d) DH