(H)

PAPER –II
WORKSHOP CALCULATION & SCIENCE & EMPLOYABILITY SKILLS
(MORNING SESSION)
10TH PASS (TWO YEAR TRADES)
SEMESTER –II

TIME: 3 HRS.   MARKS: 125

Note: This paper contains two parts – Part A & Part B.
        Attempt all the questions.
        All questions carry equal marks.
        This paper carries negative marking. 25 % marks will be deducted for each wrong
        answer.

PART – A (WORKSHOP CALCULATION & SCIENCE)   (75)

Choose the correct answer:

1. If the area of square plate is 2025 mm^2, then find the side —
    a. 65 mm   b. 55mm
    c. 45 mm   d. 35 mm

2. While using the sine bar to find out the angles sine of an angle is taken into consideration.
   From the following equations select the correct one —

    a. $\dfrac{Opposite\ side}{Adjacent\ side}$ b. $\dfrac{Opposite\ side}{Hypotenuse}$

    c. $\dfrac{Adjacent\ side}{Opposite\ side}$ d. $\dfrac{Opposite\ side}{Adjacent\ side}$

3. The advantage of RHEOSTAT over a potentiometer is —
    a. Rheostat can handle higher frequencies   b. Rheostat is more precise
    c. Rheostat can handle more current   d. Rheostat works better with DC

4. Find the factors of x from the equation $x^2 – 7x + 10 = 0$—
    a. x = 5 , or 2   b. x = 5 , or -2
    c. x = -5 , or -2   d. x = -5 , or 2

5.   Which instrument you recommend to use to measure temperature above 350^{0}C —
   a. Hydrometer   b. Thermo meter
    c. Pyrometer   d. Calorimeter

6. The resistance of a conductor increases when—
    a. The specific resistance of the material decreases
    b. The length of the conductor increases
    c. The sectional area of the conductor decreases
    d. The conductivity of the wire increases

7. Find the lateral surface area A_s (in cm^2) of the shaft of diameter 20 mm and 100 mm long—
    a. $A_s = 75.36$ cm^2 b. $A_s = 69.08$ cm^2
    c. $A_s = 65.94$ cm^2 d. $A_s = 62.84$ cm^2

8. If $x = a \, Sec \, \Phi$, $y = b \, Tan \, \Phi$, then the value of $\frac{x^2}{a^2} - \frac{y^2}{b^2}$ —

    a. 1   b. $Tan^2\Phi$
    c. $Cosec^2\Phi$ d. 0

9. If 750μ A is flowing 11KΩ of resistance, what is the voltage drop across the resistor —
    a. 8.25 V   b. 82.5 V
    c. 14.6 V   d. 146 V

10. If $x + y = 18$ and $x - y = 2$, find the values of x and y —
    a. 6 , 4   b. 8 , 6
    c. 10 , 8   d. 12 , 9

11. In case of short circuit, --------- current will flow in that circuit.
    a. zero   b. Very low
    c. Normal   d. Infinite

12. The power output of a motor (P) is 3450 joules / sec and the motor runs for 1 hour only, what will be the energy consumed by the motor in kwh —
    a. 0.0345 kwh   b. 0.345 kwh
    c. 3.45 kwh   d. 34.5 kwh

13. Find the diagonal of square whose side is 8 cm —
    a. 14.44 cm   b. 13.22 cm
    c. 11.31 cm   d. 11.24 cm

14. Keys, screws and ramps are working on the principles of —
    a. Inclined plane   b. Lever
    c. Wheel & Axle   d. Pulley

15. What is the equivalent resistance of the following circuit in which three resistances of 20Ω are connected as shown —

    a. 60 Ω   b. 40 Ω
    c. 30 Ω   d. 20 Ω
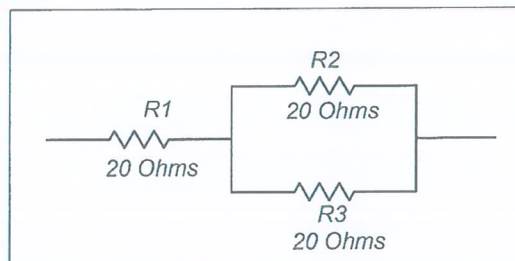
16. The first order of levers, the fulcrum is between power and the feeort, example of this is —
    a. Lemon squeezer   b. wheel barrow
    c. common balance   d. safety valve

17. In a triangle shown, AB is perpendicular to BC. If BC = 9 cm and AB the height s equal to 12 cm, find the value of its diagonal AC —
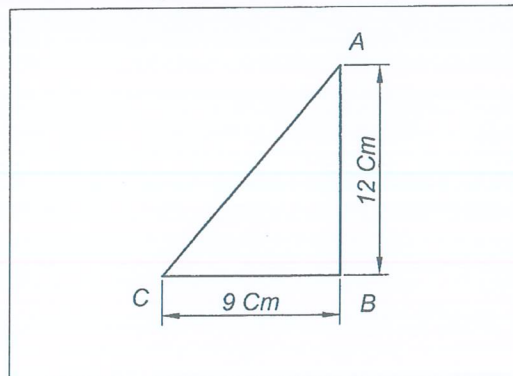
    a. 10 cm   b. 12 cm
    c. 13 cm   d. 15 cm

18. Which of the following is NOT an electrical quantity —
    a. Voltage   b. Current
    c. Distance   d. Power

19. Calculate the power (P) in watts if a resistor conducts a current 0.8 Amps at 120 Volts —
    a. 96 watts   b. 9.6 watts
    c. 0.96 watts   d. 0.096 watts

20. A spherical C.I of 20 cm diameter is melted and cast into a conical moulds, the base of which is 30 cm. Find the height of the cone —
    a. 15.78 cm   b. 16.78 cm
    c. 17.78 cm   d. 18.78 cm

21. If a load F 1200 kg is lifted by an effort of 300 kg by a simple machine having velocity ratio of 5, then its efficiency is –
    a. 80%   b.75 %
    c. 70%   d. 65%

22. What is the formula to find the area of the circular ring as shown in the figure?
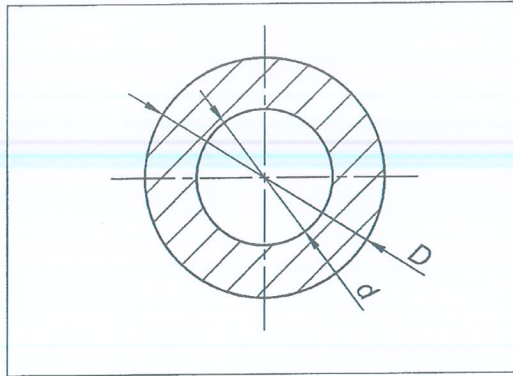
   a. $\frac{\pi}{2}$ (D^2- d^2)   b. . $\frac{\pi}{4}$ (D^2- d^2)

   c. . $\frac{\pi(D-d)}{2}$ d. $\frac{\pi(D-d)}{4}$.

23. Choose among the following formulas the correct one for the relationship between degrees centigrade to Fahrenheit —

   a. $\frac{C}{100} = \frac{F-32}{180}$ b. $\frac{C}{100} = \frac{32-F}{180}$

   c. $\frac{100}{C} = \frac{32-F}{180}$ d. $\frac{C}{100} = \frac{180}{F-32}$

24. Volume of the cylinder is equal to —

   a. $\pi r^2 h$ b. $\frac{1}{3}\pi r^2 h$

   c. . $\frac{2}{3}\pi r^2 h$ d. $\frac{3}{4}\pi r^2 h$

25. Theoretically if the mechanical advantage, velocity ratio of a machine are equal in magnitude, what will be its efficiency —

   a. 70 %   b. 80%

   c. 90%   d. 100%

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