

PAPER – II

(WORKSHOP CALCULATION & SCIENCE & EMPLOYABILITY SKILLS)
CARPENTER, EXCAVATOR OPERATOR, SANITARY HARDWARE FITTER,
FOUNDRYMAN, MASON, MECHANIC (TRACTOR) PLUMBER, SHEET METAL
WORKER, WELDER (GAS & ELECTRIC, GMAW & GTAW, PIPE, STRUCTURAL,
WELDING & INSPECTION AND FABRICATION & FITTING), PAINTER GENERAL,
WIREMAN, MECHANIC AGRICULTURAL MACHINERY

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) (MARKS: 75)

Choose the correct answer:-

- Which one of the following is equal to $a^m \times a^n$
a) a^{m+n} b) a^{m-n} c) a^{mn} d) $a^{m/n}$
- Mechanical equivalent of heat is -
a) 4200 J/kg°C b) 42.00 J/kg°C c) 420.0 J/kg°C d) 4.20 J/kg°C
- Basic unit of current is -
a) Micro amps b) Millie amps c) Amps d) Kilo amps
- Find the value of y if $(3/5) - (15/5y) = 3/4$
a) -96 b) -98 c) -100 d) -102
- Calculate the resistance (R) in a circuit if the voltage (V) is 60 volts and the current flowing through the resistance is 4 amps -
a) 240 Ω b) 120 Ω c) 50 Ω d) 15 Ω
- Unit of strain is -
a) kg/cm² b) NW/m² c) metre d) No unit
- If x = 2 and y = 1 find the value of $x^4 + y^4 - 2x^2y^2$
a) 8 b) 9 c) 10 d) 12

Contd...2/-

8. Convert 10 centigrade heat unit (CHU) into calories -
a) 4536.0 calories
b) 456.6 calories
c) 44.36 calories
d) 43.45 calories
9. Choose the correct expression of a^3+b^3 -
a) $(a+b)(a^2+b^2+ab)$
b) $(a+b)(a^2+b^2-ab)$
c) $(a-b)(a^2+b^2+ab)$
d) $(a+b)(a^2-b^2+ab)$
10. The ratio between ultimate stress to working stress is called as -
a) Bulk modulus
b) Young's modulus
c) Factor of safety
d) Modulus of rigidity
11. Find the values of x and y from the equation $x-2y=4$ & $2x+y=3$
a) $x=2$ & $y=-1$
b) $x=2$ & $y=4$
c) $x=-2$ & $y=-1$
d) $x=4$ & $y=2$
12. $\sin^2 45^\circ + \cos^2 45^\circ = \underline{\hspace{1cm}}$.
a) 4
b) 3
c) 0
d) 1
13. What is the value of $\frac{x}{3} + \frac{y}{9} + \frac{z}{2}$ if $x=6$, $y=-18$ and $z=2$.
a) 1
b) 2
c) 3
d) 4
14. A steel rod of 4 mm diameter is subjected to the load of 200 kg. Find the stress induced in the rod.
a) 15.91 kg/cm^2
b) 1.591 kg/cm^2
c) 0.1591 kg/cm^2
d) 0.01591 kg/cm^2
15. When a metal cup filled with hot coffee, which is placed on a metal plate loses heat. This heat is lost by -
a) Conduction
b) Convection
c) Radiation
d) Conduction, convection, radiation and evaporation
16. Calculate the area of parallelogram whose base is 10 cm and height is 5 cm -
a) 25 cm^2
b) 50 cm^2
c) 60 cm^2
d) 75 cm^2
17. Find the area of an equilateral triangle whose side is 8 cm -
a) 277.12 cm^2
b) 135.7 cm^2
c) 67.85 cm^2
d) 27.712 cm^2
18. The energy consumed in KW second of 3 KW electric boiler which heats 60 litres of water from 20°C to 85°C in 10 minutes.
a) 1800 kw sec
b) 17000 kw sec
c) 16000 kw sec
d) 15000 kw sec

Contd...3/-

19. If the two sides of a right angled triangle are 3 cm and 4 cm, what is the value of third side-
a) 4 cm b) 8 cm c) 5 cm d) 7 cm
20. Volume of a 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) $\frac{3}{4} \pi r^2 h$
21. Three identical resistors are connected in a series to a battery. If the current of 12A flows from the battery, how much current flows through any one of the resistors -
a) 12A b) 4 A c) 36 A d) Zero
22. If $A^3 + B^3 = 407$, $A+B = 11$, then the values of A and B are -
a) 1,10 b) 7,4 c) 8,3 d) 6,5
23. Which one of the following statement is mathematically correct?
a) $\frac{+}{+} = \text{---}$ b) $\frac{+}{-} = +$ c) $\frac{-}{-} = \text{---}$ d) $\frac{-}{+} = \text{---}$
24. What is the name of a quadrilateral whose opposite sides are parallel and equal and angles are not at right angles?
a) Rhombus b) Parallelogram c) Rhomboid d) Trapezoid
25. An example of converter of electrical energy convert into mechanical energy is -
a) Generator b) Heater c) Motor d) Dynamo
