17/B/C/S-3/4/E

(D)

33/231, 35/233, 41/234

PAPER – II
ELECTRICIAN / ELECTROPLATER / LIFT MECHANIC / LIFT & ESCALATOR
MECHANIC
(WORKSHOP CALCULATION & SCIENCE)
SEMESTER – III

TIME: 3 Hrs.

MARKS : 75

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

Choose the correct answer:

1. $(17)^{3.5} \times (17)^{?} = 17^{8}$
   a) 2.29   b) 2.75   c) 4.25   d) 4.5

2. If $\left(\dfrac{a}{b}\right)^{x-1} = \left(\dfrac{b}{a}\right)^{x-3}$, then the value of x is -
   a) $\dfrac{1}{2}$ b) 1   c) 2   d) $\dfrac{7}{2}$

3. Given that $10^{0.48} = x$, $10^{0.70} = y$ and $x^{z} = y^{2}$, then the value of z is close to -
   a) 1.45   b) 1.88   c) 2.9   d) 3.7

4. If $5^{q} = 3125$, then the value of $5^{(q-3)}$ is -
   a) 25   b) 125   c) 625   d) 1625

5. If $3^{(x-y)} = 27$ and $3^{(x+y)} = 243$, then x is equal to -
   a) 0   b) 2   c) 4   d) 6

6. What is the applied voltage for a series RLC circuit when $I_T = 3$ mA, $V_L = 30$ V, $V_C = 18$ V, and R = 1000 ohms?
   a) 3.00 V   b) 12.37 V   c) 34.98 V   d) 48.00 V

7. In a parallel RLC circuit, which value may always be used as a vector reference?
   a) Current   b) Reactance   c) Resistance   d) Voltage

8. How much current will flow in a 100 Hz series RLC circuit if $V_S = 20$ V, $R_T = 66$ ohms, and $X_T = 47$ ohms?
   a) 1.05 A   b) 303 Ma   c) 247 mA   d) 107 mA

9. What is the Q (Quality factor) of a series circuit that resonates at 6 kHz, has equal reactance of 4 kilo-ohms each, and a resistor value of 50 ohms?

    a) 0.001   b) 50   c) 80   d) 4.0

10. What type of waveform is shown in the given circuit?
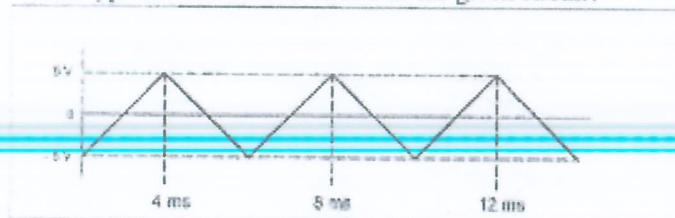
    a) Sine wave   b) Square wave   c) Triangle wave   d) Sawtooth wave

11. What theorem replaces a complex network with an equivalent circuit containing a source voltage and a series resistance?

    a) Multinetwork   b) Norton   c) Thevenin   d) Superposition

12. In a series-parallel circuit, individual component power dissipations are calculated using-

    a) Individual component parameters
    b) A percent of the voltage division ratio squared
    c) Total current squared multiplied by the resistor values
    d) A percent of the total power depending on resistor ratios

13. The current flowing through an unloaded voltage divider is called the -

    a) Resistor current   b) Load current   c) Bleeder current   d) Voltage current

14. Two 1.2 k Ω resistors are in series and this series combination is in parallel with a 3.3 k Ω resistor. The total resistance is -

    a) 138 Ω b) 1,389 Ω c) 5,700 Ω d) 880 Ω

15. Conductance is expressed in terms of -

    a) ohm / m   b) m / ohm   c) mho / m   d) mho

16. The induced voltage across a coil with 250 turns that is located in a magnetic field that is changing at a rate of 8 Wb/s is -

    a) 1,000 V   b) 2,000 V   c) 31.25 V   d) 3,125 V

17. For a given wirewound core, an increase in current through the coil -

    a) Reverses the flux lines   b) Decreases the flux density
    c) Increases the flux density   d) Causes no change in flux density

18. If the cross-sectional area of a magnetic field increases, but the flux remains the same, the flux density -

    a) Increases   b) Decreases
    c) Remains the same   d) Doubles

D

19. When the current through the coil of an electromagnet reverses, the -
    a) Direction of the magnetic field reverses
    b) Direction of the magnetic field remains unchanged
    c) Magnetic field expands
    d) Magnetic field collapses

20. A pitot tube is used to measure -
    a) Pressure
    b) Difference in pressure
    c) Velocity of flow
    d) None of these

21. Two resistances R_1 and R_2 give combined resistance of 4.5 ohms when in series and 1 ohm when in parallel. The resistances are -
    a) 3 ohms and 6 ohms
    b) 3 ohms and 9 ohms
    c) 1.5 ohms and 3 ohms
    d) 1.5 ohms and 0.5 ohms

22. Four identical resistors are first connected in parallel and then in series. The resultant resistance of the first combination to the second will be -
    a) 1 / 16 times
    b) 1 / 4 times
    c) 4 times
    d) 16 times

23. When P = Power, V = Voltage, I = Current, R = Resistance and G = Conductance, which of the following relation is incorrect?
    a) $V = \sqrt{(PR)}$
    b) $P = V^2 G$
    c) $G = P / I^2$
    d) $I = \sqrt{(P / R)}$

24. Which of the following bulbs will have the least resistance?
    a) 220 V, 60 W
    b) 220 V, 100 W
    c) 115 V, 60 W
    d) 115 V, 100 W

25. The ratio of the resistance of a 100 W, 220 V lamp to that of a 100 W, 110 V lamp will be nearly -
    a) 4
    b) 2
    c) 1 / 2
    d) 1 / 4

+×+×+×+×+×+×+×+