2024 END-OF-SEMESTER EXAMS – APPLIED ELECTRICITY 1
SUBJECT: APPLIED ELECTRICITY
CLASS: SHS ONE

SECTION A

[50 MARKS]

1. A potential difference of 6V is applied to two resistors of 3Ω and 6Ω connected in parallel. The current in the 3Ω resistor is
   A. 30A B. 2.0A C. 2.5A D 1.5A

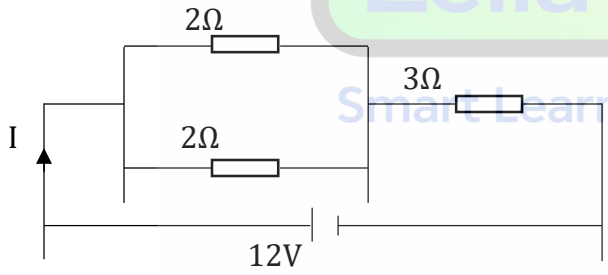
2. The resistance of 650Ω resistor of a tolerant of $\pm$ 10% ranges from
   A. 585Ω to 650Ω B. 585Ω to 715Ω C. 640Ω to 660Ω D. 650Ω to 751Ω

3. Two resistors R_1 and R_2 are connected in parallel, R_2 being greater than R_1 the combined resistance is
   A. Less than R_1 B. greater than R_3
   C. the sum of R_1 and R_2 D. greater than R_1 but less than R_2

4. A potential difference of 6V is applied to two resistors of 3Ω and 6Ω connected in parallel. The current in the 3Ω resistor is
   A. 3.0A B. 2.0A C. 2.5A D. 1.5A

5. For a given line voltage, four hating coils will produce maximum heat when connected
   A. All in parallel
   B. all in series
   C. with two parallel pairs in series
   D. one pair in parallel with the other two in series

Use the figure below to answer questions 8 to 10

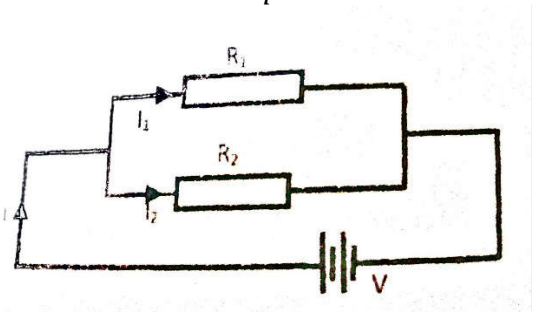


6. The effective resistance in the circuit is
   A. 7.0Ω B. 5.0Ω C. 4.0Ω D. 1.3Ω

7. The current I in the circuit is
   A. 7A B. 2,4A C. 3.0A D. 9.3A

8. The power dissipated in the 3Ω resistor is
   A. 8.67W B. 17.28W C. 27.00W D. 259.50W

Use the figure below to answer questions 11 to 13



9. The total resistance is

A. $\frac{R_1+R_2}{R_1R_2}$ B. $\frac{R_1R_2}{R_1+R_2}$ C. $\frac{R_1-R_2}{R_1+R_2}$ D. $\frac{R_1+R_2}{\frac{R_1}{R_2}}$

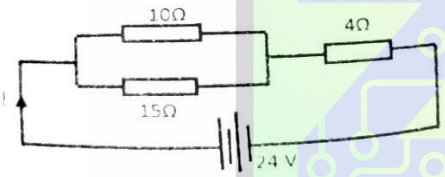
10. The current I_1 equals

A. $I\left(\frac{R_1+R_2}{R_1}\right)$ B. $I\left(\frac{R_1}{R_1+R_2}\right)$ C. $I\left(\frac{R_2}{R_1+R_2}\right)$ D. $I\left(\frac{R_1+R_2}{R_2}\right)$

11. The current I_2 equals

A. $I\left(\frac{R_1+R_2}{R_1}\right)$ B. $I\left(\frac{R_1}{R_1+R_2}\right)$ C. $I\left(\frac{R_1}{R_1+R_2}\right)$ D. $I\left(\frac{R_1+R_2}{R_2}\right)$

The figure below is an arrangement of resistors in a d.c circuit. Use it to answer questions 14 and 15



12. The total resistance in the circuit is

A. 4.17Ω B. 9.00Ω C. 10.00Ω D. 29.00Ω

13. The current through the 4Ω resistor is

A. 0.83A B. 2.40A C. 2.67A D. 5.76A

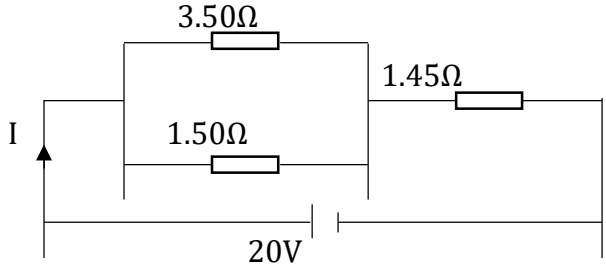
14. The value of the resistor with brown, black and orange colour band is

A. 1000KΩ B. 100KΩ C. 10KΩ 1KΩ

15. When five 5Ω resistors are connected in parallel, the effective resistance is

A. 25Ω B. 10Ω C. 5Ω D. 1Ω

Use the figure to answer questions 20 to 22



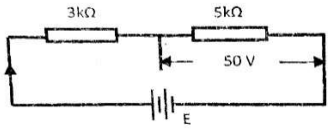
16. The equivalent resistance of the circuit is

A. 1.05Ω B. 2.40Ω C. 2.50Ω D. 6.45Ω

17. The voltage across the parallel circuit is
    A. 8.4V B. 19.2V C. 20.0V D. 51.6V

18. The total current I through the circuit is
    A. 3.10A B. 8.00A C. 8.30A D. 19.04A

Use the circuit diagram below to answer questions 24 to 26



19. The voltage across the 3kΩ resistor is
    A. 150V B. 80V C. 50V D. 30V

20. The supply voltage E is
    A. 30V B. 50V C. 80V D. 150V

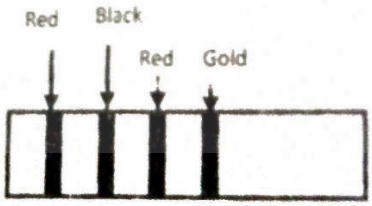
21. The total current I flowing through the circuit is
    A. 3.75mA B. 6.24mA C. 10.00 mA D. 18.75 mA

22. The current flowing through a resistor is 0.8 A when a p.d. of 20 V is applied. Determine the value of the resistance.
    A. 25 Ω B. 20 Ω C. 15 Ω D. 35 Ω

23. What two values should a resistor with colour coding brown-black-brown-silver lie?
    A. 90Ω and 110Ω B. 100Ω and 110Ω C. 110Ω and 110Ω D. 80Ω and 100Ω

24. What is the colour coding for a 47 kΩ resistor having a tolerance of ±5%?
    A. Yellow-violet-brown-gold
    B. yellow-violet-orange-gold.
    C. Yellow-green-orange-gold
    D. Brown-black-silver-gold

25. The resistance of the resistor in the figure below is



    A. 1000 Ω ± 10% B. 1020 Ω ± 5% C. 2100 Ω ± 10% D. 2000 Ω ± 5%

26. Which is indicated in the diagram
    A. Potentiometer B. rheostat C. thermister D. varistor

27. A resistor with three terminals is known as
    A. Potentiometer B. Rheostat C. Thermistor D. Wire – wound resistor

28. Determine the value and tolerance of a resistor having a colour coding of: orange-orange-silver-brown.
    A. 0.33Ω with a tolerance of ±1%
    B. 33Ω with a tolerance of ±1%
    C. 330Ω with a tolerance of ±1%
    D. 0.033Ω with a tolerance of ±1%

29. The effect of connecting an additional parallel load to an electrical supply source is to increase the
    A. resistance of the load
    B. voltage of the source
    C. current taken from the source
    D. p.d. across the load

30. If the color bands on a resistor are blue, green and yellow, its value is
    A. 56kΩ B. 560k Ω C .65kΩ D. 650kΩ

31. The total resistance of two resistors R_1 and R_2 when connected in parallel is given by:
    A. $R_1 + R_2$ B. $\frac{1}{R_1} + \frac{1}{R_2}$ C. $\frac{R_1 + R_2}{R_1 R_2}$ D. $\frac{R_1\ R_2}{R_{1+}\ R_2}$

32. Resistor R has a value of 5.6kΩ when colors 1, 2, and 3 are respectively
    A. Red, Green and Black
    B. Green, Blue and Red
    C. Brown, Red and Orange
    D. Blue, Green and Red

33. If the voltage across a resistor is 12 volts and the current through it is 3 amperes, what is the resistance?
    A. 4 ohms B. 9 ohms C. 15 ohms D. 36 ohms

34. Which of the following materials has the highest resistance?
    A. Silver B. Copper C. Gold D. Nichrome

35. If a resistor has a value of 100 ohms and a current of 0.5 amperes flowing through it, what is the voltage across the resistor?
    A. 20 volts B. 50 volts C. 100 volts D. 200 volts

36. In a series circuit, the total resistance is:
    A. Equal to the sum of the individual resistances
    B. Always less than the individual resistances
    C. Equal to the reciprocal of the sum of the individual resistances
    D. Dependent on the battery voltage

37. Which material is commonly used as a variable resistor in electronic circuits?
    A. Carbon B. Copper C. Aluminum D. Silver

38. What is the equivalent resistance of two 10-ohm resistors connected in parallel?
    A. 5 ohms B. 10 ohms C. 20 ohms D. 100 ohms

39. The current at which a fuse melts is known as
    A. Current rating B. Fusing factor C. Rating factor D. Fusing current

40. The resistivity of a conducting material is measured in
    A. Ohm B. Siemens C. Ohm-meter D. Siemens/meter

END OF PAPER 1