SWAMI VIVEKANANDA MATRIC HR SEC SCHOOL – ARUMBAVUR

STD: XII **MARKS: 50**

SUB: PHYSICS **TIME : 1.30 HRS**

UNIT TEST - 2

PART – A

CHOOSE THE BEST ANSWER . **10 X 1 = 10**

1. A toaster operating at 240 V has a resistance of 120 ohm. Its power is -----?
   a) 400 W (b) 2 W (c) 480 W (d) 240 W
2. Internal resistance of a 2.1V cell which gives a current of 0.2 A through a resistance of 10 Ohm is -----? (a) 0.2 ohm (b) 0.5 ohm (c) 0.8 ohm (d) 1.0 ohm
3. The temperature coefficient of resistance of a wire is 0.00125 per ^{0} C. At 20^{0}C its resistance is 1 ohm. The resistance of the wire will be 2 ohm at --------?
   (a) 800^{0}C (b) 700^{0}C (c) 850^{0}C (d) 820^{0}C
4. In joule's heating law when R and t are constant if the H is taken along the y axix and I^2 along the x- axis the graph is --------?
   (a) Straight line (b) parabola (c) circle (d) ellipse
5. The SI unit of mobility is ----?
   (a) $m^2V^{-1}s^{-1}$ (b) m^2Vs^{-2} (c) $m^2V^{-2}s^2$ (d) $m^2V^{-1}s^2$
6. A carbon resistor of (47 4.7) kilo ohm to be marked with rings of different colours for its identification.The colour code sequence will be -----?
   (a) Yellow – Green – Blue – Gold (b) Yellow – Blue – orange – Silver
   (c) Blue- Yellow – Orange - Silver (d) Green – Orange – Blue – Gold
7. The typical drift velocity of electrons in the wire -------?
   (a) 10^{-6} s (b) 10^{-4} s (c) 10^{-2} s (d) 10^2 s
8. Determine the number of electrons flowing per second through a conductor when a current of 30 A flows through it -------- electrons?
   (a) 2×10^{20} (b) 2×10^{19} (c) 18.75×10^{20} (d) 18.75×10^{-20}
9. Internal resistance of the Ideal battery is -----?
   (a) zero (b) 1 (c) constant (d) greater than 1
10. What is the reason for resistivity increases in conductor---?
    (a) more frequently collisions (b) average kinetic energy increases
    (c) directly proportional to the temperature (d) all the above

PART - B

ANSWER ANY 5 QUESTIONS ONLY. Q.NO 16 IS COMPULSORY. **5 X2 = 10**

11. Define Coefficient of resistivity?
12. Write the principle of potentiometer?
13. Write the application of seebeck effect?
14. Why current is a scalar?
15. The electric field of magnitude 570 NC^{-1} is applied in copper wire find the acceleration experienced by the electron?

16. In a meter bridge experiment with a standard resistance of 15 ohm in the right gap the ratio of balancing length 3:2. Find the value of the other resistance?

PART – C

ANSWER ANY 5 QUESTIONS ONLY. Q.NO 20 IS COMPULSORY. **5 X3= 15**

17. Explain about types of thermoelectric effect?

18. Explain about Krichhoff's law?

19. Explain about colour code resistors?

20. (a) Find the heat energy produced in a resistance of 10 ohm when 5 A current flows through it for 5 minutes? (b) Compute the current in the wure if a charged of 120 C is flowing through a copper wire in 1 minute?

21. Derive an expression for drift velocity and mobility?

22. Obtain the condition for bridge balance in wheatstone bridge

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PART - D

ANSWER THE ALL QUESTIONS. **3 X 5 =15**

23. Explain the method of measurement of internal resistance of a cell using by potentiometer? (OR) Explain the determination of unknown resistance using meterbridge?

24. Describe the microscopic model of current and obtain general form of ohm's law? (OR) Explain the equivalent resistance of series and parallel resistor network.

25. Explain the determination of the internal resistance of a cell using voltmeter? (OR) Write a note on electric cells in series and parallel.

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PART – A

CHOOSE THE BEST ANSWER: **10 X 1 = 10**

1. The dimensional formula of mobility is ------?

a) $M^{-1}L^{0}T^{2}I^{1}$ b) $M^{-1}L^{0}T^{2}$ c) $M^{-1}L^{0}T^{-1}I^{1}$ d) $M^{-1}L^{2}T^{2}$

2. Internal resistance of a 2.1V cell which gives a current of 0.2 A through a resistance of 10 Ohm is -----? (a) 0.2 ohm (b) 0.5 ohm (c) 0.8 ohm (d) 1.0 ohm

3. The temperature coefficient of resistance of a wire is 0.00125 per ^{0} C. At 20^{0}C its resistance is 1 ohm. The resistance of the wire will be 2 ohm at --------?

(a) 800^{0}C (b) 700^{0}C (c) 850^{0}C (d) 820^{0}C

4. In joule's heating law when R and t are constant if the H is taken along the y axix and I^2 along the x- axis the graph is --------?

(a) Straight line (b) parabola (c) circle (d) ellipse

5. Internal resistance of a ideal battery is -----?

a) Zero b) 1 c) constant d) greater than 1

6. What is the reason for coefficient of resistivity in conductor?

a) more frequently collision b) average K.E increases

c) directly proportional to the temperature d) All the above

7. A carbon resistor of (47 4.7) kilo ohm to be marked with rings of different colours for its identification.The colour code sequence will be -----?

(a) Yellow – Green – Blue – Gold (b) Yellow – Blue – orange – Silver

(c) Blue- Yellow – Orange - Silver (d) Green – Orange – Blue – Gold

8. The typical drift velocity of electrons in the wire -------?

(a) 10^{-6} s (b) 10^{-4} s (c) 10^{-2} s (d) 10^{2} s

9. Determine the number of electrons flowing per second through a conductor when a current of 30 A flows through it -------- electrons?

(a) 2×10^{20} (b) 2×10^{19} (c) 18.75×10^{20} (d) 18.75×10^{-20}

10. The electric curret is increases four times then electric power is ------?

a) 4 times increases b) 16 times increases

c) 4 times decreases d) 16 times decreases

PART - B

ANSWER ANY 5 QUESTIONS.Q.NO 16 IS COMPULSORY. **5 X 2 =10**

11. Define Joule's law?
12. Write the principle of potentiometer?
13. Define Thomson effect?
14. Define current density? mention its unit?
15. Define resistivity?
16. Resistance of a material at 20^0C and 40 ^{0} C are 45 Ω and 85 Ω respectively. Find its temperature coefficient of Resistivity?
17. Find the heat energy produced in a resistance of 10 Ω when 5 A current flows through it for 5 minutes?

PART - C

ANSWER ANY 5 QUESTIONS.Q.NO 24 IS COMPULSORY. **5 X 3 =15**

18. Write a short note on colour code resistor?
19. Derive an expression for drift velocity and mobility?
20. State and explain krichhoff's rules?
21. Write a short note on temperature coefficient of resistivity in conductors?
22. What are ohmic and non- ohmic materials?
23. Write a short note on superconductors?
24. A cell supplies a current 0.9 A through a 2 Ω resistor and a current of 0.3 Athrough a 7 Ω resistor. Calculate the internal resistance of a cell?

PART - D

ANSWER THE ALL QUESTIONS. **3 X 5 =15**

25. Explain the equivalent resistance of a series and parallel network? (OR) Explain the determination of unknown resistance using meter bridge?
26. Explain the determination of the internal resistance of a cell using voltmeter? (OR) How the emf of two cells are compared using potentiometer?
27. Obtain the bridge balance condition in Wheatstone bridge. (OR) Describe the microscope model of current and obtain general form of Ohm's law?

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PREPARED BY,

E. DEVADINESH Msc, B.Ed ,CLP.
PG TEACHER IN PHYSICS,
SWAMI VIVEKANANDA MATRIC HR.SEC.SCHOOL,
ARUMBAVUR.
WHATSAPP: 6383787585, 9524220942
E MAIL: devadineshphy93@gmail.com