

## FOCUS TUITION CENTRE

## DECEMBER MONTHLY TEST --2020

SUBJECT: PHYSICS  
STD: 12 (MATRIC)

TIME: 1.30 Hrs  
MARKS: 50 MARKS

---

SECTION -- A

CHOOSE THE BEST ANSWER.

10 X 1 = 10

1. Two identical conducting balls having positive charges  $q_1$  and  $q_2$  are separated by a center distance  $r$ . If they are made to touch each other and then separated to the same distance, the force between them will be -----?

- a) Less than before    b) Same as before    c) More than before    d) Zero

2. Which charge configuration produces a uniform electric field?

- a) Point charge    b) Infinite uniform line charge    c) Uniformly charged infinite plane  
d) Uniformly charged spherical shell

3. If voltage applied on a capacitor is increased from  $V$  to  $2V$  choose the correct conclusion.

- a)  $Q$  remains the same  $C$  is doubled    b)  $Q$  is doubled  $C$  doubled  
c)  $C$  is remains same  $Q$  doubled    d) Both  $Q$  and  $C$  remains same

4. A toaster operating at  $240V$  has a resistance of  $120\Omega$ . The power is -----?

- a)  $400W$     b)  $480W$     c)  $2W$     d)  $240W$

5. A piece of copper and another germanium are cooled from room temperature to  $80K$ . The resistance of -----

- a) Both of them Increases    b) Both of them Decreases  
c) Copper increases and germanium decreases  
d) Germanium increases and copper decrease

6. In joule's heating law when  $I$  and  $t$  are constant if the  $H$  is taken along the  $Y$  axis and  $I^2$  along the  $x$  axis the graph is -----

- a) Straight line    b) Parabola    c) Circle    d) Ellipse

7. The magnetic susceptibility of Aluminium is

- a)  $2.3 \times 10^{-5}$     b)  $6.8 \times 10^{-5}$     c)  $2.6 \times 10^{-5}$     d)  $-2.3 \times 10^{-5}$

8. The unit of magnetic flux is -----

- a) Coulomb    b) Newton    c) Tesla    d) Ampere

Kindly Send Me Your Key Answers to Our email id - padasalai.net@gmail.com

9. The vertical component of Earth's magnetic field at a place is equal to the component. What is the value of angle of dip at this place?

- a)  $40^\circ$       b)  $30^\circ$       c)  $60^\circ$       d)  $90^\circ$

10. The SI unit of electric field is ----

- a) Newton per coulomb      b) Newton      c) Coulomb      d) Coulomb per meter

**SECTION -- B**

ANSWER ANY FIVE QUESTIONS. Q.NO. 17 IS COMPULSORY.

**5 X 2 = 10**

11. The electric field lines never intersect. Justify.

12. Define Electric field?

13. Define current density?

14. Define mobility?

15. Define Magnetic flux?

16. What is magnetic susceptibility?

17. Calculate the number of electrons in one coulomb of negative charge?

**SECTION -- C**

ANSWER ANY FIVE QUESTIONS. Q.NO. 24 IS COMPULSORY

**5 X 3 = 15**

18. Write a short note on superposition principle?

19. Write the important aspects of coulomb's law? (any 4 points)

20. State the application of Seebeck effect?

21. State Kirchhoff's rules?

22. Compare dia, para, and ferro magnetism?

23. State joule's law of heating?

24. Calculate the magnetic field at the center of a square loop which carries a current of 1.5 A, length of each loop is 50 cm.

**SECTION -- D**

ANSWER ALL THE QUESTIONS.

**3 X 5 = 15**

25. Derive an expression for electrostatic potential at a point due to an electric dipole? (or)

Obtain the condition for bridge balance in wheatstone's bridge?

26. Discuss the Application of joule's law of heating? (or)

Discuss the Definition and explanation of Biot – savart law and special cases?

27. Derive an expression for torque on a current loop placed in a magnetic field? (or)

Explain the process of electrostatic induction?

## FOCUS TUITION CENTRE

## DECEMBER MONTHLY TEST -2020

SUBJECT: PHYSICS  
STD: 12 (CBSE)

TIME: 1.30 Hrs  
MARKS: 50 MARKS

---

SECTION -- A

ANSWER THE ALL QUESTIONS.

12 X 1 = 12

1. Write the SI unit of electric field and electric dipole moment?
2. Define electric flux?
3. Define current density?
4. Define the mobility and mention the unit?
5. Write the value of permittivity of free space?
6. What is frequency?
7. Write the dimensional formula of magnetic moment and magnetization?
8. An electron in an atom revolves around the nucleus in an orbit of radius 'r' with frequency  $\bar{\nu}$ .  
Write the expression for the magnetic moment of the electron?
9. Define ohm's law?
10. Where on the surface of earth is vertical component of Earth's magnetic field is zero?
11. What are permanent magnets? Give one example?
12. Two wires of equal length one of copper and the other of manganin have the same resistance.  
Which wire is thicker?

SECTION – B

ANSWER ANY FIVE QUESTIONS.

5 X 2 = 10

13. An Orbital surface encloses a dipole what is the electric flux through this surface?
14. Why can one ignore quantization of electric charge when dealing with macroscopic?
15. Why are electric field lines perpendicular at a point on an equipotential surface of a conductor?
16. Difference between emf and terminal voltage?
17. State Kirchhoff's rules?
18. How is an electromagnet different from a permanent magnet?
19. Define ampere's circuital law of integral form?

Kindly Send Me Your Key Answers to Our email id - padasalai.net@gmail.com

**SECTION – C**

ANSWER ANY FOUR QUESTIONS.

4 X 3 = 12

20. Explain why two field lines never cross each other at any point?
21. Explain the meaning of the statement “ electric charge of a body is quantized”?
22. Obtain the expression for the energy stored per unit volume in a charged parallel plate capacitor?
23. Derive an expression for drift velocity of free electron?
24. State the principle and working of a galvanometer?
25. Difference between paramagnetic and diamagnetic substance?

**SECTION – D**

ANSWER ANY FOUR QUESTIONS.

4 X 4 = 16

26. (a) Draw a labeled diagram of a moving coil galvanometer. Describe briefly its principle and working?  
(b) How is the generalized form of ampere circuital law obtained to include the term due to displacement current?
27. Draw and explain the working of meter bridge?
28. (a) Define the SI unit of capacitance? (b) Obtain expression for the capacitance of a parallel plate capacitor?
28. Define electric dipole moment? It is a scalar (or) a vector? Derive an expression for the electric field of a dipole at a point on the equatorial plane of the dipole?
29. Definition and explanation of Biot – savart law?

**PREPARED BY**

E.DEVADINESH MSC, BED, CLP.

PGT IN PHYSICS

GREEN PARK MATRIC HR.SCHOOL

SIRUVACHUR

CELL : 9524220942

MAIL ID: [devadineshphy93@gmail.com](mailto:devadineshphy93@gmail.com)

[www.Padasalai.Net](http://www.Padasalai.Net)