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| Bon Secours College for Women Nationally Accredited with “A” Grade by NAAC (Affiliated to Bharathidasan University, Trichy-24) Recognized by UGC Under Section 2(f) & 12 (B)    Vilar Bypass, Thanjavur-613 006. |

**DEPARTMENT OF PHYSICS**

**ELECTRICITY MAGNETISM AND ELECTRO MAGNETISM**

**UNIT – I**

**2 MARKS**

1. Define relative permittivity
2. Define electric intensity at a point.
3. What is called universal voltmeter?
4. State and Coulomb’s law
5. A condenser of capacity 8µF is charged to a potential of 1000V. calculate the energy stored in the condenser.
6. Define electrical image.
7. Deduce on expression for energy of charged conductor.
8. Mention any two uses of Quadrant electrometer.
9. State Gauss law for dielectrics.
10. Define electric field.
11. Give an expression for the capacity of a cylindrical capacitor.
12. What is meant by capacity of capacitor?
13. Define electric field intensity and give its unit.
14. Define spherically symmetric charge distribution.
15. Write and explain the expression for the energy stored in a capacitor.
16. Mention the uses of Capacitors.
17. Define superposition principle.
18. Deduce on expression for loss of energy on sharing of charges between two capacitors.
19. Mention any examples of cylindrical capacitors.
20. Define flux

**5 MARKS**

1. State and explain Gauss theorem.
2. Derive an expression for the energy stored in a capacitor.
3. State and explain coulomb’s inverse square law.
4. Write a note on principle of capacitor.
5. Obtain an expression for the capacity of a cylindrical capacitor.
6. Explain Gauss law and its applications.
7. Derive an expression for the capacity of spherical capacitor.
8. Derive an expression for the parallel plate capacitor.
9. Write a note on energy stored in a charged capacitor.
10. Write a note on loss of energy on sharing of charges between two capacitors.
11. Discuss the applications of Guass law.

**10 MARKS**

1. Explain Gauss theorem and its applications.
2. Explain coulomb’s inverse square law.
3. Obtain an expression for the capacity of a cylindrical capacitor.
4. Derive an expression for the capacity of spherical capacitor.
5. Briefly explain principle of capacitor and capacitance of capacitor.

**UNIT – II**

**2 MARKS**

1. Define amperes law.
2. What do you mean by solenoid?
3. Define potentiometer.
4. Give ampere’s circuital law.
5. Define charge sensitiveness of a B.G.
6. Define rententivity.
7. Define Coercive force
8. Define magnetic flux
9. State Kirchhoff’s law.
10. Define dielectrics.
11. Define carey foster bridge
12. Define temperature coefficient of resistance
13. What is the principle of potentiometer?
14. Define Fleming’s left hand rule.
15. Define conductor.
16. Define magnetic flux density.
17. Define Lorentz force
18. what is the permeability of free space
19. Define magnetic induction.
20. Define ampere.

**5 MARKS**

1. State and prove Ampere’s circuital law.
2. Derive the condition for Wheat stone’s bridge.
3. Write a note on damping correction
4. How will you calibrate low range voltmeter using a potentiometer?
5. Obtain an expression for the magnetic field at the centre of the current carrying circular coil.
6. Obtain an expression for the magnetic induction at a point due to a straight conductor carrying current.
7. Explain Kirchhoff’s law.
8. Explain carey foster bridge.
9. How will you calibrate high range voltmeter using a potentiometer?
10. Explain potentiometer.
11. How will you calibrate low range ammeter using a potentiometer?
12. Obtain an expression for the magnetic induction at a point on the axis of a solenoid.
13. Discuss about force on a current carrying conductor in a magnetic field.
14. Obtain an expression for temperature coefficient of resistance.

**10 MARKS**

1. Obtain an expression for the magnetic field at the centre of the current carrying circular coil.
2. Obtain an expression for the magnetic induction at a point due to a straight conductor carrying current.
3. Obtain an expression for the magnetic induction at a point on the axis of a solenoid.
4. State and prove Ampere’s circuital law and its applications.
5. How will you calibrate high range voltmeter using a potentiometer?
6. Explain the Wheat stone’s bridge.
7. Briefly explain the carey foster bridge.

**UNIT – III**

**2 MARKS**

1. Define self inductance.
2. Define mutual inductance
3. How will you avoid sparking in the decay of current in a circuit containing L and R.
4. What is meant by 1 Henry?
5. Define coefficient of coupling.
6. What is the time constant of a CR circuit.
7. Define induced electro motive force.
8. Define back electro motive force.
9. Define coefficient of self induction.
10. Define coefficient of mutual induction.
11. What do you mean by solenoid?
12. Define self induction.
13. Define mutual induction.
14. Define transient current**.**
15. Give the expression for growth of current containing L and R
16. Give the expression for decay of current containing L and R
17. Give the expression for growth of current containing C and R
18. Give the expression for decay of current containing C and R
19. What is the time constant of a LR circuit.
20. Define time constant.
21. Define dead beat.
22. What is called critically damped.

**5 MARKS**

1. Define mutual inductance. Derive the coefficient of coupling of pair of coils.
2. Explain the growth of current in a circuit containing R and C.
3. Derive the expression for the self inductance of a solenoid.
4. Explain the decay of current in a circuit containing L and R
5. Explain the growth of current in a circuit containing L and R
6. Explain the decay of current in a circuit containing R and C.
7. State and explain the laws of electromagnetic induction.
8. Explain how the self inductance can be measured using Rayleigh’s method.
9. Explain the self inductance of a long solenoid.

**10 MARKS**

1. Explain the growth and decay of current in a circuit containing L and R
2. Explain the growth and decay of current in a circuit containing C and R
3. Briefly explain the growth of charge in a circuit with Inductance, Capacitance and Resistance.
4. Briefly explain the decay of charge in a circuit with Inductance, Capacitance and Resistance.
5. Explain how the self inductance can be measured using Rayleigh’s method.
6. Explain the mutual inductance

**UNIT – IV**

**2 MARKS**

1. Define power factor.
2. Define wattles current.
3. Define Q – factor.
4. What is meant by coefficient of coupling ?
5. What is resonance?
6. What do you mean by impedance?
7. What is an alternating current?
8. What is meant by the resonant frequency in LCR parallel circuit?
9. What is meant by capacitive reactance?
10. Why a series resonant circuit is called as an acceptor circuit?
11. What is meant by resonant frequency?
12. Define voltage magnification.
13. Define quality factor.
14. What is meant by apparent power?
15. Define idle current.
16. What is meant by acceptor circuit?
17. What is meant by rejector circuit?

**5 MARKS**

1. Explain in detail about the AC circuit containing L and R.
2. Write a note on wattles current.
3. What is sharpness of resonance? Explain.
4. Write a note on power factor.
5. A capacitor gives a reactance of 1000 ohms in an AC circuit of frequency 50 hertz. Calculate the capacity of the capacitor.
6. Prove that Irms=IP\(2)1\2 in an AC circuit.
7. Distinguish between LCR series and LCR parallel resonant circuit.
8. Explain parallel resonant circuit containing LCR.
9. Explain series resonant circuit containing LCR.
10. Explain power in ac circuit containing LCR.
11. Write a note an alternating EMF.

**10 MARKS**

1. Briefly explain the power in ac circuit containing resistance, inductance and capacitance.
2. Derive the expression for the parallel resonance circuit.
3. Explain in detail about the series resonance circuit containing LCR.
4. Write a note an (i) sharpness of resonance(ii) power factor.
5. Compare the series and parallel resonant circuit.

**UNIT – V**

**2 MARKS**

1. Define magnetization.
2. Define magnetic induction.
3. Define intensity of magnetization.
4. Define magnetizing field.
5. Define magnetic permeability.
6. What is meant by relative permeability?
7. What is meant by Diamagnetism
8. What is meant by Para magnetism?
9. What is meant by Ferro magnetism?
10. Mention some examples of Diamagnetic materials.
11. Mention some examples of Paramagnetic materials.
12. Mention some examples of Ferromagnetic materials.
13. Define Hysteris.
14. Define Curie temperature.

**5 MARKS**

1. Write a note of B-H curve.
2. Explain cycle of magnetization.
3. Discuss about properties of Diamagnetic materials.
4. Discuss about properties of Paramagnetic materials.
5. Discuss about properties of Ferromagnetic materials.
6. Write a note on Hysteris.

**10 MARKS**

1. Briefly explain the Diamagnetic materials and give examples.
2. Briefly explain the Paramagnetic materials and give examples.
3. Briefly explain the Ferromagnetic materials and give examples.