Internal Assessment Examination'2021
Semester-II Honours Paper : CC3 Time: 30 minutes

Full Marks : 20
Answer any *ten* of the following questions $10 \times 2 = 20$

1. What is Gausss law in electrostatics?
2. What is electrostatic potential?
3. What is Gausss law in presence of dielectric?
4. What is dipole moment and polarization?
5. What is potential at $\vec{r}$ due to a single dipole of dipole moment $\vec{p}$ at $\vec{r}$
6. Find the electric field a distance z above the center of a circular loop of radius r, which carries a uniform line charge λ.
7. What is Faradays law of electromagnetic induction?
8. What is hysteresis of a ferromagnetic substance? Demonstrate by B-H curve.
9. What is self inductance and its unit?
10. What is wattless component of current? Derive from power equation in AC.
11. Define and explain the terms reactance and impedance of an AC circuit.
12. What do you mean by resonance in a series L-C-R circuit?
13. What is a parallel resonance circuit? Why it is called a rejector circuit?
14. State Laplaces Equation.
15. State Poisson Equation.
16. What is Biot Savarts Law?
17. What is Amperes Circuital Law?
18. What is Lorentz force?

Internal Assessment Examination'2021
Semester-II Honours Paper : CC4 Time: 30 minutes

Full Marks : 20
Answer any *ten* of the following questions $10 \times 2 = 20$

1. Write down the definition of simple harmonic motion (SHM).
2. A simple harmonic oscillator has an amplitude 8 cm. Its velocity at zero displacement is 2 m/s. Find the frequency of the oscillation.
3. Write down the equation of motion of a damped harmonic oscillator subjected to a damping force proportional to its velocity.
4. In the context of damped harmonic oscillation, what is characteristic time/time constant?
5. What is beats?
6. State group velocity of wave.
7. State Huygens principle in physical optics.
8. State Youngs law for a plucked string in accoustics.
9. Write down the differential equation a wave.
10. What type of wave front does a point source produce ? And what is the shape of this wave front at a very large distance.
11. Two waves having a constant phase difference ϕ and intensities I1 and I2 are made to interfereare. Write down the expressions of the resultant intensity,maximum intensity and minimum intensity. 1+0.5+0.5
12. Mention with reason, the effect of keeping a transparent plate in the pathway of one wave in Michelson interferometer. 1+1
13. A Fresnel biprism is placed in front of a light source, with its plane surface facing the source. Draw the ray diagram showing interference of the virtual sources.
14. What are Haidinger fringes and Fizeau fringes ? 1+1
15. Briefly explain the principle of measurement of an unknown wavelength using Michelson interferometer.