Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 30147

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Third Semester

Electrical and Electronics Engineering

EE 3301 – ELECTROMAGNETIC FIELDS

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

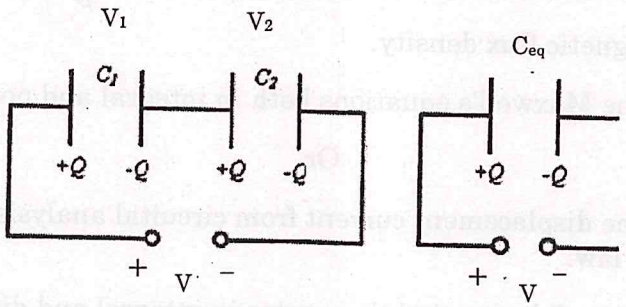
PART A — (10 × 2 = 20 marks)

1. State Divergence Theorem.

2. State Coulombs law.

3. Define potential difference with equation.

4. Formulate the total equivalent capacitance of two capacitor connected in series.



5. List the difference between Scalar and Vector Magnetic Potential.

6. State Ampere's circuital law.

7. Write the faraday's law equation for a moving charge in a constant magnetic field.

8. Write down the expression for electromotive force induced in the moving loop in static field B.

PART C — (1 × 15 = 15 marks)

16. (a) In a material, for which $\sigma = 5.0\frac{s}{m}$ and $\varepsilon_r = 1$ and $\vec{E} = 250 \sin 10^{10} t (V/m)$.

Find the conduction and displacement current densities, and the frequency at which both have equal magnitudes. (5+5+5)

Or

(b) If $V = \left[2x^2y + 20z - \frac{4}{x^2 + y^2}\right]$ volts.

Evaluate $\vec{E}$ and $\vec{D}$ at point P (6,-2.5,3) (8+7)