

Time Varying Fields and Maxwell's Equations - Practice Questions

Multiple Choice Questions:

1. Maxwell added which term to Ampere's law? (a) Flux (b) Displacement current (c) Electric force (d) Voltage - Answer: (b)
2. Unit of displacement current is: (a) Volt (b) Ampere (c) Tesla (d) Ohm - Answer: (b)
3. Faraday's law relates changing magnetic field to: (a) current (b) resistance (c) induced emf (d) charge - Answer: (c)
4. Gauss's law deals with: (a) magnetism (b) electric flux (c) current (d) energy - Answer: (b)
5. Maxwell's equations unify: (a) electricity and gravity (b) electricity and magnetism (c) optics and heat (d) mechanics and waves - Answer: (b)
6. Changing electric field produces: (a) resistance (b) magnetic field (c) heat (d) voltage only - Answer: (b)
7. Divergence of magnetic field is always: (a) zero (b) infinite (c) constant (d) negative - Answer: (a)
8. Curl of electric field is related to: (a) current (b) changing magnetic field (c) voltage (d) energy - Answer: (b)
9. Unit of electric flux is: (a) N/C (b) Nm^2/C (c) Volt (d) Ampere - Answer: (b)
10. Maxwell's equations predict existence of: (a) particles (b) waves (c) charges (d) conductors - Answer: (b)

Fill in the Blanks:

1. Maxwell introduced _____ current to modify Ampere's law. Answer: displacement
2. Changing magnetic field produces _____ field. Answer: electric
3. Changing electric field produces _____ field. Answer: magnetic
4. Gauss's law relates electric flux to enclosed _____. Answer: charge
5. Divergence of magnetic field is _____. Answer: zero
6. Faraday's law is based on electromagnetic _____. Answer: induction
7. Maxwell's equations consist of _____ equations. Answer: four
8. Curl of electric field equals negative rate of change of _____ field. Answer: magnetic
9. Unit of electric flux is _____. Answer: Nm^2/C
10. Electromagnetic waves travel with speed of _____. Answer: light