

S.No. 2793

P 16 EL 22

(For candidates admitted from 2016 – 2017 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Electronics

ELECTROMAGNETIC THEORY

Time : Three hours

Maximum : 75 marks

PART A — ($10 \times 2 = 20$)

Answer ALL questions

1. What is mutual inductance and its SI unit?
2. Define current density.
3. What do you mean by displacement current.
4. Write the Maxwell's equation in integral form from ampere's law.
5. What is a waveguide and what are its types?
6. Why there is no TEM mode in rectangular waveguide.
7. Which antenna uses folded dipole? Mention its application.

8. Mention the disadvantages of Lens antenna.
9. What is the primary purpose of helix TWT?
10. Which device is known as TED? Give its applications.

PART B — ($5 \times 5 = 25$)

Answer ALL Questions, choosing either (a) or (b)

11. (a) Briefly explain about the nature of dielectric materials.

Or

- (b) State Poisson's and Laplace equation.

12. (a) What is ampere's circuital law? Explain.

Or

- (b) Explain the faradays first and second law.

13. (a) Explain about TM and TE waves.

Or

- (b) Explain the wave propagation in free space.

14. (a) Explain (i) Transmission line
(ii) Characteristic impedance.

Or

- (b) Explain the working of biconical antenna with its application.

15. (a) Explain the working of PIN diode.

Or

- (b) Explain the construction and working of TWT.

PART C — ($3 \times 10 = 30$)

Answer any THREE Questions

16. Give a detailed note on nature of magnetic materials with all its types.

17. Derive the Maxwell's equation in point form and integral form.

18. Explain the wave propagation of TE waves in rectangular waveguides.

19. With neat schematic explain the (a) helical antenna (b) Horn antenna.

20. Explain the multicavity reflex klystron with its diagram.