

First Year B.Sc (MRT) Degree Regular/Supplementary Examinations
March 2025
General Physics and Electronics

Time: 3 Hours**Total Marks: 100**

- *Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space*
- *Answer all parts of a single question together • Leave sufficient space between answers*
- *Draw table/diagrams/flow charts wherever necessary*

Essays**(2x20=40)**

1. Explain the working of series LCR circuit in an AC supply. Explain resonance and derive expressions for resonance frequency and Q factor. How does it differ from parallel LCR circuit.
2. Explain how does a transistor work as an amplifier in common emitter configuration. What is feedback. Explain the significance of negative feedback for a practical amplifier.

Short notes:**(8x5=40)**

3. Fundamental forces of nature and their relative strength.
4. Principle of superposition of light and (derive) the condition for brightness.
5. Dia magnetism and properties of dia-magnetic materials with examples.
6. Construction of high strength magnets using super conductors.
7. Different types of transformers.
8. Doppler effect and its applications.
9. Conversion of Galvanometer into ammeter and its total resistance.
10. Working of a stable multivibrator.

Answer briefly:**(10x2=20)**

11. What are the advantages of OPAMP.
12. Write the expression for the frequency of phase shift oscillator and explain the terms.
13. Explain the working of Zener diode.
14. What is piezoelectric effect.
15. What are Eddy currents.
16. 1What is the coercivity of a ferromagnetic material.
17. Write any two properties of LASERs.
18. What is a half wave plate.
19. What are nuclear radiations.
20. Briefly explain quantum theory of radiations.
