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Reg. No.................................

Name....................................

M.Sc. (BIOMEDICAL INSTRUMENTATION) DEGREE EXAMINATION AUGUST 2025

Second Semester

BMI 204—BIOPHOTONICS AND NON-RADIATING MEDICAL IMAGING TECHNIQUES.

(2024 Admissions—Regular/2021—2023 Admissions—Supplementary/2020 Admissions—First Mercy Chance/2019 Admissions—Second Mercy Chance/2018 Admissions—Final Mercy Chance)

Time : Three Hours   Maximum Marks : 100

Part A

Answer any **five** *questions.*
Each question carries 10 *marks.*

1. Describe semiconductor diode laser and what are its advantages.

2. Explain how Laser is used in medicine.

3. Explain the properties and characteristics of holographic media.

4. Explain the modes of transmission of ultrasound.

5. Explain the applications of Ultrasonics in pregnant and non-pregnant uterus.

6. Explain with a block diagram the working of a MRI instrumentation.

(5 × 10 = 50)

Part B

Answer any **ten** *questions.*
Each question carries 5 *marks.*

1. What is population inversion ? How is it achieved ?

2. What are the characteristics of semiconductor lasers.

3. Write a note on personal safety in Laser applications.

Turn over

4. Explain with figures how holograms are recorded.
5. What is holographic interferometry ?
6. Write a note on holographic computer.
7. Explain how ultrasonics interact with body matter.
8. Differentiate between linear and vector scanning.
9. Write a note on the modes of ultrasonic displays.
10. Explain the working and advantages of 2D-scanners.
11. Explain how images are formed in MRI system.
12. Write a note on applications of MRI systems.

$(10 \times 5 = 50)$