

**Model Question Paper**  
**(Model III)**

**MAHATMA GANDHI UNIVERSITY**

**IV SEMESTER B.Sc. PROGRAMME EXAMINATION ...20**

**B. Sc. PHYSICS -INSTRUMENTATION (Model III)**

**PH4B62U- OPTICAL AND BIOMEDICAL INSTRUMENTATION**

**Instructions:**

1. Time allotted for the examination is 3 Hours.
2. Answer **all** questions in Part A. This contains 4 bunches of 4 objective type questions. For each bunch, Grade A will be awarded if all the 4 questions are correct, B for 3, C for 2, D for 1 and E for 0.  
Answer any 5 questions from Part B, any 4 from Part C and any 2 from Part D.
3. Candidates can use .....(type of calculator/tables)

**Part A ( Objective type- weight 1 each)**

**Bunch 1**

.Choose the correct answer

- 1----- is used for electrical activity of heart.(ECG\EEG)
  - 2.----- refers to the recording of brains spontaneous activity over a short period of time.(EEG,EMG)
  - 3-----device is used for dividing beam into two or more separate beam(cube corner prism,beam splitter cubes)
  - .4-----is represented as  $u_1$ (Core,Cladding)
- 

**Bunch 2**

Fill in the blanks

- 5.----- is used for electrical activity of muscles.
  - 6.----- represents to ventricular polarization.
  - 7.The Magnification value of plane mirror is -----
  - 8.The meaning of holography is -----
-

**Bunch 3**

State true or false.

- 9. Metal plate electrode is used to measure ECG.
  - 10. Absorption spectrometry is a type of Mossbauer spectrometer.
  - 11. Magnification of attitude is one among the characteristic of optical system(T/F)
  - 12. The bending of light called reflection(T/F)
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**Bunch 4**

. Match the following.(write down each matches)

- |                 |                        |
|-----------------|------------------------|
| 13. Ultrasonic  | a. double vision prism |
| 14. Transducer  | b. blood flow meter    |
| 15. Endoscopy   | c. fibre               |
| 16. Amici prism | d. direct vision prism |
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**Part B ( Short answer questions- weight 1 each )**

- 17. What is floating electrode?
- 18. What is Hemodynamics?
- 19. Explain how electro magnetic blood flow meter works with
- 20. Expand EEG.
- 21. What are ophthalmic lenses.
- 22. What do you mean by endoscopy
- 23. Give two examples of lasers.
- 24. What are the types of fiber optic sensors

**(Part C ( Short Essays / Problems- weight 2 each )**

25. Write short note on sd curve.
26. Explain metal plate electrode and disposable electrode.
27. How does ultrasound technique work with?
- 28.Explain Beam splitter cubes.
- 29.Explain the characteristics of optical materials
- 30.What is the principle of laser

**Part D ( Essay type questions –weight 4 each)**

31. Explain in detail with principle working of ECG?
32. Expand LASER and Explain the construction of laser
33. Write short notes on
  - a. Autocollimators
  - b. Profile projectors

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