

# Question Paper

Exam Date & Time: 29-Jun-2024 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH SEMESTER BSc. HEALTH SCIENCES DEGREE EXAMINATION - JUNE/JULY 2024

SUBJECT: BHS-204 - PHYSICS II  
(OLD SCHEME)

Marks: 75

Duration: 180 mins.

Answer all the questions.

1. Answer the following questions:

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|-----|--|-----|
| 1A) | What is heat?  | (2) |
| 1B) | What is unit of heat? How is it related to Joule?  | (2) |
| 1C) | Define heat efficiency of a heat engine.   | (2) |
| 1D) | Calculate the number of molecules in each cubic metre of a gas at 1 atm and 27° C.                                   | (2) |
| 1E) | What is the meaning of quantization of electric charge?  | (2) |
| 1F) | Write Ohm's law.   | (2) |
| 1G) | Explain Biot - Savart law.   | (2) |
| 1H) | A diode converts ac to pulsed dc. What electrical device smoothes the pulsed dc to a smoother dc?                    | (2) |
| 1I) | What happens to the brightness of light from each lamp in a series circuit when more lamps are added to the circuit? | (2) |
| 1J) | Write the characteristics of Laser?  | (2) |
| 1K) | Does heating a metal wire increase or decrease its electrical resistance? What is the unit of electrical resistance? | (2) |
| 1L) | What are X-rays?   | (2) |
| 1M) | Explain de-Broglie Hypothesis?   | (2) |
| 1N) | What is Nuclear Mass?  | (2) |

2. Answer the following questions:

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|-----|---|-----|
| 2A) | What are systematic and random motion of gas particles and how are they related to first law of thermodynamics?   | (3) |
| 2B) | An average induced emf 0.20 V appears in a coil when the current in it is changed from 5.0 A in one direction to 5.0 A in the opposite direction in 0.20 s. Find the self-inductance of the coil. | (3) |
| 2C) | Explain (i) Subcritical mass (ii) critical mass (iii) supercritical mass  | (3) |
| 2D) | An electric iron connected to a 110-V source draws 9 A of current. How much heat (in joules) does it generate in a minute?  | (3) |

3. Answer the following questions:

3A) Write and explain zeroth, first, and second laws of thermodynamics. (5)

3B) With a neat diagram explain Photoelectric effect. (5)

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