

RAN-2503000505011001
B.Sc. (NEP) (Sem. - V) Examination March - 2026
Physics : PH-MJ-501-TH
Contributions of Indian Physicists and Magnetic Fields in Matter
સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book
- (2) Symbols used in the question paper have their usual meanings.
- (3) Students are permitted to use non-programmable scientific calculator.
- (4) Figures on the right indicate the total marks carried by the question.

Seat No.:

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Student's Signature

Q.1. Answer any five in brief.
(05)

1. What is Bhabha Scattering?
2. In which field (s) did Sir J. C. Bose made significant contribution?
3. What is responsible for the sustained tone of Mridangam and Tabla?
4. What is Oersted's observation?
5. On which factor (s), does the value of relative permeability of a substance depend?
6. State the unit of magnetic moment.

Q.2. Write short note on any two of the following.
(10)

- (1) C. V. Raman as a Science Communicator.
- (2) Chandrashekhar Limit and star's fate.
- (3) Meghnad Saha's significant contribution in the field of Science and Society.

Q.3 (A) Attempt any one of the following.
(07)

- (1) What is a linear material?
Derive $\vec{B} = \mu_0(1 + \chi_m)\vec{H}$ for it.
- (2) Explain the origin of diamagnetism in detail.

(B) Solve any one of the following.
(03)

- (1) An infinitely long solenoid has n turns per unit length and it carries a current I . It is filled with a linear material of susceptibility χ_m - Find the magnetic field inside the solenoid and surface current in terms of magnetic susceptibility.
- (2) A square loop of side 5 cm is placed in a uniform magnetic field of 20 mT such that its plane remains parallel to the field. If a current of 2.5 A is flowing through it, what will be the value of (i) its magnetic moment and (ii) torque acting on it?