

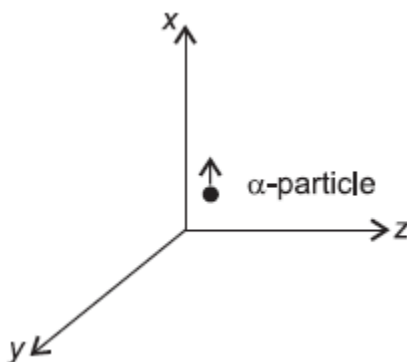
O P JINDAL SCHOOL, SAVITRINAGAR

CLASS TEST & PRACTICE

CLASS XII PHYSICS

TOPIC : MOVING CHARGES AND MAGNETISM

- 1 Why does a moving charge experience a force when placed in a magnetic field? 1
- 2 Write the expression, in a vector form, for the Lorentz magnetic force \vec{F} due to a charge moving with velocity \vec{v} in a magnetic field \vec{B} . What is the direction of the magnetic force? 1
- 3 Define one tesla using the expression for the magnetic force acting on a particle of charge q moving with velocity \vec{v} in a magnetic field \vec{B} . 1
- 4 A beam of α -particles projected along +x-axis, experiences a force due to a magnetic field along the +y-axis. What is the direction of the magnetic field? 1



- 5 A long straight wire carries a steady current I along the positive y-axis in a coordinate system. A particle of charge $+Q$ is moving with a velocity \vec{v} along the x-axis. In which direction will the particle experience a force? 1
- 6 In a certain region of space, electric field \vec{E} and magnetic field \vec{B} are perpendicular to each other. An electron enters in the region perpendicular to the directions of both \vec{E} and \vec{B} and moves undeflected. Find the velocity of the electron. 1
- 7 An electron and a proton moving with the same speed enter the same magnetic field region at right angles to the direction of the field. For which of the two particles will the radius of circular path be smaller? 1
- 8 Write the expression for the magnetic moment of a circular coil of area A carrying a current I , in a vector form. 1
- 9 Magnetic field lines can be entirely confined within the core of a toroid, but not within a straight solenoid. Why? 1
- 10 Using the concept of force between two infinitely long parallel current carrying conductors, define one ampere of current. 1