**98.** A galvanometer coil has 500 turns and each turn has an average area of $3 \times 10^{-4}$ m$^2$. If a torque of 1.5 Nm is required to keep this coil parallel to a magnetic field when a current of 0.5 A is flowing through it, the strength of the field (in T) is _____.

**(20)**

Given,

Area of galvanometer coil, $A = 3 \times 10^{-4}\,\text{m}^2$

Number of turns in the coil, $N = 500$

Current in the coil, $I = 0.5\,\text{A}$

Torque $\tau = |\vec{M} \times \vec{B}| = NiAB\sin(90°) = NiAB$

$$\Rightarrow B = \frac{\tau}{NiA} = \frac{1.5}{500 \times 0.5 \times 3 \times 10^{-4}} = 20\,T$$