Science & Technology · GS - III

Advances in neuroscience and medical technology offer new possibilities for treating diseases, but unequal access to healthcare may limit their social benefits. Discuss the opportunities and challenges of emerging medical technologies in India. (150 words, 10 marks)

EXAM YEAR	PAPER	SUBJECT
Daily Practice 11/10/2026	GS - III	Science & Technology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Explain optogenetics, precision diagnosis and treatment, research opportunities, high costs, infrastructure gaps, ethical concerns and measures to ensure affordable, equitable healthcare access.

Model Answer

Advances in neuroscience and biotechnology are expanding the possibilities of understanding and treating neurological and sensory disorders. The 2026 Nobel Prize in Physiology or Medicine recognised research that contributed to the development of optogenetics, a technique using light to control specific cells.

Opportunities: Such technologies improve understanding of neural circuits and may support future treatments for certain neurological disorders and retinal diseases. They can encourage interdisciplinary research and strengthen precision medicine.

Challenges: Many applications remain experimental and require extensive clinical validation. High research costs, specialised infrastructure, shortages of trained professionals and unequal access to advanced healthcare may restrict their benefits. Ethical concerns regarding genetic interventions, patient consent and long-term safety also require attention.

Way Forward: India should strengthen biomedical research, clinical trials, public healthcare infrastructure and affordable technology development. Transparent regulation, ethical oversight and collaboration between public institutions, universities and industry are essential.

Conclusion: Scientific innovation must be accompanied by equitable healthcare delivery so that technological progress translates into accessible and safe medical benefits for society.

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