Science & Technology · GS - III

Discuss the potential of scientific innovation in nuclear physics and the challenges associated with its commercial application.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 23/10/2026	GS - III	Science & Technology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Nuclear Transmutation, Nuclear Fusion, Scientific Research, Radioactive Isotopes, Technological Feasibility, Commercial Viability.

Model Answer

Introduction:

Advances in nuclear physics have expanded our understanding of matter and created possibilities for changing atomic nuclei through nuclear reactions.

Main Body

Potential Applications

1. Element Transmutation: Nuclear reactions can convert one element into another.
2. Energy Production: Nuclear fusion could become a low-carbon energy source.
3. Industrial Applications: Nuclear technologies support medical isotope production and scientific research.

Major Challenges

1. High costs and complex technological requirements.
2. Safe management of radioactive by-products.
3. Independent verification of experimental results and the feasibility of large-scale production.

Conclusion:

Scientific claims should be evaluated through independent testing, reproducible results and cost-benefit analysis before being considered commercially viable breakthroughs.

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