



## Mains Practice Question

**Q.** What do you understand by 'frontier technologies'? Discuss the possible impact of frontier technologies on developing countries like India. (250 words)

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### Approach:

- Explain the meaning of Frontier Technologies.
- Discuss the impact of such technologies on India.
- Conclude suitably.

### Introduction

Frontier technologies are defined as potentially disruptive technologies that can address large-scale challenges or opportunities. Frontier technology is the next phase in the evolution of modern technology. It is the intersection where radical forward-thinking and real-world implementation meet. For example AI, robotics, 3D printing, and the Internet of Things, etc.

### Body

- Frontier technologies have unlocked new routes to prosperity through agriculture, manufacturing, trade in services, the linking of informal and formal sectors, and domestic interconnectivity.

### Possible Impact of Frontier Technologies

- They have enormous potential to improve government administration and the delivery of public services.
- They can help anticipate and respond to the effects of climate hazards and air pollution through the adoption of state-of-the-art technologies to address environmental impacts.
  - In the Republic of Korea, the smart city of Songdo is built around the Internet of Things to reduce traffic pollution, save energy and water, and create a cleaner environment.
- It will be critical that these technologies work for society and the environment as well as the economy if the world is to achieve the ambitions of the 2030 Agenda for Sustainable Development.
- Challenges: Digital exclusion, uncertain future of work, ethical issues surrounding privacy, ownership and transparency, low human capital, ineffective institutions, and a difficult business environment are some of the challenges that developing countries like India can face.

### Conclusion

- The Pathways for Prosperity Commission on Technology and Inclusive Development has shown that developing countries can still harness the new wave of frontier technologies for the benefit of all. In this context, a policy framework for the next generation of technology and innovation should focus on creating an enabling environment for frontier technologies to positively impact the economy, society, and environment; and to reduce inequalities.

