



GENERAL STUDIES (MAINS) – Questions Pattern & Trends Analysis

SCIENCE & TECHNOLOGY

SPACE

1. What is PSLV? Describe its significance for India's space programme. (95/20)
2. What are VSATs ? What are they used for ? (95/3)
3. Describe how India's space programme has helped in its socio-economic development. (96/40)
4. Why does a lunar eclipse occur only on a full moon? (96/3)
5. Why is Agni Project important for India ? (97/40)
6. What is the difference between a comet and a meteor? (97/3)
7. What is remote sensing? What are its uses especially in the Indian context? (98/40)
8. What new type of satellite is proposed to be inducted for bolstering surveillance on India's border? How does this type of satellite compare with existing IRS satellites?(99/10)
9. Answer the following:-
 - (a) What is 'Swatch of no ground'?
 - (b) From where was the most advanced commercial satellite of India INSAT- 2E launched?
 - (c) What is Global Positioning System (G. P. S.)? (99/3)
10. What do the GMRT stand for ? (99/1)
11. Where is Vikram Sarabhai Space Centre located? (99/1)
12. What is the significance of the geostationary orbit? What would happen if it becomes too crowded ? (00/30)
13. Discuss the significance of GSLV in space research. (01/30)
14. Determine the utility of Direct to Home in broadcasting system. (01/10)
15. What does the solar system consist of? Discuss the motion of the entire solar system as a whole and also the motion of most of the bodies forming the solar system. (03/15)
16. In which year and by which countries was Interventional Space Station (ISS) launched? How many countries are participating in this program? What are the unique studies being made in the station which could not be made so accurately on the earth? (03/15)
17. Detail the salient features of project 'Anthareeksha.' (05/15)
18. What do you know about Indian National Satellite Systems? Describe its important features. (08/30)

DEFENCE

1. What was the controversy about 'Prithvi' ? (97/2)
2. Why is Agni Project important for India ? (97/40)
3. How does the development of Pinaka benefit India? (98/20)
4. What do the ICMR stand for? (98/1)
5. What is a cryogenic engine? Discuss its significance in India's space programme. (01/30)
6. What is Stealth Technology? (07/10)
7. Discuss the missile technology initiatives undertaken by India. (07/15)
8. Write about India's L.C.A. (Tejas). (08/2)

BIOTECHNOLOGY

1. What are transgenic organisms? What are they used for? (96/20)
2. What is tissue culture? (97/3)
3. What is genetic engineering? Why is it getting increasingly important these days? (98/40)
4. Why are transgenic organisms important? (98/3)
5. What is the Human Genome Project? Discuss briefly its importance. (99/20)
6. What are biosensors? Describe their uses. (99/20)
7. Where is Centre for Cellular and Molecular Biology located? (99/1)
8. How do identical twins differ from each other genetically? (99/3)
9. Discuss Human Genome. (00/10)
10. How are transgenic plants different from hybrid plants and what is their relevance in modern agriculture? Elaborate. (00/15)
11. What are stem cells? Why have they been in the news recently? Discuss. (01/30)
12. "Biotechnology boom may pave a golden path for India." Discuss. (02/30)
13. What is Human Cloning? Is it dangerous or beneficial? Discuss. (02/15)
14. Discuss the elements of 'frozen semen technology'. What are 'embryo transfer' 'Transgenic animals', 'DNA recombinant technique'? (03//15)
15. What is Biotechnology? Discuss the important applications of Biotechnology. (04/15)
16. What is the therapeutic cloning? Describe briefly the method and its potential applications. (05/15)
17. Write a note on 'Bio-refinery versus Fossil fuels'. (06/15)
18. What are normal osmosis and reverse osmosis? Why has reverse osmosis become popular in India today ? (06/15)
19. Short note on Genome. (07/2)
20. Explain the objectives and the current achievements of human genome project. (07/15)
21. In what way 'Medical Biotechnology' and 'Bioengineering' are useful for technological development of India? (08/30)

NUCLEAR ENERGY / ALTERNATIVE ENERGY

1. What is nuclear medicine? Describe briefly its different uses. (96/20)
2. How has India's Nuclear Programme contributed to the economic and defense requirements of the country? (97/40)
3. What is a fast breeder reactor? Comment on its suitability in the Indian context. (99/40)
4. What is carbon dating? Describe its applications in archaeology. (99/20)
5. What do the INMAS stand for? (99/1)
6. Where is Indira Gandhi Centre for Atomic Research located? (99/1)
7. Write about Radiation & its effects. (03/2)
8. Discuss in detail "Alternative Energy Sources". (04/30)
9. Why is hydrogen being acclaimed as the fuel of the future? (05/15)
10. What are the alternative fuels available for the transport sector? Discuss their characteristics, advantages and disadvantages in their utilization. (07/15)

INFORMATION TECHNOLOGY

1. What is virtual reality? What is it used for? (96/20)
2. What do the following stand for? (97/3)
(i) TIFR (ii) DRDO (iii) NEERI
3. What are optical fibers? What are their advantages? (98/20)
4. State the importance of Antrix Corporation. (98/3)
5. What do the following stand for: (98/3)
(i) C-DAC (ii) ICMR (iii) TRAI
6. Give the functions of interferons. (98/3)
7. What is the difference between E-mail and Fax ? (98/3)
8. What are the major provisions of the New Telecom Policy approved by the Government? What has been the decision of the Delhi High Court in this respect ? (99/10)
9. What is fibre optics? What advantages does it offer in telecommunications?
Elaborate. (01/15)
10. Write about E-commerce. (01/2)
11. Discuss in detail "The Internet Telephony as an alternative". (02/30)
12. What is interactive television? What special advantages are derived by using VOD services? What are the components of a typical VOD system? Which feature film was generated first entirely on computers and in which year? (03/30)
13. Discuss the utility of e-governance in the Indian context. (04/10)
14. Write note on Use of Information Technology in health management in India. (05/10)
15. What is digital convergence? Examine its implications for modern society. (05/30)
16. Write short notes on PACE. (07/2)
17. Explain : Internet Protocol Television (IPTV) (08/15)
18. Explain : Wifi (08/15)
19. Write brief note on TIFAC. (08/2)

ENVIRONMENTAL ISSUES / SUSTAINABLE DEVELOPMENT

1. What is 'greenhouse effect'? What are its adverse effects on the Earth's environment?
What steps are being taken to check the same? (95/40)
2. What is lead-free petrol? What are its merits and demerits ? (95/20)
3. What is El Nino ? What is its relevance to India ? (95/3)
4. What is ozone hole? How is it caused and what are its implications for life on Earth?
(99/20)
5. What is CNG? How can it reduce air pollution? (99/3)
6. What are greenhouse gases? What impact do they have on the Earth's climate
and with what consequences? Elaborate. (0015)
7. What does the Montreal Protocol deal with? Discuss its role in protecting Earth's environment.
(01/15)
8. Plastic hazards - Discuss. (02/30)
9. Discuss about 'Environment', its components and its awareness. (02/15)
10. What do you understand by depletion of ozone layer and why is it considered harmful? Name
ozone depleting substances and processes. What international ramifications took place to
protect the ozone layer and what was the target agreed upon? (03/30)
11. "Global Warming", Discuss. (04/30)
12. Describe the sources of ionizing and non-ionizing radiations and their effects
on the biotic components of the atmosphere.. (05/30)
13. Why do environmentalists regard asbestos and polythene as pollutants? (05/15)
14. Justify with necessary logic "Biological clean-up methods can be cheaper
than the conventional physical and chemical pollution treatments". (06/30)
15. Differentiate between Natural and Cultural heritage. (07/30)
16. Write about: The UN conference on Environment and Development (The Earth Summit)
(07/15)
17. *Answer any one of the following questions:* (07/30)
 - (a) Explain the phenomenon of ozone depletion, its causes and effects. What effects are
Needed to reduce it?
 - (b) What do you understand by the term 'biodiversity'? Examine the causes and consequences
of degeneration of biodiversity.

HEALTH

1. What is AIDS? Describe its salient features. (95/40)
2. What is ELISA? What is it used for ? (95/3)
3. What is pacemaker? How does it work ? (95/2)
4. What is bioremediation? (95/2)
5. What is HIV? What does it cause? (96/3)
6. What is Polio? Name its few features and how it can be prevented. (97/20)
7. Why is the HIV considered so dangerous? Why has the spread of the virus proved so difficult
to contain, especially in the poorer countries of the world ? (00/30)
8. Write about Anthrax. (03/2)
9. Write brief note on Aspartame. (08/2)
10. Write brief note on Gene doping. (08/2)

LASER / SUPERCONDUCTIVITY / NANOTECHNOLOGY / ROBOTICS

1. What is 'Superconductivity'? Give its uses and applications. (04/15)
2. Describe the importance of "Laser" in war and peace. (04/15)
3. Explain how Nanoscience and Nanotechnology have revolutionized modern Technology. (06/30)
4. Explain: Components of Robots. (08/15)

AGRICULTURE

1. Discuss the role of modern technological inputs on agricultural development in India. How would it be helpful for food security during 21st century? (99/40)
2. What is water harvesting? Describe its relevance in the Indian context. (00/15)
3. What is vermi composting? Discuss its importance in the Indian context. (01/15)
4. Write short note on genetically modified seeds. (05/2)
5. Write brief note on Sappan. (08/2)

INTELLECTUAL PROPERTY RIGHTS

1. What are Intellectual Property Rights? Why are Indian scientists concerned about the new patent regimes? (96/40)
2. What are the fundamental constants and their use in the measurement system? (02/15)
3. Write brief note on Copyright and Trade-mark. (08/2)

COMPUTER

1. *What do the following stand for ?*
(i) IREDA (ii) APPLE (iii) INMAS (97 / 3)
2. What is E-mail ? (98/20)
3. Describe the development of Super-computer in India. (98/20)
4. What is a modem? What is it used for? (99/3)
5. What is a computer virus? How does it infect systems? (99/2)
6. *Answer the following about 20 words each:*
 - (a) What does the 'clock speed' of a computer signify?
 - (b) What do the following stand for?
(i) http (ii) CPU (iii) ROM (iv) BIOS
 - (c) What is a modem and what is it used for?
 - (d) What is spamming?
 - (e) How does a computer virus destroy data ? (00/2)

7. *Answer the following in about 20 words each :*
- What is “handshake” in computer language?
 - What is “ethernet” and what is it used for?
 - What is “digital signature” and what is it used for ?
 - What do the following stand, for?

(i) DRAM	(ii) JPEG	(iii) ASCII	(iv) IMAP
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 - What is a WAP-enabled phone ? (01/2)
8. *Answer the following in about 20 words each:*
- What is a digital camera ?
 - What is firewall in Computer Language?
 - What is multimedia?
 - What do the following stand for ?

(i) HTML	(ii) FTP	(iii) MELOPS	(iv) PLANIT
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 - What is Piracy ? (02/2)
9. *Answer the following (in about 20 words each) :*
- What- is ‘Sympathetic Haptics’ ?
 - What are special features of ‘Linux’?
 - What is an operating system ? List the basic services provided by an operating system.
 - What is an ‘Internet Worm’? Explain DDoS,
 - What do the following stand for ? (03/2)

(i) EPROM	(ii) POSIX	(iii) MODEM	(iv) COBOL
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10. *Answer the following (in about 20 words each):*
- What do you understand by E-governance?
 - What is a URL ?
 - What do the following stand for?

(i) CD-ROM	(ii) USB	(iii) ITES	(iv) FORTRAN
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 - What do you understand by MP3 ?
 - What are cyber crimes ? How are these protected ? (04/2)
11. Write about the following: Bluetooth. (05//2)
12. *Answer the following (in about 20 words each):*
- What is an exabyte?
 - What is VIRUS?
 - What do the following stand for?

(i) XML	(ii) MASER	(iii) SECAM	(iv) TIPS
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 - What is avatar?
 - What is Wikipedia ? (05/2)

13. What do you understand by optical computing? Why is optical computing envisaged to have much better performance than that of electronic computing? (06/15)
14. Answer all the five (in about 20 words each) :
- (a) What do you understand by a 'search engine' in computing?
 - (b) Expand the following:
 - (i) CAD
 - (ii) CAM
 - (iii) CIM
 - (c) Explain what is Thin Film Memory in computers.
 - (d) Write a short note on 'Artificial Intelligence'.
 - (e) Who are called 'Hackers' in computer world? (06/2)
15. Answer all the five (in about 20 words each) :
- (a) What is firewall ?
 - (b) What is malware ?
 - (c) What do the following stand for ?
 - (i) MPEG
 - (ii) ISP
 - (iii) HTML
 - (iv) ASCII
 - (d) What is Root kit ?
 - (e) What is computer architecture ? (07/10)

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