



Mains Notes for IAS and PCS

GS-3 Science and Technology

Last year Question papers

1. What is allelopathy? Discuss its role in major cropping systems of irrigated agriculture.
(Civil Services Examination 2016)
2. Discuss India's achievements in the field of Space Science and Technology. How the application of this technology has helped India in its socio – economic development?
(Civil Services Examination 2016)
3. Why is nanotechnology one of the key technologies of the 21st century? Describe the salient features of Indian Government's Mission on Nanoscience and Technology and the scope of its application in the development process of the country.
(Civil Services Examination 2016)
4. What do you understand by 'Standard Positioning Systems' and 'Precision Positioning Systems' in the GPS Era? Discuss the advantages that India perceives from its ambitious IRNSS programme employing just seven satellites.
(Civil Services Examination 2015)
5. What are the areas of prohibitive labour that can be sustainably managed by robots? Discuss the initiatives that can propel research in premier research institutes for substantive and gainful innovation.
(Civil Services Examination 2015)
6. India's Traditional Knowledge Digital Library (TKDL), which has a database containing formatted information on more than 2 million medicinal formulations is providing a powerful weapon in the country's fight against erroneous patents. Discuss the pros and cons of making this database publicly available under open – source licensing.
(Civil Services Examination 2015)
7. Discuss the advantages and security implications of cloud hosting of servers vis – a – vis in – house machine based hosting for government businesses.
(Civil Services Examination 2015)
8. Scientific research in Indian universities is declining, because a career in science is not as attractive as are business professions, engineering or administration and the universities are becoming consumer oriented. Critically comment.
(Civil Services Examination 2014)
9. Can overuse and free availability of anti – biotics without doctor's prescription, be contributors to the emergence of drug – resistance diseases in India? What are the available mechanisms for monitoring and control? Critically discuss the various issue involved.
(Civil Services Examination 2014)
10. What do you understand by Fixed dose Drug Combinations (FDCs)? Discuss their merits and demerits.
(Civil Services Examination 2013)
11. What do you understand by Umpire Decision Review System (UDRS) in cricket? Discuss its various components. Explain how silicon tape on the edge of a bat may fool the system?
(Civil Services Examination 2013)
12. What is a digital signature? What does its authentication mean? Give various salient built in features of a digital signature?
(Civil Services Examination 2013)
13. How does 3D printing technology work? List out the advantages and disadvantages of the technology?
(Civil Services Examination 2013)
14. What is a FRP composite material? How are they manufactured? Discuss their applications in aviation and automobile industries.
(Civil Services Examination 2013)
15. What do you understand by Run – of – River hydroelectricity projects? How is it different from any other hydroelectricity project?
(Civil Services Examination 2013)

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16. The human population is slated to grow to 9 billion by 2050. In this context, many scientists predict that plant genomics would play a critical role in keeping out hunger and preserving the environment. Explain. **(Civil Services Examination 2012)**
17. What do you understand by the term “Multi – Drug Resistant Tuberculosis” (MDR – TB)? What measures would you advocate for its containment and what are the implications of its spread in the community? **(Civil Services Examination 2012)**
18. Many food items contain “trans fats”. What do you understand by this term? Which Indian food items contain trans fats? What are the implications of trans fats on human health? **(Civil Services Examination 2012)**
19. Comment on the recent launching of the National Mission on Libraries (NML). **(Civil Services Examination 2012)**
20. You are stationed in a small district town in the plains of Northern India, the summer has been severe. Suddenly, a colleague, who had been out since morning, returns to the office complaining of headache, restlessness and confusion. Shortly, he becomes unconscious. His body temperature is 40°C. What first aid steps would you take to revive him? **(Civil Services Examination 2012)**
21. Comment on the significance of the SPOT – 6 rocket launch for ISRO. **(Civil Services Examination 2012)**
22. In the context of Assisted Reproductive Technologies (ART), India has emerged as a hub of commercial surrogacy. What key biological, legal and ethical issues merit consideration while farming the regulation to govern surrogacy in India? **(Civil Services Examination 2012)**
23. Despite strict prohibitory regulations, ‘doping’ has become increasingly common amongst athletes. Name five commonly used performance enhancing drugs. What are the risks associated with their use? **(Civil Services Examination 2012)**
24. The safe landing of the ‘Curiosity’ Rover under NASA’s space programme has sparked many possibilities. What are those and how could humankind benefit from them? **(Civil Services Examination 2012)**
25. The Sequoia supercomputer was launched this year. What are its specific features and what is its purpose? **(Civil Services Examination 2012)**
26. Comment on Arsenic Bug and the significance of its discovery. **(Civil Services Examination 2011)**
27. Comment in not more than 50 words on Kaveri K – 10 aero – engine. **(Civil Services Examination 2011)**
28. Comment on concentrated solar energy and photovoltaic solar energy. **(Civil Services Examination 2011)**
29. Comment (in not more than 50 words) on Nisarga – Runa technology of BARC. **(Civil Services Examination 2011)**
30. Comment (in about 50 words) on the ‘Kessler Syndrome’ with reference to space debris. **(Civil Services Examination 2011)**
31. Comment (in about 50 words) on INSPIRE Programme of the Department of Science and Technology. **(Civil Services Examination 2011)**
32. What is SAGA 220 and why it had been in the news recently? (Your answer should be in a sentence or two only). **(Civil Services Examination 2011)**
33. What is Gliese 581 and why it had been in the news recently? (Your answer should be in a sentence or two only). **(Civil Services Examination 2011)**
34. Comment (in not more than 50 words) on the Telecommunications Ministry’s proposed Spectrum Management Commission. **(Civil Services Examination 2011)**
35. Comment in not more than 50 words on ‘E – governance’ initiatives by the Union Public Service Commission (UPSC). **(Civil Services Examination 2011)**

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36. Differentiate between CD (Compact Disc), DVD (Digital Versatile Disc) and Blu – ray Disc.
(Civil Services Examination 2011)
37. Comment (in about 50 words) on Analog, Hybrid and IP systems in CCTV technology.
(Civil Services Examination 2011)
38. Comment on F – 22 Raptor Aircraft.
(Civil Services Examination 2011)
39. What is Operation Shady Rat and why it had been in the news recently?
(Civil Services Examination 2011)
40. What is K computer and why it had been in the news recently? (Civil Services Examination 2011)
41. What is Tiangong – 1 and why it had been in the news recently?
(Civil Services Examination 2011)
42. Comment (in not more than 50 words) on Molecular Breast Imaging (MBI) technology.
(Civil Services Examination 2011)
43. What is MABEL Robot and why it had been in the news recently?
(Civil Services Examination 2011)
44. Comment on various applications of Kevlar.
(Civil Services Examination 2011)
45. Differentiate between ‘spin drying’ and ‘tumble drying’ technology with reference to the drying of washed clothes.
(Civil Services Examination 2011)
46. Comment on Omega – 3 fatty acids.
(Civil Services Examination 2011)
47. Comment on Designer Poultry Eggs.
(Civil Services Examination 2011)
48. What is Saturn’s Titan and why it had been in the news recently?
(Civil Services Examination 2011)
49. What is Opera detector at Gran Sasso and why it had been in the news recently?
(Civil Services Examination 2011)
50. Comment on ‘CARTOSAT 2B’.
(Civil Services Examination 2010)
51. Write a brief note on ‘Chandrayaan II’.
(Civil Services Examination 2010)
52. Comment on various generations of Mobile Phone Technology.
(Civil Services Examination 2010)
53. What is ‘cloud computing’? Bring out its essential features and list its advantages and limitations.
(Civil Services Examination 2010)
54. Explain and differentiate among ‘Plasma’, ‘LCD’ and ‘LED’ television technologies.
(Civil Services Examination 2010)
55. Comment ‘on Ginkgo biloba’.
(Civil Services Examination 2010)
56. Comment on MRSA infection.
(Civil Services Examination 2010)
57. Discuss the applications of nanotechnology in the health care sector.
(Civil Services Examination 2010)
58. What is Predator drones and why have it been in the news recently?
(Civil Services Examination 2010)
59. Write a brief note on Agni V.
(Civil Services Examination 2010)
60. What is Blue Gene project and why it had been in the news recently?
(Civil Services Examination 2010)
61. What is Wolfram Alpha and why it had been in the news recently?
(Civil Services Examination 2010)
62. Assess the contributions made by the Indian Council of Agricultural Research (ICAR) in agricultural development.
(Civil Services Examination 2010)
63. What is ACTN 3 gene and why it had been in the news recently?
(Civil Services Examination 2010)
64. Who is Craig Venter and why he had been in the new recently?
(Civil Services Examination 2010)

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65. Comment on the present status of the Biological Weapons Convention (BWC). What important issues, do you think, need to be taken up at the seventh review conference of the BWC scheduled for 2011?
(Civil Services Examination 2010)
66. Comment (in not more than 50 words) on HRP – 2M Comment.
(Civil Services Examination 2010)
67. What is 'Dreamliner' Aircraft and why it had been in the news recently?
(Civil Services Examination 2010)
68. Comment on Super Absorbent Polymers (SAP).
(Civil Services Examination 2010)
69. Comment on Maglev vehicles.
(Civil Services Examination 2010)
70. Write brief note on PFCs and 'liquid breathing'.
(Civil Services Examination 2009)
71. Write brief note on Artificial Sun.
(Civil Services Examination 2009)
72. Write about the following in not more than 30 words each.
(Civil Services Examination 2009)
73. Write a brief note in about 30 words on 'Extra Vehicular Activity'.
(Civil Services Examination 2009)
74. What is the 'Hubble Space Telescope'? How many Servicing Missions (SMs) have been conducted for it?
(Civil Services Examination 2009)
75. Trace the significant steps in the evolution of television in the country.
(Civil Services Examination 2009)
76. Define 'Optical Frequency Comb'. Suggest at least three applications.
(Civil Services Examination 2009)
77. Why is Tele – medicine important for country like India?
(Civil Services Examination 2009)
78. Write brief note in about 30 words: The 'P – 8A Poseidon'.
(Civil Services Examination 2009)
79. Write brief note on 'Vegetable Gold'.
(Civil Services Examination 2009)
80. Write a brief note in about 30 words: Biometric ATMs.
(Civil Services Examination 2009)
81. Explain DNA Finger Printing and its utility.
(Civil Services Examination 2009)
82. Define 'Bioinformatics'. How does it work? What are its major branches and applications?
(Civil Services Examination 2009)
83. Write about Green Fluorescence Protein (GFP) and its applications.
(Civil Services Examination 2009)
84. What do you understand by Biosignatures? Discuss briefly.
(Civil Services Examination 2009)
85. What is 'Nanotech'? Give a brief account of its basic concepts, materials used and applications.
(Civil Services Examination 2009)
86. What is 'Graphene'? Mention at least three of its applications.
(Civil Services Examination 2009)
87. Write short note on nuclear submarine 'Arihant'.
(Civil Services Examination 2009)
88. What do you know about Indian National Satellite Systems? Describe its important features.
(Civil Services Examination 2008)
89. Write brief note (in about 20 words) on TIFAC.
(Civil Services Examination 2008)
90. Explain Wi – Fi.
(Civil Services Examination 2008)
91. Explain 'Internet Protocol Television (IPTV)'.
(Civil Services Examination 2008)
92. Write brief note on Aspartame.
(Civil Services Examination 2008)
93. Write brief note on 'Gene doping'.
(Civil Services Examination 2008)
94. Write about India's LCA (Tejas).
(Civil Services Examination 2008)
95. Write brief note on Sappan.
(Civil Services Examination 2008)
96. In what way 'Medical Bio – technology' and 'Bio – engineering' are useful for technologies development of India?
(Civil Services Examination 2008)
97. Explain the components of Robots.
(Civil Services Examination 2008)
98. Write brief note (in about 20 words each) on Copyright and Trademark.
(Civil Services Examination 2008)

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99. Explain Spintronics. (Civil Services Examination 2008)
100. What are the alternative fuels available for the transport sector? Discuss their characteristics, advantages and disadvantages in their utilization. (Civil Services Examination 2007)
101. Discuss the Missile Technology Initiative undertaken by Government of India. (Civil Services Examination 2007)
102. What is Stealth Technology? (Civil Services Examination 2007)
103. What is compute architecture? (Civil Services Examination 2007)
104. What is Root kit? (Civil Services Examination 2007)
105. What do the following stand for? (Civil Services Examination 2007)
106. What is malware? (Civil Services Examination 2007)
107. What is firewall? (Civil Services Examination 2007)
108. Write a short note on Genome. (Civil Services Examination 2007)
109. Explain the objectives and the current achievements of Human Genome Project. (Civil Services Examination 2007)
110. Write brief note on IAEA. (Civil Services Examination 2007)
111. Write brief note on BIMSTEC. (Civil Services Examination 2007)
112. Who are called 'Hackers' in computer world? (Civil Services Examination 2006)
113. Write a short note on 'Artificial Intelligence'. (Civil Services Examination 2006)
114. Explain what is Thin Film Memory in computers? (Civil Services Examination 2006)
115. Expand the following. (Civil Services Examination 2006)
- CAD
 - CAM
 - CIM
116. What do you understand by a 'search engine' in computing? (Civil Services Examination 2006)
117. What do you understand by optical computing? Why is optical computing envisaged to have much better performance than that of electronic computing? (Civil Services Examination 2006)
118. What are normal osmosis and reverse osmosis? Why has reverse osmosis become popular in India today? (Civil Services Examination 2006)
119. Write a note on 'Bio – refinery versus Fossil fuels'. (Civil Services Examination 2006)
120. Explain how Nanoscience and Nanotechnology have revolutionised modern technology? (Civil Services Examination 2006)
121. Write brief note on INTELSAT. (Civil Services Examination 2006)
122. Write short note on Genetically modified seeds in about 20 words. (Civil Services Examination 2006)
123. Write brief note on Sethusamudram Project. (Civil Services Examination 2005)
124. Detail the salient features of project 'Anthareeksha'. (Civil Services Examination 2005)
125. Write note on use of Information Technology in health management in India. (Civil Services Examination 2005)
126. Bring out the prospects of development of alternative energy sources of India. (Civil Services Examination 2005)
127. Why is hydrogen being acclaimed as the fuel of the future? (Civil Services Examination 2005)
128. Write about Bluetooth. (Civil Services Examination 2005)
129. What is Wikipedia? (Civil Services Examination 2005)
130. What is avatar? (Civil Services Examination 2005)
131. What do the following stand for? (Civil Services Examination 2005)
- XML
 - MASER

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- SECAM
- TIPS

132. What is VIRUS? (Civil Services Examination 2005)
133. What is an Exabyte? (Civil Services Examination 2005)
134. What is the therapeutic cloning? Describe briefly the method and its potential applications. (Civil Services Examination 2005)
135. What is digital convergence? Examine its implications for modern society. (Civil Services Examination 2004)
136. Discuss the utility of e – governance in the Indian context. (Civil Services Examination 2004)
137. Discuss in detail “Alternative Energy Sources”. (Civil Services Examination 2004)
138. What do you understand by MP3? (Civil Services Examination 2004)
139. What do the following stand for? (Civil Services Examination 2004)
- CD – ROM
 - USB
 - ITES
 - FORTRAN
140. What is a URL? (Civil Services Examination 2004)
141. What is Biotechnology? Discuss the important applications of Biotechnology. (Civil Services Examination 2004)
142. Describe the importance of ‘Laser’ in war and peace. (Civil Services Examination 2004)
143. What is ‘Superconductivity’? Give its uses and applications. (Civil Services Examination 2004)
144. Explain the objectives of Plant Varieties Right Act, 2002. (Civil Services Examination 2004)
145. In which year and by which countries was International Space Station (ISS) launched? How many countries are participating in this programme? What are the unique studies being made in the station which could not be made so accurately on the earth? (Civil Services Examination 2003)
146. 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? (Civil Services Examination 2003)
147. What do the following stand for? (Civil Services Examination 2003)
- POSIX
 - ERROM
 - MODEM
 - COBOL
148. What is an ‘Internet Worm’? Explain DDoS. (Civil Services Examination 2003)
149. What is an operating system? List the basic services provided by an operating system. (Civil Services Examination 2003)
150. What are the special features of ‘Linux’? (Civil Services Examination 2003)
151. What is ‘Sympathetic Haptics’? (Civil Services Examination 2003)
152. Discuss the elements of ‘Frozen Semen Technology’. What is ‘Embryo transfer’, ‘Transgenic animals’, ‘DNA Recombinant Technique’? (Civil Services Examination 2003)
153. Discuss in detail “The Internet Telephony as an alternative”. (Civil Services Examination 2002)
154. What is Piracy? (Civil Services Examination 2002)
155. What do the following stand for? (Civil Services Examination 2002)
- HTML

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- FTP
 - MELOPS
 - PLANIT
156. What is multimedia? (Civil Services Examination 2002)
157. What is firewall in Computer Language? (Civil Services Examination 2002)
158. What is a digital camera? (Civil Services Examination 2002)
159. What is Human Cloning? Is it dangerous or beneficial? Discuss. (Civil Services Examination 2002)
160. "Biotechnology boom may pave a golden path for India". Discuss. (Civil Services Examination 2002)
161. Determine the utility of Direct to Home in broadcasting system. (Civil Services Examination 2001)
162. Discuss the significance of GSLV in space research. (Civil Services Examination 2001)
163. What is Cryogenic Engine? Discuss its significance in India's Space Programme. (Civil Services Examination 2001)
164. What is fibre optics? What advantages does it offer in telecommunications? Elaborate. (Civil Services Examination 2001)
165. What is a WAP – enabled phone? (Civil Services Examination 2001)
166. What do the following stand for? (Civil Services Examination 2001)
167. What is 'digital signature' and what is it used for? (Civil Services Examination 2001)
168. What is 'Ethernet' and what is it used for? (Civil Services Examination 2001)
169. What is 'handshake' in computer language? (Civil Services Examination 2001)
170. What is vermicomposting? Discuss its importance in the Indian context. (Civil Services Examination 2001)
171. What are stem cells? Why have they been in the news recently? Discuss. (Civil Services Examination 2001)
172. Bring out the observations of the parliamentary system of government in India. (Civil Services Examination 2001)
173. Differentiate and state the significance of Pokharan I and Pokharan II. (Civil Services Examination 2000)
174. What is the significance of the geostationary orbit? What would happen if it becomes too crowded? (Civil Services Examination 2000)
175. India is rapidly emerging as an Information Technology (IT) Superpower Discuss some aspects of the growth of this sector in Indian economy. What role can public policy play in further enhancing growth prospects in this Sector? (Civil Services Examination 2000)
176. 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? (Civil Services Examination 2000)
177. Differentiate between Explosion and Implosion. (Civil Services Examination 2000)
178. What do the following stand for? (Civil Services Examination 2000)
- MARV
 - MIRV
 - ICBM
179. How does a computer virus destroy data? (Civil Services Examination 2000)
180. What is spamming? (Civil Services Examination 2000)
181. What do the following stand for? (Civil Services Examination 2000)
- HTTP

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- CPU
- ROM
- BIOS

182. What does the 'clock speed' of a computer signify? (Civil Services Examination 2000)
183. How transgenic plants are different from hybrid plants and what is their relevance in modern agriculture? Elaborate. (Civil Services Examination 2000)
184. Discuss Human Genome. (Civil Services Examination 2000)
185. Where is Vikram Sarabhai Space Centre located? (Civil Services Examination 1999)
186. What does GMRT stand for? (Civil Services Examination 1999)
187. What is Global Positioning System? (Civil Services Examination 1999)
188. From where was the most advanced commercial satellite of India INSAT 2E launched? (Civil Services Examination 1999)
189. What is Chandra? For what purpose it has been launched? (Civil Services Examination 1999)
190. Where is the Indira Gandhi Centre for Atomic Research located? (Civil Services Examination 1999)
191. What do the INMAS stands for? (Civil Services Examination 1999)
192. What is a fast breeder reactor? Comment on its suitability in the Indian context. (Civil Services Examination 1999)
193. What is Al Khalid? What are its features? (Civil Services Examination 1999)
194. What is a computer virus? How does it infect systems? (Civil Services Examination 1999)
195. What is a modem? What is it used for? (Civil Services Examination 1999)
196. Where is the Centre for Cellular and Molecular Biology located? (Civil Services Examination 1999)
197. What are Biosensors? Describe their uses. (Civil Services Examination 1999)
198. What is the Human Genome Project? Discuss briefly its importance. (Civil Services Examination 1999)
199. What do the NISSAT stand for? (Civil Services Examination 1999)
200. State the importance of Antrix Corporation. (Civil Services Examination 1998)
201. Explain 'Planet B'. (Civil Services Examination 1998)
202. What is Remote Sensing? What are its uses especially in the Indian context? (Civil Services Examination 1998)
203. What is the difference between E – mail and Fax? (Civil Services Examination 1998)
204. Give the functions of interferons. (Civil Services Examination 1998)
205. What do the C – DAC, ICMR and TRAI stand for? (Civil Services Examination 1998)
206. Why is website getting popular? (Civil Services Examination 1998)
207. Explain 'Netizens'. (Civil Services Examination 1998)
208. How does the development of Pinaka benefit India? (Civil Services Examination 1998)
209. Explain Shehab – 3. (Civil Services Examination 1998)
210. Describe the development of Supercomputers in India. (Civil Services Examination 1998)
211. Why are transgenic organisms important? (Civil Services Examination 1998)
212. What is genetic engineering? Why is it getting increasingly important these days? (Civil Services Examination 1998)
213. Why was a variant of Basmati rice in news recently? (Civil Services Examination 1998)
214. What are enzymes? What is their importance? (Civil Services Examination 1998)
215. What are optical fibres? What are their advantages? (Civil Services Examination 1998)
216. What is the difference between a comet and a meteor? (Civil Services Examination 1997)
217. What was the Pathfinder Mission? What were its main findings?

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218. What do the TIFR, DRDO and NEERI stand for?

(Civil Services Examination 1997)

219. What is 'E-mail'?

(Civil Services Examination 1997)

220. What was the controversy about Prithvi?

(Civil Services Examination 1997)

221. Why is Agni project important for India?

(Civil Services Examination 1997)

222. What is Tissue Culture?

(Civil Services Examination 1997)

223. What are Quasars?

(Civil Services Examination 1997)

224. What are fullerenes? Why are they important?

(Civil Services Examination 1997)

225. What is Polio? Explain its few features and how it can be prevented?

(Civil Services Examination 1997)

226. What is 'Mad cow disease'?

(Civil Services Examination 1997)

227. How has India's Nuclear Programme contributed to the economic and defence requirements of the country?

(Civil Services Examination 1997)

(Civil Services Examination 1997)