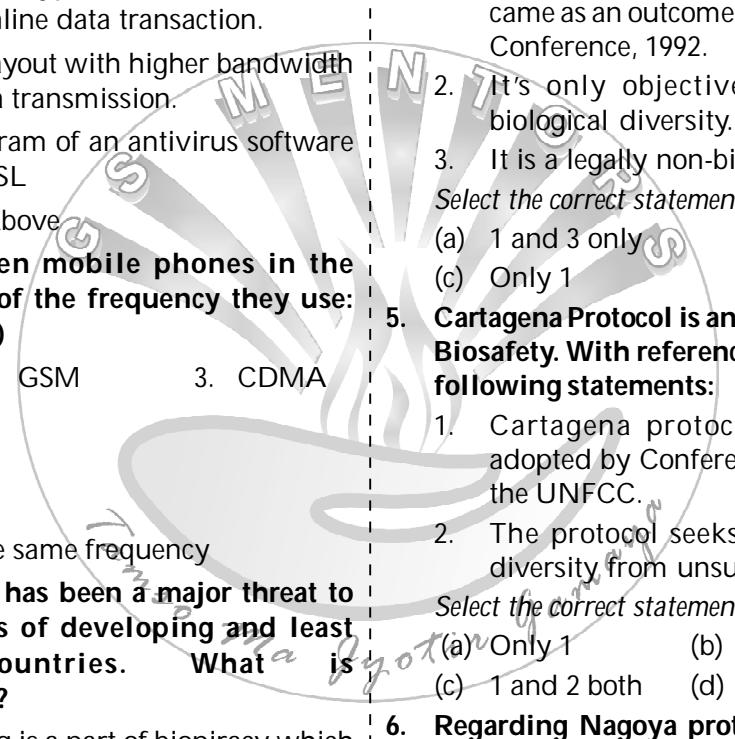


# SCIENCE & TECHNOLOGY

## TEST PAPER-1

- 
- 1. Secure Server Layout (SSL) is the most fundamental term in web security. What it refers to?**
    - (a) It refers to an encryption software been used in securing online data transaction.
    - (b) It refers to a layout with higher bandwidth for speed data transmission.
    - (c) The root program of an antivirus software is known as SSL
    - (d) None of the Above
  - 2. Arrange the given mobile phones in the ascending order of the frequency they use: (from left to right)**

1. 3 G	2. GSM	3. CDMA
--------	--------	---------

    - (a) 1 – 2 – 3
    - (b) 3 – 2 – 1
    - (c) 2 – 1 – 3
    - (d) All work on the same frequency
  - 3. "Bioprospecting" has been a major threat to natural resources of developing and least developed countries. What is "Bioprospecting"?**
    - (a) Bioprospecting is a part of biopiracy which draws on indigenous knowledge about uses of plants and animals.
    - (b) Bioprospecting refers to deteriorated biological diversity due to climate change
    - (c) It refers to unsystematic exploitation of natural resource
    - (d) None of the above
  - 4. With reference to Convention on Biological Diversity (CBD). Consider on the following statements:**
    1. Convention on Biological Diversity (CBD) came as an outcome of Earth Summit in Rio Conference, 1992.
    2. It's only objective is conservation of biological diversity.
    3. It is a legally non-binding document.

*Select the correct statement given below:*

(a) 1 and 3 only	(b) 1 and 2 only
(c) Only 1	(d) All of the above
  - 5. Cartagena Protocol is an important protocol on Biosafety. With reference to it consider on the following statements:**
    1. Cartagena protocol on biosafety was adopted by Conference of Parties (CoP) to the UNFCCC.
    2. The protocol seeks to protect biological diversity from unsustainable exploitation

*Select the correct statement given below:*

(a) Only 1	(b) Only 2
(c) 1 and 2 both	(d) None of the above
  - 6. Regarding Nagoya protocol, consider on the following statements:**
    1. Nagoya protocol was adopted in 2010 by conference of parties to the Convention on Biological Diversity (CBD)
    2. Along the objectives of CBD, resource mobilization strategy to support biodiversity is the major objective of Nagoya Protocol
    3. USA is not a signatory party of ABS feature of Nagoya protocol

*Select the correct statement given below:*

(a) Only 1	(b) 1 and 2 only
(c) 2 and 3 only	(d) All of the above



- 7. Access and Benefit sharing of Genetic resources (ABS) is the essence of Nagoya protocol. With reference to this consider on the following statements:**
1. It address the issues of traditional knowledge and pathogens
  2. Aichi target is legally not binding
- Select the correct statement given below:
- (a) Only 1
  - (b) Only 2
  - (c) 1 and 2 both
  - (d) None of the above
- 8. With reference to IPR legislation of India on Biological diversity, consider on the following statements:**
1. Biological Diversity Act, 2002 provides that prior approval of NBA is necessary before applying any kind of IPR on biological resources
  2. Biological Diversity Act, 2002 prohibits any kind of use of biological resource for research for foreigners and nationals, including traditional hakims.
- Which statement is/are true:
- (a) Only 1
  - (b) Only 2
  - (c) 1 and 2 both
  - (d) None of the above
- 9. Abundant availability of Hydrogen suggest that nuclear fusion reactor could be much more beneficial compare to nuclear fission reactors, yet why commercially viable fusion reactor could not be materialized?**
- (a) Unlike fission reactor, fusion reactor generates nuclear waste on larger scale.
  - (b) There is greater possibility of nuclear radiation leaks in nuclear fusion reactor than in fission reactor.
  - (c) Unlike fission; nuclear fusion needs significant energy to overcome the barrier of electro static forces before fusion occurs
  - (d) All of the above
- 10. Recently, India has ratified Additional Protocol with IAEA. With reference to it, consider on the following statements:**
1. Additional Protocol is legally binding on each and every member of IAEA
  2. All kind of nuclear establishments of India is now subject to investigation by IAEA.
  3. It is more as a treaty that one country has to ratify for greater coordination with IAEA.
- Which is/are of the given statements true?
- (a) Only 1
  - (b) Only 1 and 3
  - (c) Only 3
  - (d) None of the above
- 11. Liquid Fluoride Thorium Reactor (LFTR) is the most advanced type reactor. Regarding this consider the following statements:**
1. The major advantage, LFTR has that it can operate under extremely high temperature, thus its efficiency does not depends upon operating temperature.
  2. In comparison to Advanced Heavy Water Reactor (AHWR), Liquid Fluoride Thorium Reactor (LFTR) is easy to install.
- Which is/are of the given statements true?
- (a) Only 1
  - (b) 1 and 2 both
  - (c) Only 2
  - (d) None of the above
- 12. Consider the following statements about the communications technology Li-Fi, which is considered to be a "post Wi-fi technology":**
1. It uses light from light emitting diodes (LEDs) to deliver high-speed data connections.
  2. Li-fi connection can not transmit data beyond an enclosed walled room in which it is set up.
  3. Both Li-Fi and Wi-fi transmit data over the electromagnetic spectrum, but whereas Wi-fi uses radio waves for communication, Li-Fi uses visible light.
- (a) 1 and 2
  - (b) 2 and 3
  - (c) 1 and 3
  - (d) All of the above



**13. Consider the following statements:**

1. DNA fingerprinting of every individual would be unique and the DNA cannot be altered by any known treatment.
2. The fingerprints of individuals are also unique, but they can be altered by surgery.

*Which of these is/are true?*

- (a) Only 1      (b) Only 2  
(c) Both      (d) None of the above

**14. The Environment and Forests ministry has approved field trials of GM food crops on a conditional basis.**

*Which of the following crops is/are included in the list?*

1. Rice      2. Wheat      3. Maize

**Choose the correct answer using the codes below:**

- (a) 1 and 2      (b) 2 and 3  
(c) 1 and 3      (d) All of the above

**15. Which of the following forces are used to enrich the nuclear fuel U-238 to U-235?**

- (a) Centrifugal force b  
(b) Inter-molecular force  
(c) Electro-magnetic force  
(d) None of the above

**16. Consider the following statements about Dendroid about which a warning was recently issued by the CERT-IN:**

1. It is a malicious application affecting mobile operating system Android.
2. Devices affected by dendroid can be remotely accessed.
3. The application is capable of hacking computer systems also.

*Choose the correct ones from the codes below:*

- (a) 1 and 2      (b) 2 and 3  
(c) 1 and 3      (d) All of the above

**17. Consider the following statements about neutrinos:**

1. They are also called god particles.
2. They can travel at almost the speed of light.
3. They hardly interact with matter.

*Choose the correct ones from the codes below:*

- (a) 1 and 2      (b) 2 and 3  
(c) 1 and 3      (d) All of the above

**18. Indian Mars Mission reflects one leap forward in Indian space capacities. Regarding Indian Mars Mission, consider on the following statements:**

1. After Mars Orbital Mission (MOM), India has become world's fourth country to reach at Mars.
2. MOM was launched using a GSLV.
3. Mars mission is a result of collaborated efforts of 24 nations, including India.

*Which of the given statement is/are TRUE?*

- (a) Only 1  
(b) Only 2 and 3  
(c) All of the above  
(d) None of the above

**19. Nuclear Supplier Group (NSG) is an important institutional framework on nuclear non-proliferation. Which of the following is not TRUE about Nuclear Supplier Group (NSG)?**

1. Nuclear Suppliers Group (NSG) is a multinational body concerned with reducing nuclear proliferation by controlling the export
2. Only NPT signatories could join NSG
3. NSG is a subsidiary organisation of United Nations Organisation.

*Select the correct option from given below:*

- (a) Only 1  
(b) Only 1 and 2  
(c) Only 1 and 3  
(d) None of the above

**20. With reference to "Australia Group", which of the following is NOT true?**

1. It is a group that aims to control exports those aids to proliferation of nuclear weapons.
2. All OECD countries are member of "Australia Group"
3. Currently, India is not a member of Australia group
4. All of the above are TRUE



**21. With reference to LED and CFL, consider on the following statements:**

1. Disposal of LED lamps may be an environmental problem whereas CFL lamps are completely environment friendly
2. CFL are temperature sensitive and hence, sometimes they may not be desirable in extreme temperatures while LED lamps are not impacted by temperature.
3. LED are more energy efficient compare to CFL lamps.

Select the correct options from given below:

- (a) Only 1
- (b) 1 and 2 Only
- (c) 2 and 3 Only
- (d) All of the above

**22. In a major breakthrough, scientists have for the first time grown stem cells from a man's skin using cloning techniques. Which of the following statements is/are true about stem cells?**

1. They are found in multi-cellular organisms.
2. In adult organisms, stem cells, inter alia, act as repair system for the body.
3. Stem cells cannot be obtained from blood.
4. Stem cells can be artificially grown and transformed (differentiated) into specialized cell types.

Select the correct option from the codes below:

- (a) 1, 2 and 3
- (b) 1, 2 and 4
- (c) Only 3
- (d) All of the above

**23. In mobile screens, two types of screens are generally used – LCD and AMOLED. What is the basic difference between these two?**

- (a) In LCD screens all the pixels are turned off or on together, but in AMOLED individual pixels can be turned off or on.
- (b) In AMOLED screens all the pixels are turned off or on together, but in LCD individual pixels can be turned off or on.
- (c) AMOLED screens can offer high resolution display, but LCD cannot.
- (d) None of the above

**24. With reference to the mobile telephony, the USSD technology is increasingly being adopted in recent times for various services. How the USSD is different from SMS?**

1. While USSD maintains a continuous session so that users receive immediate response, SMS service can't involve a continuous session
2. While per message length in USSD is 182 alphanumeric characters, it 160 alphanumeric characters for SMS

Choose the correct option from the codes given below:

- (a) Only 1
- (b) Only 2
- (c) Both 1&2
- (d) Neither 1 nor 2

**25. What is / are the advantages of the delta wing configuration of the LCA Tejas?**

1. The plane can fly with supersonic speeds without being much affected by the shock wave
2. The plane can easily fly at lower as well as higher altitudes
3. Delta wings configuration saves energy and fuel

Choose the correct option from the codes given below:

- (a) Only 1
- (b) Only 1 & 2
- (c) Only 1 & 3
- (d) 1, 2 & 3

**26. Use of Bio-fuels helps in**

1. combating deforestation and soil erosion
2. providing better food security to the world
3. conservation of Bio-diversity
4. Prevention of global warming

Choose the correct option from the codes given below:

- (a) I, 2, 3 & 4
- (b) 2, 3 & 4
- (c) 3 & 4
- (d) Only 4

**27. Which among the following is/are correct statements with respect to the Breeder Reactors?**

1. A breeder reactor produces more fissionable material than it burns
2. Breeder reactors are known for low fuel efficiency
3. Breeder reactors can be helpful in controlling nuclear waste

Choose the correct option from the codes given below:

- (a) Only I & 2
- (b) Only 2 & 3
- (c) Only I & 3
- (d) I, 2 & 3



<p><b>28. How the conventional signatures are different from the digital signatures?</b></p> <ol style="list-style-type: none"> <li>1. While conventional signature is included in the document; a digital signature is a separate entity</li> <li>2. While conventional signature don't provide privacy to a message, digital signature provide privacy to a message</li> </ol> <p><i>Choose the correct option from the codes given below:</i></p> <ol style="list-style-type: none"> <li>(a) only 1 is correct</li> <li>(b) only 2 is correct</li> <li>(c) Both 1&amp;2 are correct</li> <li>(d) Neither 1 nor 2 is correct</li> </ol>	<p><b>31. Some countries consider the Nuclear Non-proliferation Treaty (NPT) discriminatory because:</b></p> <ol style="list-style-type: none"> <li>(a) It seeks to prevent of nuclear energy for all purposes including peaceful purposes</li> <li>(b) It gives the right to develop research, production and use of nuclear energy for peaceful purposes to only some countries</li> <li>(c) It prevents the countries to withdraw from the treaty once they have joined it</li> <li>(d) None of the above is a correct answer</li> </ol>
<p><b>29. Consider the following comparisons of the Local Area Network (LAN) and Wide Area Network (WAN):</b></p> <ol style="list-style-type: none"> <li>1. The maximum speed of data transfer of LAN is much higher than a WAN</li> <li>2. A printer can be shared on a LAN but not a WAN</li> <li>3. LAN uses the Ethernet standard, while a WAN uses the T1 standard</li> </ol> <p><i>Which among the above is / are correct statements?</i></p> <ol style="list-style-type: none"> <li>(a) Only 1 &amp; 2</li> <li>(b) Only 2 &amp; 3</li> <li>(c) Only 1 &amp; 3</li> <li>(d) Only 3</li> </ol>	<p><b>32. As various steps towards the Nuclear Non-proliferation, the Government of India has:</b></p> <ol style="list-style-type: none"> <li>1. adopted a no first use policy whereby it has pledged to not to use nuclear weapons unless first attacked</li> <li>2. placed a self-imposed moratorium on nuclear tests</li> <li>3. signed and ratified the Nuclear Non-proliferation Treaty</li> <li>4. does not allow the transfer of Nuclear Weapons Technology to other nations</li> <li>5. has placed all its nuclear power plants under inspection of IAEA</li> </ol> <p><i>Select the correct option from the codes given below:</i></p> <ol style="list-style-type: none"> <li>(a) Only 1, 2, 3 &amp; 4</li> <li>(b) Only 2, 3, 4 &amp; 5</li> <li>(c) Only 1, 2, 4 &amp; 5</li> <li>(d) Only 1, 2 &amp; 4</li> </ol>
<p><b>30. Nuclear power poses environmental risks due to the hazards associated with nuclear waste and power plant accidents. Still nuclear power is advocated by some because:</b></p> <ol style="list-style-type: none"> <li>1. The cost of building nuclear power plants is low</li> <li>2. The long-term underground storage of nuclear waste is simple and viable</li> <li>3. Carbon emissions from nuclear power plants is low</li> <li>4. There is no GHG emission from Nuclear Power plants</li> <li>5. Nuclear fuel can be reprocessed</li> </ol> <p><i>Choose the correct option from the codes given below:</i></p> <ol style="list-style-type: none"> <li>(a) 1, 2, 3 &amp; 4</li> <li>(b) 2, 3, 4 &amp; 5</li> <li>(c) 2, 3 &amp; 5</li> <li>(d) 3 &amp; 5</li> </ol>	<p><b>33. The Environment Protection related principle of common but differentiated responsibility (CBDR) was enshrined in__?</b></p> <ol style="list-style-type: none"> <li>(a) Rio Declaration</li> <li>(b) Nagoya Protocol</li> <li>(c) Montreal Protocol</li> <li>(d) Basel Action Network</li> </ol>
<p><b>34. Consider the following statements with respect to the Evergreening of Patents:</b></p> <ol style="list-style-type: none"> <li>1. It generally pertains to prolonging the life of patent by making minor incremental changes in original patented product</li> <li>2. There are no provisions in Indian Patents Act to prevent Evergreening</li> <li>3. Evergreening of patents is generally used by Pharmaceutical companies</li> </ol> <p><i>Which among the above statements is / are correct?</i></p> <ol style="list-style-type: none"> <li>(a) Only 1</li> <li>(b) Only 1 &amp; 2</li> <li>(c) Only 1 &amp; 3</li> <li>(d) 1, 2 &amp; 3</li> </ol>	



**35. Secondary Patents:**

1. are the patents obtained on the basis of new developments of the subject matter of original patent
  2. are not provided in Indian legislation
- Choose the correct option from the codes given below:*
- (a) Only 1 is correct
  - (b) Only 2 is correct
  - (c) Both 1 & 2 are correct
  - (d) None of the above

**36. Proton Therapy is emerging as more efficient radiotherapy than the normal X-Ray radiation. Proton Therapy is considered to be more effective because:**

1. Due to relatively large mass, protons have little impact on neighbouring normal tissues
2. Protons have more direct impact on the tumour

*Choose the correct option from the codes given below:*

- (a) Only 1 is correct
- (b) Only 1 & 2 are correct
- (c) Only 1 & 2 are correct
- (d) None of the above

**37. In context with the everyday computer applications, which among the following can be classified as Spyware?**

- |              |                  |
|--------------|------------------|
| 1. Trojans   | 2. Adware        |
| 3. Trackware | 4. Software Bugs |

*Choose the correct option from the codes given below:*

- (a) Only 1 & 2
- (b) Only 2 & 3
- (c) Only 1, 2 & 3
- (d) 1, 2, 3 & 4

**38. With reference to DTH services, consider the following statements**

1. Only Doordarshan DD Direct Plus (DTH) is providing DTH services free of cost of the consumers.
2. DTH Transmission is most preferred in Ku-Band so as to avoid the need of larger Dish sizes for suitably receiving the DTH signals.
3. The DTH signals cannot be received in hilly and remote terrains

*Which of the above is/are not true*

- (a) 1 and 2 Only
- (b) 2 and 3 Only
- (c) 1 and 3 Only
- (d) Only 1, 2 and 3

**39. The Joule Melter Technology is related to,**

- (a) Nuclear Waste Management
- (b) Nuclear fuel recycling
- (c) Production of coolants
- (d) None of the above

**40. Consider on the following:**

1. Australia Group: A. Prohibits export of some substance in order to control biological weapons
2. Nagoya Protocol B. Protects biosafety from Genetic modification organisms
3. Cartagena Protocol C. Protects and emphasizes on sustained use of biological resources.

*Select the correct match from given the following:*

A	B	C
(a) 1	3	2
(b) 1	2	3
(c) 3	2	1
(d) 3	1	2

**41. In Current time, gene patenting is a matter of debate. The gene patenting includes which of the following**

1. a specific isolated gene sequence
2. its chemical composition
3. The processes for obtaining it.

*Select the correct answer using the code given below:*

- (a) 1 and 3 only
- (b) 2 only
- (c) 3 only
- (d) 1, 2 and 3

**42. Which of the following is/are correct about Light Emitting Diode (LED)?**

1. It is a semi conductor light source
2. LED can function in very small amount of time.
3. There is some motion long problem in LEDs

*Select the correct answer given below:*

- (a) 1 and 2 only
- (b) 1 only
- (c) 3 only
- (d) 2 and 3 only



- 43. What is the difference between dialup and broadband Internet connection.**
- Dialup uses static IP while broadband uses Dynamic IP.
  - In a dialup modems are used to transmit digital into analogue signals while in broadband modems are used to translate analogue into digital.
  - Broadband connection uses a built in modem to connect and does not require a special router, whereas dial up requires a special router.
  - Unlike the dial up with a broadband connection, phone line still be used while using the internet
- 44. How Plasma the is different from LCT TV**
- Compared to LCD, Plasma has a slower refresh rate.
  - LCD Weight less and produces less heat
  - LCD uses lower power compared to Plasma.
  - LCD TV face the issue of screen burn in static images but plasma does not have this problems
- Select the correct answer using the code given below
- 1 and 2 only
  - 2 and 3 only
  - 3 and 4 only
  - All of these
- 45. With reference to the difference between IPv4 and IPv6. The true statements is/are?**
- IPv4 is 32-bit address system with IPv6 uses 64 bit system
  - Compare to IPv4, IPv6 can connect much more devices without much technical complexities
- Select the correct option
- Only 1
  - Only 2
  - 1 and 2 both
  - None of the above
- 46. How "Internet of things" is different from "Web of things"?**
- Internet of things is the basic framework of web of things
  - Internet of Things (IoT) is connecting electronic devices to the internet, while Web of Things (WoT) is a movement that sprang out of the IoT.
- Select the correct option given below:
- Only 1
  - Only 2
  - 1 and 2 only
  - None of these
- 47. Which of the following statement most appropriately represent the concept of transgenic crop?**
- A transgenic crop contains genes of a different species artificially inserted
  - transgenic crop contains genes from same species and genes from other different species cannot be inserted in such crops.
  - Transgenic crops did exist even in ancient time and it is not an innovation
  - All of the above
- 48. How transgenic crops is different from traditional breeding crops?**
- Exchange of genes within a species is done in traditional breeding while in transgenic crops there is no such compulsion.
  - Transgenic crops are simple technology while breeding involves intensive technology.
  - traditional breeding is safe but the transgenic crops are proved unsafe.
  - All of the above.
- 49. Regarding states of GM crops in India. Consider on the following statements**
- In India, there is blanket ban on GM crops on all categories.
  - Bt cotton is still in trial phase in India.
- The correct statements is/are
- Only 1
  - Only 2
  - 1 and 2 both
  - None of the above
- 50. How Germline Gene therapy is different from Somatic Gene therapy?**
- Germline gene therapy has no heritable impacts while somatic gene therapy has.
  - Compare to germline gene therapy somatic gene therapy is much risky.
  - In most of OECD countries, germline therapy is banned, while there is no such ban on somatic gene therapy.
  - All of the above



**51. Which of the following is NOT true regarding the convention on Biodiversity?**

1. The convention has near universal membership with 193 countries.
2. The USA is the only major country that is not a party
3. Following the ratification of the CBD India enacted the BD Act 2002.
  - (a) 1 only
  - (2) 1 and 2 only
  - (c) 2 and 3 only
  - (4) None of the above

**52. What is disadvantage of adult stem cells over embryonic stem cells?**

- (a) They are difficult to locate
- (b) They are much smaller and therefore difficult to maneuver
- (c) There is no disadvantage: The two types of cells are identical
- (d) They grow too fast.

**53. What is an argument in favour of using embryonic stem cells over adult stem cells?**

- (a) Adult stem cells cannot be cultured
- (b) Adult stem cells reproduce much faster than embryonic stem cells.
- (c) Embryonic stem cells are never really living
- (d) Embryonic stem cells can differentiate into many more types of cells.

**54. All Cells contain same genetic information. Why can't cells other than stem cells differentiate into various tissues?**

- (a) Stem Cells are the only cells that can be implanted
- (b) Stem Cells are the only cells that do not have any specific chromosome and can therefore go into male or female.
- (c) As cells develop their genetic make changes
- (d) As cells develop some genes are turned off permanently.

**55. Graphene has been the epicenter of material science. What is not TRUE about graphene.**

- (a) Graphene is about 100 times stronger than steel by weight
- (b) It is a transparent material
- (c) It is a conductor of heat but non-conductor of electricity.
- (d) Graphene is the only form of carbon in which every atom is available for chemical reaction from two sides.

**56. Which of the following is not TRUE about cryogenic rocket engine?**

- (a) The fuel of cryogenic is gases liquefied and stored at very low temperature
- (b) Till now, only six governments including India have successfully developed and deployed cryogenic rocket engines.
- (c) Some other versions of cryogenic engines are also solid-propellant rocket engines
- (d) None of the above

**57. Which one of the following is NOT true regarding Wifi and Wimax.**

- (a) Compare to Wifi, Wimax is relatively new technology
- (b) Wimax transfer data with more speed compare to wifi
- (c) Wifi networks have a channel bandwidth of 20 MHz, whereas Wimax option which ranges from 1.25 MHz to 20MHz.
- (d) All of the above the true

**58. Internet Corporation of Assigned Names and Numbers (ICANN) is a leading agency in internet governance. Consider on the following statements regarding this:**

1. ICANN is an inter-governmental body entrusted with the task of global governance.
2. Its primary task is associated with Domain Naming (System) (DNS)
3. ICANN has recently brought a paper on Net-neutrality which is legally binding upon all its members.

Select the TRUE statements:

- (a) Only 1
- (b) Only 2
- (c) Only 2 and 3
- (d) All of the above

**59. With reference to CRT and LCD technologies, select the False statements from the following:**

- (a) In CRT, electron gun is used, which in LCD liquid crystals and used to form images.
- (b) CRT have slow response while LCDs are having pretty good response
- (c) CRT consumes high power compare to LCDs.
- (d) All of the above are true



- |  |  |
|--|--|
| <p><b>60. With reference to Digital Certificate Consider on the following statements:</b></p> <ol style="list-style-type: none"> <li>1. Digital certificates provides a high level of security of Online Communication</li> <li>2. With digital Certificates only intended recipient can read the sent files.</li> </ol> <p>The true statement is/are:</p> <ol style="list-style-type: none"> <li>(a) Only 1</li> <li>(b) Only 2</li> <li>(c) Both 1 and 2</li> <li>(d) None of the above</li> </ol> | <p><b>64. While commissioning a nuclear reactor, a term "criticality" often comes up to hear. What does the term "criticality" refers to?</b></p> <ol style="list-style-type: none"> <li>(a) It refers to that chain reaction that takes place for the first time in the reactor.</li> <li>(b) It refers to start of a nuclear reactor.</li> <li>(c) It indicates the lack of sustainability of electricity generation of a reactor.</li> <li>(d) None of the above</li> </ol> |
| <p><b>61. Which of the following is NOT true regarding difference between PSLV and GSLV</b></p> <ol style="list-style-type: none"> <li>1. PSLV is mainly used to deliver the remote sensing satellites, while GSLV is designed mainly to deliver communication satellites.</li> <li>2. Compare to PSLV, GSLV can launch heavier satellites.</li> </ol>   | <p><b>65. When a satellite is moving in the orbits, it stays in position because the centripetal force on the satellite balances the gravitational attractive force of the earth. This balance depends on the following:</b></p> <ol style="list-style-type: none"> <li>1. Mass of the satellite</li> <li>2. Size of the satellite</li> <li>3. Earth's radius</li> <li>4. Distance from the earth</li> </ol>   |
| <p><i>Which of the given statements is/are TRUE?</i></p> <ol style="list-style-type: none"> <li>(a) Only 1</li> <li>(b) Only 2</li> <li>(c) 1 and 2 Both</li> <li>(d) None of the above</li> </ol>   | <p><i>Select the correct option given below</i></p> <ol style="list-style-type: none"> <li>(a) 1 and 3 only</li> <li>(b) 1 and 4 only</li> <li>(c) 3 and 4 only</li> <li>(d) All of the above</li> </ol>   |
| <p><b>62. With reference to GSLV. Mk.-III, Consider on the following statements.</b></p> <ol style="list-style-type: none"> <li>1. It is intended to launch satellites into geostationary orbit.</li> <li>2. It can also be used to launch a crew vehicle.</li> <li>3. GSLV-MK-III features fully cryogenic third stage.</li> </ol>  | <p><b>66. With reference to "Geostationary orbit", consider on the following statements:</b></p> <ol style="list-style-type: none"> <li>1. Orbit is in equatorial plane.</li> <li>2. There is only one geostationary orbit.</li> <li>3. Geostationary orbit is not circular</li> </ol>   |
| <p><i>Which of the given statement is not true?</i></p> <ol style="list-style-type: none"> <li>(a) Only 1</li> <li>(b) 1 and 2 only</li> <li>(c) All of the above</li> <li>(d) None of the above.</li> </ol>   | <p><i>Which of the statements given above is/are correct?</i></p> <ol style="list-style-type: none"> <li>(a) 1 only</li> <li>(b) 2 and 3 only</li> <li>(c) 1 and 2 only</li> <li>(d) All of the above</li> </ol>   |
| <p><b>63. With reference to International Atomic Energy Agency (IAEA) consider on the following statements:</b></p> <ol style="list-style-type: none"> <li>1. It is a subsidiary organization of United Nations (UNO) and thus works under it.</li> <li>2. Its primary objective is to provide international safeguards against any kind of nuclear use.</li> <li>3. Signature and ratification of NPT is one of pre-conditions for membership in the IAEA.</li> </ol>                               | <p><b>67. The International Space Station (ISS) is in a Low Earth Orbit (LEO) With reference to low Earth orbits consider on the following:</b></p> <ol style="list-style-type: none"> <li>1. It requires less energy to place a satellite into Low Earth Orbit (LEO)</li> <li>2. LEO satellites have a shorter life span than any other system satellites</li> </ol>  |
| <p><i>Select the correct option from given below:</i></p> <ol style="list-style-type: none"> <li>(a) 1 only</li> <li>(b) 1 and 2 only</li> <li>(c) 2 and 3 only</li> <li>(d) None of the above</li> </ol>  | <ol style="list-style-type: none"> <li>(a) 1 only</li> <li>(b) 1 and 2 only</li> <li>(c) None of the above</li> <li>(d) All of the above</li> </ol>  |

**68. In Space study, a term often comes up and known as "orbital decay". What is orbital decay?**

- (a) It is the average annual reduction of satellite life span
- (b) It is the annual average reduction of delay in transmission from satellites
- (c) This is an average reduction in the altitude of a satellites orbit.
- (d) None of the above.

**69. Geo satellites are increasingly being used for various communication systems:**

Which is/are of the reason behind it?

- (a) GEO satellite can cover almost 1/3rd of Earth's surface, offering a reach far more extensive.
- (b) GEO satellites remain stationary over some orbital location.
- (c) GEO systems have significantly greater available bandwidth than LEO and MEO systems.
- (d) All of the above

**70. With reference to Polar Satellite Launch Vehicle (PSLV), consider on the following statements:**

- 1. PSLV is used only to launch the satellites in Sun Synchronous orbit.
- 2. The PSLV has four stages using solid and liquid propulsion systems alternatively.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) 1 and 2 both
- (d) None of the above

**71. Geosynchronous Satellite Launch Vehicle (GSLV) was developed to enable India to launch its communication satellites into geostationary orbit.**

Consider the following statements.

- 1. It is a three stage-launch vehicle.
- 2. In its all three stages, the vehicle is propelled by liquid fuel

Which of the given statement is/are true?

- (a) 1 only
- (b) 2 only
- (c) 1 and 2 both
- (d) None of the above

**72. "Biosatellite" refers to:**

- (a) A satellite is powered by environment friendly fuel
- (b) A satellite designed to carry life in the space
- (c) A satellite design to explore life in space or in any other planet
- (d) None of the above

**73. The concept of physics involved in Uranium enrichment process is:**

- (a) Centripetal force
- (b) Centrifugal force
- (c) Concept of specific heat
- (d) None of the above

**74. With reference to Light Water Reactors (LWR), consider the following statements:**

- 1. It uses light water as moderator but heavy water as its coolant.
- 2. There are only two varieties of light water reactors. Pressurized Water Reactor (PWR) and Boiling Water Reactor (BWR)
- 3. Uranium enrichment or nuclear reprocessing is necessary to operate such reactors.

Which of the statements given above is/are correct?

- (a) Only 2
- (b) Only 2 and 3
- (c) Only 1 and 3
- (d) None of the above

**75. Thorium is considered as the future of nuclear energy. Consider the following statements:**

- 1. According to IAEA report Australia has the largest reserve of Thorium.
- 2. In India Western Coast has significantly more thorium reserves than the Eastern Coast.
- 3. India's second stage of nuclear cycle is based on Thorium fuel.

Select the correct option given below:

- (a) only 1
- (b) only 2 and 3
- (c) only 1 and 2
- (d) None of the above



- 76. With reference to Indian Regional Navigation Satellite System (IRNSS), consider on the following statements:**
1. The navigation system IRNSS is joint venture of ISRO and DRDO
  2. The IRNSS world provide two services – standard positioning service and restrictive service
  3. All seven satellites under IRNSS world be placed on Geosynchronous orbits
- Select the correct option given below:*
- (a) only 2
  - (b) only 2 and 3
  - (c) only 1 and 2
  - (d) All of the above
- 77. Assertion (A) :** Insect resistant transgenic cotton has been produced by inserting Bt gene
- Reason (R) :** The Bt gene is derived from a bacterium
- (a) Both A and R are true, and R is the correct explanation of A
  - (b) Both A and R are true but R is not the correct explanation of A
  - (c) A is true but R is false
  - (d) A is false but R is true
- 78. Assertion(A): Dolly was the first cloned mammal**
- Reason (R):** Dolly was proposed by In-Vitro fertilization
- (a) Both A and R are true, and R is the correct explanation of A
  - (b) Both A and R are true but R is not the correct explanation of A
  - (c) A is true but R is false
  - (d) A is false but R is true
- 79. Which one of the following techniques can be used to establish the paternity of Child?**
- (a) Protein analysis
  - (b) Chromosome Counting
  - (c) Quantitive analysis of DNA
  - (d) DNA fingerprinting
- 80. With reference to the latest development in stem cell research, consider on the following statements:**
1. The only source of human stem cell are the embryos at blastocysts stage
  2. The stem cell can be derived without causing destruction to blastocytes
  3. The stem stem cells can regenerate themselves in vitro virtually forever.
  4. Indian research centres also created a few cell lines which can be developed into many types of tissues
- Which of the statements given above are TRUE?*
- (a) 1, 2, 3 and 4
  - (b) 1, 2 and 3
  - (c) 1, 2 and 4
  - (d) 3 and 4
- 81. Consider on the following statements:**
1. SAGA-220 is a supercomputer built by the ISRO
  2. SAGA-220 has the maximum theoretical speed of 220TFLOPs
- Which of the statements given are TRUE?*
- (a) Only 1
  - (b) Only 2
  - (c) Both 1 and 2
  - (d) Neither 1 nor 2
- 82. Which of the following modern electronic instrument can use the OLED as a display unit?**
- (a) Mobile Phones
  - (b) Computer monitors
  - (c) Watches
  - (d) All of these
- 83. Consider on the following**
1. EDGE
  2. Evolved High speed packet access
  3. Universal Mobile Telecommunication System (UMTS)
- Which of the wireless telecommunication systems given above is/are GSM family?*
- (a) 1 and 2
  - (b) 1 and 3
  - (c) 2 and 3
  - (d) All of these





**94. Consider on the following statements:**

1. The radio signals used in 1G network are analogue signals
2. The radio signals on 3G networks are digital signals

*Which of the statements given above is/are TRUE?*

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**95. Consider on the following statements**

1. Facial recognition of criminals
2. Handwriting comparison and recognition of the suicide notes in the criminal conspiracy cases
3. Hacker who has cracked one's bank account password
4. Speech recognition as a password in the laptops

*Which of the applications given above is/are the exact application of artificial intelligence?*

- (a) All of the above
- (b) 1, 2 and 4
- (c) 1, 3 and 4
- (d) 1 and 4

**96. Which type of computer could be found in a digital watch?**

- (a) Mainframe
- (b) Supercomputer
- (c) Notebook
- (d) Embedded computer

**97. Consider on the following statements:**

1. Embedded computer is used in the MP3 players and traffic lights
2. The nuclear power plant is controlled by using embedded computer

*Which of the statement(s) given above is/are correct?*

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**98. With reference to induced Pluripotent Cell (iPS) stem cells, consider the following statements:**

1. It cannot be developed directly from the adult cell
2. They can propagate indefinitely and can give rise to every other cell type
3. Embryonic stem cell is an example of iPS stem cell.

*Which of the given statement(s) is/are TRUE?*

- (a) Only 2
- (b) Only 2 and 3
- (c) 1, 2 and 3
- (d) None of the above

**99. Optical fiber is one of the crucial means of communication. Which of the following is NOT true about Optical fiber?**

- (a) Optical fibres are immune to electromagnetic interference
- (b) Compare to other means, Optical fibres are costly to establish a network
- (c) It demands greater technological expertise
- (d) All of the above are TRUE

**100. Increasing Space debris is a serious concern for space scientific community. Which of the following is NOT TRUE about space debris?**

- (a) This includes spent rocket stages, old satellites and fragments from disintegration, erosion and collisions
- (b) Most space debris is smaller than 1 cm (0.4 in), including dust from solid rocket motors, surface-degradation products (such as paint flakes) and frozen coolant droplets.
- (c) Most of the space debris are concentrated in or around Low Earth Orbit (LEO).
- (d) All of the above are TRUE





# GS MENTORS

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## IAS2015 P.T. TEST SERIES

GS-I<sup>st</sup> PAPER (SCIENCE & TECHNOLOGY)

### TEST BOOKLET

A

Maximum Marks: 200

Time Allowed: 2 Hours

#### INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. DO NOT write anything else on the Test Booklet.
3. This Test Booklet contains **100** items (questions), Each item is printed in English, Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best, In any case, choose **ONLY ONE** response for each item.
4. You have to mark all your responses **ONLY** on the separate Answer Sheet provided. See directions in the Answer Sheet.
5. All items carry equal marks.
6. Before you proceed to mark in the Answer Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your Admission Certificate.
7. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the Invigilator only the Answer Sheet. You are permitted to take away with you the Test Booklet.
8. Sheets for rough work are appended in the Test Booklet at the end.
9. **Penalty for wrong answers:**

**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.**

- (i) There are **four** alternatives for the answer to every question. For each questions for which a wrong answer has **been** given by the candidate **one-third** of the marks assigned to that question will be deducted as penalty.
- (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
- (iii) If a question is left blank, i.e. no answer is given by the candidate, there will be **no penalty** for question.

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