1. Match List-I with List-II and select the correct answers from the codes given below:

List-I (Organization)		**List-II (Location)**
A.	ISRO	1. Thiruvanthapuram
B.	IUCAA	2. Pune
C.	IUAC	3. Bengaluru
D.	VSSC	4. New Delhi

Codes:

	A	B	C	D
(a)	3	2	4	1
(b)	1	2	3	4
(c)	2	4	1	3
(d)	3	1	2	4

2. Match List-I with List-II and select the correct answer using the codes given below:

	List-I	**List-II**
A.	Arihant	1. American Cryogenic Rocket
B.	AWACS	2. Anti-tank missile
C.	Atlas Centaur	3. For Air Defence
D.	Nag	4. Missile Submarine

Codes:

	A	B	C	D
(a)	4	3	2	1
(b)	4	3	1	2
(c)	3	4	1	2
(d)	3	4	2	1

3. Consider the following statements:
Assertion (A): Space Based Solar Power (SBSP) is considered to be made a national goal.
Reason (R): Supply of SBSP is 99% uninterrupted throughout the year, besides the enormity of energy availability.
Select the correct answers from the codes given below:

Codes:
(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.

4. Scientists of Britain have built a "Gravity Tractor". Identify the same from the following:
(a) A double storeyed "Jugaad" type tractor trolley to be used in public transport.
(b) A tractor with a mechanism to sweep public roads and is economical to run.
(c) A bullet train run on the principle of earth's gravity with the help of powerful magnets.
(d) A space-craft with a mechanism which would check asteroids from hitting the earth.

5. Consider the following as objectives of the New Science and Technology Policy, and state which is/are correctly stated, with the help of codes given below:
1. Optimal utilisation of existing physical and knowledge resources.
2. Development of innovative technologies.
3. Development of systems and technologies for mitigation and management of natural hazards.
4. Management of intellectual property.

Codes:
(a) 1 and 2 only (b) 1, 2 and 3 only
(c) 1, 3 and 4 only (d) all the four

6. The earth's satellite is kept moving in its orbit. It is due to the phenomenon of centripetal force provided by
(a) the rocket engine propelling the satellite
(b) the gravitational attraction of the earth on the satellite

(c) the gravitational attraction of the sun on the satellite
(d) the gravitational attraction of satellite on earth

7. Multiple Independent Re-entry Vehicles (MIRVs) are used in Agni-V missile made by DRDO, consider the following statements in regard to MIRVs.
1. Under it, each missile will be capable of carrying 2-10 separate nuclear warheads.
2. Under it, each warhead can be assigned to a different target.
3. Under it, two or more warheads can be assigned to the same target.
Which of the following statements is/are correct?
(a) 1 only (b) 2 only
(c) 2 and 3 only (d) 1, 2 and 3

8. Consider the following statements with respect to Intelligent Flight Control System (IFCS):
1. It is developed by NASA
2. It is used in NF-15B aircraft
3. The IFCS Generation-I flight was first tested in 2003.
4. An artificial neural network is used in this control sytem.
Which of the following statement codes are correct?
(a) 1 and 2 only (b) 2, 3 and 4 only
(c) 1, 2, 3 and 4 (d) None of these

9. Consider the following statements regarding Indian polar research station:
1. India established a research station named "Bharti" at Ny-Alesund in Svalbard region of Norway.
2. India established a research station named "Himadri" in the Larsemann Hills region of East Antarctica.
Which of the statements given above is/are correct?
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

10. Indian Space Research Organisation (ISRO) and the United States Space Agency NASA, have agreed to form a working group for co-operation in which of the following endeavours?
(a) Moon and Mars Missions of future
(b) Meteorology and Space Exploration
(c) Heliophysics
(d) All of the above

11. Match List-I with List-II and select the correct answers using the codes given below the lists:

	List-I	List-II
A.	Curiosity	1. Tablet
B.	MESSENGER	2. Unmanned Aerial Vehicle of DRDO
C.	Rustom-1	3. Mars Probe Space Vehicle of USA
D.	Akash-2	4. Mercury Probe Space Vehicle of NASA

Codes:

	A	B	C	D
(a)	3	4	2	1
(b)	4	3	2	1
(c)	3	4	1	2
(d)	1	2	3	4

12. What is a keyboard used in a computer for?
(a) To input text and numbers and send commands to the computer.
(b) To create new keys to use with your computer.
(c) To open the computer up.
(d) To create pictures and images and send them to your computer.

13. Which one of the following is not correctly matched?
(a) Akash — A medium range multi-target missile
(b) Nag — An anti-tank missile
(c) Pinaka — A multi-barrel rocket launcher weapon system
(d) Trishul — A short range surface to surface missile

14. Radar is used for
(a) detecting objects by using light waves
(b) reflecting sound waves to detect objects
(c) determining the presence and location of objects with radiowaves.
(d) tracking rain bearing clouds.

15. Consider the following statements regarding 'INS Tarkash'
    1. It is built indigenously by DRDO.
    2. It is a multi-role stealth frigate.

    Which of the above statements is/are correct?
    (a) 1 only (b) 2 only
    (c) Both 1 and 2 (d) Neither 1 nor 2
16. Consider the following statements with respect to the new Remote Sensing Data Policy:
    1. Agencies other than ISRO can also be nodal agencies for remote sensing.
    2. All remote sensing imagery and data up to one meter resolution will be made freely available.
    3. The old 2001 policy mandated that ISRO could release only data up to 6.8 resolutions.

    Which of the statements given above are correct?
    (a) 1 and 2 only (b) 1 and 3 only
    (c) 2 and 3 only (d) 1, 2 and 3
17. The new version of advanced television, beyond the high definition television is 4 K television. Consider the following statements in this regard?
    1. The basic principle of 4K TV is Near Field Communication (NFC).
    2. The term 4K refers to the horizontal resolution of the images, which are all on the order of 4,000 pixels.
    3. If the screen is too big then the HD gives the blurred images because the resolution of the images and pixels are limited.

    Which of the statements given above are correct?
    (a) 1 and 2 only (b) 2 and 3 only
    (c) 1 and 3 only (d) 1, 2 and 3
18. What is the difference between present Wi – Fi technology and super Wi – Fi?
    1. Present Wi – Fi technology supports 802.11 b/g/n standard while new super Wi – Fi will support 802.11 ad standard.
    2. Super Wi – Fi can send data upto the length of 1 – 2 GB and eventually there would be no log in the speed.
    3. The new super Wi – Fi would function at the speed of 7 gigabytes per second, much more than the speed of ordinary Wi – Fi.

    Select the correct answer using the codes given below:
    (a) 1 and 2 only (b) 2 and 3 only
    (c) 1 and 3 only (d) 1, 2 and 3
19. A team of scientists at NASA with the European Space Agency are working to probe dark energy or the existence of dark matter. Consider the following statements in this regard.
    1. Dark matter is called so because it does not interact with light.
    2. Dark matter interacts with ordinary matter through gravity and binds galaxies together like an invisible glue.
    3. While dark matter pulls matter together, dark energy pushes the universe apart at ever increasing speed.
    4. Dark matters are potentially effective in many dignostic devices such as PET scanners.

    Which of the statements given above are correct?
    (a) 1, 2 and 3 only (b) 2, 3 and 4 only
    (c) 1, 3 and 4 only (d) 1, 2, 3 and 4.
20. Consider the following statements about a computer named " Greenware" .
    1. 'Greenware' is completely free of both hazardous PVC (Polyvinylchloride) and BFR (brominated flame-retardants).
    2. Manufacturing of 'Greenware' can be a special action like replacing all standard light bulbs with CFLs or a more general application to live more ecologically.

    Which of the statements given above is/are correct?
    (a) 1 only (b) 2 only
    (c) Both 1 and 2 (d) Neither 1 nor 2
21. Consider the following statements regarding the High Frequency Active Auroral Research Programme (HAARP):
    1. It is an ionospheric research Program.
    2. The purpose of HAARP is to investigate the potential for developing ionospheric enhancement technology for radio communications and surveillance.
    3. The most prominent instrument at the HAARP station is the Ionospheric Research Instrument (IRI) a high-power radio frequency transmitter facility operating in the High Frequency (HF) band.

Which of the statements given above are correct?
(a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

22. Orbital decay, a process of prolonged reduction in the attitude of a Satellite's Orbit is caused by which of the following reasons?
1. Atmospheric drag
2. Tides
3. Gravitational pull

Correct code:
(a) 1 only (b) 3 only
(c) 1 and 3 only (d) 1, 2 and 3

23. How do you distinguish between Passive Optical Network (PON) and Gigabit Passive Optical Network (GPON)?
1. PON is a network architecture that brings fiber cabling and signals to the home using a point-to-multipoint scheme that enables a single optical fibre to serve multiple premises.
2. PON standard differs from non-PON standards in that it achieves higher bandwidth and higher efficiency using larger, variable-length packets.
3. GPON offers efficient packaging of user traffic, with frame segmentation allowing higher Quality Of Service (QOS) for delay-sensitive voice and video communications traffic.

Which of the statements given above are correct?
(a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

24. Recently, scientists have developed a device to near completion like an ipad that could be folded or rolled up repeatedly. What has been used in its development?
(a) Laser Fludik Imaging Film
(b) Infra-Red Laser Fludine Imaging Film
(c) NANO Garffine Imaging Film
(d) Electro Fluidic Imaging Film

25. Which of the following statements is correct regarding the SKA telescope?
1. At present, it has 36 antennas with diameter of 12 meters each and it is placed at the remote Murchison Radio Astronomy Observatory.
2. The radio waves generated from this telescope can provide details of the cosmos far away and the gases that resulted in the formation of any particular star.

Select the correct answer using the codes given below:
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

26. Consider the following statements:
1. Megha–Tropiques is an advanced weather and climate research satellite.
2. Megha–Tropiques is a joint atmospheric satellite mission of India (ISRO) and Russia (Roscosmos).
3. Megha–Tropiques has been launched by ISRO from Sriharikota.

Which of the statements given above is/are not true?
(a) 1 only (b) 2 only
(c) 3 only (d) 1 and 3

27. Consider the following statements:
1. Nirbhaya is a subsonic cruise missile being developed by DRDO.
2. The air version of Brahmos has been successfully test-fired recently.
3. Brahmos-II will be hypersonic cruise missile with target range of more than 300 km.

Which of the above statements is/are not true?
(a) 1 and 2 only (b) 2 and 3 only
(c) all of the above (d) none of these

28. RAM (Random Access Memory) is the primary memory used in a computer. RAMs are divided into two categories as static RAM (SRAM) and Dynamic RAM (DRAM). What is the difference between static and Dynamic RAM?
1. DRAMs are less expensive and slower than SRAMs.
2. DRAM requires to be refreshed periodically as opposed to the SRAM.
3. DRAM has higher bit density and lower power consumption.

Which of the above statements are correct?
(a) 1 only (b) 1 and 2 only
(c) 2 and 3 only (d) all the above

29. Indian Space Research Organisation (ISRO) is creating a GEO Imaging Satellite (GISAT) which it plans to launch. Consider the following statements about it:
    1. The satellite will carry a GEO Imager with multi-spectral, multi-resolution imaging instruments.
    2. Gisat will provide near real time pictures of large areas of the country, under cloud free conditions, at frequent intervals.

Codes:

(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) None of these

30. Consider the following statements about Dhanush missile and select the correct answer:
    1. Dhanush missile is an indigenously developed naval version of the Prithvi short range ballistic missile.
    2. It is a single stage missile and was developed by the DRDO and it uses liquid propellant.
    3. It has a strike range of up to 350 km and can carry 500 kg of conventional warheads only.

Codes:

(a) 1 and 2 only (b) 1 and 3 only
(c) 2 and 3 only (d) all the above

31. Consider the following statements about Dornier 228, which India has recently handed over to Seychelles and select the correct answers:
    1. The Dornier 228 is manufactured by the DRDO.
    2. It is a highly reliable, multi-purpose, fuel efficient rugged, lightweight twin turbo prop aircraft with a retractable tricycle landing gear.
    3. It is a frontline surveillance platform for applications like maritime reconnaissance, intelligence, warfare, search and rescue, pollution control and transport.

Codes:

(a) 1 and 2 only (b) 1 and 3 only
(c) 2 and 3 only (d) all the above

32. A computer cookie is a small text file placed on computers by a website. Which among the following can be the use of cookie?
    1. Cookies can carry viruses.
    2. Cookies can be used to maintain data.
    3. Cookies can be used to track internet user's web browsing.
    4. Cookies can install malware on the host computer.

Codes:

(a) 1 and 2 only (b) 2 and 3 only
(c) 3 and 4 only (d) All the above

33. Consider the following statements about Ethernet and select the correct answers:
    1. Ethernet is a family of computer networking technologies for wide area networks (WANs)
    2. Data rates over Ethernet can be upto 100 gigabits per second.
    3. Ethernet has a good degree of compatibility.

Codes:

(a) 1 and 2 (b) 2 and 3
(c) 1 and 3 (d) all the above

34. ISRO space vision 2025 includes:
    1. Satellite based communication and navigation systems mainly for rural connectivity.
    2. Space science mission for better understanding of solar system and universe.
    3. Reusable Launch Vehicles Technology demonstrator mission leading to Two-stage-To-orbit-(TSTO).
    4. Planetary explorations to Mars and Venus. Which of the above statements is/are correct?

(a) 1 and 2 (b) 2 and 4
(c) 1, 2 and 3 (d) 2, 3 and 4

35. Consider the following statements:
    1. A Ramjet is a form of an air-breathing using the engine's forward motion to compress incoming air, without a rotary compressor.
    2. Ramjets cannot move an aircraft from standstill.
    3. A subsonic combustion Ramjet or Scramjet is a variant of a Ramjet air-breathing.

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

36. Consider the following statements:
    1. European Space Agency (ESA) has joined the NASA's Euclid Mission to be launched in 2020.
    2. Euclid Mission is a space telescope designed to investigate the cosmological mysteries of dark matter and dark energy.

    Which of the statements given above is/are correct?

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

37. Recently, India successfully test-fired 'Nirbhay'. Consider the following statements in the above context:
    1. Nirbhay is the country's second supersonic cruise missile, the first being Brahmos.
    2. It is a 3-stage surface-to-air missile and is inspired by the technology of 'Lakshya-aircraft'.
    3. It is also called 'treetop missile' as its shape is similar to the stem of a tree.
    4. The missile has a good loitering capability.
    5. The missile is designed by the Aeronautical Development Establishment (ADE) of DRDO.

    Which of the statements given above is/are correct?
    (a) 2 and 4 only (b) 4 and 5 only
    (c) 2, 3, 4 and 5 only (d) 1, 2, 3, 4 and 5.
38. Which of the following is/ are correct about the dwarf planets?
    1. A dwarf planet is a planetary-mass object that is neither a planet nor a satellite.
    2. A dwarf planet is a celestial body in direct orbit of the Sun that is massive enough for its shape to be controlled by gravitation, but that unlike a planet has not cleared its orbital region of other objects.
    3. Dwarf planets are any astronomical objects orbiting the Sun that did not show the disk of a planet and were not observed to have the characteristics of an active comet.
    4. Dwarf planets are formed out of cosmic dust grains that collide and stick to form larger and larger bodies.
    (a) 1, 2 and 3 (b) 2 and 3
    (c) 2, 3 and 4 (d) 1 and 2
39. Which of the following is equal to 1 Mars year?
    1. 23 Earth months
    2. 686.65 days
    3. 1.88 Earth years
    (a) 1, 2 and 3 (b) 2 and 3
    (c) 1 and 3 (d) 1 and 2
40. An Anglo-German team of astronomers has discovered a new planet orbiting a nearby Sun at just the right distance for an Earth-like climate that could support life. The name of new planet is
    (a) HD40307g (b) HD40308g
    (c) HE40307g (d) HE40308g
41. Consider the following statements
    1. Mars-500 is a psychosocial experiment conducted by USA, Europe and India.
    2. The idea is to exactly mimic the time scale of a Mars mission.

    Which of the above statements is/are true?
    (a) 1 only (b) 2 only
    (c) Both 1 and 2 (d) None of these
42. Consider the following statements
    1. *Hayabusa* an unmanned spacecraft developed by the Japan Aerospace Exploration Agency (JAXA).
    2. It landed on the Itokawa asteroid and collected samples in the form of tiny grains of asteroidal material.

    Which of the above statements is/are true?
    (a) 1 only (b) 2 only
    (c) Both 1 and 2 (d) None of these
43. Consider the following about Brown Dwarf
    1. It is a small star that is somewhat cooler than a Red Dwarf.
    2. It is a very large planet.

    Which of the above statements is/are true?
    (a) 1 only
    (b) 2 only
    (c) Both 1 and 2
    (d) None of these
44. Where do most of the known asteroids orbit the Sun?
    (a) Between the orbits of Mars and Jupiter
    (b) Between the orbits of Venus and Earth
    (c) Between the orbits of Earth and Mars
    (d) Between the orbits of Pluto and Saturn
45. What are the rings of Saturn made from?
    (a) Gases and clouds
    (b) Large pieces of ice and rock
    (c) Wind and storms
    (d) Satellites
46. Consider the following statements
    1. The Indian National Satellite was established in 1983.
    2. The INSAT system use transponder TDMA technology Ku-band C-band technology.

3. GSLV is for launching 2000 kg class of communication satellite into geosynchronous transfer orbit.
4. CARTOSAT is the only satellite in the world for maping and creating atlas.

Which of the statements given above is/are correct?
(a) 1, 2, 3 and 4 (b) 2, 3 and 4 only
(c) 2 and 3 only (d) 3 only

47. Consider the following statements regarding 'Carbon Aerogel'
1. Zhejiang University of China, the team of scientists, produced an ultra-light substance known as 'Carbon Aerogel.'
2. The Carbon Aerogel has the density of 0.16 milligrams per cubic centimetres.
3. The Carbon Aerogel is made of graphite as well as the carbon Manotubes which can absorbs around 900 times its own body weight.

Which of the above statement(s) is/are correct?
(a) 1 only (b) 2 only
(c) 3 only (d) All of these

48. NASA's Swift satellite discovered one of the youngest known supernova remnants which is believed to be less than 2500 years old, in our Milky Way Galaxy has been designated as
(a) G 306.3 - 0.9 (b) G 603.3 - 0.9
(c) G 309.6 - 0.3 (d) None of these

49. Astronomers at the National Radio Astronomy observatory discovered cluster of hydrogen clouds between which of the nearby Galaxies?
(a) Triangulum-M33
(b) Andromeda-M31
(c) Both a and b
(d) None of these

50. The name of the new sexually transmitted sex-superbug, which can be much more deadly than AIDS virus is _____
(a) HO41 (b) H41O
(c) H14O (d) HO14

51. Researchers discovered a new species of dragonfly from which of the wildlife sanctuaries in India?
(a) Bhagwan Mahaveer Wildlife Sanctuary, Goa
(b) Corbett National Park
(c) Periyar Wildlife Sanctuary
(d) None of the above

52. Consider the following statements
1. SARAL is a joint project of India and France.
2. SARAL and six other satellite launch through PSLV-C20.
3. SARAL will be used to study the ocean currents and sea surface heights.

Which of the statements given above is/are correct?
(a) 1 only (b) 2 only
(c) 1 and 2 only (d) All of these

53. The space plane constructed by Richard Branson's Spaceflight Company called Virgin Galatic successfully completed the flight test which would be able to carry the people to space. The name of this space craft is
(a) Boeing X-37
(b) Soviet Buran
(c) Bor-4
(d) Sapceship 2

54. Jiuquan Satellite Centre is situated in which country?
(a) China (b) Japan
(c) S. Korea (d) Russia

55. Enriched uranium is one in which?
(a) Percentage of ^{235}U has been artificially increased
(b) Percentage of U has been artificially increased
(c) Percentage of ^{234}U has been artificially increased
(d) Extra energy is pumped from outside

56. Match the following

	Isotope	Use
A.	Holmium-166	1. to treat bone cancer
B.	Iron-57	2. to find tumor in body
C.	Arsenic-74	3. used in blood as tracer
D.	Phosphorus-32	4. to treat joint pains

Codes:

	A	B	C	D
(a)	4	3	2	1
(b)	1	2	3	4
(c)	4	3	1	2
(d)	1	2	4	3

57. Param Padma is
(a) a new civilian award instituted by the Government of India
(b) the name of supercomputer developed by India
(c) the name given to a proposed network of canals linking Northern and Southern rivers of India
(d) a software programme to facilitate e-governance in Madhya Pradesh

58. Consider the following statements
1. The first programmable electronic computer was the Colossus.
2. The Colossus was designed by Tommy Flowers.
Which of the statements given above is/are correct?
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

59. Select the correct statements given below about the components of the Robots.
(a) In robot, the lead acid battery is used to get power supply.
(b) The actuators of a robot act like the muscles of human beings.
(c) The end effectors of the robot act as hands of robot to manipulate the objects.
(d) All the statements given in 'a', 'b' and 'c' are correct about the components of the Robots.

60. Which one of the following robots uses for the first time the Zero Moment Point (ZMP) algorithm to bring bipedal locomotion like human beings?
(a) ASIMO (b) Choromet
(c) iCube (d) Ibn Sina

61. Consider the following statements:
1. ISRO has recently given clearance for using the frequency from KU band for using the satellite for internet in trains in India.
2. KU frequency range is allocated to be exclusively used by satellite communication system.
Which of the statements given above is/are correct?
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

62. What is 'Netra'?
(a) An internet spy system capable of detecting malafide messages.
(b) An award winning feature film.
(c) An NGO working for the welfare of visually handicapped.
(d) A SHG working in Andhra Pradesh for the welfare of street children.

63. Scientists have succeeded in creating a ghost in the laboratory. Which of the following is/are true regarding this?
1. Researcher Olaf Blanke's team at Ecole Polytechnique Federale de Lausanne in Switzerland, was able to recreate the illusion of a similar presence in the laboratory.
2. They showed that the 'feeling of a presence' actually results from an alteration of sensory motor brain signals.
3. These signals are involved in generating self awareness by integrating the information from our movements and the position of our body in space.
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) All of these

64. Neutrinos are
1. tiny particles that carry no charge.
2. interact very strongly with electrons and protons.
3. high in energy.
4. may be produced by the giant black hole at the centre of the Milkyway.
(a) 1, 2, 3 (b) 2, 3, 4
(c) 1, 3, 4 (d) All of the above

65. Frog from Titicaca lake, are the main ingredients in juice blend that has the power to cure asthma, bronchitis, sluggishness and a low Sex drive. This lake is situated in
(a) Chile (b) Peru
(c) Atlanta (d) None of these

66. Agni-1, was test-fired for its 700 km strike range from the wheeler island off the Odisha coast on Sept. 11, 2014.
1. It is a surface to air missile.
2. It is nuclear weapons capable ballistic missile.
3. It carried 1100 kg payload and zeroed in on the target with a high degree of accuracy.
Which of the above are correct.
(a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Both 2 and 3

67. Which of the following statements about Mars Orbiter Mission is/are true?
    1. India is the first nation to successfully put spacecraft in Mars orbit in second attempt.
    2. India becomes the 4th nation in the world to have sent spacecraft to Mars.
    3. The other three nations are – The USA, Russia and China
    (a) 1 only (b) 2 only
    (c) 3 only (d) All of these
68. 'New Horizons' spacecraft was launched by NASA to Study which of the following Planet?
    (a) Mars (b) Pluto
    (c) Jupiter (d) Mercury
69. The Liquid Propulsion System Centre (LPSC) of the Indian Space Research Organisation (ISRO) is at?
    (a) Mahendragiri (Tamil Nadu)
    (b) Bangalore (Karnataka)
    (c) Hyderabad (Andhra Pradesh)
    (d) Ahmadabad (Gujrat)
70. GSLV and PSLV are famous acronyms associated with ISRO. Consider following
    1. GSLV is four staged vehicle
    2. PSLV is three staged vehicle which of above is true
    Which of above is true
    (a) 1 only (b) 2 only
    (c) 1 and 2 (d) None of the above
71. What is the chronological sequence of the following events in Indian Science scene ?
    1. Launching of Rohini-I satellite.
    2. Pokhran nuclear test.
    3. Start of Indian Space Research Organisation.
    4. First unit of Kalpakkam nuclear powers station going critical
    Choose the correct answer from the codes given below :
    (a) 1, 2, 4 and 3 (b) 2, 3, 4 and 1
    (c) 3, 2, 1 and 4 (d) 4, 1, 3 and 2
72. Russia has successfully launched a next-generation navigation satellite for its Glonass global communication system. Which among the following statements in this reference is/are correct?
    1. Glonass will not be integrated with the US Global Positioning System (GPS).
    2. Under an accord, Russia has agreed to share the Glonass Signal with India.
    (a) 1 only (b) 2 only
    (c) 1 and 2 both (d) None
73. Which one of the following pairs is not correctly matched?
    (a) Arjun : Indigenously produced Main Battle Tank (MBT)
    (b) Phalcon : Cruise missile supplied by Russia to India.
    (c) Saras : Indigenously developed civilian passenger aircraft.
    (d) Operation Seabird: New Indian naval base at Karwar.
74. High Altitude Warfare School of the Indian Army is located at
    (a) Gulmarg (b) Siachin
    (c) Leh (d) Manali
75. Which of the following pairs is/are correctly matched?
    1. Kiran MK 11 : Aerobatic aircraft
    2. MI 35 : Attack helicopter
    3. Mirage 2000 : Military transport aircraft
    Select the correct answer using the code given below
    (a) 1 only (b) Both 1 and 2
    (c) Both 2 and 3 (d) 1, 2 and 3
76. Consider the following statements:
    1. The Armed Forces Special Powers Act (AFSPA) was declared first time in Manipur in 1980 as foreign trained insurgents had become uncontrollable.
    2. Under the Act, the army has been deployed to assist the civil administration in the state.
    3. Armed Forces Special Powers Act (AFSPA) was passed in 1958 by the Parliament of India.
    Which of the statement given above is/are correct?
    (a) 1, 2 and 3 (b) 1 and 3
    (c) 2 only (d) 1 only
77. Scientists at the Indira Gandhi Centre for Atomic Research, Kalpakkam, have successfully extended the life of Fast Breeder Test Reactor (FBTR) by another 20 years. This centre is located in:
    (a) Karnataka (b) Gujarat
    (c) Maharashtra (d) Tamil Nadu

78. The stages of India's Nuclear Power Programme differs with respect to:
1. Fuel used 2. Technology
3. Stage of development
(a) 1 and 2 (b) 2 and 3
(c) 1 and 2 (d) All

79. The output quality of a printer is measured by
(a) Dot per inch
(b) Dot per sq. inch
(c) Dots printed per unit time
(d) All of above

80. Data becomes ..... when it is presented in a format hat people can understand and use
(a) processed (b) graphs
(c) information (d) presentation

81. The cloud computing is based on:
1. Software as a service mode.
2. Users should pay scheme.
3. Common objective of all the users.
(a) 1 and 2 (b) 2 and 3
(c) 1 and 3 (d) None

82. Consider the following statements-
1. The DVD uses red laser and its thickness is 1.4 mm.
2. The BD uses blue laser and its thickness is 1.3 mm.
3. The double sided BD is having 54 GB storage capacity.
Choose the correct statement(s):
(a) 1 only (b) 2 only
(c) 3 only (d) None

83. What is Kessler Syndrome ?
(a) A disease where human talk while sleeping.
(b) A rare viral disease causing respiratory problems.
(c) A problem found in space launch vehicles.
(d) Proliferation of space debris in low earth orbit.

84. What is the purpose of India's Mars orbiter mission?
(a) Study its surface
(b) study its atmosphere
(c) Study its mineral composition
(d) All the above

85. Consider the following statements about GSLV Mk3
1. It can carry up to 4500 to 5000 kg satellites.
2. It is a 4 stage vehicle.
3. It will use cryogenic engine and not solid and liquid propellants.
Which of the above statements are correct?
(a) 1 only (b) 3 only
(c) 2 and 3 only (d) 1, 2 and 3

86. What is the objective of SMAP Satellite launched by NASA?
(a) Observe and measure moisture of soil on Earth.
(b) Detect moisture in atmosphere of Mars.
(c) Measure rigidity of rocks on Moon.
(d) Measure sea level on Earth.

87. Which district has become the first one in India to have high speed Rural Broadband Network?
(a) Ajmer of Rajasthan
(b) Vidisha of Madhya Pradesh
(c) Idukki of Kerala
(d) Hisar of Haryana

88. Which bank has launched India's first contactless debit and credit cards?
(a) ICICI Bank (b) Axis bank
(c) HDFC (d) HSBC

89. The Defense Research Development Organisation (DRDO) has developed a drug named 'Lukosin'. It will be used in the treatment of
(a) Leukemia (b) Lucoderma
(c) Lung cancer (d) Brain tumor

90. Consider the following statements
1. Inbreeding helps in accumulation of superior genes
2. Continued inbreeding reduces productivity
Which of the above statements are correct?
(a) 1 only (b) 2 only
(c) 1 and 2 (d) None

91. Which of the following national missions is entrusted with Ministry of Science & Technology?
(a) National Mission for Sustaining Himalayan Ecosystem (NMSHE)
(b) National Mission on Strategic Knowledge for Climate Change (NMSKCC)
(c) Both
(d) None

92. What is Nuclear transmutation?
(a) Conversion of one chemical element or isotope into another.
(b) Conversion of solid directly into gas
(c) Conversion of gas directly into solid
(d) Conversion of a nucleated human nerve cell into a non-nucleated one

93. Tamiflu is an anti-viral disease used to treat
(a) Swine flu (b) Asthama
(c) Diabetes
(d) Japanese Encephalitis.

94. Consider the following statements
1. Thirty Meter Telescope will be the largest of the existing and announced extremely large telescopes (ELT).
2. The TMT will enable scientists to study fainter objects far away from earth providing information about early stages of the evolution of the universe.
3. India is also a partner in the project.

Which of the statements given above are correct?
(a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

Hints & Solutions

ANSWER KEY															
1.	(a)	**13.**	(d)	**25.**	(d)	**37.**	(b)	**49.**	(c)	**61.**	(c)	**73.**	(b)	**85.**	(a)
2.	(b)	**14.**	(c)	**26.**	(d)	**38.**	(d)	**50.**	(a)	**62.**	(a)	**74.**	(a)	**86.**	(a)
3.	(a)	**15.**	(b)	**27.**	(b)	**39.**	(a)	**51.**	(a)	**63.**	(d)	**75.**	(b)	**87.**	(c)
4.	(d)	**16.**	(a)	**28.**	(d)	**40.**	(a)	**52.**	(d)	**64.**	(c)	**76.**	(a)	**88.**	(a)
5.	(d)	**17.**	(b)	**29.**	(c)	**41.**	(b)	**53.**	(a)	**65.**	(b)	**77.**	(d)	**89.**	(b)
6.	(b)	**18.**	(d)	**30.**	(a)	**42.**	(c)	**54.**	(a)	**66.**	(d)	**78.**	(d)	**90.**	(c)
7.	(d)	**19.**	(a)	**31.**	(c)	**43.**	(c)	**55.**	(a)	**67.**	(b)	**79.**	(b)	**91.**	(c)
8.	(c)	**20.**	(c)	**32.**	(b)	**44.**	(a)	**56.**	(a)	**68.**	(b)	**80.**	(c)	**92.**	(a)
9	(d)	**21.**	(d)	**33.**	(b)	**45.**	(b)	**57.**	(b)	**69.**	(a)	**81.**	(c)	**93.**	(a)
10.	(d)	**22.**	(d)	**34.**	(c)	**46.**	(a)	**58.**	(c)	**70.**	(d)	**82.**	(d)	**94.**	(b)
11.	(a)	**23.**	(c)	**35.**	(a)	**47.**	(d)	**59.**	(d)	**71.**	(c)	**83.**	(d)		
12.	(a)	**24.**	(d)	**36.**	(c)	**48.**	(a)	**60.**	(a)	**72.**	(b)	**84.**	(d)		

1. (a) Indian Space Research Organisation (ISRO) is headquartered in Bengaluru. The Inter–University Centre for Astronomy and Astrophysics (IUCAA) is located in Pune, India.
Inter–University Accelaerator Centre (IUAC) is an autonomous research facility of University Grants Commission which is based in New Delhi. Vikram Sarabhai Space Centre (VSSC) is a major space research centre of the Indian Space Research Organisation, focusing on rocket and space vehicles, is located in Thiruvananthapuram, Kerala.

2. (b) Arihant is a class of nuclear–powered ballistic missile submarine.
AWACS, abbreviation of Airborne Warning and Control System, is a mobile, long–range surveillance and control centre for air defence, developed by the U.S. Air Force, is mounted on Boeing 707 aircraft.
Atlas – Centaur is an American expendable launch system. It is the first production rocket stage to use cryogenic propellent.
Nag is a third generation fire–and–forget" anti-tank missile of India.

3. (a) Space based solar power (SBSP) is considered to be made a national goal, because its supply is 99% uninterrupted throughout the year, besides the enormity of energy availability.

4. (d) A 'Gravity tractor' (GT) is a spacecraft with a mechanism that can deflect another object in space without physically contacting it. It will use only its gravitational field to transmit the required impulse. It can effect a potentially hazardous asteroid that might hit earth.

5. (d) The main objectives of the New Science and Technology Policy are optimal utilisation of existing physical and knowledge resources,

development of innovative technologies and management of intellectual property.

6. (b) An orbiting satellite is a projectile, that the only force acting upon an oribiting satellite is the force of gravity. The force of gravity also accelerates it towards the earth. But the earth's round shape prevents it to fall on ground and if the satellite is in more than 8000 m/s speed it also contributes to the maintenance of motion in a particular orbit or elliptical path.
7. (d) Multiple Independent Re–entry Vehicle (MIRV) is a ballistic missile payload or "bus" of a ballistic missile. It is capable of being aimed to hit one of a group of targets. A unitary warhead is a single warhead on a single missile Multiple re-entry vehicle (MRV) is an intermediate case in which the MRV missile carries several reentry vehicles, which can be dispersed but not individually aimed.
8. (c) The Intelligent Flight Control System (IFCS) is a next–generation flight control system designed to provide increased safety for the crew and passengers. It was developed by NASA and IFCS tested it in NF–15B. Generation 1 IFCS flight tests conducted in 2003.
9. (d) Both the statements regarding Indian Polar Research stations are incorrect.
   India's first expedition to Antarctica was in 1981, she expanded it by undertaking its first Arctic expedition in August 2007 by setting up 'Himadri' at Nye–Alesund in Norway in 2008 to mark the International Polar Year (IPY).
   The first Antarctic research station was Gangotri (1983) and second was Maitri (1989). 'Bharti' or 'Bharthi' is the third Antarctic station at Larsemann in East Antarctica.
10. (d) ISRO and NASA have agreed to form a working group for co-operation in Moon and Mars mission for future metrology and space exploration and also in Helio physics.
11. (a) 'Curiosity' is a car–sized robotic rover, exploring Gale Crater on Mars as part of NASA's Mars Science Laboratory Mission (MSL)
    'MESSENGER' is an acronym of Mercury Surface Environment, Geochemistry, and Ranging. It is a robotic NASA spacecraft orbiting the planet Mercury.
    Rustom is a medium Altitude Long Endur-ance unmanned combat air vehicle (UCAV) being developed by DRDO.
    Akash–2 is a computer Tablet developed by DATAWIND an Indian company.
12. (a) A computer keyboard, a typewriter–style device having a particular arrangement of buttons or keys, is a main input device. It inputs text, numbers and sends commands to the computer.
13. (d) Akash is a medium–range mobile surface–to–air missile. Nag is an antitank missile by DRDO. Pinaka is a multiple rocket launcher produced for Indian Army by DRDO while Trishul is a missile system of a short range surface to–air missile as a part of the Integrated Guided Missile Development Program.
14. (c) Radar is a system that uses radio waves for object deflection. It determines the range, altitude, direction, or speed of objects.
15. (b) INS Tarkash is a Talwar–class multirole stealth frigate constructed by Indian Navy.
16. (a) The old 2001 policy mandated that ISRO could release only data upto 5.8 meter resolution.
17. (b) 4K TV is an Ultra high definition television. UHDTV, has horizontal resolution on the order of 4,000 pixels. Since its screen is too big the HD gives blurred images.
18. (d) New Super Wi-Fi will support 802.11 ad standard, it can send data upto the length of 1-2 GB and would function at the speed of 7 gigabits per second.
19. (a) Dark matter is a type of matter hypothesized in astronomy and cosmilogy to account for a large part of the mass that appears missing from the universe, it does not interact with light. It is also hypothesized that it interacts with ordinary matter through gravity and binds galaxies, and it pushes the universe apart.
20. (c) 'Greenware' is completely free of both hazardous PVC and BFR and its manufacturing can be a special action like replacing all standard light bulbs with CFLs or a more general application to live more ecologically.
21. (d) High Frequency Active Auroral Research Programme (HAARP) is an ionspheric research programme and the main purpose is to investigate the potential for developing ionaspheric enhancement technology for radio communications and surveillance.
22. (d) Orbital decay, a process of prolonged reduction in the altitude of a satellite's orbit is caused due to atmospheric drag, tides and gravitational pull.

23. (c) GPON standard differs from other passive optical network standards in that it achieves higher bandwidth and higher efficiency using larger variable length packets. GPON offers efficient packaging of user traffic with frame segmentation allowing higher quality of service for delay-sensitive voice and video communications traffic. On the other hand, PON is a network architecutre that brings fibre cabling and signals to the home using a point-to-multipoint scheme that enables a single optical fibre to serve multiple premises.
24. (d) The device has been developed to near completion using a bistable 'electrofluidic imaging film' for e–paper. The screen of proposed flexible devices would need to be able to display text and images, yet be flexible and tough enough.
25. (d) The Square Kilometre Array (SKA) is a radio telescope developed in Australia and South Africa which will have a total collecting area of one square kilometre. Atleast 13 countries and close to 100 organisations are involved radio telescopes collect radio wave from objects million or billions light years away from earth.
26. (d) Megha-Tropiques is an Indo-French Joint satellite mission for studying the water cycle and energy exchanges in the tropics. It was launched on 12 October 2011 from the Satish Dhawan Space Centre, Sriharikota.
27. (b) The air version of Brahmos has been successfully test-fired recently. Brahmos-II will be hypersonic cruise missile with range more than 300 km.
28. (d) DRAMs are less expensive and slower than SRAMs. DRAM requires to be refreshed periodically as opposed to the SRAM. DRAM has higher bit density and lower power consumption.
29. (c) The ISRO is designing a Geo imaging satellite (Gisat) which is planned to be launched during 2016–17. It will carry a GEO imager with multi–spectral (Visible, near–infra–red and thermal) and multiresolution (50m to 1.5 km) imaging instruments. It will acquire images of a geographical strip and also provide near real time images of large areas of the country.
30. (a) Dhanush missile is an indigenously developed naval version of the Prithvi short range ballistic missile. It is a single stage missile and was developed by the DRDO and it uses liquid propellant. It was successfully test-fired on 13 November, 2013.
31. (c) It is a highly reliable, multi-purpose, fuel efficient rugged, lightweight twin turbo prop aircraft with a retractable tricycle landing gear.
32. (b) Cookies can be used to maintain data. They can be used to track internet user's web browing as well.
33. (b) Data rates over Ethernet can be upto 100 gigabits per second. Ethernet has a good degree of compatability.
34. (c) ISRO space vision 2025 includes satellite based communication and navigation systems mainly for rural connectivity.
35. (a) A 'Ramjet' is also referred to as a flying 'stovepipe' or an athodyd. Ramjets are frequently confused with pulsejets, which use an intermittent combustion but Ramjets employ a continuous combustion process. They can not produce thrust at zero airspeed. They are also confused with 'Scramjets', which are a similar system designed for higher speeds, using supersonic flow.
36. (c) NASA has joined the European space Agency's (ESA') Euclid mission, a telescope designed to investigate the cosmological mysteries of dark matter and dark energy. Euclid is a medium –class ("M–class") mission and is part of ESA's "Cosmic Vision", 2015–2025 scientific program.
37. (b) Nirbhay is a long range, subsonic cruise missile being developed in India by Defence Research and Development Organisation. The missile has a good loitering capability i.e., it can go round a target and perform several manoeuvres and then re-engage it. Its first trial on 12 March 2013 from Chandipur, Odisha was failed. Brahmos is a supersonic cruise missile, while 'Lakshya' is an Indian pilot-less target drone system. Nirbhy's technology is not inspired by it. It is a "tree–top" missile because it can flyover or around hills, can fly at a very low altitude and avoid detection.
38. (d) A dwarf planet is a planetary-mass object that is neither a planet nor a satellite. More explicitly, the International Astronomical Union (IAU) defines a dwarf planet as a celestial body in direct orbit of the Sun that is massive enough for its shape to be controlled by gravitation, but that unlike a planet has not cleared its orbital region of other objects.The point 3 refers to asteroids.
39. (a) 1 Mars year = 23 Earth months = 686.65 days = 1.88 Earth years
1 Day on Mars = 24 hours 39 minutes 35 seconds
Mars has all four seasons that the Earth does, but,

since the year is longer on the planet, the axial tilt is different, and Mars has a more eccentric orbit than Earth, the seasons are not the same length as each other nor are they the same in each hemisphere. In the northern hemisphere spring is the longest season. In the northern hemisphere of Mars the seasons break down like this: Spring – 7 months, Summer – 6 months, Fall – 5.3 months, and Winter – just over 4 months. In the south seasons not exactly the same length as in the north, but they are similar; however, the temperatures can be as much as 30 C warmer.

40. (a) **HD40307g** is an exoplanet orbiting in the habitable zone of HD40307. It is located 42 light-years away in the direction of the southern constellation Pictor. The planet was discovered using the European Southern Observatory's HARPS apparatus by a team of astronomers of University of Hertfordshire and Guillem Anglada-Escude of the University of Goettingen, Germany.

41. (b) The **Mars-500** mission was a psychosocial isolation experiment conducted between 2007 and 2011 by Russia, the European Space Agency and China, in preparation for an unspecified future manned space flight to the planet Mars. The experiment's idea was to mimic the time scale of a MARS mission.

42. (c) *Hayabusa* was an unmanned spacecraft developed by the Japan Aerospace Exploration Agency (JAXA). Its goal was to return a sample of material from a small near-Earth asteroid named 25143 Itokawa to Earth for further analysis.

43. (c) Brown dwarfs are substellar objects too low in mass to sustain hydrogen-1fusion reactions in their cores. Red Dwarfs are cool but Brown Dwarfs are cooler than them and it is very large planet.

44. (a) The asteroid belt is a doughnut-shaped concentration of many different sized asteroids between the orbits of Mars and Jupiter, closer to the orbit of Mars. The asteroids orbit the Sun. The asteroid belt is not smooth but there are concentric gaps in it known as Kirkwood gaps.

45. (b) The rings of Saturn is made up of many uneven particles. The ring particles are made almost entirely of water ice, with a trace component of rocky material. There is still no consensus as to their mechanism of formation.

48. (a) NASA's Swift satellite had uncovered in 2013, the previously unknown remains of a shattered star designated G306.3–0.9. The new object ranks among the youngest-known supernova remnants in our Milky Way Galaxy.

49. (c) In a dark, starless patch of intergalactic space, astronomers have discovered a never-before-seen cluster of hydrogen clouds strewn between two nearby galaxies, Andromeda (M31) and Triangulum (M33).

50. (a) One causal virus of gonorrhea has been detected which is more aggressive than HIV in spreading AIDS and is resistance to any antibiotic. Although no infected persons are yet detected with this virus.

51. (a) A new species had been discovered in 2013 in Bhagvan Mahaveer Wildlife Sanctuary, Goa. Its name is *Idionyx gomantakensis*.

53. (a) The space plane constructed by Richard Branson's Spaceflight company, Virgin Galactic successfully completed to carry off people to space is called as Boeing X-37.

54. (a) Jiuquan Satellite Launch Center (JSLC) is a Chinese space vehicle launch facility spaceport located in the Gobi desert, about 1,600 km from Beijing.

55. (a) Natural uranium is 99.284% ^{238}U isotope, with ^{235}U only constituting about 0.711% of its weight. Enriched uranium is a type of uranium in which the percent composition of uranium-235 has been increased artificially through the process of isotope separation.

56. (a) Holmium-166-chitosan complex for the treatment of knee and joint synovitis. The four naturally occurring isotopes of iron, iron-54, iron-56, iron-57, and iron-58 are used primarily as tracers in studies on blood. Arsenic -74 is used to detect the tumours in the human body. Phosphorus-32 is used in radiotherapy in cancer patients.

57. (b) Param Padma, a supercomputer was introduced in April 2003. It had a peak speed of 1024 GFLOPS (about 1 TFLOP) and a peak storage of 1 TB.

58. (c) Colossus was the world's first electronic digital computer that was at all programmable. The Colossus computers were developed for British code breakers during World War II to help in thecryptanalysis of the Lorenz Cipher. Colossus was designed by the engineer Tommy Flowers.

60. (a) Zero moment point is a concept related with dynamics and control of legged locomotion. ASIMO, Advanced Step in Innovative Mobility, is a humanoid robot designed and developed by Honda.

64. (c) Neutrinos are tiny particles that carry no charge and interact very weakly with electrons and protons. NASA scientists have found that the giant black hole at the centre of the milkyway may be producing the mysterious high energy neutrinos.

66. (d) Agni-1 is a surface to surface, nuclear weapons capable ballistic missile.

67. (b) India is the first nation to successfully put spacecraft in Mars orbit in maident attempt. India is the 4th nation in the world to have sent spacecraft to Mars. The other 3 nations are – The USA, Russia and European space agency.

70. (d) GSLV is three staged vehicle equipped with solid propellant at first stage, liquid at second and cryogenic engine at third and PSLV is 4 marked by alternate solid and liquid busters.

73. (b) Phalcon is radar system provided by Israel to India.

74. (a) The High Altitude Warfare School (HAWS) is located at Gulmarg (Jammu and Kashmir). It was set up in 1948 by the Indian Army to train its personnel high altitude warfare, counter intelligence and survival.

75. (b) Kiran MK 11: Aerobatic aircraft
MI 35 : Attack helicopter
Mirage 2000 is a jet fightor aircraft

83. (d) The Kessler syndrome (also called the Kessler effect, proposed by the NASA scientist Donald J. Kessler in 1978, is a scenario in which the density of objects in low Earth orbit (LEO) is high enough that collisions between objects could cause a cascade—each collision generating space debris which increases the likelihood of further collisions. One implication is that the distribution of debris in orbit could render space exploration, and even the use of satellites, unfeasible for many generations.

85. (a) GSLV Mk-3 is the latest version of GSLV. It can carry up to 4500 to 5000 kg satellites. Until now, India relied on EU's Arianespace launch vehicle to send those INSAT-4 satellites. It will consist of 3 stages. 1st stage will have solid propellant, 2nd stage will have liquid propellant and 3rd stage will be cryogenic engine. GSLV MK-3 will make ISRO a competitive player in commercial launches of foreign satellites.

86. (a) SMAP (Soil Moisture Active Passive) Satellite is a three-year mission which will measure the amount of moisture in soil. It will help to monitor drought, predict floods, assist crop productivity, weather forecasting and linking water, energy and carbon cycles.

87. (c) Idukki district of Kerala has become first district in India to have high speed Rural Broadband Network i.e. National Optical Fibre Network (NOFN) Internet connectivity. NOFN is the largest rural connectivity project of its kind in the world.

88. (a) Contactless cards launched by ICICI Bank can be used to make electronic payments by waving the cards near the merchant terminal instead of dipping or swiping. These cards are based on Near Field Communication technology.

89. (b) Lukosin is a herbal drug developed by Defense Research Development Organisation(DRDO) for treatment of Lucoderma(White patches on skin).

90. (c) Inbreeding helps in accumulation of superior genes and elimination of less desirable genes. Continued inbreeding usually reduces fertility and even productivity. This is called inbreeding depression.

91. (c) The Department of Science & Technology, Ministry of Science & Technology has been entrusted with the responsibility of coordinating two out of eight national missions launched under the National Action Plan on Climate Change (NAPCC). These are National Mission for Sustaining Himalayan Ecosystem (NMSHE) and National Mission on Strategic Knowledge for Climate Change (NMSKCC).

92. (a) Nuclear transmutation is the conversion of one chemical element or isotope into another. In other words, atoms of one element can be changed into atoms of another element through nuclear reactions or through radioactive decay.

93. (a) Tamiflu (oseltamivir) is an antiviral medication used to treat Swine flu.

94. (b) Thirty Meter Telescope will be the second largest of the existing and announced extremely large telescopes (ELT) which is under construction on Mauna Kea in Hawaii. The TMT will enable scientists to study fainter objects far away from earth providing information about early stages of the evolution of the universe. As a founding member of the important international scientific project, India will be a 10 percent partner in the project and 70 percent of its contributions will be "in kind".