



All India Civil Services Coaching Centre

(Under the aegis of Government of Tamil Nadu)

TEST BOOKLET

Test 1 – NCERT Science and Technology

Time Allowed: 2 Hours

Maximum Marks: 200

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 Name on the Test Booklet
3. This Test Book contains 100 items (questions). Each it 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 response ONLY on the separate sheet provided along with the Test Booklet.
5. All items Carry equal marks. There will be **penalty (negative marking)** for wrong answers marked by you in the Answer sheet.
6. There are four alternatives for the answers to every question. For each question for which a wrong answer has been given by the candidate, one third ($\frac{1}{3}$) of the marks assigned to that question will be deducted as penalty.
7. 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 same penalty as above for that question.
8. If a question is left blank i.e., no answer is given by the candidate, there will be no penalty for that question.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO



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1. Which of the following statements is/are correct?

1. Plants require a specific pH range for their healthy growth
2. Our stomach produces hydrochloric acid, which help indigestion
3. Toothpaste is basic in nature and helps to neutralize the acid which causes tooth decay

Select the correct answer using the code given below:

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

2. Consider the following statements:

1. In Longitudinal waves, the direction of motion of the wave is parallel to the direction of motion of the particles of the medium.
2. In transverse waves, the direction of motion of the wave is perpendicular to the direction of motion of the particles of the medium.

Which of the above statements is/are correct?

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

3. Which of the following statements is/are correct about electrolytic refining?

1. Impure metal is made the cathode.
2. The pure metal is made the anode.
3. Metal is deposited from anode to cathode.

Select the correct answer using the code given below:

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

4. Consider the following statements regarding image formation by eye:

1. The size of the pupil is controlled by the iris.
2. The lens focuses light on a layer called the retina.

Which of the above statements is/are incorrect?

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

5. Consider the following statements regarding laws of reflection:

1. The angle of incidence is always equal to the angle of reflection.
2. The incident ray, the normal at the point of incidence and the reflected ray all lie in the same plane.

Which of the above statements is/are correct?

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

6. Which of the following is the real-world application of the Doppler Effect?

- (a.) Medical Diagnosis
- (b.) Weather Forecasting

- (c.) Speed Gun
(d.) All of the above
7. Which of the following statements regarding leptons is correct?
(a.) Neutrinos and electrons are examples of leptons.
(b.) They are affected by strong nuclear interactions.
(c.) They are always charged particles.
(d.) All of the above
8. Total internal reflection is the phenomenon that involves the reflection of all the incident light off the boundary. Total internal reflection only takes place when:
1. The light is in the more dense medium and approaching the less dense medium.
2. The angle of incidence is greater than the critical angle.
Which of the above statements is/are incorrect?
(a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
9. Which of the following statements is/are correct regarding Microorganisms?
1. They are single-celled creatures only.
2. They can live in all types of environments.
Select the correct answer using the code given below:
(a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
10. Which of the following diseases is/are caused by Bacteria?
1. Polio
2. Typhoid
3. Malaria
Select the correct answer using the code given below:
(a.) 1 and 2 only
(b.) 2 only
(c.) 3 only
(d.) 1 and 3 only
11. Which of the following events occur during the Photosynthesis Process?
1. Absorption of light energy by chlorophyll
2. Reduction of carbon dioxide into carbohydrates
Select the correct answer using the code given below:
(a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
12. Consider the following statements regarding nutrition:
1. It is the mode of taking food by an organism and its utilization by the body.
2. Nutrients enable living organisms to repair damaged parts of their bodies.
Which of the above statements is/are correct?
(a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
13. With reference to the Anti-microbial resistance, consider the following statements:
1. It is a gain of the susceptibility of bacteria to the killing properties of an antibiotic agent.
2. It may result in the formation of superbugs.
Which of the following statement is/are correct?
(a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
14. Osteomalacia is caused by the deficiency of:
(a.) Vitamin D

- (b.) Vitamin K
- (c.) Vitamin A
- (d.) Vitamin C

15. With reference to the process of Tissue Culture, consider the following statements:

1. The cells are placed in an artificial medium to form a small group of cells or callus.
2. Using tissue culture, many plants can be grown from one parent in disease-free conditions.

Which of the above statements is/are incorrect?

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

16. Consider the following organisms:

1. Agaricus
2. Azotobacter
3. Spirogyra

Which of the above is/are used as biofertilizer/ biofertilizers?

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

17. Consider the following pairs:

1. Red Blood Cells – Erythrocytes
2. White Blood Cells – Leukocytes
3. Platelets – Macrophages

Which of the above pairs is/are correctly matched?

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

18. Consider the following statements regarding blood:

1. Haemoglobin is a red pigment in RBCs that transports oxygen to all the parts of the body.

2. White blood cells (WBC) fight against germs that may enter our body

Which of the above statements is/are correct?

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

19. Which of the following is/are related to Vaccination?

- (a.) Injecting the body with materials that stimulate the body to produce antibodies.
- (b.) Use of antigens to cure diseases.
- (c.) Injecting the body with materials that stimulate the body to produce antigens
- (d.) None of the above

20. Which of the following are pollinating agents?

1. Wind
2. Bat
3. Humans
4. Moths

Select the correct answer using the code given below:

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

21. Consider the following statements regarding Networking:

1. Bluetooth connects short-range devices and Wifi connects devices in a larger range for sharing data.
2. K-fi is the project launched in which free WiFi zones have been set up in select areas of Karnataka.

Which of the above statements is/are correct?

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

22. Consider the following statements regarding Internet Protocol (IP):

1. IP addresses uniquely identify the source and destination of data transmitted with the Internet Protocol.

2. The successor of IPv4 is IPv5.

Which of the above statements is/are correct?

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

23. Consider the following statements about edge computing:

1. It manages the massive amounts of data generated by IoT devices by storing and processing data in the cloud.

2. It reduces the amount of data actually at risk at any one time.

Which of the above statements is/are correct?

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

24. Consider the following statements regarding the Bharat QR code:

1. It is the world's first interoperable payment acceptance solution.

2. It has been developed jointly by the National Payments Corporation of India (NPCI), Visa, MasterCard, and American Express.

Which of the above statements is/are correct?

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

25. Consider the following statements regarding Artificial Intelligence (AI):

1. It describes the action of machines accomplishing tasks that have historically required human intelligence.

2. The term was coined in 1956 by John McCarthy.

Which of the above statements is/are correct?

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

26. Which among the following is/are plausible applications of super computer?

- 1. Recreating the Big Bang
- 2. Testing nuclear weapons
- 3. Predicting climate change
- 4. Understanding earthquakes

Select the correct answer using the code given below

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

27. Consider the following statements:

1. Net neutrality is the principle that Internet Service Providers should treat all the data on the internet equally.

2. Net Neutrality supports for speeding up of specific websites.

Which of the above statements is/are incorrect?

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

28. The advent of which of the below technologies is often referred to as Industrial Revolution 4.0?

- 1. Cloud computing
- 2. Computers
- 3. Internet of Things
- 4. Telecommunication

Select the correct answer using the code given below:

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

29. Which of the following is not a type of interaction in e-Governance?

1. Government to Client (G2C)
2. Government to Employee (G2E)
3. Government to Government (G2G)
4. Government to Business (G2B)

Select the correct answer using the codes given below:

- (a.) 1 only
- (b.) 2 only
- (c.) 3 and 4 only
- (d.) None of the above

30. Consider the following statements regarding the difference between LiFi and WiFi:

1. LiFi transmits data using light with the help of LED bulbs, whereas WiFi transmits data using radio waves with the help of a WiFi router.
2. In WiFi interference is less and can pass through salty seawater, whereas in LiFi interference is more, and cannot pass through seawater.

Which of the above statements is/are correct?

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

31. Consider the following statements related to 5G:

1. China is the world's first country to launch 5th-Generation (5G) networks.
2. AJ Paulraj committee is formed for identifying the 5G deployment roadmap for India.

Which of the above statements is/are correct?

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

32. With reference to Bharat Net Project, consider the following statements:

1. It aims at providing affordable broadband connectivity of up to 100Mbps to all rural households.
2. It is funded through the Universal Service Obligation Fund (USOF).

Which of the above statements is/are correct?

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

33. With reference to the National Digital Communications Policy, 2018, consider the following statements:

1. DCP-2018 will replace the existing National Telecom Policy, 2012.
2. It aims to provide universal broadband connectivity to every citizen.

Which of the above statements is/are correct?

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

34. With reference to 'Mission Raksha Gyan Shakti', consider the following statements:

1. It is an initiative to boost India's Intellectual Property Rights (IPR) culture in Electronics and IT sector.
2. Directorate General of Quality Assurance (DGQA) has been entrusted with the responsibility of coordinating and implementing the programme.

Which of the above statements is/are incorrect?

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

35. Consider the following statements regarding the Young Scientist Programme:

1. It aims to inculcate and nurture space research fervor in young minds.
2. The programme was launched by ISRO.

Which of the above statements is/are correct?

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

36. Consider the following statements regarding the RBI's data localization directive:

- 1. There is a bar on the overseas processing of strictly domestic transactions.
- 2. Data can be shared with the overseas regulator.

Which of the above statements is/are correct?

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

37. Consider the following statements related to the National Supercomputing Mission:

- 1. The Mission is implemented and steered jointly by the Department of Science and Technology (DST) and Ministry of Human Resource Development.
- 2. PARAM Shivay is the first supercomputer designed & built under the mission.

Which of the above statements is/are correct?

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

38. With reference to the Param Shivay Supercomputer, consider the following statements:

- 1. It has been built under National Super Computing Mission at IIT Delhi.
- 2. It can be used for climate assessment, space engineering, seismic analysis, etc.

Which of the above statements is/are correct?

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

39. Consider the following statements related to the Council of Scientific and Industrial Research (CSIR):

- 1. It operates as an autonomous body registered under the Registration of Societies Act, 1860.
- 2. CSIR-NPL acts as a national verification agency for certifying instruments and equipment for monitoring emissions and ambient air.

Which of the above statements is/are correct?

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

40. Consider the following statements regarding the National Payments Corporation of India (NPCI):

- 1. It is an initiative of the Reserve Bank of India (RBI) and the Indian Banks' Association (IBA).
- 2. It runs the National Financial Switch (NFS).

Which of the above statements is/are correct?

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

41. Consider the following statements regarding DART space probe:

- 1. It is an asteroid deflecting mission to prevent a collision with earth.
- 2. It would be the first mission of Roscosmos to demonstrate such capability.

Which of the above statements is/are correct?

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

42. With reference to the YUVIKA program, consider the following statements:

1. The program focuses on arousing the interest of university-level students in the emerging areas of Space activities.
2. The program has been organized by the Ministry of Home Affairs along with the Department of Science and technology.

Which of the above statements is/are incorrect?

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

43. An orbit is a regular, repeating path that one object in space takes around another one. In this context, consider the following statements:

1. Polar Orbits have an inclination of nearly 180 degrees.
2. Satellites placed in a Sun Synchronous orbit when pass over the same place at the same time of day.

Which of the above statements is/are correct?

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

44. Consider the following statements regarding space terminologies:

1. Apogee is a point on the orbit where the vertical distance of the satellite from the Earth's surface is smallest.
2. Sunspot is a region on the surface of the Sun that is cooler than its surroundings.

Which of the above statements is/are correct?

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

45. With reference to the Antrix Corporation in India, consider the following statements:

1. It is a Maharatna company.

2. It is involved in building and marketing of satellite systems but it cannot establish ground infrastructure for space applications.

Which of the above statements is/are correct?

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

46. Which of the following space agency has announced funding support for Made In Space's project, known as RAMA (Reconstituting Asteroids into Mechanical Automata)?

- (a.) NASA
- (b.) ISRO
- (c.) JAXA
- (d.) Roscosmos

47. With reference to Pinaka rockets, consider the following statements:

1. Pinaka-I system is a multibarrel guided rocket launch system developed by DRDO.
2. Pinaka Mark-II is an upgraded version of the Pinaka-1 system with an increased range of 70 km.

Which of the above statements is/are correct?

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

48. Which of the following statements is incorrect with respect to the GAGAN project?

- (a.) It is a Satellite-Based Augmentation System (SBAS) for the Indian Airspace.
- (b.) It is a joint initiative of the Indian Space Research Organization (ISRO) and Airports Authority of India (AAI).
- (c.) GSAT 8 and GSAT 10 satellites serve as the GAGAN Payload for the provision of services.
- (d.) None of the above.

49. Which of the following statements regarding Hyperspectral Imaging Satellite (HysIS) is incorrect?

- (a.) It has been launched by NASA.
- (b.) It is an earth observation satellite.
- (c.) It has been placed into a polar sun-synchronous orbit.
- (d.) It will be used to measure chemical and physical properties.

50. With reference to the "Goldilocks zone", consider the following statements:

- 1. It refers to a habitable zone in the planetary system where the temperature is neither too high nor too low.
- 2. This range of distances changes depending on the size and temperature of the star.

Which of the above statements is/are correct?

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

51. Consider the following statements with reference to Indian AWACS:

- 1. The Phalcon AWACS operational in Indian Air Force is procured from Israel.
- 2. NETRA Airborne Early Warning and Control System has been built indigenously by India's DRDO.

Which of the above statements is/are correct?

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

52. Consider the following statements with reference to the Deep-Submergence Rescue Vehicles (DSRV) of India:

- 1. These are small submarines that are specially designed to dive to greater depths and rescue stranded crews in the event of an emergency.
- 2. INS Astradharani is India's indigenously built DSRV.

Which of the above statements is/are correct?

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

53. With reference to India's air defence system, consider the following statements:

- 1. S-400 Triumf air defense system is being purchased from Russia.
- 2. Akash is a part of mid-range air to air defense systems of India.

Which of the above statements is/are correct?

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

54. Which of the following missile systems were developed under the Integrated Guided Missile Development Programme (IGMDP)?

- 1. Prithvi
- 2. Agni
- 3. Trishul
- 4. Akash
- 5. Nag

Select the correct answer using the code given below:

- (a.) 1, 2 and 3 only
- (b.) 3, 4 and 5 only
- (c.) 1, 2 and 4 only
- (d.) 1, 2, 3, 4 and 5

55. Consider the following statements:

- 1. Tejas is an advanced technology Light Combat Aircraft indigenously developed by India.
- 2. Long Range Surface to Air Missile (LRSAM) is a joint development programme of India and Israel.

Which of the above statements is/are correct?

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

56. Which of the following statement is /are correct regarding Project75 India (P75 I)?

1. It envisages the construction of nuclear submarines.
2. It has been cleared under the strategic partnership model.

Select the correct answer using the code given below:

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

57. Consider the following statements:

1. The recently commissioned ICGS Vijaya is an indigenously built patrol vessel of India.
2. Samudrika is a program of DRDO that aims to design and indigenously develop electronic warfare systems to meet the requirements of the Indian Air force.

Which of the above statements is/are correct?

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

58. Consider the following statements with reference to 'Innovations for Defence Excellence (iDEX)' initiative of India:

1. It aims to engage MSMEs and Startups for innovation and technology development in Defence and Aerospace.
2. It will be funded and managed by Defence Innovation Organization, a not for profit company.

Which of the above statements is/are correct?

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

59. With reference to the Smart Border Management, consider the following statements:

1. Comprehensive Integrated Border Management System (CIBMS) project focuses on border management on Indo-Myanmar and Indo-Bangladesh border areas.

2. BOLD-QIT is a smart fencing project under CIBMS.

Which of the above statements is/are correct?

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

60. Consider the following statements with reference to the India's Mission Shakti:

1. It is an Anti-satellite mission successfully conducted by ISRO only.
2. This makes India the fourth nation to possess and test- anti-satellite capability, behind the U.S., Russia, and China.

Which of the above statements is/are correct?

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

61. Diseases can be classified into various types. In this context, consider the following statements:

1. Congenital diseases are those that are transmitted from parent to offspring from generation to generation.
2. Non-communicable diseases are chronic diseases that can be caused due to behavioral factors.

Which of the above statements is/are correct?

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

62. Consider the following statements regarding the Genetic Engineering Appraisal Committee (GEAC):

1. It functions under the Ministry of Science and Technology.
2. Any person authorized by it can have powers to take punitive action under the Environment Protection Act.

Which of the above statements is/are correct?

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

63. Food fortification refers to the deliberate addition of one or more micronutrients to reduce the burden of micronutrient malnutrition in India. In this context, consider the following statements:

1. Milk, salt and edible oil are the only items that are fortified in India at present.
2. Fortification of staple food is not mandatory as per the Fortification of Food Regulations 2018.

Which of the above statements is/are correct?

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

64. In the context of active and passive immunity, consider the following statements:

1. Provision of ready-made antibodies to protect the body against foreign agents is called active immunity.
2. Deliberately injecting the microbes during immunization is an example of passive immunity.

Which of the above statements is/are incorrect?

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

65. Consider the following statements regarding Industrial genetics:

1. In this, the desired proteins are over expressed in the organism by cells

transformation and produced in mass scale.

2. This technique can be used in medicines production and bioremediation.

Which of the above statements is/are correct?

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

66. Consider the following statements related to microbial fuel cells:

1. It transforms chemical energy into electricity using oxidation-reduction reactions.
2. It has applications where there is a high power requirement.

Which of the above statements is/are correct?

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

67. Consider the following statements:

1. Antimicrobial resistance is the ability of a microbe to resist the effects of medication previously used to treat them.
2. India launched the Red Line campaign for Anti-Microbial Resistance awareness.

Which of the above statements is/are correct?

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

68. With reference to the different types of vaccines, consider the following statements:

1. Inactivated vaccines provoke a more durable immunological response than live attenuated vaccines and thus do not require multiple doses.
2. Live-attenuated vaccines cannot be administered to persons with impaired immune response system.

Which of the above statements is /are correct?

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

69. Biofertilizers are the substance that contains microbes, which helps in promoting the growth of plants, trees by increasing the supply of essential nutrients to the plants. In this context, consider the following statements:

1. Only Rhizobium, Azotobacter, Azospirillum, Phosphate Solubilizing Bacteria and mycorrhiza, have been incorporated as biofertilizers in India's Fertilizer Control Order (FCO), 1985.
2. Blue-green algae fix atmospheric nitrogen in the soil.

Which of the above statements is/are correct?

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

70. Consider the following statements related to Embryo Transfer Technology (ETT):

1. It is a technique of assisted reproduction.
2. Rashtriya Gokul Mission and National Mission on Bovine Productivity utilize this technology.

Which of the above statements is/are correct?

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

71. In the context of nuclear physics, consider the following statements:

1. Fissile materials are a subset of fissionable materials.
2. Fertile materials are those that are not fissionable by thermal neutrons.

Which of the above statements is/are correct?

- (a.) 1 only
- (b.) 2 only
- (c.) Both 1 and 2

- (d.) Neither 1 nor 2

72. Consider the following statements regarding the Nuclear Fuel Cycle:

1. It is the progression of nuclear fuel from the reactor to its disposal.
2. The approach to waste disposal is to immobilize the nuclides and then place them underground.

Which of the above statements is/are correct?

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

73. Nuclear Waste must be processed for its safe disposal. In this context, consider the following statements:

1. Conditioning is the first step in processing which involves sorting and segregating the contaminated items from non-contaminated ones.
2. Pre-treatment involves slowing down the release of radio-nuclei from the waste package into the environment.

Which of the above statements is/are incorrect?

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

74. Consider the following statements regarding the atomic structure:

1. The positive charge is concentrated at the centre of the atom forming in its nucleus.
2. The nucleus contains more than 99% of the mass of the atom.

Which of the above statements is/are correct?

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

75. Depending upon how it affects the matter, radiation can be classified into ionizing and non-ionizing. In this context, consider the following statements:

1. Non-ionizing radiations deposit energy in the materials through which they pass.
2. Neutrons are indirectly ionizing while X-rays are directly ionizing.

Which of the above statements is/are correct?

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

76. With reference to the composition of the nucleus of an atom, consider the following statements:

1. Isotones differ in the number of neutrons inside their nucleus.
2. The mass number describes the total number of protons and neutrons in an atom.

Which of the above statements is/are correct?

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

77. With reference to alpha decay, consider the following statements:

1. When a nucleus undergoes alpha-decay, the atomic number and mass number of daughter nucleus decrease by four and two respectively.
2. Alpha particles cannot penetrate the surface of the skin of the human body.

Which of the above statements is/are correct?

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

78. With reference to the gamma radiations, consider the following statements:

1. These are electromagnetic radiations carrying neither mass nor any charge.

2. They can penetrate through the body and thus find numerous medical applications.

Which of the above statements is/are correct?

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

79. With reference to radiocarbon dating, consider the following statements:

1. Radiocarbon is the carbon-12 isotope that is unstable and weakly radioactive.
2. Radiocarbon is naturally formed in the upper layers of the atmosphere.

Which of the above statements is/are correct?

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

80. Consider the following statements regarding radiological environmental remediation:

1. It aims to reduce radiation exposure from contaminated soil, waste storage facilities, etc.
2. Its purpose is to return affected lands and water resources for safe public use.

Which of the above statements is/are correct?

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

81. With reference to the National Physical Laboratory (NPL), consider the following statements:

1. It is considered as one of the first National Laboratory in India whose foundation stone was laid before independence.
2. It was conceptualized in 1943 by the Governing Body of Council of Scientific and Industrial Research (CSIR).

Which of the above statements is/are correct?

- (a.) 1 only
- (b.) 2 only

- (c.) Both 1 and 2
(d.) Neither 1 nor 2
82. Which of the following statements regarding the Apsara reactor is/are correct?
1. It was the first research reactor in Asia.
 2. Apsara-upgraded is an indigenously made research reactor of higher capacity that will produce radioisotopes for medical applications.
- Select the correct answer using the code given below:
- (a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
83. India is taking tentative steps towards restarting research into cold fusion. In light of this, consider the following statements:
1. It seeks to produce nuclear energy without any harmful radiation.
 2. The disadvantage of this idea is that it requires complex equipment for energy generation.
- Which of the above statements is/are correct?
- (a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
84. With reference to Thorium Reactors, consider the following statements:
1. Unlike uranium, thorium alone cannot be used as a nuclear fuel in a reactor.
 2. Thorium reactors offer the advantage of increased plutonium production.
- Which of the above statements is/are correct?
- (a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
85. Consider the following statements regarding the Treaty on Prohibition of Nuclear Weapons (TPNW):
1. It prohibits the entire range of activity relating to production, stockpiling and use of nuclear weapons.
 2. India is signatory of TPNW.
- Which of the above statements is/are correct?
- (a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
86. With reference to the institutions involved in the development of nuclear energy in India, consider the following statements:
1. Atomic Energy Commission ensures that the use of ionizing radiation and nuclear energy does not cause risk to people and the environment.
 2. The Department of Atomic Energy is under the direct charge of President.
- Which of the above statements is/are correct?
- (a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
87. Consider the following statements:
1. Atomic Minerals Directorate (AMD) is responsible for the exploration and research of uranium in India.
 2. Andhra Pradesh has the largest reserves of monazite in India.
- Which of the above statements is/are correct?
- (a.) 1 only
(b.) 2 only
(c.) Both 1 and 2
(d.) Neither 1 nor 2
88. Consider the following statements:
1. The reactor core is a bounded region where chain reactions take place.
 2. Moderator in a nuclear reactor is always a material with low mass-number.

Which of the above statements is/are correct?

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

89. With reference to the history of nuclear power plants, consider the following statements:

1. The USA was the first country to generate electricity from a nuclear reactor.
2. The world's first grid-connected nuclear power plant was set by Russia.

Which of the above statements is/are incorrect?

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

90. India and Russia are constructing Rooppur Atomic Energy Plant in which among the following countries?

- (a.) Bangladesh
- (b.) Nepal
- (c.) Bhutan
- (d.) Myanmar

91. Consider the following statements with reference to Nanotechnology:

1. It involves science and engineering of objects in the range of only 1 to 10 nanometer.
2. An atomic force microscope is used to generate images of nanoscale details on a physical surface.

Which of the above statements is/are correct?

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

92. Bandicoot Robot is built by:

- (a.) HSC, Bengaluru
- (b.) Kerala based startup Gen Robotics
- (c.) New Delhi Municipal Corporation

(d.) IIT Kanpur

93. Which one of the following statements is incorrect with reference to Nano Mission in India?

- (a.) It is a capacity-building program for the development of Nanotechnology in India.
- (b.) It involves funding of basic research by individual scientists.
- (c.) It involves facility development for technologies like Optical Tweezers, Atomic Force Microscope (AFM).
- (d.) None of the above.

94. Consider the following statements with reference to Buckyball:

1. They are composed of carbon atoms linked to three other carbon atoms by covalent bonds.
2. They are very good electron acceptors that can be used in increasing the efficiency of solar cells.

Which of the above statements is/are correct?

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

95. With reference to Nano fabrics, consider the following statements:

1. These are textiles embedded with small nanoparticles.
2. Zinc oxide embedded nano fabrics can be used for UV rays protection.

Which of the above statements is/are correct?

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

96. With reference to Laws of Robotics, consider the following statements:

1. Isaac Asimov is known to have given the 'Three Laws of Robotics'.

2. The Zeroth law of Robotics of not harming humanity was given by Joseph Engelberger.

Which of the above statements is/are correct?

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

97. Consider the following statements with reference to properties of nanomaterial:

- 1. They are governed by rules of Quantum mechanics.
- 2. The chemical reactivity of the substances decreases drastically on Nano transformation.

Which of the above statements is/are correct?

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

98. Consider the following statements with reference to India's Sona 1.5 robot:

- 1. It is a full-service robot that can be used to transport documents by physical movement.
- 2. It is the first robot in the world with human-like spine technology.

Which of the above statements is/are correct?

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

99. In discussions of the potential of molecular nanotechnology, the possibility has been posited that badly or maliciously designed self-assembling structures could get out of control, and destroy or disassemble all structures they encounter in their blind quest to replicate. What is the term for such a structure or group of structures?

- (a.) Blue goo
- (b.) Green goo

- (c.) Red goo
- (d.) Grey goo

100. Which of the following public institutions are dedicated towards Robotics and Artificial intelligence?

- (a.) Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru
- (b.) Research and Development Establishment (Engineers), Pune
- (c.) Indian Space Research Organisation (ISRO)
- (d.) Both (a) and (b)