



# All India Civil Services Coaching Centre

(Under the aegis of Government of Tamil Nadu)

## TEST BOOKLET

### Test 5 – NCERT Science and Technology

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**Time Allowed: 2 Hours**

**Maximum Marks: 200**

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### 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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Time Allowed: 2 Hours

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1. Which of the following processes indicate chemical change?

1. Change of colour
2. Evolution of gas
3. Change in Temperature

Select the correct answer using the code given below:

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

2. Consider the following statements about refractive Index:

1. The refractive index determines the relative speed of light in different media
2. The optical density of a medium depends on the refractive index 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. Consider the following statements about the effect of temperature on the particle of the matter:

1. The energy supplied by heat overcomes the forces of attraction between the particles
2. The particles leave their fixed positions and start moving more freely

Which of the above statements is/are correct?

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

4. Which of the following is/are correctly matched?

1. Vision Defect - Correction Lens
2. Myopia - Bifocal lens

3. Hypermetropia - Convex lens

4. Presbyopia - Concave lens

Select the correct answer using the code given below:

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

5. Consider the following statements regarding the friction:

1. It depends on the nature of surfaces in contact.
2. It is caused by the irregularities on the two surfaces in contact.

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. Arrange the following in increasing order of their basicity:

1. Gastric Juice
2. Pure water
3. Lemon Juice
4. Sodium Hydroxide solution

Select the correct answer using the code given below:

- (a.) 1 – 2 – 3 – 4
- (b.) 1 – 3 – 2 – 4
- (c.) 4 – 1 – 2 – 3
- (d.) 2 – 3 – 1 – 4

7. Arrange the following waves in decreasing order of their frequencies:

1. X-rays
2. Radio waves
3. UV waves
4. Green Light

Select the correct answer using the code given below:

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

8. Consider the following statements regarding the combustion:

- 1. The highest temperature at which a substance catches fire is called its ignition temperature.
- 2. The amount of heat energy produced on complete combustion of 1 kg of a fuel is called its calorific value

Which of the above statements is/are correct?

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

9. Concave mirrors are commonly used in which of the following?

- 1. Torches
- 2. Shaving mirrors
- 3. Rear-view (wing) mirrors in vehicles
- 4. Concentrating sunlight to produce heat in solar furnaces

Select the correct answer using the code given below:

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

10. Consider the following statement about Gravitation Force:

- 1. It governs the motion of planets of the solar system around the sun
- 2. The force is independent of the mass of the objects

Which of the above statements is/are correct?

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

11. Match the following:

**List I**

- A. Tamarind
- B. Sour milk (Curd)
- C. Nettle sting
- D. Tomato

**List II**

- 1. Lactic acid
- 2. Methanoic acid
- 3. Oxalic Acid
- 4. Tartaric acid

Select the correct code using the code given below:

- |      | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
|------|----------|----------|----------|----------|
| (a.) | 2        | 3        | 4        | 1        |
| (b.) | 2        | 4        | 1        | 3        |
| (c.) | 1        | 3        | 4        | 2        |
| (d.) | 4        | 1        | 2        | 3        |

12. Which of the following are known as the 'suicide bags' of the cell?

- (a.) Ribosome
- (b.) Lysosome
- (c.) Golgi apparatus
- (d.) None of the above

13. Consider the following statements regarding Vegetative Propagation of Plants:

- 1. All plants produced through vegetative propagation are genetically similar to the parent plant.
- 2. Plants raised by vegetative propagation bear flowers and fruits quicker than those produced from seeds.

Which of the above statements is/are correct?

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

14. These animals are bilaterally symmetrical and triploblastic. They have a true body cavity. There is an extensive organ differentiation. This differentiation occurs in a segmental fashion, with the segments lined up one after the other from head to tail.

Which of the following animals described in the above passage?

- (a.) Mollusca
- (b.) Nematode
- (c.) Annelida
- (d.) Coelenterata

15. Consider the following statements regarding the digestive system of an animal:

1. Large Intestine is the largest organ in the body
2. The small intestine absorbs water and salts from the undigested food material.

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. The mode of taking food into the body varies in different organisms. In this context, consider the following statements:

1. Bees and humming-birds swallow the nectar of plants.

Snakes like the python suck the animals they prey upon.

2. Infants of mammals feed on mother's milk

Which of the above statements is/are correct?

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

17. Arrange the following in the correct order of taxonomic hierarchy:

1. Genus
2. Class
3. Order
4. Phylum
5. Species

Select the correct answer using the code given below:

- (a.) 2>1>3>4>5
- (b.) 4>2>3>1>5
- (c.) 3>4>2>5>1
- (d.) 3>2>1>4>5

18. Consider the following diseases:

1. Measles
2. Cholera
3. Tuberculosis
4. Hepatitis

Which of the above is/are caused by virus?

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

19. Which of the following are Plant Hormones?

1. Auxin
2. Gibberellins
3. Cortisol
4. Abscisic acid

Select the correct answer using the code given below:

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

20. Match the following:

Hormone	Secreted By
A. Glucagon	1. Pituitary
B. Renin	2. Pancreas
C. Growth Hormone	3. Hypothalamus
D. Releasing Hormones	4. Kidney

Select the correct code using the code given below:

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

21. Which of the following statements is/are correct regarding 5G Network?

1. With 5G, the peak network data speeds are expected to be in the range of 6-7 Megabit per second.
2. It is expected to form the backbone of Internet of Things (IoT).

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

22. Consider the following statements regarding radio frequency spectrum (which is simply referred to as spectrum):

1. It is a part of the electromagnetic spectrum covering the range from 30 Hz to 300 GHz.
2. Television and mobile phone signals require higher frequency bands than radio signals.

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 regarding Uniform Resource Locator (URL):

1. URL is a component of the IP address.
2. The components of URL - protocol, domain, and directories are separated by forward slashes.

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. Which of the following is correct regarding a 'web cookie'?

1. It is a small piece of data that is sent from a website and stored in user's web browser while a user is browsing a website
2. It is used to remember stateful information about the user's operations on the website.

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 about cloud computing:

1. Computing clouds provide computation, software, data access, and storage resources without requiring cloud users to know the location and other details of the computing infrastructure.
2. Cloud computing providers deliver applications via the internet, which are accessed from web browsers and desktop and mobile apps, while the business software and data are stored on servers at a remote location.

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. The term 'Data Mining' is often associated with which of the following?

- (a.) Cloud computing
- (b.) Big data
- (c.) Net neutrality
- (d.) Internet of Things

27. In the context of digitisation in India, Optical Fibre has become vogue today. Which of the following could be the reasons?

1. Least vulnerable to data theft/cyber attacks
2. High bandwidth of light
3. Long-distance transmission
4. Data is transmitted at the speed of light

Select the correct answer using the code given below:

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

28. Cyber Forensic involves the investigation of

1. Hard drives
2. Telephone Call Data
3. Network Devices
4. Mobile Devices

Select the correct answer using the code given below:

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

29. Which of the following are part of early Harvest Program (EHP)?

1. National Portal for lost and found children
2. Biometric attendance
3. Mass messaging to citizens
4. Public Wi-fi hotspots in all cities

Select the correct answer using the code given below

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

30. Which of the following provides an isolated tunnel across a public network for sending and receiving data privately, as if the computing devices were directly connected to the private network?

- (a.) Visual Private Network
- (b.) Virtual Private Network
- (c.) Virtual Protocol Networking
- (d.) None of the above

31. E-KRANTI is a national e-governance plan to accelerate e-governance across India. Which of the following are the thrust areas of e-Kranti?

- 1. Education
- 2. Health
- 3. Security
- 4. Farmers

Select the correct answer using the code given below:

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

32. With reference to the Cyber Swachhta Kendra, consider the following statements:

- 1. It is also known as the Botnet Cleaning and Malware Analysis Centre.
- 2. It is a part of the Digital India initiative of the Government of India.

Which of the above statements is/are incorrect?

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

33. With reference to IPrism in India, consider the following statements:

- 1. It is an online portal for awareness and registration of intellectual property rights of the MSME sector in India.
- 2. It has been launched by ASSOCHAM in collaboration with CIPAM and ERICSSON.

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. Consider the following statements regarding the National e-Governance Plan (NeGP):

- 1. It aims for improving the delivery of public services by using digital technology.
- 2. GI cloud is an initiative that will ensure the benefits of cloud computing for e-Governance projects.

Which of the above statements is/are correct?

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

35. Consider the following statements regarding Digital Literacy:

- 1. It is defined as the ability of the individual to understand and use digital technologies for meaningful actions.
- 2. PMGDISHA is a digital literacy programme of India focusing on both rural and urban populations.

Which of the above statements is/are incorrect?

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

36. Consider the following statements related to the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS):

- 1. It is implemented by the Department of Science & Technology for a period of three years.
- 2. Cyber-Physical Systems (CPS) area new class of engineered systems that integrate computation and physical processes in a dynamic environment.

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 regarding Cyber Law:

- 1. It provides legal recognition to electronic documents.

2. It prevents all the Internet Service Providers to prevent distribution and transmission of child abuse material.

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. NITI Aayog is mulling to build a National Data and Analytics Platform to host and interpret huge amounts of data. In this regard, consider the following statements:

- 1. Big Data can help in making regulatory reporting much faster.
- 2. Big Data finds application in predicting diseases and optimizing treatment.

Which of the above statements is/are incorrect?

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

39. Consider the following statements related to the CERT-In (the Indian Computer Emergency Response Team):

- 1. GravityRAT was first detected by it.
- 2. It works under the Ministry of Science and 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

40. Consider the following statements related to the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA):

- 1. Only one person per eligible household would be considered for training.
- 2. The Scheme is applicable only to rural areas of the country.

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. With reference to the Mars Orbiter Mission, consider the following statements:

- 1. It was launched by PSLV C-25.
- 2. It made ISRO the fourth space agency to reach Mars and the first Asian country to do so.

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 respect to Outer Space Missions, consider the following pairs:

- 1. Gaia Mission – NASA
- 2. Hongyun Project – Chinese Space Agency
- 3. MAVEN Spacecraft – European Space Agency
- 4. Hayabusa 2 – JAXA

Which of the above pairs are correctly matched?

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

43. With reference to the NISAR mission, consider the following statements:

- 1. It is joint earth observing mission of NASA and JAXA.
- 2. NISAR will be the first satellite mission to use two different radar frequencies for measuring land surface changes less than a metre across.

Which of the above statements is/are incorrect?

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

44. Consider the following statements with reference to the Gravitational waves:

- 1. Detection of these waves challenges the validity of the General Theory of Relativity.
- 2. LIGO India detector will be set up in Karnataka by 2025.

Which of the above statements is/are incorrect?

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

45. With reference to the Spitzer Space Telescope recently seen in the news, consider the following statements:

1. It is a part of 'Great Observatories' designed by NASA for space research.
2. It captures X-rays emitted by a warm object like stars in space.

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. In the context of India-based Neutrino Observatory (INO) project, consider the following statements:

1. Neutrinos are massless charged particles that are the most abundant in-universe.
2. Tata Institute of Fundamental Research is the nodal institution of the project.

Which of the above statements is/are correct?

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

47. Consider the following statement with respect to Chandra X-ray Observatory:

1. It is a space observatory set up in the Ladakh region of India by ISRO in collaboration with NASA.
2. It is the world's most powerful X-ray telescope.

Which of the above statements is/are incorrect?

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

48. With reference to the Aditya-L1 mission, consider the following statements:

1. It is India's first space mission intended to study the outermost region of the sun.

2. It will be placed in a halo orbit around the Lagrangian point 1 (L1) of the Sun-Earth system.

Which of the above statements is/are incorrect?

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

49. With reference to the Global Navigation Satellite System (GNSS) around the world, consider the following pairs:

1. GPS – USA
2. Quasi-Zenith Satellite System – Israel
3. BeiDou – China
4. Galileo – Russia

Which of the above pairs is/are incorrectly matched?

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

50. In the Astrophysics what does Graveyard Orbit refers to:

- (a.) Orbits where Satellites are typically moved at the end of their operational life to reduce the probability of colliding.
- (b.) Orbits between Saturn and Jupiter
- (c.) Orbits across the perimeter of Solar System
- (d.) None of the above

51. With reference to the BrahMos missile, consider the following statements:

1. The missile is named after Indian River Brahmaputra and Russian city Moscow.
2. It is a supersonic ballistic missile that can be launched from submarine, ships, aircraft, and even land-based systems.

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. In the context of Cruise and Ballistic Missiles, consider the following statements:



1. A Ballistic missile is a self-propelled guided vehicle that sustains flight through aerodynamic lift for most of its flight path.
2. A Cruise missile depends on gravity to reach its target.

Which of the above statements is/are incorrect?

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

53. With reference to the Indian Aircraft Carrier, consider the following statements:

1. Currently, India has only one aircraft carrier i.e. INS Vikramaditya.
2. INS Vikrant will be India's first indigenous aircraft carrier.

Which of the above statements is/are incorrect?

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

54. Consider the following statements with reference to the indigenously developed Doppler Weather Radar (DWR) in India:

1. It is the first indigenously developed Polarimetric Doppler Weather Radar (DWR) in India.
2. It can provide even detailed information on storm's internal wind flow and structure.

Which of the above statements is/are correct?

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

55. Consider the following pairs:

1. Unmanned Aerial : Features
2. Nishant : Battlefield surveillance and reconnaissance
3. Aura : Medium Altitude Long Endurance unmanned combat air vehicle
4. Rustom : Capable of taking off from and landing on

small airstrips

Which of the above pairs is/are correctly matched?

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

56. With reference to the Stealth Technology, consider the following statements:

1. It is also termed as low-observable technology.
2. It is deployed only on aircraft.

Which of the above statements is/are correct?

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

57. With reference to the Indian Missile deterrence, consider the following pairs:

1. Sagarika – Submarine-launched Ballistic Missile
2. Astra – First air to air missile of India
3. Pragati – Export variant of Prahaar missile
4. Shaurya – Canister launched a hypersonic surface - to - Surface tactical missile

Which of the above pairs are incorrectly matched?

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

58. With reference to the recently inducted Dhanush artillery guns in the Indian army, consider the following statements:

1. It is an indigenously upgraded variant of the Swedish Bofors gun.
2. It is the first long-range artillery gun to be produced 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

59. Consider the following statements with reference to Man-portable Anti-Tank Guided Missile System of India:

1. MILAN 2T is an indigenously built portable anti-tank guided missile.
2. The Konkurs is a Russian Anti-tank missile system that is being used by the Indian Army.

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. With reference to India's nuclear-powered submarine INS Arihant, consider the following statements:

1. It is India's second indigenously built nuclear submarine after INS Arighat.
2. Its design is based on the Russian Akula-1 Class submarine.

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. Consider the following statements regarding the Gene therapy:

1. It is the introduction of genetic material directly into cells to compensate for abnormal genes or making beneficial protein.
2. A genetically engineered carrier can be programmed to carry a gene that can overwrite the mutation and correct it.

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. With reference to the 'Oxytocin', seen in the news recently, consider the following statements:

1. It is a natural hormone secreted by pituitary glands in mammals.
2. It is listed in the National List of Essential Medicines (NLEM) as it is crucial in preventing post-partum haemorrhage.

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. Recently the Delhi High Court put a stay on Delhi government's Measles-Rubella vaccine campaign. In this context, consider the following statements regarding measles and rubella:

1. Measles and Rubella are both viral diseases spreading through respiratory droplets of sick people.
2. Rubella is also known as German Measles is more contagious and severe than Measles.

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. Consider the following situation:

"A woman in the family carries a faulty gene for haemophilia while her husband does not. They have a son and a daughter." In this context. Which of the following statements is most probably correct?

- (a.) Both son and daughter suffer from haemophilia.
- (b.) Son suffers from haemophilia while the daughter does not.
- (c.) Both son and daughter do not suffer from haemophilia.
- (d.) The daughter suffers from haemophilia while the son does not.

65. Which of the following pairs is/are correctly matched?

Disorder	Deficiency of
1. Xerophthalmia	: Retinol
2. Osteomalacia	: Calciferol
3. Beri-Beri	: Riboflavin
4. Cheilosis	: Thiamine

Select the correct answer using the code given below:

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

66. Which of the following statements regarding AIDS is/are correct?

1. It is an example of a congenital disease.
2. It is caused by the Human Immunodeficiency virus (HIV) which is a member of the rotavirus group.
3. ELISA test is used for diagnosing AIDS.

Select the correct answer using the code given below:

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

67. With reference to the common genetic blood disorders, consider the following statements:

1. Sickle cell anemia occurs only when both the parents are carriers of the defective sickle cell gene.
2. Thalassemia is a condition in which the body is not able to produce enough Red Blood Cells (RBCs).

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. Which among the following communicable diseases are caused by a virus?

1. Syphilis
2. Rabies
3. Dengue
4. Malaria

Select the correct answer using the code given below:

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

69. Consider the following statements regarding benefit from transgenic animals:

1. To study how genes are regulated and how they affect the normal functioning of the body.
2. To study how genes contribute to the development of the disease.
3. To produce useful and desired biological products for treatment.

4. To test the safety of vaccines.

Which of the above statements are correct?

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

70. Recently, a team of Greek and Spanish doctors has produced a baby from three people. In the context of triple parent baby, consider the following statements:

1. It is done to replace the father's faulty Mitochondrial DNA with healthy Mitochondria from a donor.
2. Spain became the first country in 2015, to have officially approved procedures to create "three-parent" babies.

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. Consider the following statements with reference to Graphene:

1. It is the thinnest compound known to man.
2. It is highly impermeable and photosensitive in its characteristics.

Which of the above statement is/are incorrect?

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

72. With reference to nuclear fission, consider the following statements:

1. It is an exothermic reaction.
2. The enormous energy released in an atom bomb comes from uncontrolled fission.

Which of the above statements is/are incorrect?

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

73. Match the following:

**Type of Characteristic Radioactive Waste**

- A. Low-level Waste      1. Contaminated material from the

- decommissioned reactor
- B. Intermediate-level Waste 2. Incinerated before disposal
- C. High-level Waste 3. Requires cooling
- Select the correct answer using the code given below:

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

74. Consider the following statements regarding beta particles:

- Beta particles generally have a greater ability to penetrate other materials than alpha particles.
- Carbon-14 used in carbon-dating of fossils emits beta particles.

Which of the above statements is/are incorrect?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

75. Consider the following statements:

- X-rays are emitted by electrons outside the nucleus whereas gamma rays are emitted by the nucleus.
- The materials used for shielding X-rays and gamma rays should have a high atomic number.

Which of the above statements is/are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

76. Match the following types of radioactive decays with their characteristics:

**Type of Decay**      **Particles Emitted**

- |                |                   |
|----------------|-------------------|
| A. Alpha decay | 1. Photons        |
| B. Beta decay  | 2. Positrons      |
| C. Gamma decay | 3. Helium Nucleus |

Select the correct answer using the code given below:

- |      | A | B | C |
|------|---|---|---|
| (a.) | 1 | 2 | 3 |

- 2 1 3
- 3 2 1
- 3 1 2

77. The measure of radioactivity is based on the counting of disintegrations per second. In light of this, consider the following statements:

- Curie (Ci) is the SI unit of radioactivity which is equal to one disintegration per second.
- Becquerel (Bq) is a non-SI unit defined as the activity of a quantity of radioactive material in which one million nuclei decay per second.

Which of the above statements is/are correct?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

78. Which of the following is/are the sources of radioactive waste?

- Nuclear Fuel Cycle
- Medical Waste
- Industries
- Naturally occurring radioactive materials

Select the correct answer using the code given below:

- 1 only
- 2 and 3 only
- 1, 2 and 3 only
- 1, 2, 3 and 4

79. Which of the following is/are the sources of radioactive waste?

- Nuclear Fuel Cycle
- Medical Waste
- Industries
- Naturally occurring radioactive materials

Select the correct answer using the code given below:

- 1 only
- 2 and 3 only
- 1, 2 and 3 only
- 1, 2, 3 and 4

80. Consider the following statements regarding radiological environmental remediation:

- 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. Consider the following statements:

1. Atomic Energy Regulatory Board is responsible for the design, construction, commissioning and operation of nuclear power reactors.
2. Nuclear Power Corporation of India Limited (NPCIL) is a PSE implementing the Fast Breeder Reactors Programme 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

82. Match the following:

**Power Station**      **State**

- |                |                  |
|----------------|------------------|
| A. Narora      | 1. Gujarat       |
| B. Kaiga       | 2. Tamil Nadu    |
| C. Kundankulam | 3. Uttar Pradesh |
| D. Kakrapar    | 4. Karnataka     |

Select the correct answer using the code given below:

- |      | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
|------|----------|----------|----------|----------|
| (a.) | 4        | 1        | 2        | 3        |
| (b.) | 3        | 4        | 2        | 1        |
| (c.) | 3        | 1        | 4        | 2        |
| (d.) | 1        | 3        | 4        | 2        |

83. Nuclear Reactors can be classified into two types depending upon the energy of neutrons that cause fissions in the reactor core. In this context, consider the following statements:

1. Thermal reactors contain neutron moderators while a fast reactor contains no neutron moderator.
2. Most of the nuclear reactors are fast reactors.

Which of the above statements is/are incorrect?

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

(d.) Neither 1 nor 2

84. The Iran Nuclear Deal stipulates Iran to limit uranium enrichment and reduce its stockpile of enriched uranium. In this context, consider the following statements regarding uranium enrichment:

1. Uranium enrichment is the process by which a sample of mined uranium has its proportion of U-238 increased.
2. Nuclear power plants require highly enriched uranium (HEU).

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. Light water reactors using water as moderator as well as coolant are of two types. In this context, consider the following statements:

1. Pressurized Water Reactors (PWRs) do not require any steam generators.
2. Both Pressurized Water Reactors and Boiling water reactor require low-enriched uranium.

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. Consider the following statements:

1. Breeder Reactors generate more fissile material than it consumes.
2. Research Reactors are used for the production of radioisotopes for medical and industrial 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

87. Which of the following statements regarding Pressurized Heavy Water Reactors (PHWRs) is/are correct?

1. PHWRs generally make use of natural uranium.
2. They can be used for plutonium production.

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

88. With reference to the Treaty on Non-Proliferation of Nuclear Weapons (NPT), consider the following statements:

1. NPT represents the only binding commitment to the goal of disarmament by the nuclear-weapon states.
2. NPT requires the safeguarding of only internationally traded nuclear material and 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

89. India is a member of which of the following export control regimes?

1. Wassenaar Arrangement
2. Missile Technology Control Regime
3. Australia Group
4. Nuclear Suppliers Group

Select the correct answer using the code given below:

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

90. The chain reaction is controlled in a nuclear reactor to generate electricity. In this context, consider the following statements:

1. Moderators are provided along with fissionable material to increase the speed of slow neutrons for sustaining the chain reaction.
2. Control rods are used for controlling the reaction rate in a nuclear reactor.
3. The nuclear reactor coolant used to absorb the heat can also act as a moderator.

Which of the above statements are correct?

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

- (d.) 1, 2 and 3

91. Which of the following are the application of Nanotechnology in food processing sector?

1. Contamination Sensor
2. Antimicrobial Packaging
3. Green Packaging
4. Tracing Brand Protection

Select the correct answer using the code given below:

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

92. With reference to Quantum dots, consider the following statements:

1. They are semiconductor nanoparticles that glow a particular colour after being illuminated by light.
2. Quantum dots are both photo luminescent and electro-active.

Which of the above statements is/are correct?

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

93. With reference to the Chatbots, consider the following statements:

1. These are computer programs designed to simulate conversations with human users over the internet.
2. Rule-based chatbots provide predefined responses from a database, based on the keywords used for the search.
3. Siri and Alexa are a type of Data-driven and predictive chatbots.

Which of the above statements are correct?

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

94. Consider the following statements with reference to Robotic Terminology:

1. An Actuator is a power mechanism that is used to effect motion or maintains the position of the robot.

2. Optical Encoder is a detection sensor that measures the linear or rotary motion of a robot.

3. A transducer is a device that converts energy from one form to another.

Which of the above statements is/are incorrect?

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

95. With reference to Nanomaterials, consider the following statements:

- 1. The incidental nanomaterial is unintentionally produced nanomaterial due to direct or indirect human influence.
- 2. Soot from forest fires is an example of engineered nanomaterial.
- 3. Titanium dioxide's nanoparticle is a naturally occurring nanomaterial.

Which of the above statements is/are correct?

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

96. With reference to Nano-composites, consider the following statements:

- 1. These are heterogeneous materials composed of two or more substances of which at least one has a Nanoscale dimension.
- 2. The addition of nanoparticles results in greater thermal and electrical conductivity of the material.

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. With reference to the use of nano-technology in the health sector, which of the following statements is/are correct?

- 1. Targeted drug delivery is made possible by nanotechnology.
- 2. Nanotechnology can largely contribute to gene therapy.

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

98. With reference to the classification of nanomaterials, consider the following statements:

- 1. Zero Dimensional Nanomaterials are those that have all their dimensions less than 100nm.
- 2. The nanotube is an example of one-dimensional nanomaterial.

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. With reference to the Telerobotic Coronary Intervention, consider the following statements:

- 1. It is a robotic method of performing Neurosurgery.
- 2. India became the first country in the world to perform a telerobotic operation.
- 3. Corpath was the revolutionary technology used for this operation.

Which of the above statements are correct?

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

100. Which of the following best describes the Quantum Spin Liquid, a term recently seen in the news?

- (a.) It is a new state of matter found in a two-dimensional material.
- (b.) It is a superconducting liquid at high temperatures.
- (c.) It is a state of electron found in very heavy bodies like neutron stars.
- (d.) It is a type of carbon nanotube used in electronics manufacturing.