

Time: 1 hr 40 min

Total Marks: 400

**Instructions**

1. This Test Booklet contains **100** items (questions). Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
2. You have to mark all your responses **ONLY** on the separate Answer Sheet provided. See directions in the Answer Sheet.
3. All items carry equal marks.
4. Before you proceed to mark in the Answer Sheet, the response to the various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions.
5. **Penalty for wrong answers:**  
**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTIONS.**
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-third** of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer**, even if one of the given answers happens to be correct and there will be same penalty as above to that question.
  - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.

1. What happens when the sunlight travels through the Earth's atmosphere?
  - (a) The blue colour is scattered more compared to the red colour.
  - (b) The red colour is scattered more compared to the blue colour.
  - (c) Both the blue and the red colours are scattered equally.
  - (d) The blue colour is not scattered but the red colour is scattered the most.
2. When a solid body is partially or completely immersed in a fluid, the fluid exerts an upward force on the body. The magnitude of the force is equal to
  1. The mass of the body
  2. The weight of the displaced fluid by the bodyWhich of the above is/are correct?
  - (a) 1 only
  - (b) 2 only
  - (c) Both 1 and 2
  - (d) Neither 1 nor 2
3. If the length of a copper wire is increased by twice, then its resistivity will be
  - (a) doubled
  - (b) halved
  - (c) same
  - (d) one-fourth
4. Which one of the following is dimensionless quantity?
  - (a) Stress
  - (b) Strain
  - (c) Pressure
  - (d) Force
5. A system that does NOT allow exchange of heat with its surrounding is called
  - (a) Adiabatic system
  - (b) Non-adiabatic system
  - (c) Equilibrium system
  - (d) Non-equilibrium system
6. If the speed of light in carbon disulphide and vacuum is X and Y, respectively, then
  - (a)  $X < Y$
  - (b)  $X > Y$
  - (c)  $X \geq Y$
  - (d)  $X = Y$
7. A current through a horizontal power line flow in east to west direction. What will be the direction of magnetic field at a point directly below when viewed from east end
  - (a) Clockwise in a plane perpendicular to the wire
  - (b) Anti-clockwise in a plane perpendicular to the wire
  - (c) Clockwise in a plane of parallel to the wire
  - (d) Anti-clockwise in a plane of parallel to the wire
8. Which one among the following elements is known to be discovered the earliest?
  - (a) Copper
  - (b) Gold
  - (c) Oxygen
  - (d) Uranium
9. When a light ray passes from air to water with a non-zero angle the ray will be
  - (a) bending towards the normal
  - (b) bending away from the normal

- (c) propagating in straight line  
(d) reflected towards the opposite direction
10. Which one of the following equations related to the motion of an object is NOT correct? (Symbols carry their usual meanings)
- (a)  $s = ut + \frac{1}{2}at^2$   
(b)  $u = v - at$   
(c)  $v^2 - u^2 = 2ax$   
(d) Distance travelled during  $n^{\text{th}}$  second =  $u + \frac{1}{2}a(2n - 1)$
11. Which one of the following statements is NOT correct?
- (a) An ammeter is always connected in series in the circuit to measure the current.  
(b) A voltmeter is always connected in parallel in a circuit to measure the voltage.  
(c) A voltmeter has a high resistance and an ammeter has a low resistance.  
(d) A voltmeter has a low resistance and an ammeter has a high resistance.
12. Which one of the following is a non-conventional source of energy?
- (a) Petroleum (b) Natural gas  
(c) Tidal energy (d) Coal
13. If three resistors of 1 Ohm each, connect in parallel to each other, then resultant resistance is
- (a) 1 Ohm (b)  $\frac{1}{3}$  Ohm  
(c) 3 Ohm (d) 9 Ohm
14. We hear an echo due to
- (a) Refraction of sound waves  
(b) Reflection of sound waves  
(c) Diffraction of sound waves  
(d) Resonance due to sound waves
15. At uniform speed the acceleration is
- (a) maximum (b) minimum  
(c) zero (d) constant
16. An object is placed between infinity and the pole (P) of a convex mirror. The position of the image is
- (a) between pole (P) and the focus (F), behind the mirror  
(b) between the focus (F) and infinity, behind the mirror  
(c) between the pole (P) and the infinity, in front of the mirror  
(d) at the focus (F), behind the mirror
17. The work done in moving a charge of 2 coulombs (C) from point A to point B is 24 J. What is the potential difference between A and B?
- (a) 48 V (b) 6 V (c) 12 V (d) 0.08 V
18. Two conducting wires of the same material and of equal length and equal diameter are first connected in parallel and then in series in a circuit across the same potential difference. The ratio of heat produced in parallel and series combination is
- (a) 2 : 1 (b) 4 : 1 (c) 1 : 2 (d) 1 : 4
19. The magnetic field inside a long, straight solenoid carrying current
- (a) is zero.  
(b) decreases as we move towards its end.  
(c) increases as we move towards its end.  
(d) is uniform inside the solenoid.
20. A car has an initial velocity of 12 m/s and is brought to rest over a distance of 45 m. The acceleration of the car is.
- (a)  $+ 1.6 \text{ m/s}^2$  (b)  $+ 3 - 2 \text{ m/s}^2$   
(c)  $- 1.6 \text{ m/s}^2$  (d)  $- 0.8 \text{ m/s}^2$
21. The universal constant of gravitation G has the unit
- (a) N (b) m/s  
(c) Joule (d)  $\text{Nm}^2/\text{kg}^2$
22. Two bodies of unequal masses are dropped from a tower. At any instant, they have equal
- (a) Momentum (b) Acceleration  
(c) Potential energy (d) Kinetic energy
23. The frequency ( $f$ ), wavelength ( $\lambda$ ) and speed ( $v$ ) of a sound wave are related as
- (a)  $f = v\lambda$  (b)  $\lambda = vf$   
(c)  $f = \frac{\lambda}{v}$  (d)  $v = \lambda f$
24. The length of a simple pendulum is increased four times to its previous value while the mass is doubled. What is the ratio of the new and previous time period of the pendulum?
- (a) 3 : 1 (b) 2 : 5 (c) 2 : 1 (d) 3 : 2
25. Which one of the following is NOT a basic property of electric charge?
- (a) Charges can be added.  
(b) Charge is conserved.  
(c) Charge on a body is always an integral multiple of an electron or a proton charge.  
(d) Charges can be created and destroyed in an isolated system.
26. Gaja Dwar, Ashwa Dwar, Garuda Dwar, Makar Dwar, Shardula Dwar and Hamsa Dwar are located in a building at
- (a) New Delhi (b) Varanasi  
(c) Aurangabad (d) Thanjavur
27. Which dance form of India has been inscribed into UNESCO's Representative List of Intangible Cultural Heritage of Humanity?
- (a) Kathakali (b) Garba  
(c) Bhangra (d) Odissi

28. Which ministry has initiated the "Dhara": a special initiative dedicated to Indian Knowledge System (IKS)?  
(a) The Ministry of Education  
(b) The Ministry of Home Affairs  
(c) The Ministry of Information and Broadcasting  
(d) The Ministry of Culture
29. The scheme PRASHAD (Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive) provides assistance for  
(a) e-Visa facility  
(b) Multilingual Tourist Infoline  
(c) The development of tourism infrastructure in States and Union Territories  
(d) Promoting Dekho Apna Desh scheme
30. The joint venture named 'ASHINT' to develop nuclear power facility in India is between  
(a) NPCIL and NTPC (b) TMC and VECC  
(c) HWB and BARC (d) IGACR and NTPC
31. Which one of the following statements about 'REJUPAVE' is correct?  
(a) It's a joint venture between Food and Agriculture Organisation (FAO) and the Government of India to promote organic farming.  
(b) It's the name given to the lightest surveillance aircraft development by DRDO.  
(c) It's a centrally sponsored flagship programme of the Ministry of Women and Child Development, Government of India.  
(d) It's an indigenously developed road construction technology at high altitudes.
32. Which of the following statements about 'C-BoT' is/are correct?  
1. It's an underwater vehicle to monitor coral reefs.  
2. It has been developed by CSIR and NIO.  
Select the answer using the code given below:  
(a) 1 only (b) 2 only  
(c) Both 1 and 2 (d) Neither 1 nor 2
33. India's Gas Turbine Research Establishment (GTRE), part of the Defence Research and Development Organisation (DRDO) has developed an aero-engine, which will potentially make India self-reliance in aero-engine technology. What is the name of the engine?  
(a) Ganga (b) Yamuna  
(c) Krishna (d) Kaveri
34. Who among the following Presidents/Vice Presidents of the United States of America was awarded Nobel Peace Prize for work to find peaceful solutions to international conflicts, advance democracy and human rights, and to promote economic and social development?  
(a) Jimmy Carter (b) Woodrow Wilson  
(c) Barack Obama (d) Al Gore
35. Which of the following agencies releases report on 'SAFE' Accommodation: Worker Housing for Manufacturing Growth ?  
(a) RBI  
(b) NITI Aayog  
(c) National Housing Board  
(d) Housing and Urban Development Corporation
36. The lactic acid that gets accumulated in the muscle cells during rigorous exercise causing muscle cramps is produced from  
(a) ATP (b) Pyruvate  
(c) Ethanol (d) Glucose
37. A chain of peptide containing linear sequences of amino acid linked by peptide bonds best represent the  
(a) Primary structure  
(b) Secondary structure  
(c) Tertiary structure  
(d) Quaternary structure
38. Cambium is an example of  
(a) Lateral meristem (b) Apical meristem  
(c) Intercalary meristem (d) Permanent tissue
39. What happens when the fat and oil-containing food materials are left outside for a long time?  
(a) Fats and oils in the food get oxidised.  
(b) Fats and oils in the food get reduced.  
(c) Fats and oils in the food get ice-covered.  
(d) No reaction takes place.
40. Which is the correct pairing found in a normal DNA molecule?  
(a) Adenine pairs with thymine  
(b) Adenine pairs with guanine  
(c) Adenine pairs with cytosine  
(d) Thymine pairs with guanine
41. Clotting of blood involves which one among the following clotting proteins?  
(a) Pathogen (b) Fibrinogen  
(c) Macrophage (d) Phagocytes
42. Initial discovery of antibiotic penicillin was done by  
(a) Francis Crick (b) Maurice Wilkins  
(c) Charles Darwin (d) Alexander Fleming
43. The vector of malaria parasites is  
(a) Male Anopheles mosquito  
(b) Male Culex mosquito  
(c) Female Anopheles mosquito  
(d) Female Culex mosquito

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

1. Malaria: Mycobacterium
2. TB: Plasmodium

Select the answer using the code given below:

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

45. Vitamin B1 is also known as

- (a) Riboflavin                  (b) Thiamin  
(c) Retinol                      (d) Tocopherol

46. Consider the following lines of longitude and latitude:

1. Prime Meridian
2. Tropic of Cancer
3. Equator

Which of the above lines is/are a Great Circle?

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

47. Which of the following is the correct ascending order of the given minerals in terms of their presence in the Earth's crust?

1. Amphibolite                  2. Mica
3. Pyroxene

Select the answer using the code given below:

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

48. Which of the following is/are the applied forces in mechanical weathering process?

1. Gravitational force
2. Expansion force
3. Force due to water pressure

Select the answer using the code given below:

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

49. Which of the following is/are cold ocean current/currents?

1. Alaska Current
2. North Atlantic Drift
3. West Wind Drift

Select the answer using the code given below:

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

50. Which one of the following latitudes will experience a minimum angle of the Sun's rays when it is Summer Solstice in the Northern Hemisphere?

- (a) Arctic Circle                (b) Equator  
(c) Tropic of Cancer          (d) Tropic of Capricorn

51. Which of the following statements with reference to Coriolis force is/are correct?

1. Coriolis force acts perpendicular to the pressure gradient force.
2. At the equator, the Coriolis force is zero and the wind blows perpendicular to the isobars.

Select the answer using the code given below:

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

52. Which of the following statements with reference to sleet is/are correct?

1. Sleet is frozen raindrops and refrozen melted snow-water.
2. It occurs when a layer of air with the temperature below freezing point overlies a warm layer near the ground surface.

Select the answer using the code given below:

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

53. Humid subtropical climate is NOT experienced in which one among the following regions?

- (a) Coastal South Africa  
(b) East Coast of Australia  
(c) South Japan  
(d) South Argentina

54. Mahendragiri, the highest peak of the Eastern Ghats, is located in which one of the following states?

- (a) Andhra Pradesh          (b) Odisha  
(c) Telangana                  (d) Tamil Nadu

55. Temperate forests of South India, known as 'Sholas' are found in which of the following hills?

1. Anaimalai
2. Nilgiris
3. Palami

Select the answer using the code given below:

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

56. As per the Annual Report 2023-24 of the Ministry of Mines, Government of India, which of the following states are the major producer of copper in the country?

- (a) Rajasthan and Gujarat  
(b) Rajasthan and Madhya Pradesh  
(c) Jharkhand and Rajasthan  
(d) Jharkhand and Madhya Pradesh

57. Which one among the following is NOT a major oil field located in Gujarat?

- (a) Ankleshwar                (b) Kosamba  
(c) Mehsana                    (d) Moran

58. As per the Land Revenue Records, any land is categorised as Culturable Waste-Land if it is left fallow (uncultivated) for more than

- (a) 2 years                      (b) 3 years  
(c) 4 years                      (d) 5 years

59. Which one among the following is NOT included in the National Food Security Mission-Commercial Crops (NFSM-CC)?

- (a) Cotton                      (b) Coffee  
(c) Jute                          (d) Sugarcane

60. Consider the following statements with regard to a steel plant:
1. It was set up in 1964 with Russian collaboration.
  2. It receives iron ore from the Rourkela region.
  3. Water and hydel power is supplied by the Damodar Valley Corporation.
- Identify the steel plant on the basis of the above facts:
- (a) Bhilai Steel Plant
  - (b) Bokaro Steel Plant
  - (c) Rourkela Steel Plant
  - (d) Durgapur Steel Plant
61. An offshore terminal at Vadinar has been developed to reduce pressure from which to the following major ports in India?
- (a) Kandla Port
  - (b) Cochin Port
  - (c) Mormugao Port
  - (d) New Mangalore Port
62. As per the India State of Forest Report 2021, which one of the following Himalayan states has the highest percentage of its geographical area under forest?
- (a) Arunachal Pradesh
  - (b) Himachal Pradesh
  - (c) Sikkim
  - (d) Uttarakhand
63. Which of the following statements with reference to L-Wave or Long Wave generated by an earthquake is/are correct?
1. They follow the Earth's circumference.
  2. They travel at more or less at a constant rate.
- Select the answer using the code given below:
- (a) 1 only
  - (b) 2 only
  - (c) Both 1 and 2
  - (d) Neither 1 nor 2
64. Which one of the following is formed when volcanic ash is carried by running water and is deposited as a sedimentary layer?
- (a) Basalt
  - (b) Lapilli
  - (c) Slate
  - (d) Tuff
65. Condensation of water vapour into water is influenced by which of the following factor/factors?
1. Volume of air
  2. Humidity
  3. Temperature
- Select the answer using the code given below:
- (a) 1 only
  - (b) 1 and 2 only
  - (c) 2 and 3 only
  - (d) 1, 2 and 3
66. Which one of the following statements is NOT correct?
- (a) The molecules of soap are sodium or potassium salts of long-chain fatty acids.
  - (b) The molecules of soap contain both hydrophobic and hydrophilic ends.
  - (c) Detergents are more effective than soaps in hard water.
  - (d) In micelles the ionic-end of the molecules is towards oil droplet while the other end faces outside.
67. Which one of the following statements is correct?
- (a) A neutron is formed by combination of an electron and a proton. Therefore, it is neutral.
  - (b) The mass of an electron is about  $\frac{1}{2000}$  times that of a proton.
  - (c) An isotope of cobalt is used in the treatment of goiter.
  - (d) J.J. Thomson proposed that the nucleus of an atom contains only neutrons.
68. Which one of the following particles in the nucleus of an atom was discovered by J. Chadwick?
- (a) Electron
  - (b) Proton
  - (c) Positron
  - (d) Neutron
69. Which one of the following findings is NOT observed in Rutherford's Nuclear Model of Atom?
- (a) There is a neutral centre in an atom called nucleus.
  - (b) Nearly all the mass of an atom resides in the nucleus.
  - (c) The electrons revolve around the nucleus in a circular path.
  - (d) The size of a nucleus is very small as compared to the size of the atom.
70. Element X forms a chloride with the formula  $XCl_2$ , which is a solid with high melting point. X would most likely be in the same group of periodic table as
- (a) Na
  - (b) Al
  - (c) Mg
  - (d) K
71. Which one of the following oxides is a neutral oxide?
- (a) CO
  - (b)  $CO_2$
  - (c)  $Na_2O$
  - (d) MgO
72. Which one of the following is also known as dry ice in its solid form?
- (a)  $SiO_2$
  - (b)  $CO_2$
  - (c) CaO
  - (d) MgO
73. Which one of the following statements is NOT correct?
- (a) A scale measuring hydrogen ion concentration in a solution is called pH scale.
  - (b) The higher the hydrogen ion concentration in a solution higher is its pH
  - (c) We can measure pH generally from 0 to 14 on a pH scale.
  - (d) The 'p' in pH stands for 'potenz' in German meaning power.

74. Which one of the following statements is NOT correct ?

- (a) Half mole of nitrogen gas is measured 11.2 litres at STP.  
 (b) 17 grams of ammonia gas contains  $6.022 \times 10^{23}$  molecules at STP.  
 (c) 22.4 litres of  $\text{CO}_2$  gas at STP contains 44 grams of molecules.  
 (d) 4 grams of hydrogen gas contains  $6.022 \times 10^{23}$  molecules.

75. Which one of the following statements about a compound is NOT correct?

- (a) A compound is a substance composed of two or more elements chemically combined in a fixed proportion.  
 (b) Properties of a compound are different from its constituent elements.  
 (c) A compound is an impure substance.  
 (d) The constituents of a compound can be separated only by chemical or electrochemical reactions.

76. Match List-I with List-II and select the answer using the code given below the lists :

List I (Chemical Name)		List II (Chemical Formula)	
A.	Washing soda	1.	$\text{CaOCl}_2$
B.	Baking soda	2.	$\text{NaHCO}_3$
C.	Bleaching powder	3.	$\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
D.	Gypsum	4.	$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

Code:

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

77. Which one of the following nitrogen oxides may dimerise?

- (a)  $\text{N}_2\text{O}$  (b)  $\text{NO}_2$  (c)  $\text{N}_2\text{O}_3$  (d)  $\text{N}_2\text{O}_5$

78. Which one of the following statements regarding oxidation and reduction reaction is NOT correct?

- (a) If a substance loses hydrogen during reaction, it is reduced.  
 (b) If a substance loses oxygen during reaction, it is reduced.  
 (c) If a substance gains hydrogen during reaction, it is reduced.  
 (d) If a substance gains oxygen during reaction, it is oxidised.

79. Match List-I with List-II and select the answer using the code given below the lists :

List I (Physical Name)		List II (SI Unit)	
A.	Temperature	1.	Kelvin
B.	Weight	2.	Kilogram
C.	Mass	3.	Pascal
D.	Pressure	4.	Newton

Code:

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

80. For acid rain, the pH of rain water should be less than

- (a) 7.0 (b) 6.6 (c) 5.6 (d) 8.0

81. Which of the following main industry/industries was/were developed in the Second Industrial Revolution that took place after about 1850?

- (a) Coal and iron  
 (b) Cotton spinning and weaving  
 (c) Chemical and electrical  
 (d) Steam engines

82. Which among the following materials was used in making the Harappan seals?

- (a) Sandstone (b) Lapis lazuli  
 (c) Jasper (d) Steatite

83. Which one among the following Mahajanapadas in ancient India was an oligarchy?

- (a) Vajji (b) Kosala  
 (c) Gandhara (d) Magadha

84. Which one of the following sculptures found at Sanchi Stupa is NOT directly inspired by Buddhist ideas?

- (a) Empty seat (b) Shalhanjika  
 (c) Tree (d) Wheel

85. In British India, which one among the following Acts permitted detention without trial for up to two years?

- (a) Regulating Act, 1773  
 (b) Rowlatt Act, 1919  
 (c) Pitt's Indian Act, 1784  
 (d) Government of India Act, 1935

86. Which one of the following statements about the Bhoodan Movement is correct?

- (a) The target was to get one-sixth of cultivable land in India as donation.  
 (b) It was approved through a Central Government Act.  
 (c) It was ensured that the donated land was free from all litigation.  
 (d) The first donation of land was in Bihar.

87. The Constitution (Seventy-third Amendment) Act provides for

- an elaborate system of establishing municipal self-government.
- an elaborate system of establishing panchayats as units of self-government.
- establishing a Commission for Linguistic Minorities.
- the creation of the Jharkhand State.

88. BHARATPOL portal has been developed by

- The Election Commission of India
- The Central Bureau of Investigation
- The Enforcement Directorate
- The Securities and Exchange Board of India

89. Which one of the following statements about the Parliament of India is correct?

- A majority of members of Rajya Sabha are elected by a system of proportional representation by mean of single transferable vote.
- The Deputy Chairperson of the Rajya Sabha is nominated by the President from among the members of the Rajya Sabha.
- The Lok Sabha cannot be dissolved before the completion of its five-year term.
- The members of Lok Sabha also vote in the election of the members of Rajya Sabha.

90. Which one among the following does NOT figure among the Five Principles of Panchsheel?

- Mutual respect for each other's territorial integrity and sovereignty
- Equality and mutual benefit
- Peaceful coexistence
- Nuclear non-proliferation

91. Maize (makka) was introduced in India in the seventeenth century via

- Portugal
- Africa and Spain
- China and Mongolia
- Turkey

92. Match List-I with List-II and select the answer using the code given below the lists:

List I (Five-Year Plan)		List II (Objective)	
A.	Fifth Five-Year Plan	1.	Towards Faster and More Inclusive
B.	Seventh Five-Year Plan	2.	Garibi Hatao (Removal of Poverty)
C.	Ninth Five-Year Plan	3.	Food, Work and Productivity
D.	Eleventh Five-Year Plan	4.	Growth With Social Justice and Equality

Code:

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

93. Which of the following statements about Srimanta Shankardeva is/are correct?

- In the late fifteenth century Shankardeva emerged as one of the leading proponents of Vaishnavism in Assam.
- He was the founder of Gaudiya Vaishnavism.
- His teachings are known as Bhagavati Dharma.
- He encouraged the establishment of Satra and Namghar.

Select the answer using the code given below:

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

94. At which one among the following places did the British East India Company found its factory in the year 1611?

- Madras
- Masulipatam
- Bombay
- Balasore

95. Chronologically arrange the following political events related to Indian National Movement beginning from the earliest.

- Formation of Swaraj Party
- Communal Award
- Lucknow Pact
- Simla Conference

Select the answer using the code given below:

- 3, 1, 2, 4
- 1, 3, 2, 4
- 2, 1, 4, 3
- 1, 2, 3, 4

96. Which among the following Acts provided for the establishment of a Supreme Court of Justice at Calcutta for Europeans, their employees and the citizens of India?

- The Regulating Act of 1773
- The Charter Act of 1793
- The Charter Act of 1813
- Government of India Act of 1858

97. Who among the following introduced a resolution in 1882, which is also called the Magna Carta of Local Self-Government in India?

- Lord Macaulay
- Lord Canning
- Lord Ripon
- Lord William Bentinck

98. Which one of the following terms is associated with the practice of Sufism?

- Jizya
- Ijma
- Muqaddam
- Murid

99. Consider the following features:

1. Consent of the governed
  2. Political equality
  3. Accountability of the ruled to the ruler
- Which of the above feature/features outline democratic rule?

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

100. Placing the earliest first, arrange the following

countries in the chronological order in which they granted universal adult franchise:

1. USA
2. Sri Lanka
3. Japan
4. India

Select the answer using the code given below:

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

## Answer Key

Q. No	Answer Key	Topic's Name	Chapter's Name
1	a	Rayleigh Scattering	Ray Optics
2	b	Buoyancy	Mechanical Properties of Fluid
3	c	Resistivity	Current Electricity
4	b	Dimensions	Units and Dimensions
5	a	Adiabatic Process	Thermodynamics
6	a	Refraction	Ray Optics
7	a	Right Hand Thumb Rule	Moving Charges and Magnetism
8	a	History of Metals	Metals and Non-Metals
9	a	Refraction	Ray Optics
10	d	Equations of Motion	Motion in 1-D
11	d	Voltmeter, Ammeter	Current Electricity
12	c	Types of Energy	Sources of energy
13	b	Series/Parallel Combination of Resistors	Current Electricity
14	b	Echo	Waves
15	c	Uniform Motion	Motion in 1-D
16	a	Image Formation by Convex Mirror	Ray Optics
17	c	Electric Potential	Current Electricity
18	d	Joule's Law of Heating	Current Electricity
19	d	Solenoid	Moving Charges and Magnetism
20	c	Equations of Motion	Motion in 1-D
21	d	Gravitational Force	Gravitation
22	b	Free Fall	Laws of Motion
23	d	Sound	Waves
24	c	Simple Pendulum	Oscillations
25	d	Properties of Charge	Electrostatics
26	a	Places in News	Current Affairs
27	b	Art and Culture	Current Affairs
28	d	Government Schemes and Initiatives	Current Affairs
29	c	Government Schemes and Initiatives	Current Affairs
30	a	National Organisation	Current Affairs
31	d	Science and Technology	Current Affairs

Q. No	Answer Key	Topic's Name	Chapter's Name
32	c	Science and Technology	Current Affairs
33	d	Science and Technology	Current Affairs
34	a	Awards	General Knowledge
35	b	Reports and Indexes	Current Affairs
36	d	Anaerobic Respiration	Respiration
37	a	Proteins	Biomolecules
38	a	Meristems	Plant Tissues
39	a	Oxidation	Biomolecules
40	a	DNA	Biomolecules
41	b	Blood Clotting	Blood
42	d	Antibiotics	Human Health
43	c	Malaria	Human Health
44	d	Malaria and TB	Human Health
45	b	Vitamins	Biomolecules
46	c	Latitude Longitude Parallel Meridians	World Geography
47	c	Minerals	World Geography
48	d	Geomorphology	World Geography
49	d	Currents	World Geography
50	d	Motions of the Earth Inclination of the Earth's Axis	World Geography
51	c	Motions of the Earth Inclination of the Earth's Axis	World Geography
52	a	Precipitation & Distribution of Rainfall	World Geography
53	d	Climatology	World Geography
54	b	Mountains and Peaks	Indian Geography
55	d	Vegetation	Indian Geography
56	b	Minerals	Indian Geography
57	d	Industries and their Locations	Indian Geography
58	d	Major Crops grown in India and Agro-Climatic Regions	Indian Geography
59	b	Important Crops	Indian Geography
60	b	Industries and their Locations	Indian Geography
61	a	Ports in India	Indian Geography
62	a	Forest in India	Indian Geography
63	c	Waves	World Geography
64	d	Rocks	World Geography
65	d	Climatology	World Geography
66	d	Soaps and Detergent	Acid Base and Salt
67	d	Fundamental Particles of an Atom	Structure of Atom
68	d	Discovery of Neutron	Structure of Atom
69	a	Rutherford Model of Atom	Structure of Atom

Q. No	Answer Key	Topic's Name	Chapter's Name
70	c	Estimation of Elements through Valency	Metal and Non-metals
71	a	Oxides Nature	Metal and Non-metals
72	b	Physical States of Compound	Matter in our Surroundings
73	b	pH scale	Acid Base and Salt
74	d	Mole Concept	Atoms and Molecules
75	c	Properties of Compound and Mixtures	Matter in our Surroundings
76	d	Composition of the Molecule	Acid Base and Salt
77	b	Oxides Formula	Metal and Non-metals
78	a	Oxidation and Reduction	Chemical Reaction and Equation
79	c	SI Unit	Matter in our Surroundings
80	c	ph of Rain Water	Acid Base and Salt
81	c	Industries during British Era	Modern History
82	d	Indus Valley Civilization	Ancient History
83	a	Mahajanpadas	Ancient History
84	b	Budhhism	Ancient History
85	b	Important Acts	Modern History
86	a	Important Movements	Modern History
87	b	Amendments	Indian Polity
88	b	Organisation	Current Affairs
89	a	parliament	Indian Polity
90	d	foreign policy	Indian Polity
91	b	advent of european	Modern History
92	b	five years plan	Economy
93	c	Famous Personalities	General Knowledge
94	b	Advent of European	Modern History
95	a	Important Events of National Movement	Modern History
96	a	Important Acts	Modern History
97	c	Viceroy and Governor General	Modern History
98	d	Religion	General Knowledge
99	a	Political Terms	General Knowledge
100	b	World Events	General Knowledge

**ANSWERS WITH EXPLANATIONS**

- Option (a) is correct.**  
*Explanation:* As wavelength of blue colour is the shortest, it scatters the most, while red colour scatters least.
- Option (b) is correct.**  
*Explanation:* According to Archimedes principle, the Buoyant force experienced by a body is equal to weight of fluid displaced by it.
- Option (c) is correct.**  
*Explanation:* Resistivity depends upon the material and temperature and is independent of the length and area of wire.
- Option (b) is correct.**  
*Explanation:* Strain =  $\frac{\text{Change in length}}{\text{Original length}}$   
It is a unitless and hence dimensionless quantity.
- Option (a) is correct.**  
*Explanation:* In adiabatic process no heat exchange takes place between system and surrounding.
- Option (a) is correct.**  
*Explanation:* Speed of light in vacuum is the highest and always more than that in any medium.  
Hence,  $X < Y$
- Option (a) is correct.**  
*Explanation:* As per right hand thumb rule, direction of magnetic field lines as seen from east end wire will be in clock wise direction in the plane perpendicular to the wire.
- Option (a) is correct.**  
*Explanation:* Copper was discovered earliest. Its use dates back to around 9000 BCE.
- Option (a) is correct.**  
*Explanation:* When light enters from a rarer medium to denser medium (here from air to water) at non-zero angle, it bends towards normal. At zero angle, it goes in a straight line without any deviation.
- Option (d) is correct.**  
*Explanation:* The distance covered in  $n^{\text{th}}$  second is not a fundamental equation of motion; it is derived from second equation of motion (position–time relation).
- Option (d) is correct.**  
*Explanation:* A voltmeter has a very high resistance and is always connected in parallel to measure voltage.  
An ammeter has nearly zero resistance and is connected in series to measure current.
- Option (c) is correct.**  
*Explanation:* Energy harnessed from the tides is called tidal and is a non-conventional, renewable source of energy. Coal, petroleum, biogas, natural gas and wood are conventional sources.
- Option (b) is correct.**  
*Explanation:* 
$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$
$$= \frac{1}{1} + \frac{1}{1} + \frac{1}{1} = \frac{3}{1}$$
$$\Rightarrow R_{eq} = \frac{1}{3} \Omega$$
- Option (b) is correct.**  
*Explanation:* An echo is observed when we hear the same sound twice, which is due to the reflection of sound waves.
- Option (c) is correct.**  
*Explanation:* In linear motion, at uniform speed  $a = 0$   
When the object moves at a constant speed, there is no change in the velocity.
- Option (a) is correct.**  
*Explanation:* In case of convex mirror:  
When the object is at infinity, its image always forms at the focus. For any other position of object, the image always forms between pole and focus, and behind the mirror.
- Option (c) is correct.**  
*Explanation:*  $V_{AB} = \frac{W_{AB}}{Q} = \frac{24}{2} = 12 \text{ V}$

**18. Option (b) is correct.**

*Explanation:* Since both wires are identical; they have same resistance ( $R$ ).

$$\text{In parallel: } R_p = \frac{R \times R}{R + R} = \frac{R}{2}$$

$$\text{In series: } R_s = R + R = 2R$$

Since, the voltage applied in both the cases in same and let suppose it to be " $V$ ".

The power consumed in series connection

$$= \frac{V^2}{2R}$$

The power consumed in parallel connection

$$= \frac{V^2}{\frac{R}{2}} = \frac{2V^2}{R}$$

The ratio of heat produced in parallel and series

$$\text{respectively} = \frac{4}{1} = 4 : 1$$

**19. Option (d) is correct.**

*Explanation:* Magnetic field is uniform inside an ideal solenoid and is zero outside of it.

**20. Option (c) is correct.**

*Explanation:* Here,  $u = 12 \text{ ms}^{-1}$ ,  $v = 0 \text{ ms}^{-1}$ ,  $s = 45 \text{ m}$

$$\text{Applying } v^2 - u^2 = 2as$$

$$\Rightarrow 0^2 - 12^2 = 2 \times a \times 45$$

$$\Rightarrow -144 = 90a$$

$$\Rightarrow a = -\frac{144}{90} = -1.6 \text{ ms}^{-2}$$

**21. Option (d) is correct.**

$$\text{Explanation: } \frac{Fd^2}{m_1 m_2} = \frac{\text{Nm}^2}{\text{kg}^2}$$

**22. Option (b) is correct.**

*Explanation:* In case of free fall,  $a = g = 9.8 \text{ ms}^{-2}$

Both objects will have same acceleration irrespective of mass.

Momentum, PE and KE depends upon mass of object.

**23. Option (d) is correct.**

*Explanation:* Speed of wave is given by  $v = f\lambda$ .

**24. Option (c) is correct.**

$$\text{Explanation: Time period, } T = 2\pi\sqrt{\frac{l}{g}}$$

If length is increased 4 times, then new time period will be

$$T' = 2\pi\sqrt{\frac{4l}{g}} = 2T$$

$$T':T = 2:1$$

Also,  $T$  is independent of the mass of bob.

**25. Option (d) is correct.**

*Explanation:* In an isolated system, charge is conserved which means it can't be created or destroyed.

**26. Option (a) is correct.**

*Explanation:* The six gates, Gaja Dwar, Ashwa Dwar, Garuda Dwar, Makar Dwar, Shardula Dwar and Hamsa Dwar, are located in the new Parliament building in New Delhi. Each gate is symbolically named after a creature (real or mythological), representing values such as power, wisdom, speed and courage, reflecting the ethos of Indian democracy.

**27. Option (b) is correct.**

*Explanation:* In 2023, Garba, a traditional dance form from Gujarat, was inscribed into UNESCO's Representative List of the Intangible Cultural Heritage of Humanity. Garba is performed especially during the Navratri festival and represents devotion, community participation and cultural expression. Although other dance forms like Kathakali and Odissi are classical and culturally significant, Garba is the one recently recognised by UNESCO under this specific list.

**28. Option (d) is correct.**

*Explanation:* The Ministry of Culture initiated the "Dhara: An Ode to Indian Knowledge Systems" initiative, under the aegis of Azadi Ka Amrit Mahotsav. This flagship programme aims to revive and promote India's rich civilisational knowledge by organising lectures and discussions on diverse themes, including mathematics, metallurgy, agriculture and ancient economic thought. While the Indian Knowledge Systems (IKS) Division of the Ministry of Education serves as a key execution partner for Dhara events, the initiative itself was conceptualised and launched by the Ministry of Culture.

**29. Option (c) is correct.**

*Explanation:* The PRASHAD (Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive) scheme is a Central Sector Scheme launched by the Ministry of Tourism in 2014–2015. It provides financial assistance to State Governments and Union Territory Administrations for the development of tourism infrastructure at identified pilgrimage destinations and heritage cities.

**30. Option (a) is correct.**

*Explanation:* The joint venture named ASHVINI (Anushakti Vidhyut Nigam Ltd.) is a collaboration between the Nuclear Power Corporation of India Limited (NPCIL) and the National Thermal Power Corporation (NTPC). Established in September 2024, this partnership aims to construct, own and operate nuclear power plants across India, aligning with the provisions of the Atomic Energy Act. In this venture, NPCIL holds a 51% stake, while NTPC holds 49%.

**31. Option (d) is correct.**

*Explanation:* REJUPAVE is an innovative, indigenous road construction technology developed by the CSIR-Central Road Research Institute (CSIR-CRRI) under the Ministry of Science and Technology. It is specifically designed to facilitate the construction of bituminous roads in high-altitude and sub-zero temperature regions, such as Arunachal Pradesh and Ladakh.

**32. Option (c) is correct.**

*Explanation:* Statement 1 is correct: "It's an underwater vehicle to monitor coral reefs." The C-Bot is an autonomous underwater vehicle (AUV) designed to monitor coral reefs. It is equipped with advanced sensors and cameras to collect data on coral health, aiding in the study of coral bleaching and other environmental factors affecting reef ecosystems.

Statement 2 is correct: "It has been developed by CSIR and NIO." The C-Bot was developed by the National Institute of Oceanography (NIO), which operates under the Council for Scientific and Industrial Research (CSIR). This collaboration combines CSIR's scientific expertise with NIO's focus on oceanographic research.

Therefore, both statements are correct.

**33. Option (d) is correct.**

*Explanation:* The Kaveri engine is the name of the aero-engine developed by India's Gas Turbine Research Establishment (GTRE), part of the Defence Research and Development Organisation (DRDO). The Kaveri engine is intended to power the Indian Light Combat Aircraft (LCA) Tejas. The engine has been cleared for in-flight testing, marking a significant step towards India's self-reliance in aero-engine technology.

**34. Option (a) is correct.**

*Explanation:* Jimmy Carter, the 39<sup>th</sup> President of the United States, was awarded the Nobel Peace Prize in 2002 for his decades of work to find peaceful solutions to international conflicts, promote democracy and human rights, and advance economic and social development. Carter's efforts included facilitating peace negotiations, such as the Camp David Accords, and his work through the Carter Centre, which promotes global health and human rights.

**35. Option (b) is correct.**

*Explanation:* NITI Aayog, the National Institution for Transforming India, released the report titled "S.A.F.E. Accommodation: Worker Housing for Manufacturing Growth" in December 2024. This report emphasises the importance of providing Secure, Affordable, Flexible and Efficient (S.A.F.E.) housing solutions for industrial workers to support and enhance India's manufacturing sector. It proposes actionable recommendations, including the establishment of a Viability Gap Funding (VGF) scheme to facilitate the development of such housing projects in a Public-Private Partnership (PPP) model. The initiative aims to improve worker welfare and contributes to the growth of the manufacturing industry.

**36. Option (d) is correct.**

*Explanation:* During anaerobic respiration (absence of oxygen), muscle cells convert glucose into lactic acid to release energy. This build-up of lactic acid causes cramps.

**37. Option (a) is correct.**

*Explanation:* The primary structure of a protein is the linear sequence of amino acids linked by peptide bonds. It determines the protein's unique structure and function.

**38. Option (a) is correct.**

*Explanation:* Cambium is a type of lateral meristem that causes secondary growth in plants, increasing the thickness of stems and roots.

**39. Option (a) is correct.**

*Explanation:* When exposed to air, fats and oils undergo oxidation, leading to rancidity, making the food smell and taste bad.

**40. Option (a) is correct.**

*Explanation:* In DNA, adenine (A) pairs with thymine (T) through two hydrogen bonds, and cytosine (C) pairs with guanine (G) through three hydrogen bonds.

**41. Option (b) is correct.**

*Explanation:* Fibrinogen is a soluble plasma protein that gets converted into insoluble fibrin threads during blood clotting, helping to form a clot.

**42. Option (d) is correct.**

*Explanation:* Alexander Fleming discovered penicillin in 1928 from the fungus *Penicillium notatum*. It was the first antibiotic discovered.

**43. Option (c) is correct.**

*Explanation:* Female *Anopheles* mosquitoes transmit the malaria-causing parasite *Plasmodium* to humans through their bites. Males do not bite or transmit malaria.

**44. Option (d) is correct.**

*Explanation:* Malaria is actually caused by a protozoan parasite called *Plasmodium*, which is transmitted through the bite of an infected female *Anopheles* mosquito. It is not caused by *Mycobacterium*. On the other hand, tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis*, not *Plasmodium*.

**45. Option (b) is correct.**

*Explanation:* Vitamin B1 is scientifically known as thiamin. It plays a crucial role in energy metabolism and nerve function. A deficiency of vitamin B1 can lead to a condition known as beriberi, which affects the nervous and cardiovascular systems. The other options are names of different vitamins – riboflavin is vitamin B2, retinol is vitamin A and tocopherol is vitamin E.

**46. Option (c) is correct.**

*Explanation:* The Prime Meridian is a Great Circle because it is a line of longitude that divides the Earth into the Eastern and Western Hemispheres. Being a vertical line, it passes through the centre of the Earth, making it a great circle.

The Tropic of Cancer is NOT a great circle. It is a parallel of latitude, specifically located at 23.5° North of the equator, and does not divide the Earth into two halves, thus not forming a Great Circle.

The equator is a Great Circle because it is a line of latitude that divides the Earth into the Northern and Southern Hemispheres and is equidistant from the North and South Poles. It is the longest latitude and passes through the Earth's centre, forming a great circle.

**47. Option (c) is correct.**

*Explanation:* Based on the abundance of minerals in the Earth's crust, the correct ascending order is Mica < Amphibole < Pyroxene. Pyroxene, which makes up about 10% of the crust, is the most abundant, followed by amphibole at 7%. Mica, forming around 4% of the Earth's crust, is the least abundant of the three. These minerals are crucial components of igneous and metamorphic rocks and have various industrial applications, including in electronics and the asbestos industry.

**48. Option (d) is correct.**

*Explanation:* The correct answer is (d) 1, 2 and 3. In mechanical weathering, various applied forces break down rocks physically. Gravitational force contributes to mass wasting events like landslides. Expansion force occurs when rocks expand and contract due to temperature changes, causing stress and cracks. Additionally, force due to water pressure, especially in freeze–thaw cycles, exerts pressure on rocks, leading to their fragmentation. These forces all play key roles in the mechanical weathering process.

**49. Option (d) is correct.**

*Explanation:* Alaska Current (1): The Alaska Current is a warm ocean current, flowing from the North Pacific Ocean along the coast of Alaska. It brings warmer water to the region, so it is not a cold current.

- North Atlantic Drift (2): The North Atlantic Drift is a warm ocean current, which is part of the Gulf Stream system. It brings warm water from the tropics to the North Atlantic, so it is not a cold current.

- West Wind Drift (3): The West Wind Drift, also known as the Antarctic Circumpolar Current, is a cold current. It flows around Antarctica, moving cold water westward, making it the only cold current among the options.

**50. Option (d) is correct.**

*Explanation:* During the summer solstice in the Northern Hemisphere, the Sun is directly overhead at the Tropic of Cancer (23.5°N). As a result, regions farther south receive the Sun's rays at increasingly oblique angles. The Tropic of Capricorn (23.5°S), being in the Southern Hemisphere, experiences the minimum angle of the Sun's rays and the shortest day of the year at this time. Hence, it receives the least direct sunlight among the given options.

**51. Option (c) is correct.**

*Explanation:* The Coriolis force arises due to Earth's rotation and deflects moving objects like wind to the right in the Northern Hemisphere and the left in the Southern Hemisphere. It acts perpendicular to the pressure gradient force, influencing the direction of wind flow. At the equator, the Coriolis force is zero, so the wind is not deflected and generally flows perpendicular to the isobars. Therefore, both statements 1 and 2 are correct.

**52. Option (a) is correct.**

*Explanation:* Sleet is frozen raindrops and refrozen melted snow-water. Hence, Statement 1 is correct.

When a layer of air with a temperature above the freezing point overlies a subfreezing layer near the ground, precipitation takes place in the form of sleet. Raindrops, which leave the warmer air, encounter the colder air below. Hence, Statement 2 is not correct.

**53. Option (d) is correct.**

*Explanation:* Humid subtropical climate (Cfa/Cwa in Köppen classification) is typically found on the east coasts of continents between 25° and 40° latitudes, characterised by hot, humid summers and mild winters. Regions like the East Coast of Australia, South Japan and Coastal South Africa fall under this category. However, South Argentina, especially the Patagonia region, experiences a cold desert or steppe climate, not a humid subtropical one. Thus, South Argentina does not experience this climate type.

**54. Option (b) is correct.**

*Explanation:* Mahendragiri, the highest peak of the Eastern Ghats, is located in the Gajapati district of Odisha. It rises to a height of about 1,501 metres and holds mythological significance in Indian epics like the Ramayana. The Eastern Ghats are a discontinuous range of mountains running along India's eastern coast, and Mahendragiri stands out as the tallest among them. Therefore, the correct answer is Odisha.

**55. Option (d) is correct.**

*Explanation:* Shola forests are a type of stunted tropical montane forest found in the high-altitude regions of South India, typically above 1,900 metres. These temperate forests occur in valleys amid rolling grasslands and are known for their rich biodiversity. They are commonly

found in the Anaimalai Hills, Nilgiri Hills and Palani Hills of the Western Ghats. These forests play a crucial role in water conservation and are part of a fragile ecosystem. Hence, the correct answer is 1, 2 and 3.

**56. Option (b) is correct.**

*Explanation:* As per the Annual Report 2023–24 of the Ministry of Mines, Government of India, the major producers of copper in the country are Rajasthan and Madhya Pradesh. These states host significant copper mining operations, with Rajasthan's Khetri Copper Complex and Madhya Pradesh's Malanjkhand Copper Project being prominent contributors. These mining activities are primarily managed by Hindustan Copper Limited (HCL), a public sector enterprise under the Ministry of Mines.

**57. Option (d) is correct.**

*Explanation:* Among the options provided, Ankleshwar, Kosamba and Mehsana are prominent oil fields located in Gujarat, contributing significantly to India's onshore oil production. In contrast, Moran is situated in the Dibrugarh district of Assam and is one of the major oil fields in the northeastern region of India. Therefore, Moran is not located in Gujarat, making it the correct choice for this question.

**58. Option (d) is correct.**

*Explanation:* Culturable Wasteland refers to land that has remained fallow (uncultivated) for more than five years, as per Land Revenue Records. Although not currently used for farming, this type of land has the potential to be brought back under cultivation through reclamation and improvement practices. It differs from barren land in that it retains some fertility and usability if properly managed. Thus, it holds promise for increasing cultivable area with the right investment.

**59. Option (b) is correct.**

*Explanation:* Under the National Food Security Mission-Commercial Crops (NFSM-CC), the Government of India focuses on enhancing the production and productivity of specific commercial crops. The crops included in this mission are cotton, jute and sugarcane. Coffee is not part of this initiative. Therefore, among the options provided, coffee is the crop that is not included in the NFSM-CC.

**60. Option (b) is correct.**

**Explanation:** The Bokaro Steel Plant, located in Jharkhand, was set up in 1964 with Russian collaboration, making it one of India's key public sector steel units. It receives iron ore from the Rourkela region, particularly from mines in Odisha. Water and hydro power for its operations are supplied by the Damodar Valley Corporation (DVC). These features collectively identify the plant as Bokaro, distinguishing it from Bhilai, Rourkela and Durgapur steel plants.

**61. Option (a) is correct.**

**Explanation:** The offshore terminal at Vadinar, located on the western coast of India in Gujarat, has been developed to reduce the cargo handling pressure on Kandla Port, one of the busiest major ports in India. Vadinar primarily handles crude oil imports and serves as a strategic terminal for nearby refineries, including those of Reliance and Essar. Its development has helped in easing congestion at Kandla, improving efficiency in oil and energy logistics along the west coast.

**62. Option (a) is correct.**

**Explanation:** According to the India State of Forest Report 2021, Arunachal Pradesh has the highest percentage of its geographical area under forest cover among the Himalayan states, with approximately 79.33% of its land area covered by forests.

**63. Option (c) is correct.**

**Explanation:** L-Waves (Long Waves) are surface seismic waves generated by earthquakes.

L-waves are surface waves that travel along the Earth's surface, often following the curvature of the Earth. They are responsible for most of the destruction during an earthquake.

Compared to body waves (P-waves and S-waves), L-waves travel at a slower but relatively consistent speed along the Earth's surface, depending on the properties of the ground they move through.

Hence, both statements are correct.

**64. Option (d) is correct.**

**Explanation:** Tuff is a type of sedimentary rock formed from volcanic ash that has been carried by wind or water and then deposited and compacted into layers. It often forms in areas near volcanic activity and can include small fragments of lava and minerals embedded in the ash. Basalt is an igneous rock. Lapilli are small fragments of lava, but not a sedimentary deposit. Slate is a metamorphic rock. Therefore, Tuff is the correct choice.

**65. Option (d) is correct.**

**Explanation:** Condensation of water vapour into water droplets is influenced by:

Volume of air: Larger volumes can hold more moisture; changes in volume affect pressure and temperature, which influence condensation.

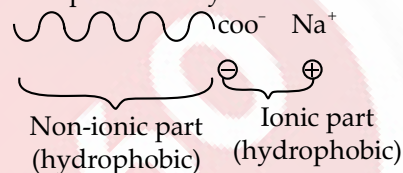
Humidity: Higher relative humidity means the air is closer to saturation, increasing the likelihood of condensation.

Temperature: When air is cooled to its dew point, condensation occurs. Lower temperatures facilitate condensation.

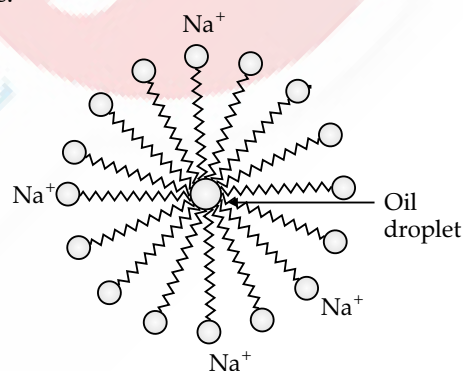
Thus, all three factors affect condensation.

**66. Option (d) is correct.**

**Explanation:** The molecules of soap are sodium or potassium salts of long-chain fatty acids having general formula of R-COONa. It contains both hydrophilic and hydrophobic ends. It is represented by Na<sup>+</sup>.



During micelle formation, the ionic part of the soap is present outside, while the non-ionic part of the soap present inside to make hydrophobic core.

**67. Option (b) is correct.**

**Explanation:** The mass of one electron is about  $\frac{1}{2000}$  times that of a proton.

**68. Option (d) is correct.**

**Explanation:** James Chadwick discovered neutron in 1932 by bombarding a thin sheet of beryllium by  $\alpha$ -particles when electrically neutral particles having a mass slightly greater than that of protons were emitted.

He named these particles as neutrons.

$\text{Be}_4^9 + \text{He}_2^{4+} \rightarrow \text{C}_6^{12} + \text{n}_0^1$  chargeless, massless particles.

**69. Option (a) is correct.**

**Explanation:** Rutherford's nuclear model of atom explains that in the centre of an atom nucleus is present in which the mass of an atom resides and it is made up of positive part of an atom, i.e., proton and around it  $e^-$  revolves.

**70. Option (c) is correct.**

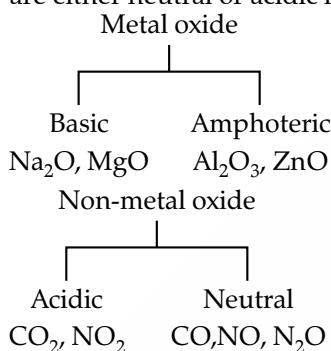
**Explanation:** The formula of the chloride is  $XCl_2$ , which suggests that the element present in it having a valency of 2.

Element	Valency
Na	1
Al	3
Mg	2
K	1

Here, magnesium metal has a valency a valency of 2 the correct answer is 2.

**71. Option (a) is correct.**

**Explanation:** Metal oxide are either basic or amphoteric in nature, while non-metal oxides are either neutral or acidic in nature.



Here, CO is a neutral oxide of carbon atom.

**72. Option (b) is correct.**

**Explanation:**

(a)	$SiO_2$	Silica
(b)	$CO_2$	Dry ice
(c)	CaO	Quick lime or lime
(d)	MgO	Magnesium oxide

**73. Option (b) is correct.**

**Explanation:** Soren Sorensen, a Swedish chemist, introduced the pH scale based on the power of 10 in 1909.

He introduced pH scale where "p" stands for Potenz or potent, which is a German word stands for power.

He introduced pH scale ranging from 0 to 14, which represents the concentration of hydrogen ions in a solution.

Mathematically  $pH = -\log[H^+]$  or  $[H^+] = 10^{-pH}$  from above it is clear that pH is inverse of  $H^+$  ion concentration. Higher the concentration of  $H^+$  ion, lower is the pH value and vice versa.

$$pH \propto \frac{1}{[H^+]}$$

**74. Option (d) is correct.**

**Explanation:** According to Avogadro's Law, volume of one mole gas is directly related to the number of molecules not standard connection of temperature and pressure.

At STP 1 mole  $N_2 = 22.4$  L

0.5 mole  $N_2 = 11.2$  L

Statement (a) is correct.

1 mole of substance = Molar mass of substance  
= Avogadro's number  
=  $6.02 \times 10^{23}$  entities

At STP

$6.022 \times 10^{23}$  molecules = 17 g ammonia

Statement (b) is correct.

Similarly 44 gram  $CO_2 = 22.4$ L at STP.

Statement (c) is correct.

(d) Here, 4 g of  $H_2$  gas & 2 moles  $H_2$  gas

1 mole  $H_2 = 6.022 \times 10^{23}$

2 moles  $H_2 = 2 \times 6.022 \times 10^{23}$   
=  $12.044 \times 10^{23}$

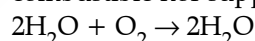
So, 4 grams  $H_2$  molecule =  $12.044 \times 10^{23}$  molecules.

**75. Option (c) is correct.**

**Explanation:** A compound is a substance composed of two or more elements in a fixed proportion and it is a pure substance.

The properties of a compound are different from its constituent elements and they can be separated only by chemical or electrochemical reaction, because the bond present among elements is a strong covalent or ionic bond, which do not break down through physical method.

For example,  $H_2$  is a combustible gas, while  $O_2$  is a supporter of combustion but  $H_2O$  is neither combustible nor supporter of combustion.

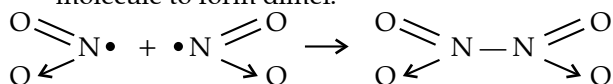
**76. Option (d) is correct.**

**Explanation:**

A	Washing soda	1.	$Na_2CO_3 \cdot 10H_2O$
B	Baking soda	2.	$NaHCO_3$
C	Bleaching powder	3.	$CaOCl_2$
D	Gypsum	4.	$CaSO_4 \cdot 2H_2O$

77. **Option (b) is correct.**

*Explanation:*  $\text{NO}_2$  is an odd  $e^-$  species, here N-atom contain an odd  $e^-$  in its valence shell, which combines with odd  $e^-$  at another  $\text{NO}_2$  molecule to form dimer.



78. **Option (a) is correct.**

*Explanation:*

Oxidation	Reduction
→ Addition of oxygen	→ Removal of oxygen
→ Removal of hydrogen	→ Addition of hydrogen
→ Addition of electronegative element	→ Removal of electronegative
→ Removal of electropositive element	→ Addition of electropositive
→ Removal or loss of $e^-$	→ Addition or gain of $e^-$

79. **Option (c) is correct.**

*Explanation:*

	List-I		List-II
(A)	Temperature	1.	Kelvin
(B)	Weight	4.	Newton
(C)	Mass	2.	Kilogram
(D)	Pressure	3.	Pascal

80. **Option (a) is correct.**

*Explanation:* The pH of rain water is around 5.6, which is acidic in nature due to dissolved oxides of sulphur and nitrogen.

81. **Option (c) is correct.**

*Explanation:* The Second Industrial Revolution, which occurred after 1850 and continued into the early 20th century, was marked by the development of new industries, notably:

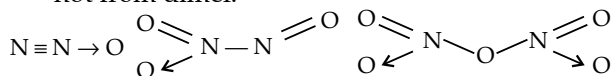
Chemical industry (e.g., synthetic dyes, fertilisers)  
Electrical industry (e.g., electric power, light bulbs, telegraph and telephone)

These industries represented a significant shift from the First Industrial Revolution, which focused more on coal, iron, steam engines and textile manufacturing (like cotton spinning and weaving).

82. **Option (d) is correct.**

*Explanation:* Steatite, also known as soapstone, was the primary material used in making Harappan seals. It is a soft stone that could be easily carved and then hardened by firing. The seals often featured intricate engravings of animals, script and religious symbols, and were likely used for trade, identification or administrative purposes.

Other molecules like  $\text{N}_2\text{O}$ ,  $\text{N}_2\text{O}_3$  and  $\text{N}_2\text{O}_5$  do not form dimer.



83. **Option (a) is correct.**

*Explanation:* Vajji was one of the ancient Mahajanapadas that had an oligarchic form of government, known as Gana-Sangha. Unlike monarchies like Magadha or Kosala, Vajji was ruled by a group of nobles or clan leaders rather than a single king. The Lichchhavis, a prominent clan within Vajji, played a key role in its governance. This republican system is often considered an early form of participatory government in Indian history.

84. **Option (b) is correct.**

*Explanation:* Shalbhajika is a female figure depicted as holding or touching a branch of a tree. While it appears in Buddhist sites like Sanchi, it is primarily a folk or fertility motif associated with nature worship and pre-Buddhist traditions, not directly stemming from Buddhist ideology. In contrast, the empty seat, tree and wheel are direct symbolic representations of the Buddha, his enlightenment and his teachings (Dharma).

85. **Option (b) is correct.**

*Explanation:* The Rowlatt Act of 1919, officially known as the Anarchical and Revolutionary Crimes Act, allowed the British Government in India to detain individuals without trial for up to two years on mere suspicion of involvement in revolutionary activities. This act was widely opposed across India and led to widespread protests, including the infamous Jallianwala Bagh massacre. The act was seen as a direct attack on civil liberties.

**86. Option (a) is correct.**

*Explanation:* The Bhoodan Movement (Land Gift Movement), launched by Acharya Vinoba Bhave in 1951, was a voluntary movement that encouraged landowners to donate one-sixth of their cultivable land to the landless poor. It began at Pochampally village in present-day Telangana, but the movement gained significant momentum in Bihar, where some of the earliest major land donations were made. It was a non-violent and non-legislative effort to address land inequality in rural India.

**87. Option (d) is correct.**

*Explanation:* The Constitution (Seventy-third Amendment) Act, 1992, came into effect on 24 April 1993 and provided a constitutional status to Panchayati Raj Institutions (PRIs). It introduced Part IX in the Constitution titled "The Panchayats" and added the Eleventh Schedule, detailing the powers and responsibilities of Panchayats, thus laying down an elaborate framework for grassroots-level self-governance in rural areas.

**88. Option (b) is correct.**

*Explanation:* BHARATPOL is a portal developed by the Central Bureau of Investigation (CBI) to connect law enforcement agencies across India and to share information about cases, including those related to corruption and criminal activities. It aims to enhance coordination and efficiency among various law enforcement agencies.

**89. Option (a) is correct.**

*Explanation:* The correct answer is: (a) A majority of members of Rajya Sabha are elected by a system of proportional representation by means of single transferable vote.

The Deputy Chairperson of the Rajya Sabha is elected by the members of the Rajya Sabha, not nominated by the President.

The Lok Sabha can be dissolved before the completion of its five-year term by the President, on the advice of the Prime Minister.

The members of the Lok Sabha do not vote in the election of Rajya Sabha members. Only the members of the State Legislative Assemblies, the members of the Electoral College for Union Territories and the members of Rajya Sabha itself vote in Rajya Sabha elections.

**90. Option (d) is correct.**

*Explanation:* The Five Principles of Panchsheel, which were agreed upon in 1954 between India and China, emphasise the core values of mutual respect for territorial integrity and sovereignty, equality and mutual benefit, peaceful coexistence, non-interference in each other's internal affairs and mutual respect for cultural values. These principles laid the foundation for bilateral relations based on respect and cooperation. However, nuclear non-proliferation is not included in these principles; it pertains to a different set of global agreements and discussions related to controlling the spread of nuclear weapons.

**91. Option (a) is correct.**

*Explanation:* Maize (makka) was introduced into India in the seventeenth century through the Portugal. It gained acceptance in India because of its high adaptability.

**92. Option (b) is correct.**

*Explanation:* (a) Fifth Five Year Plan → 2. Garibi Hatao (Removal of Poverty)  
(b) Seventh Five-Year Plan → 3. Food, Work and Productivity  
(c) Ninth Five-Year Plan → 4. Growth With Social Justice and Equality  
(d) Eleventh Five-Year Plan → 1. Towards Faster and More Inclusive Growth

**93. Option (c) is correct.**

*Explanation:* Statement 1: True. Shankardeva was indeed a prominent proponent of Vaishnavism in Assam during the late 15<sup>th</sup> century.

Statement 2: False. Shankardeva was not the founder of Gaudiya Vaishnavism. Gaudiya Vaishnavism was founded by Chaitanya Mahaprabhu in Bengal, although Sankardeva's Vaishnavism shared similarities.

Statement 3: True. His teachings are indeed known as Bhagavati Dharma, emphasising devotion to Lord Vishnu.

Statement 4: True. He encouraged the establishment of satra (Vaishnavite monasteries) and naamghar (prayer halls).

**94. Option (b) is correct.**

*Explanation:* The British East India Company established its first factory in Masulipatam in 1611. This was part of its early efforts to expand trade in India before it moved to other locations like Madras and Bombay.

**95. Option (a) is correct.**

*Explanation:* The correct chronological order of the events is: (a) 3, 1, 2, 4

Lucknow Pact (1916) – A significant agreement between the Indian National Congress and the All India Muslim League, marking a key moment in the Indian freedom struggle.

Formation of Swaraj Party (1923) – The Swaraj Party was formed within the Indian National Congress to demand greater self-rule from the British.

Communal Award (1932) – An order by British Prime Minister, Ramsay MacDonald, who granted separate electorates for minorities, including Muslims, Sikhs and others.

Simla Conference (1945) – A conference between the British and Indian leaders to discuss the political future of India during World War II.

**96. Option (a) is correct.**

*Explanation:* The Regulating Act of 1773 provided for the establishment of a Supreme Court of Justice at Calcutta. This court was specifically created for Europeans, their employees and the citizens of India, marking an important step in the development of the judicial system in British India.

**97. Option (c) is correct.**

*Explanation:* In 1882, Lord Ripon, who was the British Viceroy of India, introduced a resolution that is often referred to as the "Magna Carta of Local Self-Government" in India. This resolution aimed at decentralising power and promoting local self-governance, particularly in the rural areas, by giving more autonomy to local bodies like municipalities and district boards.

**98. Option (d) is correct.**

*Explanation:* In Sufism, the term Murid refers to a disciple or follower of a Sufi master. The Murid seeks spiritual guidance from the Sufi teacher (Sheikh) and follows the teachings of Sufism to attain closeness to God through practices like meditation, remembrance of God (dhikr) and spiritual exercises.

**99. Option (a) is correct.**

*Explanation:* Consent of the governed and political equality are fundamental features of a democratic system. In a democracy, the government derives its legitimacy from the consent of the governed, meaning that the people give their approval through voting and participation in the political process. Political equality ensures that all citizens have equal rights and opportunities in the political sphere.

Accountability of the ruled to the ruler is not typically a feature of democracy. In a democratic system, it is the ruler (or government) who is accountable to the ruled (the people), not the other way around. The government is accountable to the citizens through elections, checks and balances, and other democratic mechanisms.

Thus, features 1 and 2 outline democratic rule.

**100. Option (b) is correct.**

*Explanation:* The correct chronological order in which these countries granted universal adult franchise is:

Sri Lanka (1931)

USA (1965)

Japan (1946)

India (1950)

So the correct answer should be (b) 2, 3, 4, 1.

