

Time Allowed : 2 Hours

M.M. : 100

Important Instructions :

1. This Test Booklet contains 120 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. **Penalty for wrong answers :**
THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.
 - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-third** (0.33) 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. Which one of the following statements is not correct ?
 - (a) Real GDP is calculated by valuing outputs of different years at common prices.
 - (b) Potential GDP is the real GDP that the economy would produce if its resources were fully employed.
 - (c) Nominal GDP is calculated by valuing outputs of different years at constant prices.
 - (d) Real GDP per capita is the ratio of real GDP divided by population.
2. The mismatch in the regional or occupational pattern of job vacancies and the pattern of worker availability results in
 - (a) Structural unemployment
 - (b) Disguised unemployment
 - (c) Altered unemployment
 - (d) Cyclical unemployment
3. The situation in an economy which is growing slowly along with rapid inflation (rising price level) is called
 - (a) Stagnation
 - (b) Deflation
 - (c) Stagflation
 - (d) Recession
4. The increase in private investment spending induced by the increase in Government spending is known as
 - (a) Crowding in
 - (b) Deficit financing
 - (c) Crowding out
 - (d) Pumping out
5. The asset or assets that a borrower pledges in order to guarantee repayment of a loan is called as
 - (a) Cheque
 - (b) Collateral
 - (c) Guarantee card
 - (d) Bond
6. The percentage by which the money the borrower pays back exceeds the money that was borrowed is called as
 - (a) Bank rate
 - (b) Nominal interest rate
 - (c) Real interest rate
 - (d) Terms of credit
7. Which one of the following statements about the Gandhi-Irwin Pact of 1931 is correct?
 - (a) The Government would not release those prisoners who had been non-violent.
 - (b) The Government would not release those prisoners who had indulged in the peaceful picketing of liquor and foreign cloth shops.
 - (c) The Congress did not agree to the suspension of the Civil Disobedience Movement.
 - (d) The Congress agreed to take part in the Second Round Table Conference.
8. Who among the following founded the Bhil Seva Mandal in 1922 ?
 - (a) Dayaram Gidumal
 - (b) Gurusaday Dutt
 - (c) Dhondo Keshav Karve
 - (d) Amritlal Vithaldas Thakkar

9. In 1911, who among the following introduced a bill in the Imperial Legislative Council for introduction of compulsory and free primary education in India ?
- Dadabhai Naoroji
 - Bal Gangadhar Tilak
 - Sir Harcourt Butler
 - Gopal Krishna Gokhale
10. Which one of the following statements about the Act V of 1843 relating to Slavery in India is correct ?
- It gave the masters the right to wilfully keep their slaves tied to their estates.
 - It denied the masters the use of Courts to assert their claims on slaves.
 - The Law Courts and masters worked jointly in resolving the cases of desertion.
 - The slaves became the owners of the land.
11. Which Maratha statesman signed the Treaty of Bassein on December 31, 1802 ?
- Baji Rao II
 - Vithuji Holkar
 - Daulat Rao Sindhia
 - Madhava Rao Narayan
12. The *Amara-Nayaka* system was a major political innovation of which Indian imperial rulers ?
- Cholas
 - Chalukyas
 - Guptas
 - Vijayanagara
13. KIRAN (Knowledge Involvement in Research Advancement through Nurturing) is an initiative to provide opportunities to women scientists who
- had a break in their career due to family reasons.
 - are pursuing innovative research in life sciences.
 - have collaborative projects with labs in foreign countries.
 - have leading edge projects in Nano-Science and Technology.
14. NIDHI is an umbrella scheme for the promotion of
- young and aspiring innovators.
 - scientific research.
 - primary health care.
 - primary education in rural areas.
15. The Saubhagya Scheme aims at universal
- LPG connection.
 - household electrification.
 - primary school education.
 - public health insurance.
16. Mission Indradhanush aims at
- reducing child deaths due to pneumonia.
 - reducing the impact of rotavirus.
 - elimination of maternal tetanus.
 - full immunisation of children.
17. Which one of the following statements about the DDU - GKY is **not** correct ?
- It is a skill training programme.
 - It is for rural youth from poor families.
 - Its objective is placement in wage employment.
 - It relies entirely on skill training by Government agencies.
18. Which of the following statements about the Pradhan Mantri Gram Sadak Yojana are correct ?
- It is part of Government of India's poverty reduction strategy.
 - It is a centrally sponsored scheme for rural development.
 - It provides connectivity in rural areas.
- Select the correct answer using the code given below :
- 1, 2 and 3
 - 1 and 3 only
 - 2 and 3 only
 - 1 and 2 only
19. India's territorial limit extends towards the sea up to
- 10 nautical miles
 - 12 nautical miles
 - 14 nautical miles
 - 15 nautical miles
20. Which one of the following is a cold ocean current ?
- Brazilian Current
 - Gulf Stream
 - North Equatorial Current
 - California Current
21. Identify the type of soil on the basis of the given characteristics
- They are rich in lime, iron, magnesia and alumina.
 - They are generally clayey, deep and impermeable.
 - They are mainly found in Maharashtra, Madhya Pradesh and Gujarat.
- Select the correct answer from the given alternatives
- Laterite soil
 - Red and yellow soil
 - Saline soil
 - Black soil

22. Arabica, Robusta and Liberica are varieties of
 (a) Coffee (b) Tea
 (c) Sugarcane (d) Cotton
23. Aluminium is manufactured from
 (a) Copper ore (b) Bauxite ore
 (c) Mica ore (d) Manganese ore
24. Which one of the following sea ports gained significance for handling iron-ore exports to Japan ?
 (a) Kandla (b) Ennore
 (c) Kochi (d) Mormugao
25. Which one of the following is not a function of money ?
 (a) Acts as an intermediate in the exchange process
 (b) Acts as a store of value
 (c) Used as the unit of account
 (d) Used for regulating consumption
26. The situation where the equilibrium level of real GDP falls short of potential GDP is known as
 (a) Recessionary gap
 (b) Inflationary gap
 (c) Demand-side inflation
 (d) Supply-side inflation
27. The excess of total expenditure of Government over its total receipts, excluding borrowings, is known as
 (a) Primary deficit (b) Fiscal deficit
 (c) Current deficit (d) Capital deficit
28. Exchange rates state the value of one currency in terms of other currencies. Which one of the following statements with respect to the exchange rate of currency is correct ?
 (a) Floating exchange rates are rates in which the Governments interfere by buying or selling their currencies.
 (b) Fixed exchange rates are rates set by Government decisions and maintained by Government actions.
 (c) Under the Bretton Woods System, the exchange rates are floated in terms of rise or fall in price of gold.
 (d) Under the classical gold standard, the exchange rates are fixed in terms of price of dollar.
29. Francois Bernier was physician to
 (a) Prince Murad (b) Princess Jahanara
 (c) Emperor Shah Jahan
 (d) Prince Dara Shikoh
30. Which one of the following British firms was taken over by Soorajmull-Nagarmull group?
 (a) McLeod (b) Octavius Steel
 (c) Davenport (d) Andrew Yule
31. Which one of the following statements with regard to ryotwari settlement is **not** correct ?
 (a) In southern and western India, the ryotwari settlement was adopted.
 (b) Ryotwari was in principle a direct contract between the ryot and the state.
 (c) It means a tax contract valid for usually 30 years.
 (d) In principle, it strengthened the former elite, the zamindars and weakened the peasantry.
32. Which one of the following statements about the British Indian Medical Service (IMS) is not correct?
 (a) IMS began in 1764.
 (b) It recruited health professionals by means of a competitive examination.
 (c) Indians were never admitted to IMS.
 (d) The IMS was at first meant to look after the troops.
33. When was the monopoly of China trade lost by East India Company ?
 (a) 1813 (b) 1833
 (c) 1838 (d) 1860
34. National Disaster Management Authority is headed by
 (a) the Prime Minister (b) the Home Minister
 (c) the President (d) the Health Minister
35. Which of the following statements regarding the 'casting vote' in the Parliament is/are correct?
 1. It is cast by the speaker or a person acting as such.
 2. It is cast in addition to voting in the first instance.
 3. It is cast in the case of equality of votes.
 4. It is always cast to maintain the *status quo*.
- Select the correct answer using the code given below :
- (a) 1, 2 and 3 only (b) 1 and 3 only
 (c) 2 and 4 only (d) 3 only

36. Equality before the law or equal protection of the laws within the territory of India is guaranteed under which one of the following Articles of the Constitution of India ?
 (a) Article 14 (b) Article 15
 (c) Article 16 (d) Article 22
37. 'Legal Positivism' theory was developed by
 (a) T.H. Green (b) Thomas Hobbes
 (c) John Austin (d) Patrick Devlin
38. Who among the following said that Democracy means a system of 'Government by Consent' ?
 (a) John Locke (b) J. S. Mill
 (c) Jeremy Bentham (d) J. J. Rousseau
39. Milpa and Ladang are different names for
 (a) shifting cultivation
 (b) mixed farming
 (c) truck farming
 (d) plantation agriculture
40. Which one of the following approaches of human development was initially proposed by the International Labour Organisation (ILO) and emphasised on health, education, food, water supply, sanitation and housing ?
 (a) Welfare approach
 (b) Basic needs approach
 (c) Income approach
 (d) Capability approach
41. Which one of the following tributaries of river Indus feeds the canal system of the Bhakra Nangal Project ?
 (a) Chenab (b) Satluj
 (c) Ravi (d) Jhelum
42. When the rivers discharge their waters from all directions into a lake or depression, the pattern is known as
 (a) Trellis (b) Dendritic
 (c) Radial (d) Centripetal
43. Which one of the following statements about the Coriolis force is **not** correct ?
 (a) It is maximum at the Poles.
 (b) It is absent at the Equator.
 (c) It deflects the wind to the right direction in the southern hemisphere.
 (d) It deflects the wind to the right direction in the northern hemisphere.
44. Chronologically arrange the following treaties/conventions signed between the Marathas and the British (starting with the earliest):
 1. Treaty of Salbai
 2. Treaty of Purandar
3. Convention of Wadgaon
 4. Treaty of Surat
- Select the correct answer using the code given below :
 (a) 4-2-3-1 (b) 4-3-2-1
 (c) 1-3-2-4 (d) 1-2-3-4
45. Which of the following statements about the Sanyasi and Faqir disturbances/rebellions are correct?
 1. Governor-General Warren Hastings faced the persistent Sanyasi and Faqir disturbances in Bengal and Bihar.
 2. There were a number of Shaivite Naga Sanyasis who formed into armed bands.
 3. Majnu Shah, who led bands into Bengal from 1771, was their prominent leader.
- Select the correct answer using the code given below :
 (a) 1 and 2 only (b) 1, 2 and 3
 (c) 2 and 3 only (d) 1 and 3 only
46. In 1943, young leaders in which one of the following districts of Maharashtra set up a parallel Government (*prati sarkar*) with volunteer corps (*seva dals*) and village units (*tufan dals*) ?
 (a) Pune (b) Nasik
 (c) Nagpur (d) Satara
47. Who founded the Central Hindu School at Benaras which was later developed into Benaras Hindu University ?
 (a) Madan Mohan Malaviya
 (b) Annie Besant
 (c) Ishwar Chandra Vidyasagar
 (d) Madame H.P. Blavatsky
48. Which one among the following is not a feature of centralization ?
 (a) National unity (b) Uniformity
 (c) Prosperity (d) Liberty
49. Which one of the following is not an objective of NITI Aayog ?
 (a) It provides a critical direction and strategic input for development process.
 (b) It functions as a 'think tank' in providing key elements of policy.
 (c) It monitors and evaluates the implementation of the programmes.
 (d) It offers a platform for resolution of interstate conflicts as 'provider of first and last resort'.

50. Article 231 of the Constitution of India grants power to establish a common High Court for two or more states to
- the Parliament
 - the Supreme Court
 - the President of India
 - the Union Cabinet
51. Which one among the following motions **cannot** be made while introducing an ordinary Bill in the Parliament ?
- That the Bill be taken into consideration.
 - That the Bill be circulated for the purpose of eliciting public opinion.
 - That the Bill be referred to a Select Committee.
 - That the Bill be referred to a Joint Committee of the House without the concurrence of the other House.
52. Which one among the following was eliminated by the 44th Amendment Act of the Parliament ?
- Right against Exploitation
 - Right to Constitutional Remedies
 - Right to Property
 - Right to Education
53. Identify the crop on the basis of the following characteristics :
- It is a kharif crop.
 - Aus, Aman and Boro are its three different growing periods in an agricultural year.
 - About one-fourth of the total cropped area of India is under its cultivation.
- Select the correct answer using the code given below :
- | | |
|------------|------------|
| (a) Wheat | (b) Rice |
| (c) Pulses | (d) Cotton |
54. Which one of the following is a type of igneous rock ?
- | | |
|-------------|------------|
| (a) Marble | (b) Halite |
| (c) Granite | (d) Shale |
55. Ozone layer, which absorbs the ultra-violet radiation, is found in which one of the following layers of the atmosphere ?
- | | |
|----------------|------------------|
| (a) Ionosphere | (b) Troposphere |
| (c) Mesosphere | (d) Stratosphere |
56. Which one of the following statements about primary waves of earthquakes is not correct ?
- They are similar to sound waves.
 - They can travel only through solid materials.
 - They travel through gaseous, liquid and solid materials.
 - They move faster and are the first to arrive at the surface.
57. Alluvial soils vary in nature from sandy loam to clay. They are generally
- poor in potash and rich in phosphorus
 - poor in both potash and phosphorus
 - rich in both potash and phosphorus
 - rich in potash and poor in phosphorus
58. Who among the following was popularly known as 'Lokahitwadi' ?
- Gopal Hari Deshmukh
 - Mahadev Govind Ranade
 - Gopal Krishna Gokhale
 - Jyotiba Phule
59. Who among the following socialist activists persuaded Gandhiji **not** to restrict the salt march protest to men alone ?
- Kamaladevi Chattopadhyay
 - Sarojini Naidu
 - Matangini Hazra
 - Mithuben Petit
60. Which one of the following painters was **not** associated with Humayun ?
- Mir Sayyid Ali
 - Maulana Dost Musawir
 - Maulana Yusuf
 - Bihzad
47. Match List I with List II and select the correct answer using the code given below the Lists :
- | List-I
(Author) | List-II
(Poetical work) |
|---------------------------|----------------------------------|
| A. Brindavan Das | 1. <i>Shivasankirttan</i> |
| B. Krishnadas Kaviraj | 2. <i>Chandimangal</i> |
| C. Mukundaram Chakravarti | 3. <i>Chaitanya-charitamrita</i> |
| D. Rameshwar Bhattacharya | 4. <i>Chaitanyamangal</i> |
- Code :
- | | A | B | C | D |
|-----|---|---|---|---|
| (a) | 4 | 2 | 3 | 1 |
| (b) | 4 | 3 | 2 | 1 |
| (c) | 1 | 3 | 2 | 4 |
| (d) | 1 | 2 | 3 | 4 |

62. Which one of the following scholars of Akbar's court translated Bhaskaracharya's *Lilavati* into Persian ?
 (a) Abul Fazl (b) Faizi
 (c) Fathullah Shirazi (d) Ataullah Rashidi
63. Who among the following was the Chairman of the National Commission for Review of the Working of the Constitution (2000) ?
 (a) Justice M. N. Venkatachaliah
 (b) Justice J. S. Verma
 (c) Justice Ranganath Mishra
 (d) Justice Y. K. Sabharwal
64. M.M. Punchhi Commission on Centre-State Relations has recommended the disposal of a bill reserved for the consideration of the Union Executive within
 (a) four months (b) six months
 (c) eight months (d) five months
65. Who among the following founded the Marathi newspaper 'Kesari' ?
 (a) Lokmanya Tilak (b) Vallabhbhai Patel
 (c) Lala Lajpat Rai (d) Mahatma Gandhi
66. Which mega public sector undertaking is 70 designated with 'Navratna' status ?
 (a) Indian Oil Corporation Limited
 (b) Gas Authority of India Limited
 (c) Bharat Petroleum Corporation Limited
 (d) Bharat Electronics Limited
67. Which of the following statements with regard to the creation of a new state or alteration of boundaries of states is/are correct ?
 1. An amendment has to be moved in the Parliament under Article 368 of the Constitution of India.
 2. Ratification by one half of the states is necessary after the amendment is made by the Parliament.
 3. The legislation can be passed by a simple majority of both Houses of Parliament.
 Select the correct answer using the code given below :
 (a) 1 and 3 only (b) 2 only
 (c) 3 only (d) 2 and 3 only
68. Which one of the following is the largest linguistic group of India ?
 (a) Sino-Tibetan (b) Austric
 (c) Indo-Aryan (d) Dravidian
69. Which one of the following water bodies separates the Andaman and the Nicobar islands ?
 (a) Gulf of Mannar
 (b) Ten Degree Channel
 (c) Eleven Degree Channel
 (d) Palk Strait
70. Which one of the following longitudes is the standard meridian of India ?
 (a) 83°30' E (b) 82°30' E
 (c) 82°30' W (d) 83°30' W
71. Match List-I with List-II and select the correct answer using the code given below the Lists :
- | List-I | List-II |
|------------------|----------------------|
| A. Cyclones | 1. Western Australia |
| B. Hurricanes | 2. South China Sea |
| C. Typhoons | 3. Indian Ocean |
| D. Willy-willies | 4. Atlantic Ocean |
- Code :
- | A | B | C | D |
|-------|---|---|---|
| (a) 3 | 2 | 4 | 1 |
| (b) 3 | 4 | 2 | 1 |
| (c) 1 | 4 | 2 | 3 |
| (d) 1 | 2 | 4 | 3 |
72. Which of the following is/are social security scheme(s) ?
 1. Atal Pension Yojana
 2. Pradhan Mantri Jeevan Jyoti Bima Yojana
 3. Pradhan Mantri Suraksha Bima Yojana
 Select the correct answer using the code given below :
 (a) 1 only (b) 2 and 3 only
 (c) 1, 2 and 3 (d) 1 and 3 only
73. Which one of the following units is not a part of All India Radio's Transcription and Programme Exchange Service ?
 (a) Central Archives
 (b) Sound Archives
 (c) Advanced Research Unit
 (d) Transcription Unit
74. Which of the following statements about the Panchayati Raj System are correct ?
 1. All seats in a Panchayat are filled by persons chosen by direct election.
 2. The 'Gram Sabha' consists of persons registered in the village electoral rolls.

3. The Chairperson of a Panchayat is elected in accordance with a law passed by each state.
4. All states in India have a three-tier system of Panchayats.
- Select the correct answer using the code given below :
- (a) 1 and 4 only (b) 1, 2 and 3 only
(c) 2 and 3 only (d) 2, 3 and 4 only
75. Which of the following statements is/are correct ?
1. The elections to the Panchayat are conducted by the State Election Commission.
 2. The State Election Commissioner is appointed by the Chief Election Commissioner of India.
 3. The State Legislatures have the power to make laws on all matters relating to Panchayat elections.
- Select the correct answer using the code given below :
- (a) 2 only (b) 1 and 2 only
(c) 1, 2 and 3 (d) 1 and 3 only
76. Which one of the following is **not** a correct description of the Union Cabinet ?
- (a) It is part of the Parliament.
(b) It is responsible to the Parliament.
(c) It remains in power till it enjoys the confidence of the Parliament.
(d) A person from outside the Parliament can never be appointed a member of the Cabinet.
77. Which one of the following statements about the composition of the Parliament is not correct?
- (a) Representatives of the states in Rajya Sabha are elected directly by the people.
(b) Representatives from Union Territories in Lok Sabha are chosen by direct elections.
(c) Rajya Sabha has 12 nominated members.
(d) Lok Sabha has seats reserved for SCs and STs.
78. Which among the following fundamental rights is/are available to non-citizens?
1. Freedom of speech
 2. Protection against self-incrimination
 3. Freedom of conscience
 4. Non-discrimination in matters of employment
- Select the correct answer using the code given below :
- (a) 1, 2 and 3 only (b) 1, 3 and 4 only
(c) 2 and 3 only (d) 2 only
79. Which one of the following statements about the Vice-President of India is **not** correct ?
- (a) He is not eligible for re-election.
(b) He must not be less than 35 years of age.
(c) He is elected by members of an electoral college consisting of members of both Houses of Parliament.
(d) His term of office is five years.
80. A motion of no-confidence is moved against
- (a) an individual Minister
(b) the Council Ministers
(c) the Prime Minister
(d) a political party
81. Which one of the following is correct about 'Pinaka' ?
- (a) It is a multi-barrel rocket system
(b) It is a type of battle tank
(c) It is an advanced submarine
(d) It is an indigenously developed drone system
82. Which one of the following is **not** a member of the Quad group of nations ?
- (a) France (b) USA
(c) Australia (d) Japan
83. The first phase of Exercise Malabar, 2020 was conducted at
- (a) Port Blair (b) Mumbai
(c) Visakhapatnam (d) Kochi
84. Hollywood actor Sir Sean Connery, who died recently, was popularly known for the portrayal of the role
- (a) Rocky
(b) Captain Jack Sparrow
(c) Terminator
(d) James Bond
85. The Luhri Hydro-Electric Power Project is being constructed on the river
- (a) Satluj (b) Beas
(c) Ravi (d) Chenab
86. 'CARAT Bangladesh 2020' was a joint naval exercise between Bangladesh and
- (a) India (b) USA
(c) Japan (d) Thailand

87. Peninsula Shield Force is a military arm of
(a) Organization of Islamic Cooperation
(b) Organization of the Petroleum Exporting Countries
(c) Gulf Cooperation Council
(d) Arab League
88. Which one of the following ships was involved in 'Mission Sagar-II' ?
(a) INS Shakti (b) INS Vikramaditya
(c) INS Kesari (d) INS Airavat
89. In the year 2020 which one of the following tiger reserves of India was declared by UNESCO as a Biosphere Reserve ?
(a) Panna Tiger Reserve
(b) Namdapha Tiger Reserve
(c) Dudhwa Tiger Reserve
(d) Pench Tiger Reserve
90. The Kaleshwaram Lift Irrigation System, which was in the news recently, is constructed in
(a) Kerala (b) Gujarat
(c) Telangana (d) Maharashtra
91. Cell wall is **not** present in cells of
(a) Bacteria (b) Plants
(c) Fungi (d) Humans
92. A child receives a tall beautiful plant as a birthday gift from his father with a quiz. The father asked her how she would verify whether this tall plant was the progeny of both the tall parents or one tall and one short parent plant. She could verify this through
(a) cross-pollination
(b) self-pollination
(c) tissue culture
(d) negative propagation
93. A student was doing an experiment on increasing the cell division among plants. She asked her supervisor to suggest the specific plant hormone for the same. Had you been her supervisor, which plant hormone would you suggest ?
(a) Abscisic acid (b) Gibberellins
(c) Cytokinin (d) Auxin
94. Which cell organelles have their own DNA and Ribosomes?
(a) Golgi body and Endoplasmic Reticulum
(b) Mitochondria and Plastids
(c) Lysosome and Golgi body
(d) Vacuole and Plastids
95. Osmosis is the process of movement of water molecules from its
(a) higher concentration to its lower concentration through a cell wall.
(b) lower concentration to its higher concentration through a fully permeable membrane.
(c) higher concentration to its lower concentration through a fully permeable membrane.
(d) higher concentration to its lower concentration through a semi-permeable membrane.
96. Growing of two or more crops simultaneously on the same field in a definite pattern is known as
(a) mixed cropping
(b) inter cropping
(c) mixed farming
(d) hybrid farming
97. When we heat lead nitrate $[Pb(NO_3)_2]$ in a boiling tube, we observe the emission of brown fumes. Which one of the following is the brown gas?
(a) NO (b) N_2O_2
(c) NO_3 (d) NO_2
98. Which one of the following substances do silver articles react with, that makes the silver articles black ?
(a) Sulphur (b) Oxygen
(c) Carbon dioxide (d) Phosphorus
99. Which one of the following metals is kept immersed in Kerosene oil to protect it and to prevent accidental fire ?
(a) Calcium (b) Sodium
(c) Vanadium (d) Magnesium
100. A solution contains 20 g of solute in 180 g of solvent. If the solvent is water, what is the concentration of the solution in terms of mass by mass percentage ?
(a) 11.1% (b) 22.2%
(c) 10% (d) 20%
101. Which one of the following elements is a non-metal but is lustrous ?
(a) Carbon (b) Silicon
(c) Germanium (d) Iodine
102. Which one of the following metals has both malleability and ductility properties ?
(a) Na (b) Au
(c) Ce (d) Hg

103. We are given three copper wires of different lengths and different areas of cross-section. Which one of the following would have highest resistivity ?
- Copper wire of 50 cm length and 1 mm diameter
 - Copper wire of 25 cm length and 0.5 mm diameter
 - Copper wire of 10 cm length and 2.0 mm diameter
 - All the wires would have same resistivity
104. Which of the following statements about 'fission' is correct ?
- It is related with the creation of new individuals by means of cell division in unicellular organism.
 - It is related with the transformation of heavier nuclei into smallest nuclei.
 - It is related with the creation of a heavier nuclei by means of combining two higher nuclei.
- Select the correct answer using the code given below :
- 1 only
 - 2 only
 - 1 and 2 only
 - 1 and 3 only
105. Which one of the following is an electric conductor ?
- A plastic sheet
 - Distilled water
 - Human body
 - A wooden thin sheet
106. A non-spherical shining spoon can generally be considered as a
- Spherical mirror
 - Parabolic mirror
 - Plane mirror
 - Lens
107. Who amongst the following is a pioneer in discovering the heating effect of electric current ?
- Isaac Newton
 - Galileo Galilei
 - James P. Joule
 - J. J. Thomson
108. Which one of the following laws of electro-magnetism does not give the direction of magnetic field ?
- Right-hand thumb rule
 - Fleming's left-hand rule
 - Fleming's right-hand rule
 - Faraday's law of electromagnetic induction
109. An antibiotic is not useful against a virus whereas a vaccine is. Which one of the following is the most appropriate reason for this?
- An antibiotic can break RNA only, whereas virus has DNA.
 - An antibiotic is a carbohydrate in its chemical nature, whereas a vaccine is a protein which works well to kill a virus.
 - Only a vaccine can break the genetic material of a virus.
 - A virus does not use biochemical pathways which can be blocked by an antibiotic. But a vaccine can boost an immune system to fight the virus.
110. 'Sleeping sickness' is caused by
- Trypanosoma*
 - Leishmania*
 - Plasmodium*
 - Paramecium*
111. Which one among the following is a free living animal?
- Liver fluke
 - Wuchereria*
 - Plasmodium*
 - Planaria*
112. Which one of the following is the structure of a cardiac muscle cell ?
- Cylindrical, Unbranched and Multi-nucleate
 - Spinal shaped, Unbranched and Uninucleate
 - Spinal shaped, Branched and Uninucleate
 - Cylindrical, Branched and Uninucleate
113. Which one of the following naturally occurring acids is found in abundance in tomato ?
- Acetic acid
 - Citric acid
 - Oxalic acid
 - Tartaric acid
114. Which one of the following is used in soda-acid fire extinguishers ?
- Sodium chloride
 - Sodium hydrogen carbonate
 - Calcium hydroxide
 - Acetic acid
115. Which one of the following sodium compounds is used for softening hard water ?
- Na_2CO_3
 - NaHCO_3
 - NaOH
 - Na_2SO_4

116. Calcium oxide reacts vigorously with water to produce slaked lime whose solution is used for white-washing walls. This slaked lime reacts with component (A) in air to form a thin layer of component (B) to give a shiny finish. What are the components (A) and (B) ?
- (a) A – O_2 ; B – $CaCO_3$
(b) A – CO_2 ; B – $Ca(OH)_2$
(c) A – O_2 ; B – $Ca(OH)_2$
(d) A – CO_2 ; B – $CaCO_3$
117. How many internal reflections of light take place in the formation of primary rainbow ?
- (a) 0 (b) 1
(c) 2 (d) More than 2
118. The direction of acceleration in uniform circular motion is along the
- (a) direction of motion
(b) tangent to the circle at the point of observation
(c) direction of velocity
(d) direction perpendicular to velocity
119. The weight of an object is due to
- (a) the net force acting on it.
(b) the total of all forces acting on it irrespective of their directions.
(c) the force that it exerts on the ground.
(d) its inert property.
120. The size of particles being studied in 'nano-technology' is about
- (a) $1\text{Å} - 10\text{ nm}$
(b) $1 - 100\text{ nm}$
(c) $1 - 50\text{ }\mu$
(d) $1\text{ mm} - 10\text{ mm}$

Answers

Q No	Answer Key	Topic Name	Chapter Name
1	(c)	Economics	Basic Concepts
2	(a)	Economics	Unemployment
3	(c)	Economics	Inflation
4	(a)	Economics	Public Finance
5	(b)	Economics	Banking
6	(b)	Economics	Banking
7	(d)	Modern History	Gandhi -Irwin Pact
8	(d)	Modern History	Organizations
9	(d)	Modern History	Education
10	(b)	Modern History	Indian Slavery Act
11	(a)	Modern History	Treaty of Bassein
12	(d)	Medieval History	Vijayanagara Empire
13	(a)	KIRANS Scheme	Government Schemes
14	(a)	NIDHI Scheme	Government Schemes
15	(b)	Saubhagya Scheme	Government Schemes
16	(d)	Mission Indradhanush	Government Schemes
17	(d)	DDU-GKY	Government Schemes
18	(a)	PMGSY	Government Schemes
19	(b)	Territorial Jurisdiction	Exclusive Economic Zone
20	(d)	Cold and Warm Currents	Ocean Currents
21	(d)	Types of Soil	Soil
22	(a)	Coffee	Types of Coffee Variety
23	(b)	Ores	Minerals
24	(d)	Marmagao Port	Ports
25	(d)	Economics	Monetary Policy
26	(a)	Economics	Inflation
27	(b)	Economics	Budget
28	(b)	Economics	Banking
29	(d)	Court Physician	Mughal Emperor
30	(a)	Personalities	Static GK
31	(d)	Modern History	Ryotwari System
32	(c)	Indian Medical Service	British Rule
33	(b)	Monopoly of East India Company	East India Company
34	(a)	NDMA	Static GK
35	(b)	Casting Vote	Speaker
36	(a)	Articles	Articles of Indian Constitution
37	(c)	Polity	Basic concepts
38	(a)	Governance	Basic concepts
39	(a)	Types of farming	Agriculture
40	(b)	Human Development	International Labour Organization

Q No	Answer Key	Topic Name	Chapter Name
41	(b)	Bhakra Dam	Dams
42	(d)	Drainage Patterns	Drainage System
43	(c)	Coriolis force	rotation of earth
44	(a)	Modern History	First Anglo-Maratha War
45	(b)	Modern History	Sanyasi Revolt
46	(d)	Parallel government	Modern History
47	(b)	Central Hindu School	Annie Besant
48	(d)	Centralization	Centre
49	(d)	NITI Aayog	Commissions
50	(a)	Articles	Articles of Indian Constitution
51	(d)	Ordinary bills	Types of Bills
52	(c)	Amendments	Constitutional Amendments
53	(b)	Rice Crop	Crop
54	(c)	Rocks	Landforms
55	(d)	Layers of Atmosphere	Atmosphere
56	(b)	Waves	Types of waves
57	(d)	Types of soil	Soil
58	(a)	Modern History	Socio-Cultural Reform Movements
59	(a)	Salt March	National Movements
60	(d)	Mughal Empire	Famous Personalities
61	(b)	Literary work	Books and Writers
62	(b)	Books	Translation
63	(a)	Commission	NCRWC
64	(b)	Commission	Punchhi commission
65	(a)	Kesari Newspaper	Newspaper
66	(d)	Static GK	Navratna Companies
67	(c)	Creation of new states	Reorganization of States
68	(c)	Art & Culture	Languages
69	(b)	Ten Degree Channel	Static GK
70	(b)	standard meridian	India-Size and Location
71	(b)	names of cyclones	Cyclones
72	(c)	Different Government Schemes	Government Schemes
73	(c)	Transcription Service	Static GK
74	(b)	Panchayat	Panchayati Raj System
75	(d)	State Election Commission	Election Commission
76	(d)	Union Cabinet	Parliament
77	(a)	Rajya Sabha	Parliament
78	(c)	Different fundamental rights	Fundamental Rights
79	(a)	Eligibility of Vice-President	Vice-President
80	(b)	Polity	No-confidence Motion
81	(a)	Current Affairs	Rocket

Q No	Answer Key	Topic Name	Chapter Name
82	(a)	QUAD	Current Affairs
83	(c)	Current Affairs	Maritime Exercise
84	(d)	Current Affairs	Obituaries
85	(a)	Current Affairs	Hydro Project
86	(b)	Current Affairs	Maritime Exercise
87	(c)	Current Affairs	Peninsula Shield Force
88	(d)	Current Affairs	Mission Sagar II
89	(a)	Current Affairs	Panna National Park
90	(c)	Current Affairs	Irrigation Project
91	(d)	Cell Wall	Cell: The Unit of Life
92	(b)	Kinds of Pollination	Sexual Reproduction in Flowering Plants
93	(c)	Cytokinins	Plant Growth and Development
94	(b)	An Overview of Cell	Cell: the Unit of Life
95	(d)	Cell Membrane	Cell: the Unit of Life
96	(b)	Agricultural Practices	Crop Production and Management
97	(d)	Decomposition Reaction	Chemical Reaction and Equation
98	(a)	Corrosion of Metals	Metals and Non Metals
99	(b)	Reaction of Metals	Metals and Non Metals
100	(c)	Percentage Composition	Atoms and Molecules
101	(d)	Properties of Metal and Non Metals	Metals and Non Metals
102	(b)	Properties of Metal and Non Metals	Metals and Non Metals
103	(d)	Resistivity	Current Electricity
104	(c)	Nuclear Energy, Fission	Sources of Energy, How Do Organisms Reproduce?
105	(c)	Resistance	Current Electricity
106	(b)	Types of Mirrors	Ray Optics
107	(c)	Thermal Effect of Current	Current Electricity
108	(d)	Faraday's Law	EMI
109	(d)	Medicinal Use Of Microorganisms	Microorganisms: friends and Foe
110	(a)	Infectious Diseases	Why Do We Fall Ill?
111	(d)	Phylum Platyhelminthes	Animal Kingdom
112	(d)	Muscular Tissue	Tissues
113	(b)	Naturally Occuring Acids in Plants	Acids, Bases and Salts
114	(b)	Uses of Salt	Acids, Bases and Salts
115	(a)	Techniques For Softening Hard Water	Is Matter Around Us Pure
116	(d)	Chemical Reaction of Compounds	Acids, Bases and Salts
117	(b)	TIR	Ray Optics
118	(d)	Circular Motion	Motion
119	(c)	Weight	Force and Laws of Motion
120	(b)	Units	Units and Dimensions

Answers with Explanation

1. Option (c) is correct.

Nominal GDP measures output using current prices, but real GDP measures output using constant prices. Nominal GDP is derived by multiplying the current year quantity output by the current market price.

2. Option (a) is correct.

It is a category of unemployment arising from the mismatch between the jobs available in the market and the skills of the available workers in the market. Structural unemployment can be caused by massive changes within an industry, such as the manufacturing industry moving jobs overseas.

3. Option (c) is correct.

Stagflation refers to an economy that is experiencing a simultaneous increase in inflation and stagnation of economic output. It presents a dilemma for economic policy, since actions intended to lower inflation may exacerbate unemployment.

4. Option (a) is correct.

Crowding-in occurs when higher government spending leads to an increase in economic growth and therefore encourages firms to invest due to the presence of more profitable investment opportunities.

5. Option (b) is correct.

Collateral is an asset that serves to secure a loan when businesses need capital. In other words, collateral is something pledged as security for repayment of a loan, to be forfeited in the event of a default.

6. Option (b) is correct.

The nominal interest rate or money interest rate is the percentage increase in money you pay the lender for the use of the money you borrowed. The nominal interest rate is often used in banks to describe interest on different loans and in the investment field.

7. Option (d) is correct.

Gandhi-Irwin Pact

- Gandhi and all other members of the Congress Working Committee (CWC) were released unconditionally on January 25, 1931.
- The CWC authorised Gandhi to initiate discussions with then viceroy Lord Irwin.
- On February 14, 1931, the viceroy, representing the British Indian Government, and Gandhi, representing the Indian people, signed a pact in Delhi as a result of these discussions.
- This Delhi Pact is also known as the Gandhi-Irwin Pact.

Irwin on behalf of the government agreed on-

- Immediate release of all political prisoners not convicted of violence.
- Return of all lands not yet sold to third parties.
- Right to make salt in coastal villages for personal consumption (not for sale).

Gandhi on behalf of the Congress agreed-

- To suspend the civil disobedience movement
- To participate in the Second Round Table Conference

8. Option (d) is correct.

The Bhil Seva Mandal was founded in 1922 by Amritlal Vithaldas Thakkar (popularly known as Thakkar Bapa).

He was an Indian social worker who worked for upliftment of tribal people in state of Gujarat.

9. Option (d) is correct.

Gopal Krishna Gokhale

- He was an Indian 'moderate' political leader and also a social reformer.
- He was associated with Indian National Congress and the founder of the Servants of India Society.

- Gokhale was elected to the Bombay Legislative Council In 1899.
 - On 20 December 1901, he was elected to the Imperial Council of the Governor-General of India.
 - In 1911, he had introduced a bill in the Imperial legislative Assembly in order to implement the principle of compulsory primary education for children of 6-10 years age.
- 10. Option (b) is correct.**
Act V of 1843
- It is also known as the Indian Slavery Act, 1843.
 - It was an act passed in British India under East India Company rule.
 - It made many economic transactions associated with slavery.
 - The act stated that anyone who buys or sell slaves would be booked under the Indian Penal Code with an offence carrying stringent punishment.
 - It states that within the East India Company's territories, no rights resulting from an asserted property in the person and services of another as a slave shall be enforced by any Civil or Criminal Court or Magistrate.
- 11. Option (a) is correct.**
The treaty of Bassein was signed on 31 December 1802 between the British East India Company and Baji Rao II, the Maratha Peshwa of Poona.
- Under the treaty, the Peshwa agreed:**
- to surrender to the Company territories yielding an income of Rs 26 lakh
 - to surrender the city of Surat.
 - to give up all claims for Chauth on the Nizam's dominions
 - to subject his relations with other states to the control of the English.
- 12. Option (d) is correct.**
The Amara-Nayaka system
- It was a major political innovation of the Vijayanagara Empire.
 - They were the military commanders who were given territories for the purpose of governance by the Rayas.
 - As part of their military duties, they used to maintain an army.
- This system helped the Rayas to claim dominance over the entire southern peninsula.
- 13. Option (a) is correct.**
- KIRANS stands for "Knowledge Involvement in Research Advancement through Nurturing"
 - The scheme was started to encourage women scientists through various programmes in the field of Science and Technology (S&T).
 - It offers fellowships to unemployed women scientists and technologists, particularly those who have taken a break from their careers, to pursue research in frontier fields of science and engineering.
- 14. Option (a) is correct.**
- NIDHI stands for National Initiative for Development and Harnessing Innovations.
 - It was initiated by the Science & Technology department (DST).
 - It was launched with the goal of turning knowledge-based innovations and technology-driven concepts into successful start-ups.
 - It supports start ups from the ideation stage to the marketing stage.
- 15. Option (b) is correct.**
Saubhagya scheme
- It is also known as Pradhan Mantri Sahaj Bijli Har Ghar Yojana.
 - The scheme was launched in September 2017 by Prime Minister Narendra Modi.
 - The scheme aims to provide electricity to the households.
 - Households were identified through Socio-economic and Caste Census (SECC) of 2011 are eligible for free electricity connections.
 - The beneficiaries get One LED lights, one DC power plug.
 - Repair and Maintenance of Meter Only (R&M) for 5 years is also included.
- 16. Option (d) is correct.**
Mission Indradhanush
- It was launched on 25 December 2014
 - The final goal of Mission Indradhanush is to ensure that children up to two years of age and pregnant women get fully immunized with all available vaccines.

Vaccination is provided against eight vaccine-preventable diseases nationally. These are –

1. Diphtheria
2. Whooping Cough
3. Tetanus
4. Polio
5. Measles
6. Severe form of Childhood Tuberculosis
7. Hepatitis B and meningitis
8. Pneumonia caused by *Haemophilus influenza* type B

Also, in some selected states and districts vaccines against Rotavirus Diarrhea and Japanese Encephalitis are also provided.

17. Option (d) is correct.

Deen Dayal Upadhyaya Gramin Kaushalya Yojana (DDU-GKY)

- It was launched on the 25th of September 2014.
- It was launched on the occasion of 98th birth anniversary of Pandit Deendayal Upadhyaya.
- It is a nationwide placement-linked skill training program which is funded by the Ministry of Rural Development (MoRD).
- The scheme aims to build the placement linked skills of the poor rural youth and to place them in wage employment across different sectors of the economy.

18. Option (a) is correct.

Pradhan Mantri Gram Sadak Yojana (PMGSY)

- It was introduced by the then-prime minister of India Atal Bihari Vajpayee in 2000.
- It is a Centrally Sponsored Scheme.
- It is a part of the poverty reduction strategies of the government.
- It aims to provide all-weather road connectivity to unconnected villages.
- All-weather roads are those roads that can be used throughout the year in all seasons.
- The scheme is under the authority of Ministry of Rural Development.
- Besides building new roads, the scheme also seeks to upgrade the existing roads, although the primary focus is to provide connectivity to unconnected habitations.

19. Option (b) is correct.

- The territorial jurisdiction of India extends to territorial water up to 12 nautical miles from the nearest point of the baseline.
- Beyond territorial waters lies the Contiguous Zone which is extended up to 24 nautical miles
- And beyond the Contiguous Zone up to 200 nautical miles is the Exclusive Economic Zone of India.

20. Option (d) is correct.

- **Ocean currents** are the continuous, predictable, directional movement of seawater which are driven by gravity, water density and wind (Coriolis Effect).
- **Cold current** - These are the currents moving toward the Equator. Water carried by this current is colder than the water they are moving into.
- **Examples of cold currents** - California Current, Antarctica Current, Okhotsk Current, Labrador Current and Benguela Current.
- **Warm-water currents** flow out from the equator along the surface, replacing the sinking cold water at the poles.
- Kuroshio Current, Brazilian Current, North Atlantic Drift, Gulf Stream and North Equatorial Current are examples of warm currents.

21. Option (d) is correct.

Black soil

- It covers most of the Deccan Plateau which includes parts of Andhra Pradesh, Maharashtra, Madhya Pradesh, Gujarat, and some parts of Tamil Nadu.
- It is also as the 'Regur Soil' or the 'Black Cotton Soil'.
- These are generally clayey, deep and impermeable.
- They swell and become sticky when wet and shrink when dried.
- This is why, during the dry season, these soils develop wide cracks.
- The black soils are rich in lime, magnesia, iron, and alumina. They also contain potash.

- However, they lack in nitrogen, phosphorous, and organic matter.
- The soil varies in colour from deep black to grey.

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

Five varieties of Indian coffee received the Geographical Indication tag from government of India. These are-

- **Coorg Arabica** coffee from Karnataka
- **Wayanad Robusta** coffee from Kerala
- **Chikmagalur Arabica** from Karnataka
- **Araku Valley Arabica** from Andhra Pradesh
- **Bababudangiris Arabica** coffee from Karnataka.

Coffee, in India, is cultivated on around 4.54 lakh hectare by 3.66 lakh coffee farmers of which 98 per cent are small farmers.

Coffee is grown mostly in India's southern states, particularly Karnataka, which produces 54 percent of the country's total. Kerala comes in second with 19%, followed by Tamil Nadu with 8%.

Coffea liberica

It is commonly known as the Liberian coffee and is native to western and central Africa.

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

Aluminium is the most abundant metal in the earth crust and the third most abundant element which is mainly found in the form of $Al_2O_3 \cdot 2H_2O$ and it is commonly known as Bauxite.

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

Marmagao Port, is situated at the entrance of the Zuari estuary. It is a natural harbor in Goa.

Marmagao is one of the oldest ports on the west coast of India.

Major ports of India.

Name	State
Deendayal Port Trust	Gujarat
Paradip Port Trust.	Odisha
Jawaharlal Nehru Port Trust	Maharashtra
Visakhapatnam Port Trust	Andhra Pradesh
Mumbai Port Trust	Maharashtra
Syama Prasad Mookerjee Port Trust	WestBengal

Chennai Port Trust	Tamil Nadu
New Mangaluru Port Trust	Karnataka
Kochi Port Trust.	Kerala

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

Used for regulating consumption is not a function of money. Apart from this, money has taken many forms through the ages, but money consistently has three functions: store of value, unit of account, and medium of exchange.

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

Recessionary Gap can be defined as the difference between the real GDP and potential GDP at the full employment level. A recessionary gap occurs when a country's real GDP is lower than its GDP at full employment. Recessionary gaps close when real wages return to equilibrium, and the quantity of labor demanded equals the quantity supplied.

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

Fiscal deficit is the difference between the total revenue and total expenditure of a government in a financial year. Fiscal deficit arises when the expenditure of a government is more than the revenue generated by the government in a given fiscal year.

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

This statement is correct regarding fixed exchange rate. A fixed exchange rate is a regime applied by any government or central bank that ties the country's official currency exchange rate to another country's currency or the price of gold. The purpose of a fixed exchange rate system is to keep a currency's value within a narrow band.

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

Francois Bernier

- He was a French physician and traveller.
- He was the personal physician of Mughal prince Dara Shikoh who was the eldest son of Shah Jahan.
- Later on, after the execution of Dara Shikoh by Aurangzeb's henchmen, he was associated with the court of the Mughal emperor Aurangzeb for around twelve years during his stay in India.
- Travels in the Mughal Empire was written by him which is mainly about the reigns of Dara Shikoh and Aurangzeb.

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

- Soorajmull Jalan and Nagarmull Bajoria were Marwari traders in Calcutta in the 1930s & owned extensive real estate. Later entered into jute manufacturing,
- Around 1952-53, Surajmull Nagarmull front companies bought up jute companies under the control of McLeod and Co.
- McLeod at the time managed and owned ten jute mills, sixteen tea companies, and light railways.

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

- By 1814 the Court of Directors decided to introduce the ryotwari system.
- This system was formulated by Governor Thomas Munro.
- Under this system, the ryot, meaning a peasant or cultivator, was the proprietor and tax payer of the land.
- This was broadly practised in Bombay and Madras areas, as well as Assam and Coorg provinces.
- The taxes were directly collected by the government from the peasants.
- The rates were 50% in dryland and 60% in the wetland.
- The revenue assessment was reviewed once in thirty years.
- This system introduced the concept of private property in land.
- This system intended to create a large body of self-sufficient peasants, who would be shielded from the corrupt and faithless zamindar.

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

- The Indian Medical Service (IMS) was a military medical service which also had some civilian functions in British-ruled India.
- It served during the two World Wars, and remained in operations until the independence of India in 1947.
- Many of its officers, who were both British and Indian, worked in civilian hospitals.
- IMS began with the establishment of the Bengal Medical Service on 20 October 1763 and later on was established in both Madras and Bombay by 1764.

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

The jealously-protected monopoly of the East India Company was abolished in 1833 and the China trade was made open to the competition to dozens of British companies, who had been petitioning the government for free and open trade for years.

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

National Disaster Management Authority (NDMA)

- It is headed by the Prime Minister of India
- It is the apex body for Disaster Management in India.
- It was established by Disaster Management Act enacted by the Government of India on 23 December 2005.

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

- The speaker does not vote in the first instance.
- But he can exercise a casting vote in case of a tie
- When the House is divided equally on any question, the Speaker is entitled to vote.
- Such vote is called casting vote, and its objective is to resolve a deadlock.
- The Deputy Speaker, like the Speaker, cannot vote in the first instance; however, in cases of a tie, he can exercise a casting vote.

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

Article 14 - The State shall not deny to any person equality before the law or equal protection of the laws.

Article 15 - Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth.

Article 16 - Equality of opportunity in matters of public employment.

Article 22 - Protection against arrest and detention in certain cases.

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

This theory was developed by John Austin and Jeremy Bentham around the 18th and 19th century. Legal positivism is one of the leading philosophical theories of the nature of law, and is characterized by two theses: (1) the existence and content of law depends entirely on social facts (2) there is no necessary connection between law and morality.

38. Option (a) is correct.

The idea of consent of the governed came from political philosopher John Locke, who wrote about the concept in his Two Treatises of Government. Locke argued that a government exists to serve the people, who are all equal citizens, and the people have the right to rebel if the government fails at this duty.

39. Option (a) is correct.

Shifting cultivation is also known as 'slash and burn' agriculture. There are other names too. For example -

- Jhumming - North-East India
- Milpa - Mexico
- Roca - Brazil.
- Ladang - Malaysia
- In shifting cultivation, a plot of land is cleared by felling the trees and burning them.
- The ashes are then mixed with the soil and crops like potatoes, maize, yam and cassava are grown.
- The land is abandoned after the soil loses its fertility, and the cultivator moves to a new plot.

40. Option (b) is correct.

- The basic needs approach was introduced in 1976 by the International Labour Organization's World Employment Conference.
- There are six basic needs which must be fulfilled for all individuals.
- These needs are; Health, Water, Education, Food, Sanitation and Housing.

41. Option (b) is correct.

Bhakra Dam is a concrete gravity dam built on the Sutlej River (which is the easternmost tributary of the Indus River) in Bhakra Village, Bilaspur district, Himachal Pradesh.

The dam forms the Gobind Sagar reservoir and is built to provide irrigation and other facilities to the states of Punjab, Rajasthan and Haryana.

42. Option (d) is correct.**Important Drainage Patterns**

- Centripetal Pattern - The discharging of river water from all directions in a lake or depression is called as Centripetal.

- Dendritic- The drainage pattern resembling the branches of a tree is known as "dendritic". Example - the rivers of northern plain.
- Radial - The drainage pattern is called as 'radial' when rivers originate from a hill and flow in all directions. Rivers that originate in the Amarkantak range are a good illustration of this.
- Trellis- The pattern is known as trellis, when the primary tributaries of rivers flow parallel to each other and secondary tributaries join them at right angles.

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

- It is an apparent force caused by the rotation of Earth.
- In the northern hemisphere, it is responsible for deflecting winds to the right, while in the southern hemisphere, it is responsible for deflecting winds to the left. This is also known as 'Ferrel's Law'.
- This force is zero at the equator
- It is maximum at the poles due earth's rotation.

44. Option (a) is correct.

Treaty of Surat - Raghunathrao, the Peshwa of Maratha empire was unwilling to give up his position in power. So, he sought help from the English at Bombay and signed the Treaty of Surat in 1775.

Under the treaty, Raghunathrao ceded the territories of Bassein and Salsette to the English along with a portion of the revenues from Bharuch and Surat districts. The English were to provide Raghunathrao with 2,500 soldiers in return.

Treaty of Purandhar - The British Calcutta Council condemned the Treaty of Surat (1775) and sent Colonel Upton to Pune to repeal it and make a new treaty which is known as Treaty of Purandhar, 1776 with the regency renouncing Raghunath and promising him a pension.

Battle of Wadgaon - It was a battle fought between the Maratha Empire and the British East India Company in 1779 near Vadgaon Maval village in Maharashtra. It was part of the First Anglo-Maratha War.

It forced the Bombay government to give up all territories acquired by the English since 1775.

Treaty of Salbai - It ended the first phase of the Struggle of the Anglo-Maratha War. The English, under General Camac, defeated Sindhia at Sipri in February 1781.

Sindhia proposed a new treaty between the Peshwa and the English; the Treaty of Salbai was signed in May 1782. The treaty guaranteed peace between the two sides for twenty years.

45. Option (b) is correct.

Sanyasi Revolt (1763-1800)

- It is also known as Fakir rebellion or revolt.
- A group of sanyasis in Eastern India (Bengal and Bihar) were forced to fight the British yoke after the devastating famine of 1770 and the strict economic regime of the British.
- The revolt took place under the leadership of Majnoo Shah Fakir and Pandit Bhabani Charan Pathak.
- These sanyasis were joined by a large number of dispossessed small zamindars, disbanded soldiers and naga sadhus.
- They raided Company factories and the treasuries, and fought the Company's forces.
- It was only after a long battle that Warren Hastings could subdue the sanyasis.

46. Option (d) is correct.

Parallel government (Prati Sarkar)

- The Parallel government in Satara, Maharashtra was started against British rule from August 1943 to May 1946.
- It was an armed offshoot of the 1942 Quit India movement.
- Kratisimha Nana Patil was the leader of this Prati Sarkar. He later on joined the Communist Party and was elected to the Lok Sabha on the CPI ticket from Satara in 1957 and again from Beed in 1967.

Toofan Sena (whirlwind or typhoon army)

- It was the armed wing of the prati Sarkar.
- It was also an armed offshoot of the Quit India movement of 1942 and declared a parallel government in Satara.

The **prati sarkar and Toofan Sena** gave some of the most important leaders of India's freedom struggle in Maharashtra.

47. Option (b) is correct.

Central Hindu School

- Formerly known as Central Hindu College
- It was founded by noted freedom-fighter Annie Besant in July 1898 in Benaras.
- Annie Besant, later on, dedicated this school to Pt. Madan Mohan Malviya.
- With the support of some leaders, Madan Mohan Malviya established BHU in 1915.

48. Option (d) is correct.

The approach or system by which designing and decision-making procedures within an organisation or a managerial body are indicated is known as government centralization.

Roles and responsibilities are clearly defined by higher authority in the central governing body, and decision-making is simple and transparent, resulting in uniformity.

The central power has a broad encompassing interest in the welfare of the state it controls, as it stands to benefit from any increase in the state's wealth and/or power, **permitting national unity and prosperity.**

49. Option (d) is correct.

On the 13th of August, 2014, the Modi Government scrapped the 65-year-old Planning Commission and replaced it with the NITI Aayog (National Institution for Transforming India).

Functions of NITI Aayog

- It is the premier policy 'Think Tank' of the Government of India
- It provides both directional and policy inputs.
- It also provides relevant technical advice to the Centre and States while designing strategic and long-term policies and programmes for the Government of India
- It monitors and evaluate the implementation of programmes and initiatives.

50. Option (a) is correct.

Article 231 – It grants power to the Parliament for the establishment of a common high court for two or more states.

51. Option (d) is correct.

Ordinary Bills

Every ordinary bill has to pass through the following mentioned five stages in the

Parliament before it finds a place on the Statute Book:

First Reading

- An ordinary bill can be introduced in either House of Parliament. Such a bill can be introduced either by a minister or by any other member.
- The mover of the bill introduces it by reading its title and objectives. No discussion on the bill takes place at this stage.

Second Reading

This stage involves three more sub-stages-

- stage of general discussion
- committee stage
- consideration stage.

Third Reading

At this stage, the debate is confined to the acceptance or rejection of the bill and no amendments are allowed. If the bill is accepted by the majority of members the bill is regarded as passed by the House. After this, the bill is sent to the second House for consideration and approval.

Fourth Stage

If the second House passes the bill without any amendments the bill is deemed to have been passed by both the Houses.

If the second House rejects the bill altogether or a deadlock is deemed to have taken place. The president can summon a joint sitting of the two Houses to resolve such a deadlock.

Assent of the President

Every bill after being passed by both Houses of Parliament either singly or at a joint sitting, is presented to the president for his assent.

52. Option (c) is correct.

- Originally, there were seven Fundamental Rights mentioned in Constitution.
- By the 44th Amendment Act of 1978, the Right to Property (Article 31) was removed from the list of Fundamental Rights
- Right to Property is made a legal right under Article 300-A in Part XII of the constitution.

53. Option (b) is correct.

Rice Crop

- It is a Kharif crop and required a hot and humid climate

- Punjab, Haryana, Bihar, Uttar Pradesh, Rajasthan and Madhya Pradesh are the major rice-producing states.

- There are three rice seasons:

- ♦ Aman is the December-January season
- ♦ Boro is March-May
- ♦ Aus is July-August.

- Aman is the most important for rice cultivation.
- About 1/4th of the total cropped area of India is under rice cultivation.

54. Option (c) is correct.

Igneous rocks

- When magma in its upward movement cools and turns into solid form it is referred as Igneous rock.
- The process of cooling and solidification can happen on the surface of the earth or in the earth's crust.
- They are known as primary rocks, as igneous rocks form out of magma and lava from the interior of the Earth
- Examples of igneous rocks - Granite, gabbro, pegmatite, basalt, volcanic breccia and tuff.

55. Option (d) is correct.

- The ozone layer refers to the high concentration of ozone found in the stratosphere between 15 and 30 kilometres above the surface.
- It protects life on Earth by absorbing damaging ultraviolet-B (UV-B) radiation from the.

56. Option (b) is correct.

There are two types of body waves. They are called P and S-waves.

P waves

- P waves are also called as primary waves.
- P-waves move faster and are the first to arrive at the surface.
- They are similar to sound waves.
- They travel through gaseous, liquid and solid materials.

S-waves can travel only through solid materials.

57. Option (d) is correct.

- The alluvial soils vary in nature from sandy loam to clay.

- They are generally rich in potash but poor in phosphorous.
 - Khadar is known as new alluvium while bhangar represents a system of older alluvium.
58. **Option (a) is correct.**
Gopal Hari Deshmukh (1823-1892)
- He was a social reformer from Maharashtra.
 - Under British raj, he held the post of a judge.
 - He used to write for a weekly called Prabhakar on social reform issues under the pen name of Lokahitawadi.
59. **Option (a) is correct.**
- The Salt March was the first nationalist movement in which considerable number of women took part.
 - Gandhiji had been persuaded by socialist activist Kamaladevi Chattopadhyay not to limit the protests to males only.
60. **Option (d) is correct.**
- Kamal ud-Din Behzad also known as Kamal al-din Bihzad was not associated with Humayun.
 - He was a Persian painter during the late Timurid and early Safavid Persian periods
 - He was the head of the royal ateliers in Herat and Tabriz.
 - He is recognized as marking the highpoint of the great tradition of Islamic miniature painting.
61. **Option (b) is correct.**
- Shiva-Sankirtana - Rameshwar Bhattacharya
 - Epic poem Chandimangal- Kabikankan Mukundaram Chakrabarti
 - Chaitanya Charitamrita - Krishnadasa Kaviraja
 - Chaitanyamangal - Brindavan Dasa
62. **Option (b) is correct.**
- Bhaskaracharya's work 'Lilavati' was translated into Persian by Abul Faizi-in 1587.
 - Lilavati is treatise on mathematics written in 1150.
63. **Option (a) is correct.**
National Commission to review the working of the Constitution (NCRWC)
- It is also known as Justice Manepalli Narayana Rao Venkatachaliah Commission.
 - It was set up on 22 February 2000 by a resolution of the NDA Government led by Atal Bihari Vajpayee
 - It was set up for suggesting possible amendments to the Constitution of India.
 - It submitted its report in 2002.
64. **Option (b) is correct.**
M.M Punchhi Commission
- The Second commission on Centre-State Relations was set-up in April 2007 under the chairmanship of Madan Mohan Punchhi, former Chief Justice of India.
 - It made a recommendation for the disposal of a bill reserved for the consideration of the Union Executive within six months.
65. **Option (a) is correct.**
Kesari is a Marathi newspaper which was founded in 4 January 1881 by Lokmanya Bal Gangadhar Tilak.
66. **Option (d) is correct.**
The Government of India categorizes Central Public Sector Enterprises (CPSEs) into three different categories. These are:
- Maharatna
 - Navratna
 - Miniratna
- Bharat Electronics Limited (BEL) is a navratna company. It was founded in Bengaluru, Karnataka in 1954.
67. **Option (c) is correct.**
Article 3 authorises the Parliament to:
- form a new state by separation of territory from any state or by uniting two or more states or by uniting any territory to a part of any state.
 - increase the area of any state
 - diminish the area of any state
 - alter the boundaries of any state
 - alter the name of any state.
- The laws made for admission or establishment of new states and formation of new states and alteration of areas, boundaries or names of existing states are not to be considered as amendments of the Constitution under Article 368.

This means that such laws can be passed by a simple majority and by the ordinary legislative process.

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

Indo-Aryan

- The language came to India with the Aryans and is part of the Indo-European family of languages.
- It is the biggest of the language groups in India.
- It accounts for about 74% of the total Indian population.
- It comprises of all the principal languages of northern and western India such as Rajasthani, Assamese, Oriya, Pahari, Bihari, Kashmiri, Urdu Hindi, Bengali, Marathi, Gujarati, Punjabi, Sindhi, and Sanskrit.

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

The Ten Degree Channel in the Bay of Bengal is a channel that separates the Andaman Islands and Nicobar Islands from each other.

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

- 82 degree 30 minutes is chosen as standard meridian because it lies almost in the centre of India.
- There is a time lag of two hours from Gujarat to Arunachal Pradesh.
- Therefore, time along the Standard Meridian of India (82°30'E) passing through Mirzapur is taken as the standard time for the whole country.
- As one moves from south to north, the latitudinal extent influences the duration of day and night.

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

There are different names of cyclones in different countries:

- North Atlantic (including Caribbean and Gulf of Mexico): Hurricanes.
- Arabian Sea/Northern Indian Ocean: Tropical Cyclones.
- South Indian Ocean: Tropical Cyclones
- Willy-Willy for southwest Australia.
- Eastern and Central North Pacific: Hurricanes.
- Western Northern Pacific: Typhoons.

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

All the three mentioned schemes are social security schemes.

Atal Pension Yojana

- It is a government-backed pension scheme in India which is primarily targeted at the unorganised sector.
- It was launched on 9 May 2015 in Kolkata.

Pradhan Mantri Jeevan Jyoti Bima Yojana

- It is life insurance scheme in India. Launched in 2015.
- It is available to people between 18 and 50 years of age with bank accounts.
- It has an annual premium of ₹330

Pradhan Mantri Suraksha Bima Yojana

- It is an accident insurance scheme. It was launched in 2015.
- Available to people between 18 and 70 years of age with bank accounts.

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

The Transcription Service was started on 3rd April 1954. It was entrusted with the task of preparing transcription of speeches of all dignitaries.

This office has the following functional units:

- Central Archives
- Programme Exchange Unit (PEU)
- Transcription Unit
- Refurbishing Unit
- Digital Sound Archives
- Commercial Release & Marketing

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

Gram Sabha - It is a village assembly consisting of all the registered voters in the area of a panchayat.

The act provides for a three-tier system of panchayati raj in every state. This system comprises

- ♦ Panchayats at the village
- ♦ Intermediate
- ♦ District levels

However, a state having a population not exceeding 20 lakhs may not constitute panchayats at the intermediate level.

The chairperson of panchayats at the village level shall be elected in manner described by the state legislature.

The Panchayati Raj system exists in all states except Meghalaya, Nagaland, and Mizoram.

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

- The State Election Commission is concerned with the elections to panchayats and municipalities in the states.
- Governor appoints the state election commissioner
- The state legislature makes provisions with regard to all matters relating to elections to the panchayats.

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

- It is the part of Parliament.
- Article 75 clearly states that the council of ministers is collectively responsible to the Lok Sabha.
- Usually, the members of Parliament, either Lok Sabha or Rajya Sabha, are appointed as ministers.
- A person who is not a member of either House of Parliament can also be appointed as a minister but, within six months, he must become a member (either by election or by nomination) of either House of Parliament, otherwise, he ceases to be a minister.

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

The representatives of states in the Rajya Sabha are elected by the elected members of state legislative assemblies. The elections are indirect and held in accordance with the system of proportional representation by means of the single transferable vote.

The representatives of each union territory in the Rajya Sabha are indirectly elected by members of an electoral college specially constituted for the purpose.

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

Fundamental Rights available to both citizens and foreigners are:

- Equality before law and equal protection of laws (Article 14).
- Protection in respect of conviction for offences (Article 20). Clause (3) of Article 20 states that no person accused of an offence shall be compelled to be a witness against himself.
- Freedom of conscience and free profession, practice and propagation of religion (Article 25).

79. **Option (a) is correct.****Vice-President**

- He is elected by the members of an electoral college consisting of the members of both Houses of Parliament.
- He should have completed 35 years of age to be eligible for election.
- The Vice-President holds office for a term of five years.
- He may be elected for any number of terms.

80. **Option (b) is correct.****No-Confidence Motion**

- Article 75 states that the council of ministers shall be collectively responsible to the Lok Sabha.
- A no-confidence motion can be passed against the entire council of ministers. It can only be introduced in the Lok Sabha.
- Lok Sabha can remove the ministry from office by passing a no-confidence motion. It requires the support of 50 members to be admitted.

81. **Option (a) is correct.****Pinaka**

- It is a multi-barrel rocket launcher produced in India.
- Developed by DRDO. It was used during Kargil war.
- As of 2019, an upgraded guided missile version of the system with a range of over 90 km has been test-fired.

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

- The Quadrilateral Security Dialogue (QSD) or QUAD is a strategic security dialogue between Australia, India, Japan, and the United States.
- The dialogue was initiated by Japanese Prime Minister Shinzo Abe in 2007.

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

- The 24th edition of Malabar maritime exercise was held in two phases.
- The first phase was conducted in Visakhapatnam in Bay of Bengal from 3-6 November 2020.
- The second phase was conducted in the Arabian Sea from 17-20 November 2020

84. Option (d) is correct.

Sir Sean Connery was a Scottish actor and was best remembered for his portrayal of James Bond

85. Option (a) is correct.

- 210 MW Luhri Stage-I Hydro Electric Project is built on river Satluj in Shimla and Kullu districts of Himachal Pradesh.
- The project will generate 758.20 million units of electricity annually.

86. Option (b) is correct.

- Cooperation Afloat Readiness and Training (CARAT) maritime exercise was held between Bangladesh and USA.
- The exercise aims to promote regional cooperation and build relationships.

87. Option (c) is correct.**Peninsula Shield Force**

- It is the military arm of the Gulf Cooperation Council (GCC).
- Its objective is to deter, and respond to, military aggression against any of the GCC member countries: Saudi Arabia, Qatar, Bahrain, Kuwait, Oman and the United Arab Emirates.

88. Option (d) is correct.

- As part of 'Mission Sagar-II', the Government of India provided assistance to friendly foreign countries to deal with Covid-19 pandemic.
- Countries where help was sent - Sudan, South Sudan, Djibouti and Eritrea.
- The Indian Naval Ship (INS) 'Airavat' was associated with the mission.

89. Option (a) is correct.**Panna National Park**

- It was declared a UNESCO Biosphere Reserve in 2020.
- It is located in Chhatarpur districts of Madhya Pradesh.
- It was declared as the twenty second Tiger reserve of India in 1994 and the fifth in Madhya Pradesh.

90. Option (c) is correct.**Kaleshwaram Lift Irrigation Project**

It is a multi-purpose irrigation project built on the Godavari River in Kaleshwaram, Bhupalpally district in Telangana.

91. Option (d) is correct.

Cell wall is a rigid structural layer present outside the cell membrane of plants, bacteria, and fungi. It prevents the cell from mechanical damage, helps in cell-cell interactions, and maintains the shape of the cell. The composition of cell wall differs in different organisms. It is made up of cellulose, pectin and other glycans in plants. Bacterial cell wall is made up of polysaccharides referred to as peptidoglycan that are joined together by peptide bridges and cell wall of fungi is composed of chitin, glucans, and glycoproteins. Animals and humans do not possess cell wall as their structural framework is supported by bones, muscles, and cartilage. They have cell membrane that facilitates the exchange of metabolites, gases, and other organic substances into and out of the cell and maintains the fluidity of the cell.

92. Option (b) is correct.

When the pollen from the anther of the flower gets transferred to the stigma of same flower (autogamy), or from different flower on the same plant (geitonogamy), the process is referred to as self-pollination. If all the progenies that are formed are tall, it means the tall progeny has been formed by both tall parents but if some plants are tall while others are small, it would establish the fact that one of the parent plants might have been small. Cross pollination occurs when the pollen from a plant gets transferred to the stigma of the other plant by means of insects or wind. It would not be possible to establish the progeny's height by means of cross pollination.

93. Option (c) is correct.

Cytokinins are the plant hormones involved in cell division that is commonly found in actively growing regions such as shoot buds, the apices of root, and young fruits. The hormone involved primarily in cell growth and differentiation, it also overcomes apical dominance and is helpful in translocation of nutrients in various parts of the plant thereby delaying senescence.

94. Option (b) is correct.

The endosymbiotic theory states that some of the organelles found in eukaryotes have once evolved from the prokaryotes. Chloroplasts and mitochondria are known to possess their own genetic material in the form of deoxyribonucleic acid (DNA) that is circular rather than the chromosomal DNA (linear,

contained in the nucleus) and ribosomes (70S) which facilitates their replication independent of other cells and organelles and also helps in synthesizing some of their proteins.

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

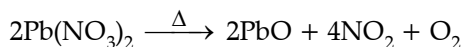
The diffusion or net movement of solvent molecules through a selectively permeable membrane (allows only certain molecules to pass through) from a region of high-water potential (less concentrated solution) to a region of low water potential (highly concentrated solution) in the direction that tends to equalise the solute concentrations on the two sides is referred to as osmosis.

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

When two or more plants are cultivated in a specific row pattern simultaneously in the same field in order to utilize the space between the rows for maximal productivity, the practice is referred to as intercropping. The crops generally differ in their standing and harvesting time. Mixed cropping involves growing two or more plants (mixed seeds) in the same field but not in a specific pattern. It is done to avoid crop failure in case of unfavourable circumstances. All the crops in mixed cropping generally have similar harvesting time.

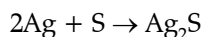
97. **Option (d) is correct.**

Lead nitrate is a stable compound but on heating it get decomposed into lead oxide, nitrogen dioxide and oxygen gas. Nitrogen dioxide (NO_2) is a brown coloured gas which evolve along with oxygen.



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

Silver articles become black after some time when expose to air because silver reacts with sulphur in the air to form a coating of silver sulphide.



It is an example of rusting of silver.

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

Sodium is highly reactive and electropositive metal which readily reacts with air and water to form metal oxide and metal hydroxide respectively. Along with this, large amount of energy is released which may cause accidental fire therefore it is either kept in kerosene oil or wrapped in paraffin wax.

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

mass of solute = 20 gm

mass of solvent = 180 gm

mass of solution = 20 + 180 = 200 gm

mass by mass percentage

$$= \frac{\text{mass of solute}}{\text{mass of solution}} \times 100$$

$$= \frac{20}{200} \times 100 = 10\%$$

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

Non metal exist is all three states of matter.

Gas — He, Ne, O_2 , N_2 , H_2

Liquid— Br_2

Solid—Ge, P_4 , S_8

The non metal which is lustrous is Iodine. Iodine forms violet coloured crystal.

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

Sodium is soft metal, mercury is a liquid metal. Metal which show both malleability and ductility properties is Gold (Au).

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

Resistivity does not depend upon length and area of cross section of the conductor. It depends only upon the nature of material. All three wires are made up of same material, hence they have same resistivity.

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

Fission means "to divide". The reaction in which an atom breaks into smaller atoms that might vary in number depending upon the reaction conditions is called fission. In biology, fission is a means of asexual reproduction (seen in unicellular organisms such as *Amoeba*, bacteria) in which an organism divides to form two (binary fission) or more (multiple fission) progenies each carrying a copy of genetic material through the process of cell division. In this method, heavier nuclei of parents transforms into the smaller nuclei of progenies.

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

A human body does have free charge carriers, so it acts as a conductor. While all other options do not have free charges associated with them, so they act as insulators.

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

A spoon is usually in parabolic shape, so a shining spoon can be considered as a parabolic

mirror.

107. Option (c) is correct.

Heating effect of current was discovered by James P. Joule. Hence, it is known as Joule's law of heating.

108. Option (d) is correct.

Faraday's law of EMI is related to change in flux and induced current. It does not tell about the direction of magnetic field.

109. Option (d) is correct.

Viruses are intracellular parasites that live within a host cell and utilize host cell machinery to replicate their own genetic material. They do not possess biochemical pathways of its own. Antibiotics are the antimicrobial compounds that block the biochemical pathways (inhibit cell wall synthesis, protein synthesis, membrane function, or nucleic acid synthesis) in bacteria and either inhibit or kill them. Since virus does not have its own biochemical pathway, viruses are not affected by the antibiotics. Vaccines are biological substances made up of either inactivated or live-attenuated viruses, polysaccharide, peptides, or sugars of microbes that carry the antigenic properties (foreignness) and are unable to infect the host but able to elicit immune response when administered into a host. Since vaccines are specific for a particular disease as they carry a specific antigenic preparation, they are able to induce immune system to synthesize specific antibodies which can neutralize the virus.

110. Option (a) is correct.

Sleeping sickness (African Trypanosomiasis) is the disease caused by a protozoan parasite *Trypanosoma brucei* when they are transmitted into the host by the bite of a Tse-tse fly. Fever, fatigue, swollen lymph nodes, irritability, and confusion, and other neurological disorders are the common symptoms of this disease. It is referred to as sleeping sickness because it leads to disturbed sleeping pattern.

111. Option (d) is correct.

Planaria is a free-living flatworm that belongs to the phylum Platyhelminthes and class Turbellaria. It has a soft body with a leaf-like shape and have a remarkable property of regeneration. Rest other options are parasites.

112. Option (d) is correct.

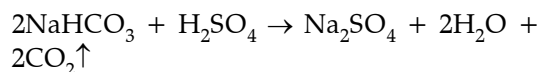
Cardiac muscle tissue is a unique, well-organized tissue found solely in the heart. It is in charge of managing the heart beat and the blood flowing throughout the body. Myocardium, or cardiac muscle tissue, includes cells that contract and expand in response to electrical impulses from the neurological system. Cardiac muscle fibres are cylindrical, have a single nucleus, are branching, and are connected by intercalated discs with gap junctions for cell depolarization and desmosomes to keep the fibres together when the heart contracts.

113. Option (b) is correct.

Tomato contains around ten organic acids depending upon their ripening stage. The major organic acid found in tomatoes is citric acid followed by malic acid. Citric acid is commonly used as a flavouring agent and as a preservative in food products.

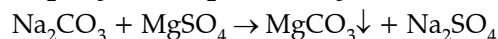
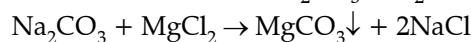
114. Option (b) is correct.

Sodium hydrogen carbonate commonly called as Baking soda. It is mainly used in bakery items as well as fire extinguisher. In fire extinguisher it is present along with sulphuric acid to produce carbon dioxide which cuts the supply of air.



115. Option (a) is correct.

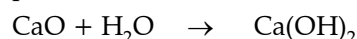
The sodium compound which is mainly used in the softening of hard water is Na_2CO_3 . It is commonly called washing soda having molecular formula of $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$.



here the formation of precipitate of MgCO_3 takes place to remove hardness of water.

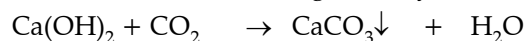
116. Option (d) is correct.

Calcium oxide reacts vigorously with water to produce slaked lime



(Slaked lime)

Calcium hydroxide further reacts with compound CO_2 to produce a compound calcium carbonate which give shiny finish.



(Calcium carbonate)

117. Option (b) is correct.

The rainbow is a result of a three-step process, that is, refraction, internal reflection, and refraction. In primary rainbow internal reflection occurs once, while in secondary rainbow it occurs twice.

118. Option (d) is correct.

In circular motion the direction of velocity is along the tangent to the circle drawn at the object. Direction of acceleration is towards

the center of motion. Both the directions are perpendicular to each other. So, option (d) is correct.

119. Option (c) is correct.

Weight of an object is the measure of force due to gravity. It always acts towards ground.

120. Option (b) is correct.

Nanotechnology is the branch of science which deals with matter at microscopic level. Here dimensions are about 1 to 100 nm.