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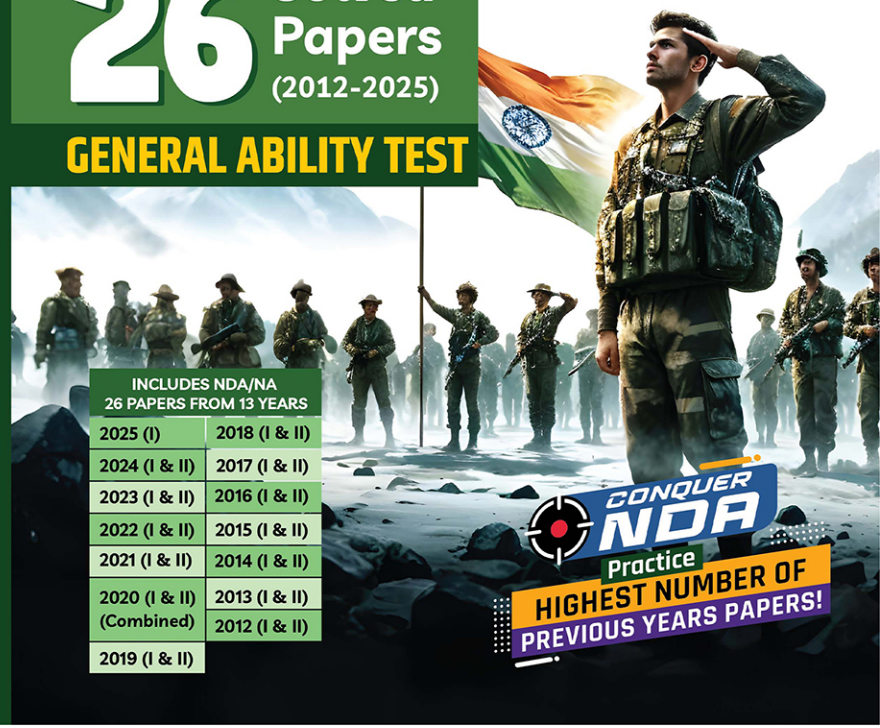

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META DATA	
BOOK NAME	NDA/NA GENERAL ABILITY TEST SOLVED PAPERS
AUTHOR	Rahul Aggarwal
EDITION	Latest
PUBLISHED BY	Agrawal Group Of Publications (AGP)
ADDRESS (Head office)	28/115 Jyoti Block, Sanjay Place, Agra, U.P. 282002
CONTACT	quickreply@agpgroup.in We reply superfast
BUY BOOK	www.examcart.in Cash on delivery available
WHATSAPP (Head office)	8937099777
PRINTED BY	Schoolcart
DESKTOP PUBLISHING	Agrawal Group Of Publications (AGP)
ISBN	978-93-6890-121-1
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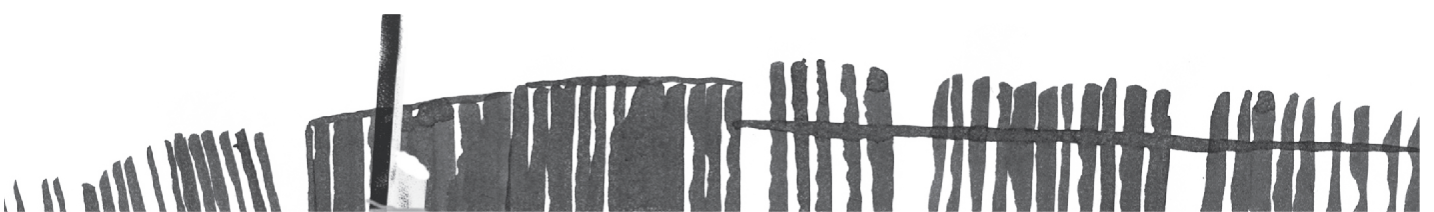

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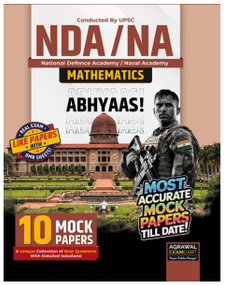

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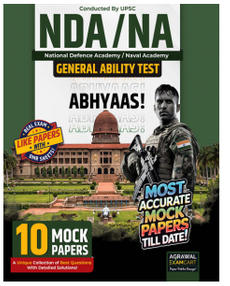

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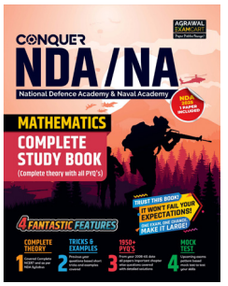

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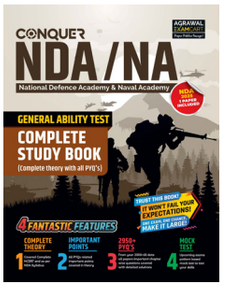

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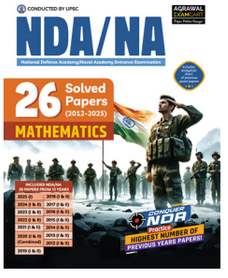

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NDA/NA Solved Paper, 2025 (I)
(GAT)

Exam Date : 13-04-2025

English

Noun: Types of Nouns, Number & Gender, Case & Confusion about the Use of Certain Nouns

1. The class decided to organise

(A) picnic (B) a picnic

(C) picnics (D) the picnic

Adjectives & Comparison of Adjectives

Direction (Q. No. 2 and 3)

Following items have four sentences, one of which is correct. Find the correct option.

2. Which one of the following sentences is correct ?

(A) He is considered as the brightest intellectual in the country

(B) He is considered as one among the brightest intellectual in the country

(C) He is considered as one among the brighter intellectual in the country

(D) He is considered as one of the intellectual in the country

3. Which one of the following sentences is correct ?

(A) No other mountain is taller than the Himalayas

(B) No other mountain is tall than the Himalayas

(C) No other mountains taller than the Himalayas

(D) No other mountain is taller then the Himalayas

Direction (Q. No. 4 to 14)

The following items have a blank space followed by four options. Select the most appropriate option to fill in the blank.

4. _____ an unhappy childhood leads to criminal behaviour.

(A) Still if (B) Even somewhat

(C) In some cases (D) In progression

5. There is more than ____ to get the job done.

(A) one way (B) one ways

(C) any ways (D) any way

Verb & Subject-Verb Agreement

6. _____ what are you doing in my room ?

(A) On the other hand

(B) Excuse me

(C) Look there

(D) Eventually

7. The accused _____ before the judge.

(A) tried (B) was trial

(C) sat trial (D) stood trial

Adverb

8. _____ did you know Ravi has a new job ?

(A) For one thing

(B) By the way

(C) In the first place

(D) As a result,

9. _____ the problem is nothing but a wrong assumption about processes.

(A) In the meanwhile

(B) Somewhat

(C) Engagingly

(D) In other words

10. Many, _____, hesitate to publicly broach such question for fear of nurturing discrimination.

(A) understandably

(B) despite

(C) until

(D) of course

11. _____ , one notes that in the nineteenth century an important development of reflection and questioning gained momentum.

(A) Particularly speaking

(B) Generally speaking

(C) Otherwise

(D) Of course

12. _____, the situation has completely transformed over the past few years.

(A) Somewhat (B) Believably

(C) Thus (D) Predominantly

13. _____, the committee is of the opinion that all academic matters will be discussed in the Executive Body Meeting.

(A) Hence (B) But

(C) Later (D) Although

Preposition

14. The manner in which the demolitions have been carried out _____ scrutiny by the High Court.

(A) was under (B) under

(C) is under (D) however under

Conjunction

Direction (Q. No. 15 to 17)

Given below are sentences that use discourse markers/expressions to make them complete. Identify the most appropriate discourse marker/expression.

15. _____ your transfer request is concerned; we'll be discussing it at the next meeting.

(A) As far as (B) To begin with

(C) By the way (D) Talking about

Non-Finite Verbs: Infinitive, Gerund & Participle

16. _____ the wind, it was getting stronger, and I was getting colder.

(A) To begin with (B) By the way

(C) First of all (D) Speaking of

Time & Tense

17. I _____ consider the opinions of all stakeholders before taking a final decision.

(A) will not (B) have

(C) will (D) shall

Direct & Indirect Speech

Direction (Q. No. 18 to 20)

The following items have a sentence in direct or indirect speech with four options. One of the options converts the direct or indirect speech into indirect or direct correctly. Select the correct option.

18. Convert from direct speech to indirect speech :

Charu said to her friend, "I want you to be here at 6.00 p.m. tomorrow for the meeting."

(A) Charu told her friend that she wanted her to be there at 6.00 p.m. the next day for the meeting

(B) Charu told her friend that she wanted her to be there at 6.0 p.m. tomorrow for the meeting

(C) Charu requested her friend that she wanted her to be there at 6.00 p.m. tomorrow for the meeting

(D) Charu told her friend that she will want her to be here at 6.00 p.m. the next day for the meeting

19. Convert from direct speech to indirect speech :

Nitin said to his brother, "What a beautiful painting it is ?"

(A) Nitin wondered to his brother that what a beautiful painting it was

(B) Nitin wondered before his brother that it was a beautiful painting

(C) Nitin exclaimed that it is a beautiful painting

(D) Nitin asked his brother whether it was beautiful painting

20. Convert from indirect speech to direct speech :

The teacher asked her students why they had been quiet in the previous class.

(A) The teacher asked her students, "Why were they keeping quiet in the previous class ?

(B) The teacher said to her students, "Why were you quiet in the previous class ?"

(C) The teacher said to her students, "Why had you been quiet in the previous class ?

(D) The teacher said to her students, "Why were you quiet in previous class ?

Vocabulary: Synonyms and Antonyms

Direction (Q. No. 21 to 25)

In the following items a sentence or a phrase is given with a word that is underlined, followed by four options. Select the most appropriate option that is nearest in meaning to the underlined word.

21. The Constitution of India ensures <u>proportionate</u> representation from all regions.

(A) balanced (B) partial

(C) unlikely (D) suffragette

22. There is a feeling of <u>disenchantment</u> among the members of the group.

(A) delight (B) disappointment

(C) idealism (D) unrelenting

23. She believed that it was <u>imminent</u> that he would be chosen as the leader of the group.

(A) timely (B) distant

(C) unlikely (D) inevitable

24. The brave soldiers left an <u>indelible</u> impression on the people of the land.

(A) permanent (B) fleeting

(C) hilarious (D) eradicable

25. The manager always provides <u>instantaneous</u> replies to all queries.

(A) immediate (B) delayed

(C) deliberate (D) unwanted

One word Substitution

Direction (Q. No. 26 to 30)

Given below are words, followed by their appropriate meaning. Identify the correct meaning.

26. Cynosure :

(A) Person or thing that causes a change

(B) Person or thing that attracts a lot of attention

(C) Person or thing regarded as exact copy

(D) Person or animal that lives in a particular place

27. Coeval :

(A) Person of roughly the same age

(B) Person or organisation that cooperates with others

(C) Person employed to drive a private car

(D) Person employed in taking census

28. Retrogression :

(A) Sudden sharp drop in price

(B) Reverse pressure

(C) Return to earlier state

(D) Sudden occurrence of a past event

29. Imprest :

(A) Surprise attack by people

(B) Money used to manage small expenses

(C) Sudden occurrence of laughter

(D) Sudden increase in activity

30. Turgid :

(A) Determined or loyal

(B) Dirty or untidy

(C) Swollen or distended

(D) Excited or upset

Homonyms *i.e.* Confusing Words

Direction (Q. No. 31 to 35)

In the following items, a pair of words is provided. You are required to select the option that most appropriately describes the meaning of both the words.

31. Confident and Confidant

(A) Confident means certain and confidant means close friend

(B) Confidant means certain and confident means close friend

(C) Confident means belief and confidant means an emissary

(D) Confident means assurance and confidant means intimate person

32. Broke and brook

(A) Broke means abundance and brook means a flowing water body

(B) Broke means bankrupt and brook means a stream

(C) Broke means fractured and brook means nonsense

(D) Broke means negotiate and brook means a stream

33. Accept and Except

(A) Accept means apart from and except means recognise

(B) Accept means recognise and except means include

(C) Accept means consent and except means apart from

(D) Accept means allude and except means apart from

34. Accord and Accrued

(A) Accord means collected and accrued means agreement

(B) Accord means agreement and accrued means arrived

(C) Accord means accepted and accrued means received

(D) Accord means agreement and accrued means accumulated

35. Guarantee and Warranty

(A) Guarantee is an agreement and warranty is a service contract

(B) Guarantee is a business agreement and warranty is a service contract

(C) Guarantee is a promise and warranty is a service contract

(D) Guarantee is acceptance and warranty is a service contract

Sentence Re-arrangement of Word/ Sentences

Direction (Q. No. 36 to 40)

In this section each item consists of six sentences that comprise a passage. The first and sixth sentences are given in the beginning as S1 and S6. The sequence of the middle four sentences has been jumbled up and labelled as P, Q, R and S. You are required to find the proper sequence of the four sentences.

36. S1 : Although all sources of energy ultimately come from natural processes, non-renewable resources cannot be replaced naturally at the rate they are being used.

S6 : The sustainable use of natural resources in a manner that provides the maximum benefit of these resources to humans over a period of time can be termed as conservation.

P : This will increase the time and cost of mining and once these resources are used up they cannot be replaced.

Q : Hence, we must remember that though our country is rich in mineral deposits these resources are short-lived,

R : Extraction of these ores through the process of mining will soon become difficult and very expensive because these minerals have to be mined from greater depths over time.

S : Mineral resources can be said to be finite and non-renewable.

(A) QPRS (B) SPQR
(C) SQRP (D) SQPR

37. S1 : India, at present, has one of the largest road networks in the world.

S6 : It passes through Howrah, Delhi and Amritsar and terminates in Kabul (Afghanistan).

P : The importance of roads has been recognised in India since the ancient times.

Q : The Grand Trunk Road was built by Sher Shah Suri across the Indo-Gangetic plain, from Chittagong (Bangladesh) to Peshawar (Pakistan).

R : Kings such as Ashoka and Chandragupta built roads for easy transportation of goods and people.

S : Construction of roads continued as an important activity in the late medieval period.

(A) QPRS (B) SPQR
(C) PQRS (D) PRSQ

38. S1 : National highways connect one state with another and are of national importance.

S6 : These road systems are also known as primary road systems and are laid and operated under the supervision of the National Highway Authority of India.

P : They are important because whereas they constitute merely two per cent of the total road networks, they nevertheless carry 40 per cent of the total road traffic.

Q : The road infrastructure of the country is therefore crucial, and their construction and maintenance is of critical importance.

R : They bear the load of traffic because these roads connect long distances and pass-through major cities and towns.

S : Since they cover the length and breadth of the nation and connect cities and towns, these highways are the primary facilitators of trade and connectivity.

(A) PRSQ (B) SPQR
(C) PRQS (D) SQRP

39. S1 : The South African Constitution was inaugurated in December, 1996.

S6 : A special constitutional court enforces the rights enshrined in the Constitution.

P : Its creation and promulgation took place at a time when South Africa still faced the threat of a civil war after the dissolution of the Apartheid Government.

Q : The South African Constitution says that its "Bill of Rights is a cornerstone of democracy in South Africa"

R : Apropos, it forbids discrimination on the grounds of "race, gender, pregnancy, marital status, ethnic or social origin, colour, age, disability, religion, conscience, belief, culture, language and birth".

S : The Bill of Rights grants perhaps the most extensive range of rights to the citizens.

(A) QSRP (B) SPQR
(C) PQRS (D) PQSR

40. S1 : Our Constitution reminds us of the necessity of representation in a large democracy.

S6 : Elections have today become the most visible symbol of the democratic process.

P : This is why elections become important.

Q : Therefore, representatives are elected by the people.

R : Whenever we think of India as a democracy, our mind invariably turns to our successful elections.

S : All citizens cannot participate in taking every decision.

(A) QSRP (B) SPQR
(C) PQSR (D) SQPR

Direction (Q. No. 41 to 45)

Each of the following items in this section consists of a sentence, the parts of which have been jumbled. These parts have been labelled as P, Q, R and S. The parts are rearranged in four sequences, namely (a), (b), (c) and (d). You are required to select the most appropriate option that sequences the parts correctly.

41. participate in the function
P
many of the people who had come to
Q
the auditorium was over-crowded
R
could not find a seat because
S

(A) PRQS (B) PQRS
(C) QPSR (D) SPRQ

42. lay outside her existing life
P
she knew that the answer
Q
somewhere in the back of her mind
R
to her questions about life
S

(A) RPQS (B) QSPR
(C) QPSR (D) RQSP

43. works of literature
P
inside the pages of all good
Q
lies the truth about some of
R
the more challenging questions posed by humanity
S

(A) PRQS (B) QPRS
(C) QPSR (D) RPSQ

44. takes on account of its economic successes
P
to address continuing social inequality
Q
for every stride of progress any nation
R
it takes two back if it is unable
S

(A) PRQS (B) QPRS
(C) RPSQ (D) RPQS

45. the book-value of a loan or
P
an intangible asset over a set period of time
Q
used to periodically lower
R
amortisation is an accounting technique
S

(A) SRPQ (B) RSPQ
(C) SRQP (D) RPSQ

Reading Comprehension Passages

Direction (Q. No. 46 to 50)

Read the following passage carefully and answer the questions that follow by selecting the correct option from the given options, based solely on the passage.

An attempt to determine the number of languages in the world is affected by other factors. A few new languages do continue to be discovered, even these days, as unexplored regions of the world begin to be opened up. The discovery does not usually take place straight away. Often there are similarities with an already known language which make the investigators assume that what they have found is just a dialect of that language. Only after a considerable period of contact does it transpire that the speech is so different that it has to be considered a different language. It takes a language survey to establish the facts, and there are still many countries where such surveys are incomplete or have not even begun. The people may be known, but the identity of their language may not be. Because many such peoples are bilingual or multilingual, and converse with outsiders in lingua franca, it may take a while before linguists come to realize that there is an ethnic language there at all.

46. Which one of the following is NOT the reason for the difficulty in estimating the number of languages of the world ?

(A) New languages continue to be discovered

(B) There are still unexplored regions

(C) New languages are considered a dialect of a known language

(D) People who speak the language do not claim their language

47. Which one of the following is a way to establish the discovery of a new language ?

(A) By establishing contact over a period of time with the speakers of the language

(B) By finding the similarities of the language with other languages

(C) By comparing with the lingua franca of the region

(D) By conducting a survey of all languages of the region

48. Which one of the following statements is correct ?

(A) Language surveys have been conducted by all nations

(B) There is hardly any language to be discovered in the world

(C) All the languages are either complete languages or dialects of other major languages

(D) No new language needs to be discovered since all languages are known to the world

49. 'The people may be known, but the identity of their language may not be,' means

(A) People are recognised as different ethnic groups but not necessarily their language

(B) People are recognised as different ethnic groups and their language is recognised

(C) People are not recognised as different ethnic groups, and so are their languages

(D) Because the people are not from different ethnic groups and their language is recognised

50. Which one of the following words from passage means 'come to be known' ?

(A) transpire (B) lingua franca

(C) straight (D) variant

General Studies

Ancient Indian History

Indus Valley Civilization

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

(A) Sandstone (B) Lapis lazuli

(C) Jasper (D) Steatite

Political condition before 6th century (Mahajanapada period)

52. Which one among the following Mahajana-padas in ancient India was an oligarchy ?

(A) Vajji (B) Kosala

(C) Gandhara (D) Magadha

Medieval Indian History

Religious Movements (Bhakti, Sufi etc.)

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

1. In the late fifteenth century Shankardeva emerged as one of the leading proponents of Vaishnavism in Assam
2. He was the founder of Gudiya Vaishnavism
3. His teachings are known as Bhagavati Dharma
4. He encouraged the establishment of Satra and naam ghar

Select the answer using the code given below :

(A) 1 and 2 only (B) 2 and 3 only

(C) 1,3 and 4 only (D) 1,2,3 and 4

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

(A) Jizya (B) Ijma

(C) Muqaddam (D) Murid

Modern Indian History

Advent of European Companies

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

(A) Madras (B) Masulipatam

(C) Bombay (D) Balasore

Administrative Organization and Structure of the British Empire in India (1757-1857)

56. 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 India Act, 1784

(D) Government of India Act, 1935

57. 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 ?

(A) The Regulating Act of 1773

(B) The Charter Act of 1793

(C) The Charter Act of 1813

(D) Government of India Act of 1858

Miscellaneous

58. 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

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

1. Formation of Swaraj Party
2. Communal Award
3. Lucknow Pact
4. Simla Conference

Select the answer using the code given below :

(A) 3, 1, 2, 4 (B) 1, 3, 2, 4
(C) 2, 1, 4, 3 (D) 1, 2, 3, 4

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

(A) Lord Macaulay
(B) Lord Canning
(C) Lord Ripon
(D) Lord William Bentinck

World History

61. 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

Art and Culture

Indian Architecture

62. 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) Thanjevur

Indian Sculpture

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

(A) Empty seat (B) Shalbhanjika
(C) Tree (D) Wheel

UNESCO World Heritage Sites

64. 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

Indian Geography

Natural Vegetation of India

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

1. Anaimalai
2. Nilgiris
3. Palani

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. 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

Natural and Mineral Resources in India

67. 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

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

(A) Ankaleshwar (B) Kosamba
(C) Mehsana (D) Moran

Energy Resources in India

69. Which one of the following is a non-conventional source of energy ?

(A) Petroleum (B) Natural Gas
(C) Tidal energy (D) Coal

Agriculture, Agricultural Allied Activities and Irrigation in India

70. Maize (*makka*) was introduced into India in the seventeenth century via :

(A) Portugal
(B) Africa and Spain
(C) China and Mongolia
(D) Turkey

71. As per the Land Revenue Records, any land is categorized 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

Industry in India

72. Consider the following statements with regard to a steel plant :

I. It was setup in 1964 with Russian collaboration
II. It receives iron ore from the Rourkela region
III. 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

Transportation in India

73. An offshore terminal at Vadinar has been developed to reduce pressure from which of the following major ports in India ?

(A) Kandla Port
(B) Cochin Port
(C) Mormugao Port
(D) New Mangalore Port

World Geography

Earth (origin, geological history, motions, imaginary lines, etc.)

74. 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

75. 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

76. 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

Rocks

77. 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

78. 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

Earthquake

79. 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

World Climate

80. 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

Atmospheric Circulations

81. 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

Ocean currents

82. 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

Miscellaneous

83. 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

Indian Polity and Constitution

Constitutional Amendments

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

(A) an elaborate system of establishing municipal self-government
(B) an elaborate system of establishing panchayats as units of self-government
(C) establishing a Commission for Linguistic Minorities
(D) the creation of the Jharkhand State

Elections and Election Commission

85. BHARATPOL portal has been developed by :

(A) The Election Commission of India
(B) The Central Bureau of Investigation
(C) The Enforcement Directorate
(D) The Securities and Exchange Board of India

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

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

Miscellaneous

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

(A) Mutual respect for each other's territorial integrity and sovereignty
(B) Equality and mutual benefit
(C) Peaceful coexistence
(D) Nuclear non-proliferation

88. 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

89. 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

Indian Economy

Economic Planning and Reforms

90. 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 Growth

List-I (Five Year Plan)	List-II (Objective)
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

Codes :

	A	B	C	D
(A)	1	4	3	2
(B)	2	3	4	1
(C)	2	4	3	1
(D)	1	3	4	2

Agriculture and Food Management

91. 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) Sugar cane

Miscellaneous

92. 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 & Broadcasting

(D) The Ministry of Culture

93. The scheme PRASHAD (Pilgrimage Rejuvenation & Spiritual Heritage Augmentation Drive) provides assistance for :

(A) e-Visa Facility

(B) Multilingual Tourist Infoline

(C) The development of tourism infrastructures in States & Union Territories

(D) Promoting Dekho Apna Desh scheme

94. Which one of the following statements about 'REJUPAVE' is correct ?

(A) It's a joint venture between Food and Agriculture Organisation (FAO) and Government of India to promote organic farming

(B) It's the name given to the lightest surveillance aircraft developed 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

95. Which among the following agencies releases report on 'S.A.F.E. Accommodation : Worker Housing for Manufacturing Growth' ?

(A) RBI

(B) NITI Aayog

(C) National Housing Bank

(D) Housing and Urban Development Corporation

Physics

Units and Measurements

96. Match List I with List II and select the answer using the code given below the Lists :

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

Codes :

	A	B	C	D
(A)	1	2	4	3
(B)	3	4	2	1
(C)	1	4	2	3
(D)	3	2	4	1

97. Which one of the following is dimensionless quantity ?

(A) Stress (B) Strain

(C) Pressure (D) Force

Force and Motion

98. 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

99. 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

100. 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) $u^2 - v^2 = 2as$

(D) Distance travelled during n^{th} second $= u + \frac{1}{2} a(2n - 1)$

101. At uniform speed the acceleration is :

(A) Maximum (B) Minimum

(C) Zero (D) Constant

Gravitational Force and Acceleration

102. 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 m/s^2 (B) +3.2 m/s^2

(C) –1.6 m/s^2 (D) –0.8 m/s^2

103. The universal constant of gravitation G has the unit :

(A) N (B) m/s

(C) Joule (D) N-m^2/kg^2

Pressure and Buoyancy

104. 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 body

Which of the above is/are correct ?

(A) 1 only (B) 2 only

(C) Both 1 and 2 (D) Neither 1 nor 2

Heat and Thermodynamics

105. 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

Electric Current

106. The work done in moving a charge of 2 coulomb (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

107. Two conducting wires of the same material and of equal lengths and equal diameters 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 combinations is :

(A) 2 : 1 (B) 4 : 1

(C) 1 : 2 (D) 1 : 4

108. 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

109. 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

110. A current through a horizontal power line flows in east to west direction. What will be the direction of magnetic field at a point directly below it 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

111. 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 to 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

112. If three resistors of 1 Ohm each connect in parallel to each other the resultant resistance is :

(A) 10 Ohm (B) $\frac{1}{3}$ Ohm

(C) 30 Ohm (D) 9 Ohm

Magnetism

113. 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

Sound

114. The frequency (f), wavelength (λ) and speed (v) of a sound wave are related as :

(A) $f = v\lambda$ (B) $\lambda = vf$

(C) $f = \frac{\lambda}{v}$ (D) $v = \lambda f$

115. 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

Light

116. 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

117. 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 color 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

118. If the speed of light in carbon disulfide and vacuum is X and Y respectively, then :

(A) $X < Y$ (B) $X > Y$

(C) $X \geq Y$ (D) $X = Y$

119. When a light ray passes through 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

Chemistry

Matter and its States

120. 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

121. Which one of the following statements regarding oxidation and reduction reactions 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 oxidized

Atomic Structure

122. 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

123. 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 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

124. 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

125. Which one of the following findings is NOT observed in Rutherford's Nuclear Model of Atom ?

(A) There is a neutral center 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 atom

Classification of Elements

126. 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

127. Which one among the following elements is known to be discovered the earliest ?

(A) Copper (B) Gold

(C) Oxygen (D) Uranium

Acid, Base and Salts

128. 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

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

(A) 7.0 (B) 6.6

(C) 5.6 (D) 8.0

Some Important Elements and Compounds

130. Which one of the following oxides is a neutral oxide ?

(A) CO (B) CO_2

(C) Na_2O (D) MgO

131. 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

132. 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. $CaOCL_2$
B. Baking soda	2. $NaHCO_3$
C. Bleaching Powder	3. $Na_2CO_3\,10H_2O$
D. Gypsum	4. $CaSO_4.2H_2O$

Codes :

	A	B	C	D
(A)	4	2	1	3
(B)	4	1	2	3
(C)	3	1	2	4
(D)	3	2	1	4

133. 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

Organic Compounds

134. 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

Chemical Bonding and Molecular Structure

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

(A) Half mole of nitrogen gas is measured 11.2 litre at STP

(B) 17 gram of ammonia gas contains 6.022×10^{23} molecules at STP

(C) 22.4 litre of CO_2 gas at STP contains 44 gram of molecules

(D) 4 gram of hydrogen gas contains 6.022×10^{23} molecules

136. Which one of the following Nitrogen oxides may dimerize ?

(A) N_2O (B) NO_2

(C) N_2O_3 (D) N_2O_5

Biology

Cell and Tissue

137. 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

Human Body Systems

138. Cambium is an example of :

(A) Lateral meristem

(B) Apical meristem

(C) Intercalary meristem

(D) Permanent tissue

Nutrition and Their Deficiency Diseases

139. 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 oxidized

(B) Fats and oils in the food get reduced

(C) Fats and oils in the food get ice-covered

(D) No reaction takes place

140. Clotting of blood involves which one among the following clotting proteins ?

(A) Pathogen (B) Fibrinogen

(C) Macrophage (D) Phagocytes

141. Vitamin B_1 is also known as :

(A) Riboflavin (B) Thiamin

(C) Retinol (D) Tocopherol

Microbes and Their Diseases

142. The vector of malaria parasites is :

(A) Male Anopheles mosquito

(B) Male Culex mosquito

(C) Female Anopheles mosquito

(D) Female Culex mosquito

143. 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

Genetics and Biological Evolution

144. Which is the correct base 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

Prominent Inventions and their Inventors

145. Initial discovery of antibiotic penicillin was done by :

(A) Francis Crick
(B) Maurice Wilkins
(C) Charles Darwin
(D) Alexander Fleming

Miscellaneous

146. 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

Science and Technology

Defence Technology

147. India's Gas Turbine Research Establishment (GTRE), part of the Defence Research and Development Organisation (DRDO) has developed an aeroengine 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

Nuclear Technology

148. The Joint Venture named 'ASHVINI' 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

Miscellaneous

149. 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 1and 2 (D) Neither 1 nor 2

GK Miscellaneous

Awards and Honors of India and the World

150. 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, to advance democracy and human rights, and to promote economic and social development ?

(A) Jimmy Carter
(B) Woodrow Wilson
(C) Barack Obama
(D) Al Gore

Solutions

1. (B) a picnic is correct to make the sentence meaningful.

Picnic - an excursion or outing with food usually provided by members of the group and eaten in the open.

2. (A) He is considered as the brightest intellectual in the country. Considered as can be used to emphasize how something is being considered for a particular purpose.

3. (A) In option (B), the word 'tall' is a positive degree that is not followed by 'than'. In option (C) verb is missing after the subject 'mountains', and in option (D), 'then' should be replaced by 'than' because it is used in comparison. Hence, option (A) is correct. No other mountain is taller than the Himalayas.

4. (C) In some cases is the correct expression to make the sentence meaningful.

In some cases is used to refer to particular situations or circumstances in which a certain thing might happen or be true.

5. (A) one way is the most appropriate expression to make the sentence meaningful. The phrase 'more than one' is followed by a singular noun. Hence, 'way' is correct, not 'ways'.

6. (B) 'Excuse me' is the correct expression to make the sentence meaningful. The phrase 'Excuse me' means a polite way of attracting someone's attention, especially someone you do not know.

7. (D) 'stood trial' is the correct expression to make the sentence meaningful. The phrase 'stand trial' means to be put on trial in a law court.

8. (B) 'By the way' is the correct expression to make the sentence meaningful. The phrase 'By the way' is used to introduce a new subject to be considered or to give further information.

9. (D) 'In other words' is the correct expression to make the sentence meaningful. The phrase 'In other words' means to explain it more clearly or to clarify a previous idea in simpler or clearer terms.

10. (D) 'of course' is the correct expression to make the sentence meaningful. Of course means yes, certainly.

11. (B) 'Generally speaking' is the correct expression to make the sentence meaningful. 'Generally speaking is used to say that something is usually true or is true in most situations.

12. (C) 'Thus' is the correct expression to make the sentence meaningful. 'Thus' means as a result or consequently. It's commonly used to show that what follows is a result or outcome of something previously stated.

13. (A) 'Hence' is the correct expression to make the sentence meaningful. 'Hence' is used to introduce a logical conclusion.

14. (C) 'is under' is the correct expression to make the sentence meaningful. Have been carried out shows present perfect tense, which suggests a recent or ongoing situation. Therefore, the correct verb form to use is present tense- 'is under scrutiny. Is under means currently being examined or reviewed.

15. (A) 'As far as' is the correct expression to make the sentence meaningful. As far as means so long as or to the extent or degree that.

16. (D) 'Speaking of' is the correct expression to make the sentence meaningful. Speaking of means related to the subject being discussed.

17. (C) 'will' is the most appropriate word to fill in the blank. The sentence talks about a future action, so you need a future tense verb. Will is the standard auxiliary verb for expressing future intent or decision.

18. (A) The given sentence is in direct speech. To convert it into indirect speech, the following changes have to be made :

said to -told, "....." — connective that, pronouns as per SON rules, here- there, tomorrow- the next day, simple present- simple past

Charu told her friend that she wanted her to be there at 6:00 p.m. the next day for the meeting.

19. (B) The given sentence is in direct speech. To convert it into indirect speech, the following changes have to be made :

said to -wondered, "....." — connective that, exclamatory sentence - assertive sentence.

Nitin wondered before his brother that it was a beautiful painting.

20. (B) The given sentence is in indirect speech. To convert it into direct speech, the following changes have to be made :

asked- said to, use a comma before the question word, pronouns as per SON rules, had been -were, assertive clause- interrogative clause.

The teacher said to her students, "Why were you quiet in the previous class?"

21. (A) The word 'balanced' is the nearest in meaning to the underlined word 'Proportionate'- having equal or appropriate weight, force or proportion on all sides or components

Partial - not complete

Unlikely - not probable or likely to happen

Suffragette- a woman who campaigned for the right of women to vote, especially a member of the early 20th century British group of activists led by Emmeline and Christabel Pankhurst.

22. (B) The word 'disappointment' is the nearest in meaning to the underlined word 'disenchantment'.

Disenchantment- a feeling of no longer believing in the value of something, especially having learned of the problems with it.

Delight - a feeling of great pleasure, satisfaction or happiness.

Idealism - the belief that your ideals can be achieved, often when this does not seem likely to others.

Unrelenting- extremely determined; never becoming weaker or admitting defeat.

23. (A) The word 'timely' is the nearest in meaning to the underlined word 'imminent'.

Imminent - coming or likely to happen very soon

Distant - far away

Unlikely - not probable or likely to happen

Inevitable - certain to happen and unable to be avoided or prevented

24. (A) The word 'permanent' is the nearest in meaning to the underlined word 'indelible'.

Indelible - an indelible mark or substance is impossible to remove by washing or in any other way

Fleeting - short and quick

Hilarious - extremely funny and causing a lot of laughter

Eradicable- capable of being completely removed or destroyed

25. (A) The word 'immediate' is the nearest in meaning to the underlined word 'instantaneous'.

Instantaneous- happening immediately, without any delay

Delayed - happening at a later time than expected or happening some time after the event that caused it

Deliberate - intentional or planned, often of something bad

Unwanted - not wanted

26. (B) Cynosure means a person or thing that is so good or beautiful that it attracts a lot of attention. Hence, option (B) is correct.

27. (A) Coeval means of the same age or existing at the same time as another person or thing. Hence, option (A) is correct.

28. (C) Retrogression means the act of returning to an older and worse state. Hence, option (C) is correct.

29. (B) Imprest means an amount of money used by part of a business to pay for small things. Hence, option (B) is correct.

30. (C) Turgid means swollen or firm, usually because of being full of liquid (of an organ or living tissue). Hence, option (C) is correct.

31. (A) Confident (Adj.) means being certain of your abilities or having trust in people, plans or the future, while Confidant (N.) means a person you trust and share your feelings and secrets with. Hence, option (A) is correct.

32. (B) Broke means having no money, while brook means a small stream. Hence, option (B) is correct.

33. (C) Accept means to agree to take something, or to consider something as satisfactory, reasonable or true, while Except means not include.

Hence, option (C) is correct.

34. (D) Accord means formal agreement, while Accrued means to increase in number or amount over a period of time. Hence, option (D) is correct.

35. (C) Guarantee means a written promise by a company to repair or change a product that develops a fault within a particular period of time, while warranty means a written promise from a company or a person to repair or replace a product. Hence, option (C) is correct.

36. (C) The proper sequence of four sentences will be - SQRP

37. (D) The proper sequence of four sentences will be - PRSQ

38. (A) The proper sequence of four sentences will be - PRSQ

39. (D) The proper sequence of four sentences will be -PQSR

40. (D) The proper sequence of four sentences will be - SQPR

41. (C) The correct sequence sentences is - QPSR

42. (B) The correct sequence sentences is - QSPR

43. (B) The correct sequence sentences is - QPRS

44. (C) The correct sequence sentences is - RPSQ

45. (A) The correct sequence sentences is - SRPQ

46. (D) On the perusal of the given passage, we can say that nowhere in the passage it is mentioned that people do not claim their language as a reason for the difficulty. So option (D) is correct.

47. (D) In the passage, it is mentioned that even after coming in contact with a new group of people, it takes time to understand if they are speaking a different language. But what really confirms whether it is a new language is a language survey. This is clearly stated in the line- "It takes a language survey to establish the facts..." Hence, option (D) is correct.

48. (C) According to the passage, new languages are often mistaken for dialects because they appear similar to known languages. Only after detailed study are they identified as separate languages. This common confusion supports the idea stated in option (C), making it correct.

49. (A) The passage explains that even though people are known, their language identity might remain unknown, especially because they may speak to outsiders in a lingua franca, which hides their native ethnic language.

50. (A) In the passage, the word transpire means come to be known, be revealed, become known or to be shown to be true.

- Lingua franca refers a language used for communication between groups of people who speak different languages.
- Straight means direct or clear or not complicated.
- Variant means something that is slightly different from other similar things.

51. (D) Harappan seals were primarily made of steatite, which is a kind of soft stone which made it easy to work with, enabling the creation of various shapes and sizes. It was a readily available material in riverbeds, making it a convenient and accessible resource for crafting. A few of them were also made of terracotta, gold, agate, chert, ivory and faience but sandstone, lapis lazuli and jasper was not used in making the harappan seals.

- Sandstone is used as a construction material.
- Lapis lazuli is used in jewellery making.
- Jasper is used in making decorative household items.

52. (A) Vajji was an oligarchy because its administration was collectively governed by a council of leaders, often referred to as "Raja" or "kings". In this type of government the power is divided and controlled by a few influential people

- Kosala, Gandhara and Magadha were monarchies during the Maha-janapada period and in this type of government the power is vested in the king who is the alone and the supreme controller of power

53. (C) Statement 1, 3 and 4 are correct regarding Srimanta Shankardeva.

- He emerged as a prominent Vaishnava leader in late 15th century Assam.
- His teachings are referred to as "Bhagavati Dharma".
- He advocated for the establishment of "Sataras" (monasteries) and "Namghar" (prayer halls).

While the statement 2 is incorrect because the founder of Gaudiya Vaishnavism was Chaitanya Mahaprabhu, not Shankardev.

54. (D) Murid is associated with the practice of sufism. In sufism the master or the teacher is called “Murshid” and the disciple or the seeker is called “Murid”.

- Jizya was a religious tax paid by non muslims.
- Ijma is a fundamental source of Islamic law.
- Muqaddam was responsible for maintaining law and order within their villages during Delhi sultanate period.

55. (B) In 1611 the British east India company founded its first temporary factory in Masulipatnam located on the southeastern coast of India later the company established its first permanent factory in India at Surat in 1613.

- In Madras the EIC established a factory in 1639 which later developed into a fortified settlement called Fort St. George.
- The EIC established a factory at Balasore in 1633.
- Bombay was the company’s western headquarter.

56. (B) The Rowlatt Act of 1919 also known as the Black Act allowed the British government to detain individuals without trial for up to two years. It sparked widespread outrage and resistance among Indians. In Amritsar the government responded violently and the Jallianwala Bagh incident happened where under the command of Brigadier-General Dyer soldiers surrounded the area and opened fire on the unarmed crowd resulting in the deaths of hundreds and injuries to thousands.

- The regulating act of 1773 was the first attempt to regulate the east India company’s affairs.
- The Pitt’s India act of 1784 established a dual control of administration in India
- The government of India act 1935 established the new constitutional framework for British India

57. (A) The Regulating Act of 1773 provided for the establishment of a Supreme Court of justice at Calcutta for Europeans, their employees and the citizens of India and the first Chief Justice of the Supreme Court of Calcutta established was Sir Elijah Impey later The Supreme Court of India came into existence on 26 January 1950 with the coming into force of the Constitution. The first Chief Justice of India was Hon’ble Justice Harilal J. Kania.

58. (A) In the Bhoodan movement the large landowners were persuaded to donate one sixth of their cultivable land voluntarily to the landless.

- It was initiated by Acharya Vinoba Bhave as a non-governmental campaign.
- The first donation of land took place in Pochampally village, Telangana not in Bihar.

59. (A) The Lucknow Pact was an agreement to present a united demand for self governance, between the Indian National Congress and the Muslim League held in Lucknow in December 1916

- The Swaraj Party was formed in January 1923, following the Gaya session of the Indian National Congress in December 1922 by C. R. Das and Motilal Nehru.
- The Communal Award was announced by British Prime Minister Ramsay MacDonald on August 16, 1932. It established separate electorates for various communities, including Muslims, Sikhs, Europeans, Indian Christians, Anglo-Indians and the Depressed Classes
- The Simla Conference was a

meeting between Lord Wavell, the viceroy of India and the major political leaders of British India in June 1945 in Simla.

So, the correct sequence is 3, 1, 2, 4 therefore option A is correct

60. (C) The resolution of 1882 which is also called the magna carta of local self-government in India was introduced by Lord Rippon and that's why he is known as the "Father of Local Self-Government in India.

- Lord Macaulay introduced Western education through his "Minute on Indian Education" in 1835.
- Lord Canning was the first Viceroy of India.
- Lord William Bentinck is famous for the abolition of the practice of Sati and the suppression of Thuggee.

61. (C) The Second Industrial Revolution, beginning around 1850, was characterized by significant advancements in chemical and electrical industries. This period saw the rise of new technologies and processes in these sectors, leading to mass production and widespread adoption.

- Coal and iron were important industries during the first Industrial Revolution. Coal provided the fuel for steam engines, while iron was essential for building infrastructure, machinery and tools.

62. (A) Gaja Dwar, Ashwa Dwar, Garuda Dwar, Makar Dwar, Shardula Dwar and Hamsa Dwar are the six gates of new parliament building, which is located in New Delhi. These gates are named after different creatures.

63. (B) The "Shalabhanjika" is not directly inspired by Buddhist ideas. It is a decorative motif in Indian art and architecture, typically a sculpture of a woman standing near a tree, often grasping a branch.

- The empty seat in Buddhism represents the Buddha's absence after his enlightenment
- The Buddha attained enlightenment under The Bodhi tree so it is highly respectable in Buddhism
- The wheel or Dharmachakra, represents the Buddha's first sermon and the spread of his teachings.

64. (B) Garba has been inscribed in UNESCO's Representative List of Intangible Cultural Heritage of Humanity. It is a traditional folk dance of Gujarat.

- Kathakali is a folk dance of Kerala.
- Bhangra is a folk dance of Punjab.
- Odissi is a folk dance of Odisha.

65. (D) Shola forests, which are temperate forests of South India, are found in the Anaimalai, Nilgiri and Palani hills. So option D is correct.

66. (A) As per the India State of Forest Report 2021. Arunachal Pradesh has the highest percentage of its geographical area under forest in himalayan states. Its forest cover area is approximately 66,964 sq km which is 79.33 percent of the total geographical area of the State.

- Himachal Pradesh has 15,443 sq km (27.73%) of forest cover.
- Sikkim's total forest cover is 3341.03 sq km (47.08%).
- Uttarakhand has 24,305 sq km (45.44%) of forest cover.

67. (B) Rajasthan and Madhya Pradesh. According to the Annual Report 2023-24 of the Ministry of Mines, Rajasthan (second largest) and Madhya Pradesh (largest) are the leading copper producing states in India.

- Gujarat is not a major producer of copper and Jharkhand produces less than Rajasthan and Madhya Pradesh

68. (D) Moran is an oil field of Assam, not of Gujarat. while Ankleshwar, Kosamba and Mehsana are all recognized oil fields in Gujarat.

69. (C) Tidal energy is a non-conventional source of energy. Non-conventional sources are also called renewable sources of energy solar energy, bioenergy and wind energy are the examples of Non-conventional sources.

- Petroleum, Natural gas and Coal are examples of conventional sources of energy. These resources diminish with time so they are called non-renewable resources

70. (A) Maize (makka) was introduced into cultivation by the Portuguese during the 17th century into India.

- Maize is a kharif crop which is sown during monsoon.
- The Portuguese also introduced printing press in India.

71. (D) According to land revenue records, a land is considered "Culturable Waste-Land" if it is left uncultivated for more than five years.

- A land which is uncultivated for one or less than one agricultural year is termed as "Current Fallow".
- If uncultivated for more than one year but less than five years it is referred as "Other than Current Fallow".

72. (B) The Bokaro Steel Plant was established in 1964 with the collaboration of Russia. It receive iron ore from the Rourkela region and water and hydel power is supplied by the damodar valley corporation.

- Bhilai Steel Plant (BSP) was set up in 1955 with the help of the then USSR.
- The Rourkela Steel Plant was set-up in 1959 with the help of Germany.
- The Durgapur Steel Plant was established with the help of the United Kingdom (UK).

73. (A) The Vadinar terminal has been developed to reduce pressure on Kandla Port, both are located in Gujarat. The offshore terminal at Vadinar was built to handle additional cargo, particularly oil and related products.

- Cochin Port is located on the Malabar Coast of Kerala.
- Mormugao Port is situated in Goa.
- New Mangalore Port is located in Karnataka.

74. (C) A great circle is a circle that divides the Earth into two equal hemispheres and passes through its center. The Equator is a great circle because it is the line of latitude that divides the Earth into the Northern and Southern Hemispheres. Prime Meridian is also a great circle because it passes through the Earth's center and connects the North and South Poles. The Tropic of Cancer is at 23.5 degrees north of the Earth's equator so it doesn't divide the earth into two halves.

75. (D) The Tropic of Capricorn is the latitude that will experience the minimum angle of the sun's rays during the summer solstice(June 20 or 21) when the sun is directly overhead the Tropic of Cancer (23.5° North latitude) in the northern hemisphere.

- During the summer solstice in the Northern Hemisphere the sun's

rays at the equator will be directly overhead.

- During the summer solstice, the sun never sets in the Arctic Circle.

76. (C) Both the given statements that Coriolis force acts perpendicular to the pressure gradient force and at the equator, the Coriolis force is zero and the wind blows perpendicular to the isobars are correct.

- The rotation of the earth about its axis affects the direction of the wind. This force is called the Coriolis force. It deflects the wind to the right direction in the northern hemisphere and to the left in the southern hemisphere.The deflection is more when the wind velocity is high.

77. (C) In earth's crust six most abundant minerals are feldspar (51%), quartz (12%), pyroxenes (11%), amphiboles (7%), mica (5%) and olivine so the correct ascending order of the given minerals in terms of their presence in the Earth's crust in 2, 1, 3.

78. (D) Tuff is formed when volcanic ash is carried by running water and is deposited as a sedimentary layer.

- Basalt is a volcanic rock that has a low silica content, dark in colour and is very rich in iron and magnesium
- Lapilli are the small rock fragments that are ejected from a volcano.
- Slate is a fine-grained homogeneous metamorphic rock.

79. (C) Both statements are true. L-waves follow the Earth's circumference and travel at a relatively constant speed. These waves are the last to arrive on seismograms and are responsible for much of the structural damage caused by earthquakes.

80. (B) Mahendragiri, the highest peak in the Eastern Ghats mountain range, is situated in the state of Odisha, India.

- Arma Konda is the highest peak in Andhra Pradesh.
- Doddabetta is the highest peak in Tamil Nadu

81. (D) All the given statements are correct about condensation. Condensation is influenced by volume of air, humidity and temperature.

- When the amount of water vapor is constant, a smaller volume of air will lead to higher humidity and thus more condensation.
- When the amount of water vapor is constant, a larger volume of air will lead to lower humidity and thus less condensation.
- Humidity has inverse relationship with condensation so when humidity is high the rate of condensation is less and vice-versa
- When temperature decreases, condensation is more likely to occur and vice-versa.

82. (D) West Wind Drift is a cold ocean current that flows along the southern coast of Antarctica.

- Alaska Current is a warm current that flows along the west coast of North America.
- North Atlantic Drift is a warm current that originates from the Gulf Stream and flows northward along the eastern coast of North America.

83. (D) Mechanical weathering is the physical breakdown of rocks and minerals without changing their chemical composition. The forces that drive this process include all the given forces namely Gravitational force, expansion force and force due to water pressure.

- Gravity can cause rocks to fall and break apart, particularly on steep slopes.
- Expansion forces cause rocks to crack, fragment and eventually crumble, as the expansion creates stress and weakens the rock structure.
- Water pressure involve the expansion of water upon freezing or the growth of salt crystals within cracks, exerting force that disrupts the rock's structure and ultimately breaks it down.

84. (B) The constitution (Seventy-third Amendment) Act provides for an elaborate system of establishing panchayats as units of self-government. It was passed to strengthen the government at the local-self level and transfer the powers related to the village level from the central government to the local government.

85. (B) BHARATPOL Portal was developed by the Central Bureau of Investigation (CBI). This portal allows central and state agencies to connect with the International Criminal Police Organization (INTERPOL) for real-time information sharing, replacing the previous system where only the CBI had this access. It is designed to address transnational crimes such as cybercrime, human trafficking, drug trafficking and financial fraud.

86. (B) Out of the given statements about the Parliament of India statement (B) is correct that The Deputy Chairperson of the Rajya Sabha is nominated by the President from among the members of the Rajya Sabha.

- Rajya Sabha members are elected by state legislative assemblies, they are not elected by means of single transferable vote.
- The Lok Sabha can be dissolved before the completion of its five-year term by the President on the advice of the Prime Minister.
- Only the members of state legislative assemblies vote in the election of Rajya Sabha members, Lok Sabha members don't participate in the elections of Rajya Sabha

87. (D) The Panchsheel agreement also known as Five Principles of Peaceful Coexistence, are a set of five principles that were established between India and China in 1954. These principles include: mutual respect for each other's territorial integrity and sovereignty, mutual non-aggression, mutual non-interference in each other's internal affairs, equality and mutual benefit and peaceful coexistence but Nuclear non-proliferation is not a part of these five principles.

88. (C) Democracy in Abraham Lincoln words is a government "of the people, by the people and for the people." and in this form of government consent of the governed is very much required and respected and people themselves choose their representative through voting so they are accountable to them and through voting and the right to contest elections political equality is established thus all of the statements are correct and all these features outline democratic rule.

89. (B) Sri Lanka granted universal adult franchise in 1931.

- Japan granted universal adult franchise in 1945.
- India granted universal adult franchise in 1950.
- USA with the 26th Amendment in

1971 lowering the voting age to 18.

- So the correct sequence is 2,3,4,1.

90. (B) The Fifth Five Year Plan was primarily focused on poverty eradication and achieving self-reliance, with the slogan "Garibi Hatao" (Remove Poverty).

- The Seventh Five Year Plan was aimed to achieve food security and increase productivity through various measures.
- The Ninth Five Year Plan emphasized growth with social justice and equality.
- The Eleventh Five Year Plan was launched to achieve faster and more inclusive growth.

So, the correct match sequence is 2,3,4,1.

91. (B) The National Food Security Mission Commercial Crops (NFSM-CC) focuses on increasing production of crops like cotton, jute and sugarcane. Coffee is a commercial crop, it is not included in the NFSM-CC as it is not a major food crop produced in India on a large scale. The mission primarily aims to enhance food security by boosting production of staples like rice, wheat and pulses

92. (D) The Dhara initiative, which is dedicated to Indian Knowledge Systems (IKS), was launched by the Ministry of Culture under the Azadi Ka Amrit Mahotsav.

93. (C) The PRASHAD (Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive) scheme provides assistance for The development of tourism infrastructures at identified pilgrimage sites and heritage cities in States & Union Territories. This includes things like improving connectivity, facilities and amenities for pilgrims and tourists.

94. (D) REJUPAVE (Regenerative Jointless UnPave Concrete) is an indigenously developed technology to construct roads at high altitudes where traditional construction methods are difficult.

95. (B) NITI Aayog released a report on "S.A.F.E. Accommodation. S.A.F.E. means safe, affordable, flexible and efficient housing for industrial workers to support India's manufacturing sector.

- The Reserve Bank of India is India's central bank.
- National Housing Bank focuses on promoting housing finance in India.
- Housing and Urban Development Corporation provide financial assistance for housing and urban development projects.

96. (C) The correct matching of List I with List II :

Physical quantity	S.I Unit
A. Temperature	Kelvin
B. Weight	Newton
C. Mass	Kilogram
D. Pressure	Pascal

Therefore, the correct code is: A - 1 B - 4 C - 2 D - 3

So the right answer is option 'C'.

97. (B) The correct answer is Strain. Strain is defined as the ratio of the change in dimension (*e.g.*, length, volume) of a body to its original dimension. Therefore, it is a ratio of two quantities with the same units, making it dimensionless.

$$\text{Strain} = \frac{\text{Change in Dimension}}{\text{Original Dimension}}$$

- Stress is defined as the force acting per unit area of a material. Its unit is Pascal (Pa) or N/m^2, so it has dimensions of $[ML^{-1}T^{-2}]$.

$$\text{Stress} = \frac{\text{Force}}{\text{Area}}$$

- Pressure is defined as the force acting perpendicularly per unit area. Its unit is also Pascal (Pa) or N/m^2, so it has dimensions of $[ML^{-1}T^{-2}]$.

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

- Force is defined as mass times acceleration. Its SI unit is Newton (N) or, kg m/s^2 so it has dimensions of $[MLT^{-2}]$.

Force = Mass × Acceleration

Therefore, only strain is a dimensionless quantity.

98. (B) The correct answer is Acceleration. When objects are dropped near the Earth's surface, they experience the same acceleration due to gravity (g), regardless of their mass (ignoring air resistance). This acceleration is approximately $9.8 m/s^2$ downwards for both bodies.

Let's look at why the other options are incorrect :

- **Momentum :** Momentum (*p*) is given by the product of mass (*m*) and velocity (*v*), so $p = mv$. Since the masses are unequal and although they will have the same velocity at any given instant (ignoring air resistance), their momenta will be different.
- **Potential Energy :** Gravitational potential energy (U) is given by $U = mgh$, where m is mass, g is the acceleration due to gravity and h is the height above a reference point. Since the masses are unequal, their potential energies at the same height will be different.
- **Kinetic Energy :** Kinetic energy (K) is given by $K = \frac{1}{2} mv^2$. Since the masses are unequal and although they will have the same velocity at any given instant (ignoring air resistance), their kinetic energies will differ.

In the absence of air resistance, all objects in free fall near the Earth's surface experience the same acceleration due to gravity.

99. (C) The formula gives the time period of a simple pendulum :

$$T = 2\pi\sqrt{\frac{L}{g}}$$

where :

- T is the period
- L is the length of the pendulum
- g is the acceleration due to gravity

Let the initial length of the simple pendulum be L_1 and its initial period be T_1. Then,

$$T_1 = 2\pi\sqrt{\frac{L_1}{g}}$$

Now, the length of the simple pendulum is increased four times its previous value, so the new length $L_2 = 4L_1$. The mass of the bob is doubled, but the period of a simple pendulum is independent of the mass of the bob.

The new period T_2 with the new length L_2 will be :

$$T_2 = 2\pi\sqrt{\frac{L_2}{g}}$$

$$T_2 = 2\pi\sqrt{\frac{4L_1}{g}}$$

$$T_2 = 2\pi\sqrt{4.\frac{L_1}{g}}$$

$$T_2 = 2\pi . 2\sqrt{\frac{L_1}{g}}$$

$$T_2 = 2\left(2\pi\sqrt{\frac{L_1}{g}}\right)$$

$$T_2 = 2T_1$$

The ratio of the new time period to the previous time period is :

$$\frac{T_2}{T_1} = \frac{2T_1}{T_1} = 2$$

So, the ratio of the new and previous time periods of the pendulum is 2 : 1.

Therefore, the correct answer is (C) 2 : 1.

100. (C) Let's analyze each equation of motion :

(a) $s = ut + at^2$

This is the second equation of motion, which correctly describes the displacement (s) of an object moving with a uniform acceleration (a) over a time (t), given an initial velocity (u).

(b) $u = v - at$

This equation can be rearranged to $v = u + at$, which is the first equation of motion. It correctly relates the final velocity (v) of an object to its initial velocity (u), uniform acceleration (a) and the time (t) for which it accelerates. Therefore, the given form $u = v -$ at is also correct.

(c) $u^2 - v^2 = 2as$

The third equation of motion is typically written as $v^2 = u^2 + 2as$. Rearranging this equation gives :

$v^2 - u^2 = 2as$

Multiplying both sides by –1 gives :

$u^2 - v^2 = -2as$

The given equation $u^2 - v^2 = 2as$ is the wrong sign on the right-hand side. Therefore, this equation is NOT correct.

(d) Distance travelled during nth second = $\frac{u + a(2n-1)}{2}$

The distance travelled during the nth second (S_n) is given by :

$$S_n = u + \frac{a}{2}(2n-1)$$

The given equation Distance travelled during nth second = u + a$(2n – 1)$ is missing the factor of $\frac{1}{2}$ multiplying the acceleration term. Therefore, this equation is NOT correct.

Based on the analysis :

Equation (c) is incorrect. Equation (d) is also incorrect due to the missing factor of $\frac{1}{2}$. The question asks for one equation that is NOT correct. Since (c), $\boxed{u^2 - v^2 = 2as}$ is fundamentally wrong in its derivation from the standard equations of motion, it is the primary incorrect equation.

101. (C) The correct answer is Zero.

Here's why :

- **Acceleration** is defined as the rate of change of velocity with respect to time. Velocity, in turn, has both magnitude (speed) and direction.
- **Uniform speed** means that the magnitude of the velocity (the speed) is constant.
- If the object is moving in a straight line at a uniform speed, then its velocity is also constant (both magnitude and direction are constant). Since there is no change in velocity, the acceleration is zero.
- If the object is moving at a uniform speed along a curved path (like uniform circular motion), its velocity is changing because the direction of motion is constantly changing. In this case, there is an acceleration (centripetal acceleration), even though the speed is constant.

However, the question simply states "at uniform speed" without specifying the path. In the context of basic kinematics and without additional information implying a change in direction, "uniform speed" is generally taken to mean motion in a straight line at a constant speed. In such a case, the acceleration is zero.

If the question intended to imply uniform circular motion, it should have been specified. Given the options, the most straightforward and generally accepted answer for an object moving at a uniform speed (without a change in direction implied) is zero acceleration.

102. (C) We can use the following equation of motion to solve this problem :

$$v^2 = u^2 + 2as$$

where :

- v is the final velocity
- u is the initial velocity
- a is the acceleration
- s is the displacement (distance over which the motion occurs)

Given :

- Initial velocity, u = 12m/s
- Final velocity, v = 0 m/s (since the car is brought to rest)
- Distance, s = 45m

We need to find the acceleration, a.

Plugging the given values into the equation :

$(0)^2 = (12)^2 + 2.\ a.\ 45$

$0 = 144 + 90a$

Now, we solve for a :

$90a = -144$

$a = -\frac{144}{90}$

To simplify the fraction, we can divide both the numerator and the denominator by their greatest common divisor, which is 18 :

$a = -\frac{144 \div 18}{90 \div 18}$

$a = -\frac{8}{5}$

Now, convert the fraction to a decimal :

$$a = -1.6 \text{ m/s}^2$$

The negative sign indicates that the acceleration is in the opposite direction to the initial velocity, which means it is a deceleration or retardation, causing the car to slow down and come to rest.

Therefore, the acceleration of the car is –1.6 m/s^2.

103. (D) The universal constant of gravitation (G) appears in Newton's Law of Universal Gravitation :

$$F = G\frac{m_1 m_2}{r^2}$$

Where :

- F is the gravitational force between two objects.
- m_1 and m_2 are the masses of the two objects.
- r is the distance between the centers of the two objects.
- G is the universal constant of gravitation.

To find the unit of G, we can rearrange the formula :

$$G = \frac{F . r^2}{m_1 . m_2}$$

Now, let's substitute the SI units for each quantity:

- Force (F) is measured in Newton (N)
- Distance (r) is measured in meters (m), so r^2 is measured in m^2.
- Mass (m_1 and m_2) is measured in kilograms (kg), so $m_1 \times m_2$ is measured in 1 kg.

Substituting these units into the equation for G :

$$\text{Unit of G} = \frac{\text{N} \cdot m^2}{\text{kg} \cdot \text{kg}} = \frac{\text{N} \cdot m^2}{\text{kg}^2}$$

Therefore, the unit of the universal constant of gravitation G is $N.m^2/kg^2$.

104. (B) The correct answer is (B), 2 only. This statement describes Archimedes' Principle, which states that when a solid body is partially or completely immersed in a fluid, it experiences an upward buoyant force. The magnitude of this buoyant force is equal to the weight of the fluid displaced by the body.

Let's analyze why the other option is incorrect :

- **The mass of the body :** The upward buoyant force depends on the volume of the fluid displaced (which is related to the volume of the submerged part of the body) and the density of the fluid. It does not directly depend on the mass of the immersed body. A heavy object can displace a small volume of fluid, resulting in a smaller buoyant force than its weight, causing it to sink. Conversely, a less dense object can displace a larger volume of fluid, resulting in a buoyant force equal to or greater than its weight, causing it to float.

Therefore, only statement 2 accurately describes the magnitude of the upward force exerted by the fluid on the immersed body according to Archimedes' Principle.

105. (A) The correct answer is the Adiabatic system. By definition, an adiabatic system is one that does not allow the transfer of heat between the system and its surroundings. This isolation is typically achieved through perfectly insulating walls. In an adiabatic process, any change in the internal energy of the system is solely due to work done on or by the system.

- **Non-adiabatic system :** This is a general term for any system that does allow the exchange of heat with its surroundings.
- **Equilibrium system :** An equilibrium system is one where the macroscopic properties (like temperature, pressure and concentration) do not change with time and are uniform throughout the system. It doesn't necessarily restrict heat exchange. A system can be in thermal equilibrium with its surroundings while still allowing heat exchange (e.g., a cup of coffee at room temperature).
- **Non-equilibrium system :** A non-equilibrium system is one where the macroscopic properties change with time or are not uniform throughout. Again, this doesn't directly relate to whether or not heat exchange is allowed.

Therefore, the system that does NOT allow the exchange of heat with its surroundings is specifically called an adiabatic system.

106. (C) The potential difference (V) between two points is defined as the work done (W) per unit charge (Q) in moving the charge between those two points. The formula is :

$$V = \frac{W}{Q}$$

Given :

- Charge, Q = 2C
- Work done, W = 24J

We need to find the potential difference, V.

Plugging the given values into the formula :

$$V = \frac{24\ \text{J}}{2\ \text{C}}$$

$$V = \frac{12\ \text{J}}{\text{C}}$$

The unit of potential difference (Joules per Coulomb) is Volt (V).

Therefore, the potential difference between point A and point B is 12 V.

107. (B) Let the resistance of each conducting wire be R. Since the wires are of the same material, equal lengths and equal diameters, their resistances will be the same. Let the potential difference across the circuit be V.

Case 1 : Wires connected in parallel
When the two wires are connected in parallel, the equivalent resistance Rp is given by :

$$\frac{1}{R_{P1}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R_{P1}} = \frac{1}{R} + \frac{1}{R}$$

$$\frac{1}{R_{P1}} = \frac{2}{R}$$

$$R_{P1} = \frac{R}{2}$$

The heat produced in the parallel combination, Hp, is given by the formula, $H = \frac{V^2}{R}t$, where t is the time. So,

$$Hp = \frac{V^2}{R_p}t = \frac{V^2}{\left(\frac{R}{2}\right)}t = \frac{2V^2}{R}t$$

Case 2 : Wires connected in series
When the two wires are connected in series, the equivalent resistance Rs is given by: The heat produced in the series combination, Hs, is given by :

$$H_s = \frac{V^2}{R_s}t = \frac{V^2}{2R}t$$

Now, we need to find the ratio of the heat produced in parallel and series combinations :

$$\frac{H_p}{H_s} = \frac{\frac{2V^2}{R}t}{\frac{V^2}{2R}t}$$

$$\frac{H_p}{H_s} = \frac{2V^2t}{R} \times \frac{2R}{V^2t}$$

$$\frac{H_p}{H_s} = \frac{4V^2Rt}{V^2Rt} = 4$$

So, the ratio of heat produced in parallel and series combinations is 4 : 1.

108. (D) The correct answer is Charges can be created and destroyed in an isolated system.

Here's why:

(a) Charges can be added : Electric charges are scalar quantities and can be added algebraically. If a system has charges +2 C and –3 C, the net charge is –1 C. This is a basic property.

(b) Charge is conserved : The law of conservation of electric charge states that the total electric charge of an isolated system remains constant. Charges cannot be created or destroyed; they can only be transferred from one part

of the system to another. This is a fundamental principle.

(c) Charge on a body is always an integral multiple of an electron or a proton charge : This is the property of quantization of electric charge. The magnitude of the charge on an electron is denoted by '*e*' (approximately 1.602×10^{-19} Coulombs) and any free charge found in nature is an integral multiple of this elementary charge ($q = ne$, where n is an integer). This is also a basic property.

(d) Charges can be created and destroyed in an isolated system : This statement is incorrect. As per the law of conservation of charge, the net charge in an isolated system remains constant. While charges can be created or destroyed in pairs of opposite signs (*e.g.*, in pair production and annihilation), the net charge of the isolated system does not change.

109. (C) The correct answer is the Same.

Here's why :

- Resistivity is an intrinsic property of a material that quantifies how strongly it resists the flow of electric current. It depends on the material's nature (like copper in this case) and its temperature.
- The length and cross-sectional area of the wire affect the resistance of the wire, not its resistivity. The relationship between resistance (R), resistivity (ρ), length (L) and cross-sectional area (A) is given by :

$$R = \rho \frac{L}{A}$$

If the length of the copper wire is increased, its resistance will increase proportionally (assuming the cross-sectional area remains the same). However, the fundamental property of the copper material to resist current flow (its resistivity) will not change unless the material itself or its temperature changes.

Therefore, increasing the length of a copper wire (without changing its material or temperature) will increase its resistance, but its resistivity will remain the same.

110. (A) To determine the direction of the magnetic field around a current-carrying wire, we can use the right-hand thumb rule.

Here's how to apply it to this situation:

1. Imagine holding the horizontal powerline in your right hand.
2. Point your thumb in the direction of the current. The current flows from East to West, so your thumb should point towards West.
3. Curl your fingers around the wire. The direction in which your fingers curl represents the direction of the magnetic field lines.

Now, let's consider a point directly below the powerline and view it from the East end.

- From the East end, the current in the wire is moving away from you (towards the West).
- Applying the right-hand thumb rule, with your thumb pointing away from you, your fingers will curl in a clockwise direction in a plane perpendicular to the wire.

Therefore, the direction of the magnetic field at a point directly below the wire, when viewed from the East end, will be clockwise in a plane perpendicular to the wire.

111. (D) Let's analyze each statement :

(a) An ammeter is always connected in series in the circuit to measure the current. This statement is correct. An ammeter must be placed in series so that the current flowing through the circuit also passes through the ammeter, allowing it to measure the current accurately.

(b) A Voltmeter is always connected in parallel in a circuit to measure the voltage. This statement is correct. A voltmeter is connected in parallel across the component whose voltage difference is to be measured. This allows the voltmeter to measure the potential difference between the two points without significantly affecting the current flow in the circuit.

(c) A voltmeter has a high resistance and an ammeter has a low resistance. This statement is correct.

- A voltmeter needs to have a very high resistance so that it draws a negligible amount of current from the circuit when connected in parallel. This ensures that the voltage being measured is not significantly altered by the presence of the voltmeter.
- An ammeter needs to have a very low resistance so that it causes a minimal voltage drop across it when connected in series. This ensures that the current being measured is not significantly affected by the presence of the ammeter.

(d) A voltmeter has a low resistance and an ammeter has a high resistance. This statement is NOT correct. It contradicts the fundamental requirements for the proper functioning of voltmeters and ammeters as explained in option (c).

Therefore, the statement that is NOT correct is (d).

112. (B) When resistors are connected in parallel, the reciprocal of the equivalent resistance is equal to the sum of the reciprocals of the individual resistances.

Let the three resistors be R1, R2 and R3. In this case, each resistor has a resistance of 1 Ohm :

$R_1 = 1\ \Omega$

$R_2 = 1\ \Omega$

$R_3 = 1\ \Omega$

The formula for the equivalent resistance (Rp) of resistors connected in parallel is :

$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

Substituting the values of the resistors :

$$\frac{1}{R_p} = \frac{1}{1\Omega} + \frac{1}{1\Omega} + \frac{1}{1\Omega}$$

$$\frac{1}{R_p} = 1 + 1 + 1$$

$$\frac{1}{R_p} = 3$$

To find the resultant resistance Rp, we take the reciprocal of 3 :

$$R_p = \frac{1}{3}\Omega$$

Therefore, the resultant resistance of three resistors of 1 Ohm each connected in parallel is 1/3 Ohm.

113. (D) The correct answer is that is uniform inside the solenoid.

Here's why :

- **Ideal Long Solenoid :** For an

ideal long straight solenoid (where the length is much greater than its diameter), the magnetic field lines inside are nearly parallel to the axis of the solenoid and are uniformly spaced. This indicates that the magnetic field strength is the same at all points inside the solenoid, away from the ends.

- **Field at the Ends :** The magnetic field strength does decrease as you move towards the ends of a real solenoid (which is not infinitely long). The field lines spread out at the ends, reducing the field strength. However, the question refers to the magnetic field inside a long straight solenoid, implying a region away from the immediate ends where the uniformity is a good approximation.

Considering the ideal case of a long solenoid, which is the standard simplification in such problems unless otherwise specified, the magnetic field inside is considered uniform.

114. (C) The relationship between the frequency (f), wavelength (λ) and speed (v) of a wave (including a sound wave) is given by the fundamental wave equation:

$v = f\lambda$

Let's examine the given options to see which one matches this equation:

(a) $f = v\,\lambda$: This equation states that frequency is the product of speed and wavelength, which is incorrect.

(b) $\lambda = vf$: This equation states that wavelength is the product of speed and frequency, which is incorrect.

(c) $f = \frac{\lambda}{v}$: This equation states that frequency is the ratio of wavelength to speed, which is the inverse of the correct relationship.

(d) $v = 2f$: This equation has an extra factor of 2 and uses the symbol 'λ' which is not standard for wavelength (λ). This is incorrect.

Looking closely at option (c), it seems there might be a typographical error.

If it was intended to be $f = \frac{v}{\lambda}$, then it would be the correct rearrangement of the fundamental wave equation.

Rearranging the correct equation $v = f\lambda$ to solve for frequency (f), we get :

Comparing this with the given options, option (C) is the closest, assuming a typo where the positions of 'v' and 'λ' were swapped.

115. (B) The correct answer is the Reflection of sound waves.

Here's why :

- **Echo :** An echo is a sound that is repeated because the sound waves are reflected back to the listener. This happens when sound waves strike a surface (like a wall, cliff or other large object) and bounce back.

Let's look at why the other options are incorrect :

(a) Refraction of sound waves : Refraction is the bending of sound waves as they pass from one medium to another at a different speed. While refraction does occur with sound waves, it's not the primary reason we hear echoes.

(c) Diffraction of sound waves : Diffraction is the bending of sound waves around obstacles or through narrow openings. While diffraction is a property of sound waves, it doesn't explain the distinct repetition of sound that we perceive as an echo.

(d) Resonance due to sound waves: Resonance is the phenomenon where an object vibrates at its natural frequency when exposed to sound waves of that frequency. While resonance can amplify sound, it doesn't cause the repetition of sound heard in an echo.

Therefore, the phenomenon responsible for hearing an echo is the reflection of sound waves.

116. (A) The correct answer is between pole (P) and the focus (F), behind the mirror.

Here's a step-by-step explanation using ray diagrams and the properties of convex mirrors :

1. **Convex Mirror Properties :** A convex mirror is a diverging mirror. Its reflecting surface is curved outwards. It always forms virtual, erect and diminished images, regardless of the object's position. The focal point (F) and the center of curvature (C) are behind the reflecting surface of the mirror.
2. **Object at Infinity :** When the object is at infinity, parallel rays of light from the object strike the convex mirror. After reflection, these rays diverge and appear to originate from the focus (F) behind the mirror. The image formed is virtual, erect, highly diminished and located at the focus (F) behind the mirror.
3. **Object between Infinity and the Pole (P) :** Now, let's consider the case when the object is placed at some finite distance between infinity and the pole (P) of the convex mirror. To determine the position of the image, we can trace two principal rays :

- **Ray 1 :** A ray of light parallel to the principal axis strikes the mirror. After reflection, it diverges and appears to come from the focus (F) behind the mirror.
- **Ray 2 :** A ray of light directed towards the center of curvature (C) behind the mirror strikes the mirror. After reflection, it retraces its path.

4. **Image Formation :** The point where these two reflected rays appear to intersect (when extended backward behind the mirror) is the location of the virtual image.

- The reflected ray from Ray 1 appears to come from the focus (F).
- The reflected ray from Ray 2 appears to come from the center of curvature (C).

5. The intersection of these apparent rays occurs behind the mirror, between the pole (P) and the focus (F). The image formed is virtual (since the rays do not actually meet), erect and diminished.

Therefore, when an object is placed between infinity and the pole (P) of a convex mirror, the image is always formed between the pole (P) and the focus (F), behind the mirror.

117. (A) The correct answer is The blue color is scattered more compared to the red color.

Here's why:

- **Scattering of Sunlight :** Sunlight is composed of all the colors of the visible spectrum. When sunlight enters the Earth's atmosphere, it collides with air molecules (mainly

nitrogen and oxygen) and tiny particles. This interaction causes the sunlight to be scattered in different directions.

- **Rayleigh Scattering :** The scattering of light by particles much smaller than the wavelength of the light is called Rayleigh scattering. The amount of scattering is inversely proportional to the fourth power of the wavelength ($\propto\lambda 41$).
- **Wavelength and Scattering:** Blue light has a shorter wavelength than red light. Because of this inverse relationship, blue light is scattered much more strongly by the air molecules in the atmosphere than red light.
- **Why the Sky is Blue :** When we look at the sky away from the sun, we see the scattered sunlight. Since blue light is scattered more effectively in all directions, the sky appears blue.
- **Red Sunsets and Sunrises :** During sunrise and sunset, the sun is lower on the horizon. The sunlight has to travel through a much greater distance of the atmosphere to reach our eyes. During this longer path, most of the blue light is scattered away. The longer wavelengths, like red and orange, are scattered much less and thus reach our eyes predominantly, making the sun and the sky around it appear reddish or orange.

Therefore, the blue color of sunlight is scattered more than the red color when it travels through the Earth's atmosphere due to Rayleigh scattering.

118. (A) The speed of light in a vacuum (Y) is a fundamental constant, approximately 3×10^8 m/s.

When light travels through a medium other than a vacuum, such as carbon disulfide, it interacts with the atoms and molecules of the medium. This interaction causes the light to slow down. The refractive index (n) of a medium is defined as the ratio of the speed of light in a vacuum (c) to the speed of light in that medium (v) :

$$n = \frac{c}{v}$$

The refractive index of carbon disulfide is greater than 1 (approximately 1.63). This means that the speed of light in carbon disulfide (X) is less than the speed of light in a vacuum (Y).

$$n \text{ carbon disul fide} = \frac{Y}{X} > 1$$

From this inequality, we can conclude that :

$$Y > X$$

Or

$$X < Y$$

Therefore, the speed of light in carbon disulfide is less than the speed of light in a vacuum.

119. (A) The correct answer is bending towards the normal.

Here's why :

- **Refraction :** When a light ray travels from one transparent medium to another, its speed changes. This change in speed causes the light ray to bend at the interface between the two media. This bending of light is called refraction.
- **Optical Density :** The extent to which light slows down in a medium is related to its optical density. A medium with a higher refractive index is optically denser and light travels slower in it.
- **Air and Water :** Air is an optically rarer medium (lower refractive index, approximately 1.0003) and water is an optically denser medium (higher refractive index, approximately 1.33).
- **Bending of Light :**
  - When light travels from a rarer medium (like air) to a denser medium (like water), it slows down and bends toward the normal. The normal is an imaginary line perpendicular to the surface at the point of incidence.
  - Conversely, when light travels from a denser medium to a rarer medium, it speeds up and bends away from the normal.
- **Non-zero Angle :** The question specifies a non-zero angle of incidence. If the angle of incidence is zero (the light ray is incident perpendicular to the surface), the light ray will pass straight through without bending, even though its speed changes.

Therefore, when a light ray passes from air (rarer) to water (denser) at a non-zero angle of incidence, it will bend towards the normal.

120. (B) Solid carbon dioxide (CO_2) is also known as dry ice. It is primarily used as a cooling agent, particularly for food preservation and refrigeration

- SiO_2 is the chemical formula for silicon dioxide, commonly known as silica, which is the main component of sand and glass.
- CaO is the chemical formula for calcium oxide, also known as quicklime. It is a white powder used in construction and other industries.
- MgO is the chemical formula for magnesium oxide, also known as magnesia. It has various industrial uses.

121. (B) Oxidation is the chemical process in which a substance loses electrons or gains oxygen or loses hydrogen and in Reduction a substance gains electrons or loses oxygen or gains hydrogen. So option (A), If a substance loses hydrogen during reaction, it is reduced, is incorrect

122. (D) Micelles have both Hydrophilic end and Hydrophobic end.

Hydrophilic end is attracted to water and has a charged ionic group whereas Hydrophobic End is repelled by water and has a long hydrocarbon(Non-Ionic) chain. So option (D) is incorrect and other given statements are correct.

- The molecules of soap are sodium or potassium salts of long chain fatty acids.
- The molecules of soap contain both hydrophobic and hydrophilic ends
- Detergents are more effective than soaps in hard water.

123. (B) The mass of an electron is about 1/1836 the mass of a proton which is approximately 1/2000 times. So option (B) is correct whereas the other statements are incorrect.

- A neutron is not formed by combining an electron and a proton; it is a fundamental neutral particle.
- J. J. Thomson gave the "plum pudding model" of the atom, which suggested that positive charge was distributed throughout the atom with electrons embedded within. He did not suggest the existence of a nucleus, let alone one composed only of neutrons.
- Cobalt isotopes are not used in the treatment of goiter. Instead, cobalt-60 is used in cancer treatment through radiation therapy.

124. (D) James Chadwick discovered the neutron in 1932 which is a neutral particle.

- The Electron was discovered by J.J. Thomson which is negatively charged particle.
- The Proton was discovered by Ernest Rutherford which is positively charged particle.
- The positron was discovered by Carl D. Anderson in the year 1932.

125. (A) According to Rutherford's Nuclear Model the nucleus is positively charged, not neutral so option (A) is incorrect whereas other statements are correct.

- The electrons revolve around this nucleus in a circular path.
- Nearly all the mass of an atom resides in the nucleus.
- The size of a nucleus is very small as compared to the size of atom.

126. (C) Element X forms a chloride with the formula XCl_2 is Mg(magnesium) because the valency of Magnesium is 2 and chloride has valency of 1 so when Magnesium will react with chloride it will form Magnesium chloride, *i.e* $MgCl_2$.

- The valency of Sodium and Potassium is 1 so when they will react with Chloride they will form sodium chloride (NaCl) and potassium chloride (KCl).
- The valency of Aluminum is 3 so when it will react with chloride it will form aluminium chloride ($AlCl_3$).

127. (A) Copper was one of the earliest metals known to humans. It has been used by humans for over 10,000 years.

- The first evidence of copper use dates back to 8700 BCE in northern Iraq, where a copper pendant was discovered.
- In India, the earliest evidence of copper use is between 3500 and 1000 BCE, during which copper tools became increasingly important.

128. (B) Statement (B) is incorrect because The pH scale works inversely so the higher the hydrogen ion concentration in a solution, the lower will be its pH value thus Statement (B) is contradictory and false and all other statements are correct.

- A scale measuring hydrogen ion concentration in a solution is called pH scale.
- The range of Ph scale is from 0 to 14.
- The 'p' in pH stands for 'potenz' in German meaning power.

129. (C) For acid rain, the pH of rainwater should be less than 5.6.

- Acid rain is a broad term that includes any form of precipitation with acidic components, such as sulfuric or nitric acid that fall to the ground from the atmosphere in wet or dry forms. This can include rain, snow, fog, hail or even dust that is acidic.

130. (A) Carbon monoxide (CO) is a neutral oxide because it does not react with both acid and base in aqueous solution.

- CO_2 (Carbon dioxide) is an acidic oxide. It reacts with water to form carbonic acid.
- Na_2O (Sodium oxide) is a basic oxide. It reacts with water to form sodium hydroxide.
- MgO (Magnesium oxide) is also a basic oxide. It reacts with water to form magnesium hydroxide.

131. (C) Option (C) is incorrect because a compound is a pure substance not impure. Impure substances, also known as mixtures which are made up of two or more different types of particles that can be separated by physical methods. They are further classified into homogeneous mixtures and heterogeneous mixtures whereas Pure substances is a substance with a constant chemical composition which can be classified into two main types: elements and compounds.

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

132. (D) The Chemical Formula of Washing Soda (Sodium Carbonate Decahydrate) is $Na_2CO_310H_2O$.

- The Chemical Formula of Baking Soda (Sodium Bicarbonate) is $NaHCO_3$.
- The Chemical Formula of Bleaching Powder (Calcium Hypochlorite) is $CaOCl_2$.
- The Chemical Formula of Gypsum (Calcium Sulfate Dihydrate) is $CaSO_4.2H_2O$.

So, Option (D) is correctly matched.

133. (C) Both the given statements about sleet are correct.

- Sleet is a precipitation in the form of frozen raindrops or refrozen melted snow water.
- Sleet forms when raindrops freeze while falling through a cold layer of air and this typically happens when a cold air layer is present above a warmer layer at the ground surface.

134. (D) South argentina does not experience a humid subtropical climate. It experiences a temperate climate. The region features cool summers and cold, snowy winters, with temperatures averaging below 4°C.

- Coastal South Africa has a humid subtropical climate due to the influence of warm ocean currents like the Mozambique Current.
- The East Coast of Australia has a humid subtropical climate due to the warm East Australian Current and prevailing winds that transport moisture from the Tasman and Coral Seas.
- South Japan has a humid subtropical climate due to its geographical location and the influence of the subtropical high pressure system.

135. (D) Statement (D) is incorrect because the molar mass of hydrogen gas is 02 grams, so 04 grams of hydrogen gas will have 02 moles and each mole of hydrogen gas contain 6.022×10^{23} molecules therefore two moles of hydrogen gas will have $2 \times 6.022 \times 10^{23}$ moles. Rest other options are correct because One mole is defined as the amount of a substance that contains exactly 6.022×10^{23} (Avogadro's number) entities of that substance. These entities can be atoms, molecules, ions or other particles.

136. (B) Nitrogen dioxide (NO_2) can dimerize under applied conditions, such as when it's cooled down, to form dinitrogen tetroxide (N_2O_4). Dimerization is the chemical process where two molecules of the same compound combine to form a larger molecule called a dimer. During dimerization, new covalent bonds

are formed between two molecules of Nitrogen dioxide (NO_2) and dinitrogen tetroxide (N_2O_4).

137. (B) The lactic acid that gets accumulated in the muscle cells during vigorous exercise causing muscle cramps is produced from Pyruvate. It is a three-carbon molecule formed during the breakdown of glucose in glycolysis

- ATP (adenosine triphosphate) is the primary energy currency of the cell
- Ethanol is produced during fermentation in yeast
- Glucose is a monosaccharide (simple sugar)

138. (A) Cambium is an example of lateral meristem. It is a non permanent tissue located on the sides of the stem and roots and is responsible for secondary growth, increasing the thickness of the plant.

- Apical meristem is found at the tips of roots and shoots and is responsible for primary growth, increasing the length of the plant.
- Intercalary meristem is located between nodes on the stem and is responsible for secondary growth in certain plants.
- Permanent tissues in plants are tissues that have stopped dividing. They are further divided into simple and complex permanent tissues.

139. (A) When fat and oil containing food materials are left outside for a long time, fats and oils in the food get oxidized, this process is called "rancidity". In this process the unsaturated fats in the food react with oxygen in the air, leading to a change in taste, smell and often, even the texture of the food.

140. (B) Blood has Fibrinogen protein which is crucial for blood clotting. It is converted into fibrin, a key component of blood clots, which helps to stop bleeding and initiate wound healing.

- A pathogen is a disease-causing agent.
- Macrophages are white blood cells that play a role in immune responses.
- Phagocytes are a type of white blood cell that engulf and digest foreign particles, bacteria and dead cells to protect the body.

141. (B) Vitamin B1 is also known as thiamin.

- Vitamin B2 is also known as Riboflavin.
- Vitamin A is also known as retinol
- Vitamin E is also known as Tocopherol.

142. (C) The vector of malaria parasites is Female Anopheles mosquito, which injects malaria parasites into a person when they bite.

- Malaria can be prevented by avoiding mosquito bites and by taking medicines and it does not spread from person to person.
- Male Anopheles mosquitoes do not transmit malaria.
- Male Culex mosquitoes do not cause diseases by biting.
- Female Culex mosquitoes can transmit diseases like West Nile virus, Japanese encephalitis and St. Louis encephalitis by biting.

143. (D) Malaria is transmitted by Female Anopheles mosquitoes. It is caused by the Plasmodium parasite, which is a single-celled protozoan not a mycobacterium and TB(Tuberculosis) is caused by the bacterium Mycobacterium tuberculosis, not by a plasmodium, so neither option is correctly matched.

144. (A) Adenine pairs with thymine and cytosine pairs with guanine. These base pairs are held together by hydrogen bonds, forming the double helix structure of DNA. In RNA, adenine pairs with uracil instead of thymine.

145. (D) The initial discovery of the antibiotic penicillin was done by Alexander Fleming.

- Francis Crick along with James Watson discovered the double helix structure of DNA in 1953.
- Maurice Wilkins studied X-ray diffraction studies of DNA which played a pivotal role in the discovery of DNA's double helix structure.
- Charles Darwin is known for his theory of evolution by natural selection.

146. (A) A chain of peptides containing linear sequences of amino acids linked by peptide bonds best represents the primary structure.

- Secondary structure refers to local folding patterns like alpha helices or beta sheets, formed by hydrogen bonding between the peptide backbone atoms.
- Tertiary structure is the overall 3D shape of a polypeptide chain, determined by interactions between the side chains of amino acids.
- Quaternary structure refers to the arrangement of multiple polypeptide chains in a protein complex.

147. (D) India's Gas Turbine Research Establishment (GTRE), part of the Defense Research and Development Organization (DRDO) has developed the Kaveri engine. It was developed with the primary aim of reducing India's dependence on foreign technology for jet engine development and making India self-reliant. It was designed to power the Tejas Light Combat Aircraft (LCA).

148. (A) The Government on September 11, 2024 accorded approval to the Anushakti Vidhyut Nigam Ltd. (ASHVINI), a Joint Venture (JV) of Nuclear Power Corporation of India Limited – NPCIL (51%) and NTPC Ltd. (49%) to build, own & operate nuclear power plants in India in accordance with provisions of the Atomic Energy Act.

149. (C) Both the statements are correct. C-Bot is an underwater vehicle developed by the CSIR(Council of Scientific & Industrial Research) and NIO (National Institute of Oceanography) specifically designed to monitor coral reefs.

150. (A) Jimmy Carter (President of the United states of america) was awarded the Nobel Peace Prize in 2002 for his efforts to find peaceful solutions to international conflicts, advance democracy and human rights and promote economic and social development.

- Woodrow Wilson (president) won the Nobel Peace Prize in 1919 for his work in negotiating the Treaty of Versailles after World War I.
- Barack Obama (president) won the Nobel Peace Prize in 2009 for his efforts to promote nuclear non-proliferation.
- Al Gore (Vice President) won the Nobel Peace Prize in 2007 for his work on climate change awareness.

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