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(GAT)

Exam Date : 01-09-2024

English

Verb : Primary-Ordinary, Auxiliary Verbs & Modals and Idiomatic Use of Verbs

Direction (Q. No. 1 to 10)

Each of the following items features one part of a sentence followed by four alternatives. Complete the sentence by choosing the correct alternative .

- Preeti suggests :
(A) that I ask to your advice
(B) that I had asked your advice
(C) that I can have asked your advice
(D) that I ask your advice
- We saw :
(A) the older of all monuments in the city
(B) the old of all monuments in the city
(C) the oldest monument in the city
(D) an oldest of all monuments in the city
- Since you have been touring all day :
(A) you must be tired
(B) you ought to have been tired
(C) you could had been tired
(D) you might not be tired
- His condition is serious, but :
(A) it should be worse
(B) it ought to be worse
(C) it could be worse
(D) it had been going to be worse
- I hope the bus comes soon because :
(A) we waited for half an hour
(B) we have been waiting for half an hour
(C) we waiting for half an hour
(D) we could have been waiting for half an hour
- Someone :
(A) has spilt juice on the sofa
(B) should have spilt juice on the sofa
(C) have spilt juice on the sofa
(D) would spilt juice on the sofa
- What would you do ?
(A) if you found your lost toy ?

- (B) if you will have found your lost toy ?
(C) if you would found your lost toy ?
(D) if you have find your lost toy ?
- If I were you :
(A) I shouldn't buy that dress
(B) I wouldn't buy that dress
(C) I weren't buying that dress
(D) I mustn't buying that dress
 - I wish :
(A) I could help you
(B) I ought to help you
(C) I did help you
(D) I must help you

- The efforts of the security services have not been quite :
(A) upto the incredibility
(B) up-take
(C) up-tight
(D) upto the mark

Direction (Q. No. 11 to 15)

Each item in this section consists of a sentence with an underlined word followed by four words. Select the option that is nearest in meaning to the underlined word.

- Sages and seers have cautioned that the path towards enlightenment is full of illusory traps.
(A) reasoned
(B) admitted
(C) warned
(D) refused
- The officer reported the details of the mission in a monotonous manner.
(A) dull
(B) happy
(C) disturbed
(D) enthusiastic
- There are many elusive questions in philosophy.
(A) clear
(B) baffling
(C) paramount
(D) truthful

- Cleaning this mess is a mammoth task.
(A) huge
(B) quick
(C) easy
(D) intelligent
- The police department's image was tarnished after the high-profile murder case.
(A) enhanced
(B) tainted
(C) restored
(D) assigned

Direction (Q. No. 16 to 20)

Each item in this section consists of a sentence with an underlined word followed by four words or group of words. Select the option that is opposite in meaning to the underlined word.

- All human beings are fallible :
(A) frail
(B) erring
(C) mortal
(D) perfect
- His words were vague :
(A) identical
(B) obscure
(C) precise
(D) imperceptible
- She performed all her duties conscientiously :
(A) assiduously
(B) carelessly
(C) painstakingly
(D) scrupulously
- These risks are incidental to the work of a firefighter :
(A) essential
(B) adventitious
(C) serendipitous
(D) subsidiary
- She has always been disdainful of poor people :
(A) reverential
(B) derisive
(C) supercilious
(D) insolent

Idioms and Phrases

Direction (Q. No. 21 to 25)

Given below are some idioms/phrases followed by four alternative meanings to each. Select the response (A), (B), (C) or (D).

21. A white lie :
- (A) An offensive way of describing something
 - (B) To do something completely impossible
 - (C) A lie that is absolutely and universally true
 - (D) A lie that you tell to avoid hurting someone
22. Bad blood :
- (A) Feelings of hatred between people
 - (B) A situation which goes from bad to worse
 - (C) A fatal accident
 - (D) To accept the unpleasant situation
23. Count your blessings :
- (A) to start to understand how badly something has affected you
 - (B) an event which gradually becomes worse
 - (C) to be grateful for good things in your life
 - (D) something that you say in order to warn someone
24. Have the last laugh :
- (A) to be the worst example of something
 - (B) to succeed when others thought that you would not
 - (C) to solve all the problems of life
 - (D) to laugh at someone secretly
25. Sit on the fence :
- (A) to make someone suddenly notice you
 - (B) to fail completely
 - (C) to delay making a decision
 - (D) to behave very badly

Sentence Re-arrangement of Word Sentences

Direction (Q. No. 26 to 30)

Each of the following items in this section consists of a sentence, the parts of which have been jumbled. These parts have been labelled P, Q, R and S. Given below each sentence have four sequences, namely (A), (B), (C)

and (D). You are required to rearrange the jumbled parts of the sentences and mark your response accordingly.

26. good quality elementary education conforming
P
as a fundamental right of all children
Q
the Right to Education Act (RTE) mandates
R
to the standards and norms specified in the Act
S
- (A) QSPR
 - (B) RPSQ
 - (C) RQSP
 - (D) SQPR
27. the conflicts and disputes in their mind
P
music not only relieves the burden
Q
on children and the young
R
but also alleviates
S
- (A) QRSP
 - (B) PSRQ
 - (C) QPRS
 - (D) PQRS
28. but it is virtually covered by a dome-shaped
P
Antarctica is a continent
Q
nearly twice as large as Australia
R
ice sheet nearly 2 miles thick
S
- (A) QRPS
 - (B) SPRQ
 - (C) QSPR
 - (D) SQPR
29. the global economic weight from the advanced economies
P
that there was a major shift in
Q
and Central Bank Governors, in recognition of the fact
R
the G20 was formed in 1999, as a forum of Finance Ministers
S
- (A) SPQR
 - (B) PQRS
 - (C) QRSP
 - (D) SRQP

30. aquaculture nation in the world and
P
India's products are exported to many nations
Q
fish producing and the second largest
R
India is the third largest
S
- (A) SRPQ
 - (B) QPRS
 - (C) RPQS
 - (D) PQRS

Noun

Direction (Q. No. 31 to 35)

Each of the following sentences has word (s) underlined. Read the sentence carefully and find which word class the underlined word (s) belong (s) to.

31. Adders are the only poisonous snakes found across Britain.
- (A) Noun
 - (B) Adjective
 - (C) Adverb
 - (D) Determiner
32. The plane is ready for take-off.
- (A) Noun
 - (B) Conjunction
 - (C) Verb
 - (D) Gerund

Conjunction

33. She spoke to him once since he has been in town.
- (A) Adjective
 - (B) Adverb
 - (C) Conjunction
 - (D) Preposition

Adverb

34. I don't really want to go. Besides, it's too late now.
- (A) Adjective
 - (B) Adverb
 - (C) Preposition
 - (D) Conjunction

Articles & Determiners

35. Look at that man over there.
- (A) Adverb
 - (B) Conjunction
 - (C) Determiner
 - (D) Article

Cloze Test or Numbered Gaps

Direction (Q. No. 36 to 45)

In this section, there is a passage that has some blank spaces, each with four words or group of words. Select whichever word or group of words you consider the most appropriate for the blank space.

- Most of our food comes from agriculture, so we tend to believe that it is 36. (A) independent of natural biota. This is not true. In nature,
(B) dependent
(C) relevant
(D) consequent
- 37. (A) the plants and animals,
(B) both
(C) some
(D) among
- 38. (A) had been continuously subjected
(B) will be continuously subject
(C) continuously subjected
(D) are continuously subjected
- to the rigours of natural selection. Only the fittest survive. 39. (A) Consequently
(B) Inadvertently
(C) Although
(D) Since
- wild populations have numerous traits for competitiveness, resistance to parasites, 40. (A) withdrawal to adverse conditions,
(B) tolerance
(C) adaptable
(D) compliance
- 41. (A) and
(B) with
(C) by
(D) upon
- other aspects of vigour. In contrast, populations grown for many. 42. (A) eras
(B) epochs
(C) periods
(D) generations
- under the pampered conditions of agriculture tend to
lose these traits, because they 43. (A) had selected for production, not resilience. For example, a
(B) have selected
(C) are selected
(D) might select
- high-producing plant. 44. (A) whichever lacks resistance to drought is
(B) whom
(C) that
(D) whenever
- 45. (A) heated and the resistance to drought is ignored. Also, in the
(B) irrigated
(C) showered
(D) deserted
- process of breeding plants for maximum production, all genetic variation is eliminated.

Reading Comprehension Passages

Direction (Q. No. 46 to 50)

In this section, you have a short passage. After the passage, you will find some items based on the passage. Read the passage carefully and answer the items based on it.

We live in a time when globalisation is rapidly encompassing travel, information, trade and investment. The internet ties people together in ways unimagined a few years ago. The globalisation of health, however, remains an elusive goal, similar to the globalisation of economic well-being. Laurie Garrett, in *The Coming Plague*, describes an unwelcome form of globalisation : the globalisation of disease. Garrett examines the recent history of emerging diseases such as AIDS, Ebola, Hantavirus, Rift Valley Fever, Legionnaires ' disease, and others. She also explains the resurgence of familiar diseases like tuberculosis, cholera, and pneumonia as a consequence of the widespread and unwise use of antibiotics. Many of the new diseases are clearly linked to changes in land use, which brings humans into close contacts with rodents or other animals that harbour viruses previously unknown to medicine and often deadly to humans. Resurgent diseases, by contrast, are a creation of our medical practice. By treating people with antibiotics without restraint, we unknowingly select strains that are immune to the antibiotics and that pass on their resistant genes to unrelated bacteria by way of plasmid transfer. The heroes of her book are the women and men on the front lines of epidemiology. Garrett makes a plea for a greater commitment from our universities, medical schools, and government agencies to train workers who will be capable of recognizing new diseases and who will be able to move about equally well in the laboratory, the hospital and the field in pursuit of knowledge and public-health intervention around the world.

46. What according to the passage is the 'unwelcome form of the globalization' ?

1. Globalization of the diseases
2. Elusive goal of globalization
3. History of fatal diseases
4. Selective use of antibiotics

Select the correct answer using the code given below :

- (A) 1 only (B) 2, 3 and 4
(C) 3 only (D) 1 and 4

47. According to the passage, globalization of health has become imperative due to

- (A) the globalization of diseases
- (B) public health intervention
- (C) the creation of new medical systems
- (D) the indiscriminate use of anti-biotics

48. According to the passage, resurgent diseases are affected by :

1. Medical practices
2. Overuse of antibiotics
3. Emergence of new strains

Select the correct answer using the code given below :

- (A) 1 only
(B) 2 only
(C) 1 and 3 only
(D) 1, 2 and 3

49. According to the passage, many new diseases are emerging due to change in land use because :

- (A) humans are coming in contact with unfamiliar viruses
- (B) urbanisation proliferate makes pathogens
- (C) humans become adaptive and pass on their genes to related bacteria by way of plasmid transfer
- (D) humans are inadvertently releasing new viruses

50. What is the meaning of the word " epidemiology " in the passage ?

- (A) The historical study of the spread of diseases
- (B) The scientific study of the spread and control of diseases
- (C) The scientific study of the invention and uses of drugs
- (D) The scientific study of the uses of drugs

General Science

Ancient Indian History

[Political Condition before 6th Century (Mahajanapada Period)]

51. Taxila was the capital of which one among the following Mahajanapadas of ancient India ?

- (A) Kuru (B) Kasi
(C) Gandhar (D) Avanti

Medieval Indian History

(Bahmani and Vijayanagara Empire)

52. Vijayanagara rulers claimed that they were ruling on behalf of :

- (A) Lord Murugan
- (B) Lord Venkateshwara
- (C) Shri Virupaksha
- (D) Shri Vallabha

53. Domingo Paes describes a king in these words : 'Of medium height, and of fair complexion and good figure, rather fat than thin; he has on his face signs of

smallpox'. Identify the king from the options given below .

- (A) Krishnadeva Raya
- (B) Ram Raya
- (C) Devaraya II
- (D) Devaraya I

Modern Indian History

[Struggle for Swaraj (1925-1939) (Simon Commission, Lahore Session, Gandhi Irwin Pact, etc.)]

54. Inspired by the Dandi March by Mahatma Gandhi, in Tamilnadu, C Rajagopalachari led a salt march from :

- (A) Tirunelveli to Nagercoil
- (B) Kanchipuram to Mahabalipuram
- (C) Trichinopoly to Vedaranniyam on Tanjore coast
- (D) Chennai to Vellore

[Final Phase of Freedom Struggle (1940-1947) (August Resolution, Cripps Mission, Quit India Movement, Cabinet Mission Plan, Moutbatten Plan, etc.)]

55. Freedom Fighter Kanaklata Barua sacrificed her life while participating in :

- (A) Rowlatt Satyagraha
- (B) Non-Cooperation Movement
- (C) Civil Disobedience Movement
- (D) Quit India Movement

(Governor-General and Viceroy)

56. Who among the following was the last Governor-General of India before the the office was permanently abolished ?

- (A) Lord Moutbatten
- (B) Chakravarti Rajagopalachari
- (C) Lord Wavell
- (D) Lord Linlithgow

(Miscellaneous)

57. The first cotton mill in British India which began production in 1856 was set up by :

- (A) Ghanshyam Das Birla
- (B) Jamnalal Bajaj
- (C) Ambalal Sarabhai
- (D) C. N. Davar

58. Acharya Vinoba Bhave received the first donation of land under the Bhoodan Movement at :

- (A) Ramgarh (B) Garhwa
- (C) Hyderabad (D) Pochampally

59. Maize (makka) was introduced into India via :

- (A) America and England
- (B) Africa and Spain
- (C) France and Russia
- (D) Portugal and Italy

60. Which of the following is NOT a part of the five principles enshrined in the 'Panchsheel' agreement signed by India and China in 1954 ?
- (A) Mutual non-aggression
(B) Mutual non-interference
(C) Peaceful coexistence
(D) Cultural cooperation

Art and Culture

(UNESCO World Heritage Sites)

61. Consider the following statements :
- Kozhikode has been included in UNESCO's creative cities network as the 'City of Music'
 - Garba of Gujarat has been declared by UNESCO as an intangible cultural heritage
 - Gwalior has been included in UNESCO's creative cities network as the 'City of Literature'
- How many of the above statements is/are correct ?
- (A) None (B) 1
(C) 2 (D) 3

Indian Geography

(Drainage System of India)

62. Consider the following facts of the rivers of the Indus system :
- The Satluj originates in Tibet where it is known as Langchen Khambab
 - The Satluj is a classic example of an antecedent river
 - The Jhelum is the largest tributary of the Indus System
- Select the answer using the code given below :
- (A) 2 only (B) 3 only
(C) 1 and 2 (D) 2 and 3
63. Which of the following is/are east flowing rivers in India ?
- Palar
 - Periyar
 - Pennar
 - Kali nadi
- Select the answer using the code given below :
- (A) 1 only (B) 1 and 3
(C) 2 and 4 (D) 4 only
64. Which of the following tributaries is/are correctly matched with the Deccan Rivers ?
- | Tributary | River |
|------------|----------|
| 1. Bhavani | Krishna |
| 2. Kabini | Kaveri |
| 3. Manjra | Godavari |
| 4. Bhima | Mahanadi |
- Select the answer using the code given below :

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

65. Consider the following statements regarding River Brahmaputra :
- It rises in Tibet, near Lake Mansarovar
 - It takes a "U" turn near Namcha Barwa and enters India through a gorge
- Which of the statements given above is/are correct ?
- (A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2

(Climate of India)

66. Which statement is NOT correct with reference to Andaman and Nicobar Islands ?
- (A) Climate is humid, tropical coastal climate
(B) Maximum rainfall occurs between March and April
(C) Andaman and Nicobar islands are separated by 10 degree Channel which is 150 Km wide
(D) Islands are inhabited by Negrito tribes

(Soil of India)

67. Any land that is left fallow for more than five years is termed as :
- (A) Current fallow
(B) Fallow other than current fallow
(C) Culturable waste land
(D) Barren and waste land
68. Which one among the following statements with reference to the black cotton soils of India is NOT correct ?
- (A) The black cotton soils are also called 'Regur'
(B) They are highly moisture retentive
(C) They are rich in lime
(D) These soils have less clay factor and hence can support a wide variety of crops and vegetables

69. Which one of the following is found in appreciable amount in Laterite soil in India ?
- (A) Calcium (B) Phosphate
(C) Potash (D) Nitrogen

(Energy Resources in India)

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

List I (Hydroelectric Power Plant)	List II (State)
--	--------------------

- | | |
|---------------|----------------------|
| (a) Doyang | 1. Arunachal Pradesh |
| (b) Gomuti | 2. Assam |
| (c) Kapili | 3. Tripura |
| (d) Ranganadi | 4. Nagaland |

Code :

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

(Miscellaneous: Mountains, passes, plateaus, lakes, islands, etc. in India)

71. Which of the following pairs of Himalayan Passes and the Ranges in which they are located is/are correctly matched ?
- Zoji La – Great Himalayas
 - Banihal Pass – Pir Panjal range
 - Photu La – Ladakh Range
 - Khardung La – Karakoram Range

Select the answer using the code given below :

- (A) 2 only (B) 4
(C) 1 and 2 only (D) 1, 2 and 3

World Geography

(Universe and Solar System)

72. Which one of the following is correct ?
- (A) Pyroxene is commonly found in meteorites
(B) Amphiboles form about 20 % of the Earth's crust
(C) Quartz is soluble in water
(D) The word 'sedimentary' is derived from the Latin word kelimentum

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

73. Where is the Coriolis Effect the largest ?
- (A) At the Equator
(B) At the Tropic of Capricorn and Tropic of Cancer
(C) At the North Pole
(D) At 45 degree latitude in each hemisphere
74. In which among the following states in India, the Sun rays are never perpendicular ?

1. Bihar 2. Chhattisgarh
3. Manipur 4. Rajasthan
Select the answer using the code given below :
- (A) 1 and 2 (B) 1 and 3
(C) 2 and 3 (D) 2 and 4

(Internal Structure of the earth)

75. The lowest part of most basins is occupied by a landform called playa. Which category of landform formation does it represent ?
- (A) Fluvial landforms
(B) Arid landforms
(C) Glacial landforms
(D) Periglacial landforms

(Rocks)

76. Which one of the following is an example of both an igneous as well as a metamorphic rock ?
- (A) Gabbro (B) Geysirite
(C) Gneissoid (D) Granite

[Atmosphere (air pressure, humidity)]

77. Which one among the following processes is NOT part of chemical weathering ?
- (A) Solution (B) Hydration
(C) Reduction (D) Thawing

(Atmospheric Circulations)

78. Which one among the following local winds is NOT related to Mediterranean Sea ?
- (A) Harmattan (B) Khamsin
(C) Sirocco (D) Mistral

[World's oceans (salinity, tides, major troughs, etc.)]

79. Which one among the following is a landlocked water body ?
- (A) Mediterranean Sea
(B) Black Sea
(C) Red Sea
(D) Caspian Sea

(Ocean currents)

80. Which one among the following statements with reference to Benguela is NOT correct ?
- (A) It influences the climate of the West coast of North Africa
(B) It is a cold current
(C) Its direction is from South to North
(D) It flows in the Atlantic Ocean

(Tsunami, cyclone and other natural disasters)

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

**List-I List-II
(Tropical (Country)
Cyclone)**

- (a) Hurricanes 1. China
(b) Willy Willy 2. Philippines
(c) Baguio 3. Australia
(d) Typhoons 4. USA

Code :

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

Indian Polity and Constitution

(Parts, Articles, and Schedules of the Indian constitution)

82. In which Schedule of the Constitution of India, provisions as to disqualification on grounds of defection are given ?
- (A) Ninth Schedule
(B) Tenth Schedule
(C) Eleventh Schedule
(D) Sixth Schedule
83. Which of the following statements with regard to Article 19 (1) of the Constitution of India is/are correct ?
1. Freedoms under this Article are not absolute.
2. Reasonable restrictions can be imposed on the exercise of freedoms under this Article.

Select the answer using the code given below :

- (A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2

(Attorney General and CAG)

84. Consider the following statements :
1. The duties of the Attorney General of India are to give advice to the Government of India upon such legal matters, and to perform such other duties of a legal character, as may from time to time be referred to or assigned to him by the President of India.
2. The Solicitor General of India is the secondary Law Officer of the country, who assists the Attorney General, and is himself assisted by several Additional Solicitor Generals of India.

Which of the statements given above is/are correct ?

- (A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2

[Parliament (Parliamentary Committees, Forums and Groups)]

85. Which of the following Committees does NOT consist of Members from the Upper House of the Parliament ?
1. Public Accounts Committee
2. Estimates Committee
3. Committee on Public Undertakings
- Select the answer using the code given below :
- (A) 1 and 2 (B) 1 and 3
(C) 2 only (D) 3 only

86. In the passing of a Money Bill, the Rajya Sabha has limited powers in that it shall return the Bill, with or without within the any recommendation, stipulated time of :
- (A) 12 days (B) 21 days
(C) 14 days (D) 30 days

(Union Territories)

87. Consider the following statements about the Linguistic Reorganization of the States :
1. Gandhiji, in 1948, had argued for the reorganization of provinces on a linguistic basis.
2. The Constituent Assembly recommended it to be incorporated in the Constitution of India.

Which of the statements given above is/are correct ?

- (A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2

Indian Economy

(Growth, Development and Happiness)

88. "Not me, but you" is the motto of which one of the following youth organizations/schemes ?
- (A) Rashtriya Yuva Sashaktikaran Karyakram
(B) National Service Scheme (NSS)
(C) National Young Leaders Programme
(D) National Discipline Scheme (NDS)
89. Which of the following statements about 'ULLAS' scheme is/are NOT correct ?
1. It's a Centrally Sponsored scheme which aims at securing childhood for street children.

2. It's a scheme aligned with National Education Policy-2020 which aims at empowering adults aged 15 or above who could not get due schooling.

Select the answer using the code given below :

- (A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2

(Economic Planning and Reforms)

90. Which among the following is/are the objective (s) of setting up of Planning Commission in the 1950s in India ?

- To increase production and offering opportunities to all for employment
- To make assessment of all resources of the country

Select the answer using the code given below :

- (A) 1 only
(B) 2 only
(C) Both 1 and 2
(D) Neither 1 nor 2

91. Which among the following statements with regard to Five Year Plans in India is/are correct ?

- The First and Ninth five year plans accorded high priority to agriculture.
- The Third Plan was based on the Harrod-Domar Model.
- Seventh Plan focused on food, work and productivity.
- The Ninth five year plan emphasized on massive investments in public sector.

Select the answer using the code given below :

- (A) 1 only (B) 1 and 3
(C) 3 and 4 (D) 1, 2 and 4

92. Before the inception of the First Five year Plan, which among the following Plans were initiated in India ?

- Bombay Plan
- Peoples Plan
- Sarvodaya Plan
- Gandhian Plan

Select the answer using the code given below :

- (A) 1 and 2 only (B) 1 and 3 only
(C) 3 and 4 only (D) 1, 2, 3 and 4

(Miscellaneous)

93. Which one of the following statements about the Industrial Revolution is correct?

- (A) Thomas Savery invented astrolabe Newcomen
(B) Thomas chemical dyes invented
(C) James Watt's invention converted the steam engine from being a mere pump into one which would provide energy to power machines in factories
(D) Mathew Boulton discovered the technique of refining gold of impurities

94. Consider the following statements :

- India has secured 10th rank in International Shipment category in World Bank's Logistics Performance Index Report-2023
- Global Maritime India Summit-2023 was held in Vishakhapatnam
- ' Maritime Amrit Kaal Vision 2047 ' was launched during Global Maritime India Summit-2023

How many of the above statements is/ are correct ?

- (A) None (B) 1
(C) 2 (D) 3

(Physics)

(Force and Motion)

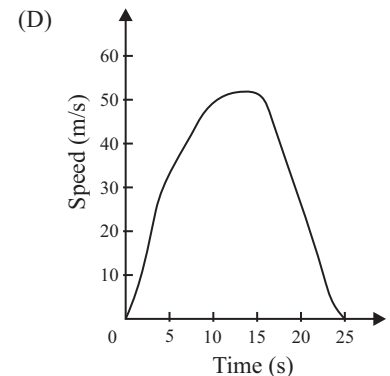
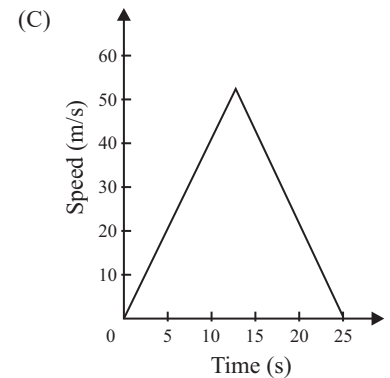
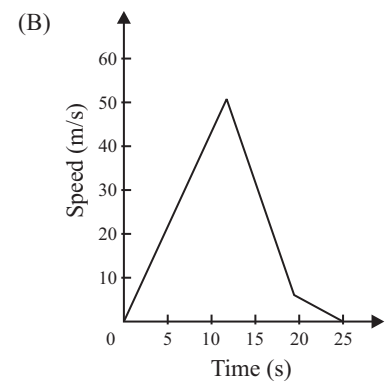
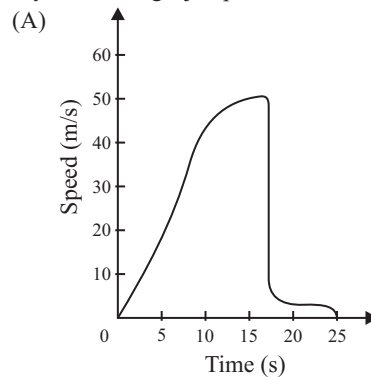
95. Which of the following statements give characteristics of contact forces ?

- It appears between an object when it is in contact with some other object
- It satisfies the third law of motion
- It may appear between a pair of solid and fluid

Select the answer using the code given below :

- (A) 1 and 3 only
(B) 2 and 3 only
(C) 1 and 2 only
(D) 1, 2 and 3

96. Which one among the following diagrams may correctly represent the motion of a skydiver during a jump ?



97. A vehicle starts moving along a straight line path from rest. In first t seconds it moves with an acceleration of 2 m/s^2 and then in next 10 seconds it moves with an acceleration of 5 m/s^2 . The total distance travelled by the vehicle is 550 m. The value of time is :

- (A) 10 s (B) 13 s
(C) 20 s (D) 25 s

98. Starting from rest a vehicle accelerates at the rate of 2 m/s^2 towards east for 10 s. It then stops suddenly. It then accelerates again at a rate of $4\sqrt{2} \text{ m/s}^2$ for next 10s towards south and then again comes to rest. The net displacement of the vehicle from the starting point is

- (A) 100 m (B) 200 m
(C) 300 m (D) 400 m

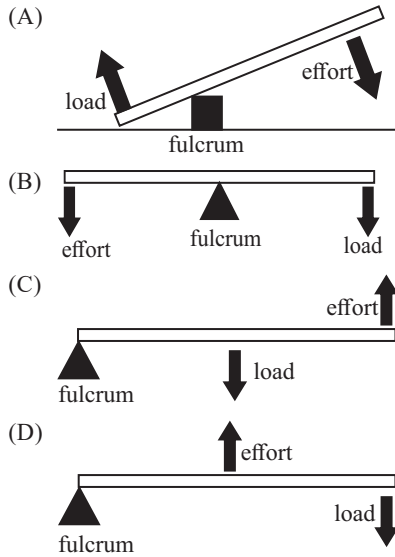
99. A block of mass 2.0 kg slides on a rough horizontal plane surface. Let the speed of the block at a particular instant is 10 m/s.

It comes to rest after traveling a distance of 20 m. Which one of the following could be the magnitude of the frictional force ?

- (A) 10 N (B) 20 N
(C) 40 N (D) 50 N

(Work, Power and Energy)

100. Which one of the following sketches correctly describes a lever of second class ?



(Gravitational Force and Acceleration)

101. An astronaut whose weight on the Earth is 600 N experiences weightlessness on International Space Station orbiting around the Earth. It means that :

- (A) acceleration of the astronaut is zero
(B) normal reaction of the space-station floor on the astronaut is zero
(C) gravitational pull of earth on the astronaut is zero
(D) space station applies a centrifugal force on the astronaut

102. A pumpkin weighs 7.5 N. On sub-merging it completely in water, L of water gets displaced. The acceleration due to gravity at the place where the pumpkin was weighed is 10 m/s^2 .

Which one of the following is the correct value of the density of the pumpkin ?

- (A) 10 kg/m^3
(B) 100 kg/m^3
(C) 1000 kg/m^3
(D) 10000 kg/m^3

103. The masses of two planets are in the ratio of 1 : 7. The ratio between their diameters is 2 : 1. The ratio of forces which they exert on each other is :

- (A) 1 : 7 (B) 7 : 1
(C) 1 : 1 (D) 2 : 1

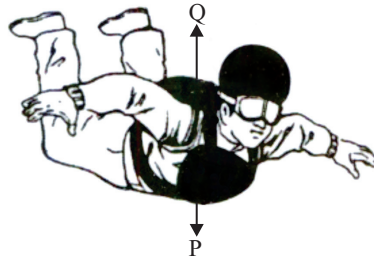
104. A car weighs 1000 kg. It is moving with a uniform velocity of 72 km/h towards a straight road. The driver suddenly presses the brakes. The car stops in 0.2s. The retarding force applied on the car to stop it is :

- (A) 100 N (B) 1000 N
(C) 10 kN (D) 100 kN

105. There is a ball of mass 320 g. It has 625J potential energy when released freely from a height. The speed with which it will hit the ground is :

- (A) 62.5 m/s
(B) 2.0 m/s
(C) 50 m/s
(D) 40 m/s

106. The figure given below shows the direction of the two forces P and Q acting on a skydiver :



Which one among the following statements is correct about the two forces?

- (A) Force P is caused by the gravity and force Q is caused by the friction
(B) When the force P is bigger than the force Q, the speed of the skydiver remains the same
(C) After the parachute opens, force P remains the same while force Q increases
(D) After the parachute opens, force P decreases while force Q increases

(Heat and Thermodynamics)

107. Shown in the figure are two hollow cubes C_1 and C_2 of negligible mass partially filled (depicted by darkened area) with liquids of densities ρ_1 and ρ_2 , respectively, floating in water (density ρ_w). The relationship between ρ_1 , ρ_2 and ρ_w is :



- (A) $\rho_2 < \rho_w < \rho_1$
(B) $\rho_2 < \rho_1 < \rho_w$
(C) $\rho_1 < \rho_2 < \rho_w$
(D) $\rho_1 < \rho_w < \rho_2$

108. Which one of the following statements best defines the concept of heat ?

- (A) The transformation of energy from one form to another
(B) The conversion of energy into mass and vice-versa due to temperature difference
(C) The transfer of energy due to temperature difference
(D) The change in volume of a substance with temperature

109. Given below are the four cases in which certain heat transfer is taking place :

- Ice is melting in a glass full of water
- Water is boiling in an open container
- A metal rod is heated in a furnace
- A cup of coffee is allowed to cool on a table

In which of the above cases, the Newton's Law of Cooling is applicable ?

- (A) 1 only (B) 4 only
(C) 1 and 4 only (D) 1, 2 and 3

(Electric Current)

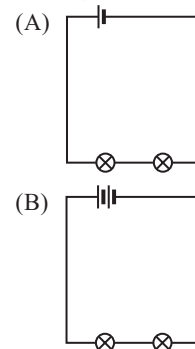
110. Two resistances of 5.0Ω and 7.0Ω are connected in series and the combination is connected in parallel with a resistance of 36.0Ω . The equivalent resistance of the combination of three resistors is :

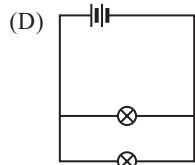
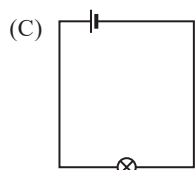
- (A) 24.0Ω (B) 12.0Ω
(C) 9.0Ω (D) 6.0Ω

111. Lightning is due to :

- (A) The flow of charges between different parts of the cloud
(B) The short-circuiting of charges between the upper and lower surfaces of the cloud
(C) The collection of positively charged particles on the base and collection of negatively charged particles at the top of the cloud
(D) The induction of positive charge on the ground below the negative charge at the base of the cloud

112. In which one among the following situations, the bulb \otimes would glow the most? (Consider all batteries are the same)



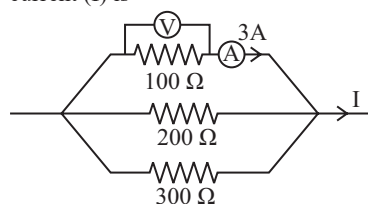


113. An incandescent electric bulb converts 20 % of its power consumption into light, and the remaining power is dissipated as heat. The bulb's filament has a resistance of 200 Ω and 2 A current flows through it. If the bulb remains ON for 10 h and the rate of electricity charge is ₹ 5/unit, then which among the following is the correct amount for the money spent on producing light ?
 (A) ₹ 5 (B) ₹ 6
 (C) ₹ 7 (D) ₹ 8

114. The AC mains domestic supply current in India changes direction in every :
 (A) 50 s (B) $\frac{1}{50}$ s
 (C) 100 s (D) $\frac{1}{100}$ s

(Magnetism)

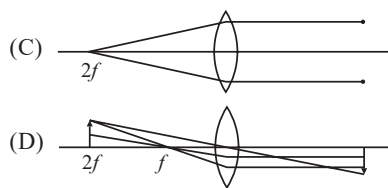
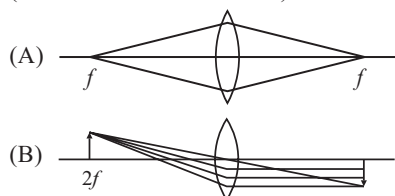
115. For an electric circuit given below, the correct combination of voltage (V) and current (I) is



- (A) V = 900 V ; I = 18 A
 (B) V = 300 V ; I = 5.5 A
 (C) V = 600 V ; I = 1 A
 (D) V = 300 V ; I = 2 A

(Light)

116. Which one among the following figures correctly represents the ray diagram? (Consider the lens to be thin)



117. A point object is placed at the centre of curvature of a spherical concave mirror. Which one among the following would be the correct location of image formed ?
 (A) At infinity
 (B) At the centre of curvature
 (C) At the focal point
 (D) Between the focal point and the centre of curvature
118. Which one among the following is correct for a person suffering from myopia ?
 (A) The person can see near objects clearly
 (B) The person can see distant objects clearly
 (C) The person cannot distinguish colours
 (D) The person can neither see near objects nor distant objects clearly
119. Which one among the following is the correct focal length of a combination of lenses of power 2.5 D and 2.0 D ?
 (A) + 0.5 m (B) - 0.5 m
 (C) + 2.0 m (D) - 2.0 m

(Chemistry)

(Matter and its states)

120. The intermixing of particles of two different types of matter on their own is called :
 (A) Osmosis
 (B) Brownian motion
 (C) Diffusion
 (D) Conductance

(Physical and Chemical Changes)

121. The chemical reaction :
 $2\text{AgCl} (s) \rightarrow 2\text{Ag} (s) + \text{Cl}_2 (g)$
 takes place
 (A) in dark
 (B) in sunlight
 (C) on heating
 (D) under high pressure
122. Which one among the following is an example of an oxidation reaction ?
 (A) Freezing of water
 (B) Dissolving sugar in water
 (C) Rusting of iron
 (D) Boiling of petro

123. Which one among the following is an example of chemical change?
 (A) Sublimation of camphor
 (B) Melting of ice
 (C) Heating of an iron rod
 (D) Mixing of NaOH and HCl

(Classification of Elements)

124. Which one among the following elements are polyatomic ?
 (A) Phosphorus (B) Sulphur
 (C) Chlorine (D) Aluminium
125. Which of the following anions has a valency of -3 ?
 (A) Nitride (B) Nitrate
 (C) Sulphide (D) Sulphate
126. The mass of 0.5 mole of N_2 gas is :
 (A) 7 g (B) 14 g
 (C) 21 g (D) 28 g
127. Which one among the following has valency of 3 ?
 (A) Carbon (B) Oxygen
 (C) Nitrogen (D) Sodium

(Minerals, Ores and Alloys)

128. The elemental composition of diamond is :
 (A) Carbon and Hydrogen
 (B) Carbon and Oxygen
 (C) Pure Carbon
 (D) Pure Silicon

(Chemical Bonding and Molecular Structure)

129. What is the maximum number of electrons that can occupy the first shell of an atom ?
 (A) 2 (B) 4
 (C) 8 (D) 16

(Man Made Substances)

130. Which one among the following fertilizers is a source of nitrogen ?
 (A) Superphosphate
 (B) Potassium sulfate
 (C) Bone meal
 (D) Urea

(Miscellaneous)

131. Which one among the following separation techniques is used for blood tests in diagnostic laboratories ?
 (A) Filtration
 (B) Chromatography
 (C) Centrifugation
 (D) Crystallization
132. At which temperature does liquid water show maximum density ?
 (A) 299 K (B) 277 K
 (C) 285 K (D) 373 K

133. For Aluminium (Al) (atomic number : 13, mass number : 27), which one among the following statements is NOT correct ?
- (A) Number of electrons present in Al is 13
 (B) Number of protons present in Al is 13
 (C) Number of neutrons present in Al is 14
 (D) The valency of Al is 2

(Biology)

(Classification of Organisms)

134. Organisms of which of the following phylum are called sponges ?
- (A) Coelenterata
 (B) Platyhelminthes
 (C) Porifera
 (D) Echinodermata

(Cell and Tissue)

135. Which one of the following statements about lysosomes is NOT correct ?
- (A) They are waste disposal system of the cell
 (B) They breakdown all inorganic materials
 (C) These are also referred to as "suicidal bags"
 (D) Lysosomes stop entry of foreign materials
136. Which of the following two cell organelles have their own genetic material ?
- (A) Endoplasmic reticulum and plastids
 (B) Endoplasmic reticulum and mitochondria
 (C) Mitochondria and plastids
 (D) Lysosomes and Golgi apparatus
137. Which one among the following tissues help to connect two bones ?
- (A) Tendons (B) Ligaments
 (C) Areolar tissue (D) Cartilage

138. Which one among the following is the source of energy in cells ?
- (A) ADP (B) ATP
 (C) AMP (D) NAD

(Plant Physiology)

139. In which one among the following the vegetative propagation takes place through Eye Buds ?

- (A) Potato (B) Ginger
 (C) Onion (D) Sugarcane

(Human Body Systems)

140. Which one among the following is commonly used as an 'anti-skinning agent' in paints ?
- (A) Gelatin
 (B) N-methyl pyrrolidone
 (C) Pyridine
 (D) Polyhydroxy phenol
141. In which part or organ of human body cartilage is NOT found ?
- (A) Nose (B) Trachea
 (C) Bronchiole (D) Knee joint
142. Which part of nephron of the human kidney is responsible for filtration of blood for excretion ?
- (A) Collecting duct
 (B) Renal vein
 (C) Ureter
 (D) Bowman's capsule

(Nutrition and Their Deficiency Diseases)

143. Which one among the following diseases is caused due to deficiency of Vitamin D in humans ?
- (A) Beriberi (B) Scurvy
 (C) Rickets (D) Pneumonia
144. Which one among the following combinations most appropriately represent the components of balanced diet ?
- (A) Carbohydrate, vitamins, proteins, fat, minerals, fibres and water
 (B) Carbohydrate, vitamins, proteins, fat and minerals
 (C) Carbohydrate, vitamins, proteins, minerals and water
 (D) Vitamins, proteins, fat, minerals, fibres and water

Science and Technology

(Defence Technology)

145. Consider the following statements :
1. First Indian Military Heritage festival was inaugurated in October 2023 in Pune.
 2. First Green Hydrogen Fuel Cell Bus was flagged off in India in Bangalore.

3. South Africa chaired the 15th BRICS Summit held in 2023.
4. Viksit Bharat Sankalp Yatra was flagged off in 2023 2023 from Jharkhand.

How many of the above statements is/are correct ?

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

146. Which one among the following Joint Military Exercises was NOT conducted between India and USA ?
- (A) Yudhabhyas (B) Vajra Prahar
 (C) Malabar (D) Varuna

(Miscellaneous)

147. In January 2024, India has entered into a bilateral agreement through which it will provide grant assistance to a country to construct a 20 feet Bailey bridge. Identify the country
- (A) Nepal (B) Bangladesh
 (C) Bhutan (D) Myanmar

(GK Miscellaneous)

(UN and other organisations)

148. ASEAN-India Millet Festival-2023, organized by Indian Mission to ASEAN, was held in which one of the following countries ?
- (A) India (B) Indonesia
 (C) Malaysia (D) Thailand
149. Which one of the following statements is NOT correct about NATO ?
- (A) It was formed out of the signing of the Washington Treaty
 (B) Russia is not a member of this organization
 (C) It derives its authority from the UN Charter
 (D) Finland is its latest member

(Sports and their related awards)

150. "Fitness ka dose, aadha ghanta roz" campaign, is associated with :
- (A) Khelo India
 (B) Fit India Programme
 (C) Mera Yuva Bharat
 (D) Healthy Heart Programme

Solutions

1. (D) When the given part 'Preeti suggests' is combined with option (D), the meaningful sentence will be as follows:
 Preeti suggests that I ask your advice.

The word Suggest denotes that the tense of the verb is present and its meaning is to mention a plan or an idea that you have for somebody to discuss or consider.

2. (C) When the given part 'We saw' is combined with option (C), the meaningful sentence will be as follows:
 We saw the oldest monument in the city.

- The word 'saw' is the past tense form of 'see' which means to become conscious of something, using your eyes, to use the power of sight and the word 'oldest' is an adjective of superlative degree.
3. (A) When the given part 'Since you have been touring all day' is combined with option (A), the meaningful sentence will be as follows:
Since you have been touring all day you must be tired.
4. (C) When the given part 'His condition is serious', but is combined with option (A), the meaningful sentence will be as follows:
his condition is serious, but it could be worse.
The word Worse is the comparative degree of bad which means more unpleasant, difficult, or severe than before or than something else that is also bad, *e.g.*
The conditions they're living in are worse than we thought.
5. (B) When the given part 'I hope the bus comes soon because' is combined with option (B), the meaningful sentence will be as follows:
I hope the bus comes soon because we have been waiting for half an hour.
[because is a subordinate conjunction and in the above sentence subordinate clause denotes that the above sentence is of Present perfect continuous tense]
6. (A) When the given part 'Someone' is combined with option (A), the meaningful sentence will be as follows:
Someone has spilt juice on the sofa. [Subject + has + verb III form + Object] shows that the sentence is in present perfect tense.
7. (A) When the given part 'What would you do' is combined with option (A), the meaningful sentence will be as follows:
What would you do if you found your lost toy?
The above sentence is in Improbable or the Present Conditional. The conditional clause 'if you found your lost toy', is in past simple while the main clause is in present tense with the modal and base verb in the result clause. This form is used to talk about a hypothetical situation that cannot happen or is unlikely to happen.
8. (B) When the given part 'If I were you' is combined with option (B), the meaningful sentence will be as follows:
If I were you I wouldn't buy that dress.
9. (A) When the given part 'I wish' is combined with option (A), the meaningful sentence will be as follows:
I wish I could help you.
10. (D) When the given part 'The effort of the security services have not been quite' is combined with option (D), the meaningful sentence will be as follows:
The effort of the security services have not been quite upto the mark. If something is up to the mark, it is good enough. Synonyms of upto mark satisfactory, acceptable, good enough, adequate.
Example:
The workers get rid of those whose work is not up to the mark.
11. (C) The word 'Warned' is the nearest in meaning to the underlined word 'Cautioned'.
Cautioned: say something as a warning
Reasoned: based on logic or good sense
Admitted: agreed that something is true
Refused. to say that you will not do or accept something or indicate or show that one is not willing to do something
So, option (C) is correct.
12. (A) The word 'Dull' is the nearest in meaning to the underlined word 'Monotonous'.
Monotonous: boring because of never changing
Happy: feeling or showing pleasure or contentment
Disturbed: not thinking or behaving normally because of mental or emotional problems
Enthusiastic: a feeling of energetic interest in a particular subject or activity and an eagerness to be involved in it.
So, option (A) is correct.
13. (B) The word 'Baffling' is the nearest in meaning to the underlined word 'Elusive'.
Elusive : not easy to catch, find, or remember
- Paramount : more important than anything else *i.e.* most important
Truthful : honest and not containing or telling any lies.
So, option (B) is correct.
14. (A) The word 'Huge' is the nearest in meaning to the underlined word 'Mammoth'.
Mammoth : very big, extremely large
Quick : happening or done with great speed, or lasting only a short time
Intelligent : showing intelligence, or able to learn and understand things easily.
So, option (A) is correct.
15. (B) The word 'Tarnished' is the nearest in meaning to the underlined word 'Tainted'.
Tarnished: if metal is tarnished it has become less bright or a different colour, made to seem less good or respected
Restored: to bring back into use something that has been absent for a period of time.
Assigned: give a particular job or piece of work to someone.
So, option (B) is correct.
16. (D) The word 'Perfect' is opposite in meaning to the underlined word 'Fallible'.
Fallible: capable of making mistakes or being wrong, able or likely to make mistakes.
Perfect: complete and correct in every way, of the best possible type or without fault.
Frail: weak or unhealthy, or easily damaged, broken, or harmed.
Erring: to make a mistake or to do something wrong.
Mortal: of living things, especially people) unable to continue living forever; having to die.
So, option (D) is correct.
17. (C) The word 'Precise' is opposite in meaning to the underlined word 'Vague'.
Vague: not clearly expressed, known, described, or decided.
Precise: exact and accurate.
Identical: exactly the same, or very similar.
Obscure: not known to many people
Imperceptible: unable to be noticed or felt because of being very slight
So, option (C) is correct.
18. (B) The word 'Conscientiously' is opposite in meaning to the underlined word 'Carelessly'.

- Conscientiously : in a careful way that involves a lot of effort.
 Carelessly : without taking or showing enough care and attention.
 Assiduously : in a way that involves great care and attention to detail.
 Painstakingly : in a way that shows you have taken a lot of care or made a lot of effort.
 Scrupulously : in a way that is careful to do the morally right thing.
 So, option (B) is correct.
19. (A) The word 'Essential' is opposite in meaning to the underlined word 'Incidental'.
 Incidental: happening as part of something more important.
 Essential: necessary or needed.
 Adventitious: not expected or plan.
 Serendipitous: happening or found by chance.
 Subsidiary: connected with something but less important than it.
 So, option (A) is correct.
20. (A) The word 'Disdainful' is opposite in meaning to the underlined word 'Reverential'.
 Reverential: treat someone or something with a lot of respect
 Disdainful: someone does not like someone or something and thinks that they do not deserve interest or respect.
 Derisive: expressing or causing contemptuous ridicule or scorn.
 Supercilious: behaving as if you are better than other people, and that their opinions, beliefs, or ideas are not important.
 Insolent: rude and not showing respect.
 So, option (A) is correct.
21. (A) A white lie (idiom) means a small or unimportant lie that is told to avoid hurting someone's feelings or to avoid trouble. So option (A) is correct.
22. (A) Bad blood (idiom) means a feeling of ill will, anger, or hostility between people, or feelings of hate between people because of arguments in the past. So option (A) is correct.
23. (C) Count your blessings (idiom) means to be grateful for the good things in your life, often to stop yourself becoming too unhappy about the bad things. So option (C) is correct.
24. (B) Have the last laugh (idiom) means to succeed when others thought you would not, become successful at something. So option (B) is correct.
25. (C) Sit on the Fence (idiom) means to remain neutral, to refuse to take sides in a dispute, or to delay making a decision. So option (C) is correct.
26. (B) The correct sequence is 'RPSQ'.
 The Right to Education Act (RTE) mandates good quality elementary education conforming to the standards and norms specified in the Act as a fundamental right of all children.
27. (A) The correct sequence is 'QRSP'.
 Music not only relieves the burden on children and the young but also the conflicts and disputes in their mind.
28. (A) The correct sequence is 'QRPS'.
 Antarctica is a continent nearly twice as large as Australia but it is virtually covered by a dome-shaped ice sheet nearly 2 miles thick.
29. (D) The correct sequence is 'QRPS'.
 The G20 was formed in 1999, as a forum of Finance Ministers and Central Bank Governors, in recognition of the fact that there was a major shift in the global economic weight from the advanced economics.
30. (A) The correct sequence is 'SRPQ'.
 India is the third largest fish producing and the second largest aquaculture nation in the world and India's products are exported to many nations.
31. (A) The underlined word 'Adders' belongs to a Noun. A noun is a word that represents a person, thing, concept, or place, e.g. dog, June, month, importance, teacher, grammar etc.
32. (A) The underlined word 'takes-off' belongs to a Noun. Take-off means a departure, especially of airplanes and the moment when an aircraft leaves the ground and begins to fly.
33. (C) The underlined word 'since' belongs to a conjunction. A conjunction is a word that is used to connect words, phrases, and clauses. There are many conjunctions in the English language, but some common ones include and, or, but, because, for, if, and when.
34. (B) The underlined word 'now' belongs to an adverb. An adverb is a word that can modify or describe a verb, adjective, another adverb, or entire sentence. Adverbs can be used to show manner (how something happens), degree (to what extent), place (where), and time (when).
35. (C) The underlined word 'that' belongs to the determiner. A determiner is a word that modifies, describes, or introduces a noun. Determiners can be used to clarify what a noun refers to (e.g., **your car**) and to indicate quantity or number (e.g., **four wheels**) and **that cup**.
36. (B) 'dependent' is the most appropriate word to fill in the blank space. The word biota is derived from biotic and it means all the plant and animal life of a particular region.
37. (B) 'both' is the most appropriate word to fill in the blank space. When both is used as a conjunction, it is followed by and to form a correlative conjunction and it relates two things.
38. (D) 'are continuously subjected' is the most appropriate word to fill in the blank space. Subject to something means likely to be affected by something.
39. (C) 'although' is the most appropriate word to fill in the blank space. The word 'Although' means despite the fact that. Though and although have the same meaning but though is used only at the end of the sentence.
40. (B) 'tolerance' is the most appropriate word to fill in the blank space. Tolerance means the state or quality of being tolerant.
41. (A) 'and' is the most appropriate word to fill in the blank space. 'And' used to join two words, phrases, parts of sentences, or related statements together.
42. (C) 'periods' is the most appropriate word to fill in the blank space. Period means a fixed time during the life of a person or in history. Era is a period of time in history that is special for some reason. Epoch is a long period of time, esp. one in which there are new advances and great change.
43. (C) 'are selected' is the most appropriate word to fill in the blank space.
44. (C) 'that' is the most appropriate word to fill in the blank space. That is a relative pronoun. It's used to introduce defining relative clauses and to refer to people, animals, or things.
45. (B) 'irrigated' is the most appropriate word to fill in the blank space. Irrigate means to supply land with water so that crops and plants will grow .
46. (A) On the perusal of the given passage it can be said that unwelcome form of the globalization is globalization of diseases.

47. (A) According to the passage, globalization of health has become imperative due to the globalization of diseases.
48. (D) According to the passage, resurgent diseases are affected by medical practices, overuse of antibiotics and emergence of new strains. So, option (D) is correct.
49. (A) According to the passage, many new diseases are emerging due to change in land use because humans are coming in contact with unfamiliar viruses. See the lines. Many of the new diseases are clearly linked to to humans.
50. (B) The word Epidemiology used in the passage means the scientific study of diseases and how they are found, spread, and controlled in groups of people. So, option (B) is correct.
51. (C) The capital of the ancient Mahajanapada of Gandhara was Taxila, while that of Kashi was Varanasi, Kuru's was Indraprastha, and Avanti's was Ujjain.
The Buddhist scripture Anguttara Nikaya and the Jain scripture Bhagavati Sutra mention 16 Mahajanapadas.
52. (C) According to the claims of the Vijayanagara rulers, they ruled on behalf of Lord Virupaksha. The Vijayanagara rulers followed the Shaiva tradition. It is worth remembering that the Virupaksha temple in Hampi was built by Devaraya II.
53. (A) Domingo Paes has described King Krishnadev Raya in these words : "Muscular build, fair complexion, and a good voice. Somewhat fat, with small pox marks on his face." Domingo Paes has also given a delightful description of the beauty and splendor of the capital of King Krishnadeva Raya, according to which the city can be compared to any of the best cities in the world, and its grandeur is incomparable.
54. (C) Inspired by Mahatma Gandhi's Dandi March, C. Rajagopalachari led a salt march from Tiruchirapalli (Trichinopoly) to Vedaranyam on the Tanjore coast. This was a significant phase of the Civil Disobedience Movement, which C. Rajagopalachari attempted to give an all-India character. C. Rajagopalachari was a philosopher and the last Governor-General of India.
55. (D) Freedom fighter Kanaklata Barua sacrificed her life while participating in the Quit India Movement. Kanaklata Barua was leading a procession at Gohpur's Barangabari when she was shot by the British police, resulting in her death at the age of just 18. She is also known as Veerbaala in Indian history.
56. (B) Chakravarti Rajagopalachari was the last Governor-General of India before the end of British rule. Despite the country gaining independence on August 15, 1947, Lord Mountbatten was retained as the Governor-General until June 21, 1948, to maintain stability. Following this, on June 21, 1948, Rajagopalachari took charge as the first Indian Governor-General of India and remained in office until January 26, 1950, when the Constitution of the Republic of India came into effect.
57. (D) The first cotton mill in British India was established in 1854 by cowasjee Nanabhoy and started production in 1856 in Mumbai (Bombay). The foundation for this mill was laid in 1853. With the establishment of this mill, the use of automatic machines in weaving cloth began, leading to increased production in less time.
58. (D) Under the Bhoodan Movement, Acharya Vinoba Bhave received the first land donation in Pochampally village, which is currently located in the state of Telangana. This movement was initiated by Acharya Vinoba Bhave in 1951, and the first person to donate land was Vedire Ramachandra Reddy, the landlord of Pochampally.
59. (D) Maize was introduced to India from Portugal via the route of Italy. Although there is no consensus on the exact timing, most believe that it was brought from America to India during the Portuguese explorations in the 16th century.
60. (D) In the Panchsheel Agreement signed between India and China in 1954, the five principles that were NOT included are : Mutual Non-Interference, Mutual Non-Aggression, Peaceful Coexistence. However, the agreement did include respect for each other's sovereignty and territorial integrity, as well as mutual benefit. The agreement was signed by the then Prime Minister of India, Jawaharlal Nehru and the Prime Minister of China, Zhou Enlai.
61. (C) Only statement 2 is correct. UNESCO has recognized Gujarat's Garba Dance as an Intangible Cultural Heritage of humanity, while Kozhikode has been included in the UNESCO Creative Cities Network as a City of Literature. Gwalior has been included in the UNESCO Creative Cities Network as a City of Music.
62. (C) In the given statements about the rivers of the Indus River system, only 1 and 2 are correct. The Satluj River is an excellent example of an antecedent river, originating in Tibet. The statement that Jhelum is the largest tributary of the Indus River system is incorrect, because the largest tributary of the Indus River is the Chenab River.
63. (D) Among the given rivers, only the Kali River flows eastward. The other rivers mentioned, namely Pamba, Periyar, Pennar and the remaining ones, flow westward.
64. (B) In the given rivers, only Kabini-Kaveri and Manjira-Godavari are correctly matched. While Bhavani is a tributary of Kaveri and Krishna is a tributary of Kaveri.
65. (C) Both the statements are correct in the context of the Brahmaputra River. That is, it originates from Lake Mansarovar in Tibet here it is also known as Tsangpo, and it enters India through the Great Bend (Gorge) near Namcha Barwa, where it is known as Dihang. And where it enters Assam through Arunachal Pradesh, it is known as Siang.
66. (B) In the context of the Andaman and Nicobar Islands, the statement that the maximum rainfall occurs in March and April is incorrect because the maximum rainfall in the Andaman and Nicobar Islands occurs during June-July. The other statement that the Andaman and Nicobar Islands have a tropical coastal climate, and the Andaman and Nicobar Islands are separated by the 10° channel and the Negrito tribe has developed in the islands is correct.
67. (A) Land that has been left fallow for five or more years is called current fallow. This type of land is usually kept uncultivated either to create pasture or for some other purpose. It can be used for agricultural purposes at any time.

68. (D) In the context of black cotton soil (regur), the statement that clay content is low in the soil and therefore a variety of crops are grown in it is incorrect. Because sufficient clay is found in this soil. All other statements related to agriculture in this soil are correct.
69. (A) Laterite soil in Southern India contains adequate amounts of Calcium, although the exact composition of laterite soil depends on its parent rock. Still, minerals like magnesium are also found in it. This soil is considered suitable for the cultivation of plantation crops like tea, coffee, spices, and cashews in warm and humid climates.
70. (A) The correct matching of List I with List II is as follows :
- | | | |
|---------------|---|-------------------|
| List I | – | List II |
| Doyang | – | Nagaland |
| Gomuti | – | Tripura |
| Kapili | – | Assam |
| Ranganadi | – | Arunachal Pradesh |
71. (C) Himalayan passes and the ranges in which they are located.
Thus, the correct match is:
Zoji La – Greater Himalayas
Banihal Pass – Pir Panjal Range
Whereas, the Photu La Pass is located in the Zaskar Range of the Himalayas and the Khardung La Pass is situated in the Ladakh Range of the Himalayas.
72. (D) According to the given statements, quartz is soluble in water.
But it requires high temperatures. The term sedimentary is derived from the word 'sedimentum'. The Earth's crust is primarily composed of NIFE, SIMA and SIAL.
73. (A) The Coriolis effect is maximum at the equator (equatorial circle).
The Coriolis force is an apparent force resulting from Earth's rotation, which deflects objects to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.
74. (B) The sun's rays do not fall perpendicularly in the states of Bihar and Manipur in India because the sun is perpendicular only at places through which the Tropic of Cancer passes. The Tropic of Cancer passes through a total of 8 states in India, including Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura and Mizoram.
75. (B) Most bolsons (desert valley) have a landform at their lowest part called Playa which indicates the formation of a dry landform series. The depressions formed by abrasion in deserts, where water collects, are called 'Oasis', these are a type of lake.
76. (A) Gabbro is an example of both igneous and metamorphic rocks. The first is an example of plutonic igneous rocks, which chemically resemble granite and form below the Earth's surface. The second is an example of metamorphism from chemical recrystallization.
77. (D) Solution, Hydration, Reduction are part of chemical weathering chemical reactions between minerals in rocks. Thawing is a type of physical weathering as here the chemical competition of rocks is not changing and weathering is taking place due to mechanical action of water.
78. (A) Among the local winds mentioned, the Harmattan local wind is not associated with the Mediterranean Sea. It originates in the western Sahara Desert and blows towards the east, carrying dry and hot air. It is most prevalent from November to March and is also known as the "Doctor Wind".
79. (D) Regarding the Caspian Sea reservoir (water body), the statement that the Caspian Sea is a marine expanse is incorrect. It is not a bay of any sea but rather a landlocked saltwater lake, the largest in the world. It is situated between Eastern Europe, Western, and Central Asia, and is so vast that it receives large rivers like the Volga and the Ural.
80. (A) Regarding the Benguela Current, the statement in the question that it flows in the Atlantic Ocean is not correct. It affects the winds blowing along the west coast of South Africa because it flows along the west coast of South Africa. The other statements in the question regarding the Benguela Current are correct.
81. (A) The correct match of List I and List II is as follows :
- | | | |
|----------------|---|----------------|
| List I | – | List II |
| Hurricane | – | USA |
| Willy Willy | – | Australia |
| Baguio (Bagyo) | – | Philippines |
| Typhoon | – | Japan |
82. (B) The Tenth Schedule of the Constitution of India contains provisions regarding party defection. It is a kind of control system used to prevent a member of a political party from joining another (second) party. It was added through the 52nd Constitutional Amendment 1985.
83. (C) Article 19(1) of the Constitution relates to the Right to Freedom. That is, under this article, both the mentioned freedoms are rights under the Right to Freedom and reasonable restrictions can be imposed on the exercise of this right under this article. Especially when the question of the country's sovereignty, unity, and integrity arises.
84. (C) Both statements in the question are correct. That is, it is the duty of the Attorney General of India to advise the Government of India on legal matters and to perform such other duties of a legal nature as the President of India may from time to time direct. The statement is correct. The Solicitor General of India is the second-highest law officer of the country who assists the Attorney General of India, and the Additional Solicitors General of India assists him (the Solicitor General). Correct.
85. (C) Among the mentioned parliamentary committees, the Estimates Committee does not consist of members of the Rajya Sabha. It is a committee of 30 members of the lower house of Parliament, each of whom is appointed by the Speaker. The function of this committee is to scrutinize the government departments and ministries regarding grants and expenditures.
86. (C) The Rajya Sabha has limited powers when passing a Money Bill, in which it can return it with recommendations within a stipulated time. This stipulated time period is 14 days. It is important to remember that the Lok Sabha is not bound to accept or adopt the recommendations of the Rajya Sabha regarding the Money Bill.
87. (D) Both statements in the question regarding linguistic Reorganization are correct. The argument was given that the Constituent Assembly did not recommend the reorganization of states on a linguistic basis in 1948, as they were aware of the imminent danger of linguistic regionalism.
88. (B) Among the youth organizations mentioned, the motto of the National Service Scheme is "Not me but you".

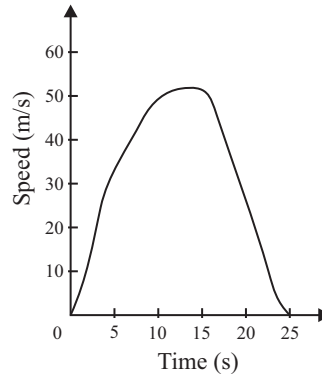
It was established on September 24, 1969, and is a flagship program of the Ministry of Youth Affairs and Sports, Government of India. Its emblem is the chariot wheel of the Sun Temple in Odisha.

89. (B) Regarding the ULLAS scheme, only statement 2 is correct. That is, it is in accordance with the National Literacy Policy-2000. Whose objective is to empower those adults of 15 years or above who could not get schooling. It is a centrally sponsored scheme. It has nothing to do with the welfare of street children.
90. (C) The objective of forming the Planning Commission India in the 1950s in India was to ensure food security. That is, to maintain stability in production and to provide employment opportunities to all and to utilize all the resources of the country were its primary objectives.
91. (C) Regarding the Five Year Plans in India, only statements 3 and 4 are correct. Because the focus of the Seventh Five Year Plan was food, work and productivity. And in the Ninth Five Year Plan, emphasis was given on investment in the public sector. While statements 1 and 2 are incorrect because only the First Five Year Plan was based on the Harrod-Domar model and focused on agriculture, while the Second Five Year Plan was based on the Mahalanobis model and focused on rapid industrialization.
92. (D) Before the commencement of the First Five Year Plan in India, the plans mentioned in the question were presented. That is, the Bombay Plan (1944) was prepared by the top industrialists of India at that time, including J.R.D. Tata, Ghanshyam Das Birla, Ardeshir Dalal, Purushottam Das Thakur Das etc., while the People's Plan was prepared by M.N. Roy. The Gandhian Plan was presented by Shriman Narayan Agarwal in 1944, and the Sarvodaya Plan was presented by Jai Prakash Narayan in 1950.
93. (C) Regarding the Industrial Revolution, only statement (C) is correct. That is, James Watt's invention transformed the steam engine from a simple pump into a form that could power machines in factories.

NOTE : Thomas Savery, Thomas Newcomen and Matthew Boulton,

all these scientists (researchers) are associated with the discovery, transformation and improvement of the steam engine.

94. (B) During the World Maritime Summit 2023, the 'Maritime Amrit Kaal Vision 2047' was launched. The summit was organized in Mumbai and inaugurated by Prime Minister Narendra Modi through video conferencing. It should be noted that India has achieved the 38th position in the World Bank Logistics Performance Report . 2023.
95. (B) The three statements in question represent the characteristics of contact force, as contact force arises when one object comes into contact with another object. It satisfies the third law of motion and acts between the surfaces of two objects. Therefore, statement (C) is not correct.
96. (D) In the given diagram, only (D) accurately represents the motion of a skydiver during a jump.



97. (A) According to the question
 $u = 0$
 $t_1 = t$ seconds
 $t_2 = 10$ seconds
 $a_1 = 2 \text{ m/s}^2$
 $a_2 = 5 \text{ m/s}^2$
 $s = 550 \text{ m}$
 From the first equation of motion
 $v = u + at$
 $v = 0 + 2 \times t$
 $v = 2t \quad \dots(1)$
 From the second equation of motion
 $s_1 = ut + \frac{1}{2} at^2$
 $= 0 \times t + \frac{1}{2} \times 2 \times t^2$
 $s_1 = t^2 \quad \dots(2)$
 For the next 10 seconds
 With the help of second equation of motion

$$s_2 = ut + \frac{1}{2} at^2$$

$$= 2t \times t + \frac{1}{2} \times 5 \times 10 \times 10$$

$$s_2 = 2t^2 + 250$$

Given,

$$s = s_1 + s_2$$

$$550 = t^2 + (2t^2 + 250)$$

(From equation 1 and 2)

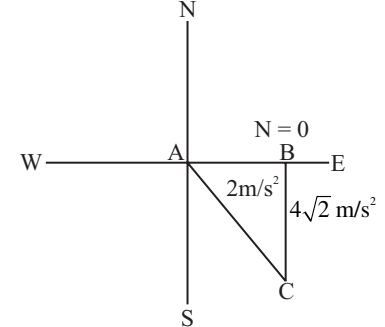
$$550 = 3t^2 + 250$$

$$3t^2 = 300$$

$$t^2 = 100$$

$$t = 10 \text{ s}$$

98. (B) Given that
 $u_1 = 0$
 $a_1 = 2 \text{ m/s}^2$
 $t_1 = 10 \text{ sec.}$
 $v_2 = 0 = u_2$
 $a_2 = 4\sqrt{2}$
 $t_2 = 10 \text{ sec}$
 $v_2 = 0$



For East Direction-(AB)

$$s_1 = u_1 t_1 + \frac{1}{2} a_1 t_1^2$$

$$= 0 \times 10 + \frac{1}{2} \times 2 \times 10 \times 10$$

$$= 100 \text{ m}$$

For South Direction-(BC)

$$s_2 = u_2 t_2 + \frac{1}{2} a_2 t_2^2$$

$$= 0 \times 10 + \frac{1}{2} \times \frac{1}{2} \times 4\sqrt{2} \times 10 \times 10$$

$$= 0 + 2\sqrt{2} \times 100$$

$$= 200\sqrt{2} \text{ m}$$

By Pythagoras Theorem

$$CA^2 = AB^2 + BC^2$$

$$CA^2 = 100^2 + (200\sqrt{2})^2$$

$$CA^2 = 10000 + (40000 \times 2)$$

$$CA = \sqrt{10000 + 80000}$$

$$= \sqrt{90000}$$

$$CA = 300 \text{ m}$$

99. (C) Given,

Mass $m = 2 \text{ kg}$
 $u = 10 \text{ m/s}$

Coefficient of friction
 $\mu = 0.02$

We know that

$$F = mg \quad (g = 10 \text{ m/s}^2) \\ = 2 \times 10 \\ = 20 \text{ Newton}$$

We know that,

$$\text{Frictional, } f = \mu F \\ f = 0.02 \times 20 \\ = 40 \text{ N}$$

Since the wooden block is moving in the direction of velocity.

So the friction force will work

So, negative acceleration,

$$\text{From } f = ma \\ a = \frac{f}{m} = \frac{4}{2} = 2 \text{ m/s}^2$$

Time taken for block to come to rest:

From the first equation of motion
 $v = u - at$
 (I have taken acceleration as negative)

$$0 = 10 \text{ m/s} - 2 \times t \\ 2t = 10 \\ t = 5 \text{ sec}$$

Distance travelled before coming to rest

From the second equation of motion:

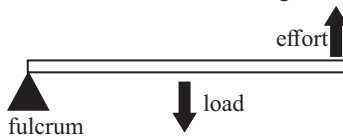
$$s = ut - \frac{1}{2}at^2 \\ = 10 \times 5 - \frac{1}{2} \times 2 \times 5 \times 5 \\ = 50 - 25 \\ = 25 \text{ m}$$

Therefore magnitude of frictional force = 40 N

Time taken to come to rest = 5 s

Distance travelled before coming to rest = 25 m

100. (C) Draw a diagram of a second class lever and describe its working.



In a second class lever, the load is situated between the fulcrum and the effort. The effort arm's length is greater than the load arm's length, leading to a mechanical advantage greater than 1. This means that less effort is needed to lift a heavier load. A wheelbarrow, bottle opener, and nutcracker are a few examples of second class levers.

101. (C) An astronaut weighing 600 N on Earth is orbiting the Earth on the

International Space Station and experiences weightlessness. This means that the gravitational force of the Earth on the astronaut is zero.

102. (C) Given,

Weight of the Pumpkin

$$W = 7.5 \text{ N}$$

We know that,

$$W = mg \\ m = \frac{W}{g} = \frac{7.5}{10} \\ (g = 10 \text{ m/s}^2)$$

$$m = 0.75 \text{ kg}$$

Therefore, according to the Archimedes principle

The weight of the displaced water will be, 7.5 N

Weight of water

$$W = f \cdot v \cdot g$$

Where n is the volume of displaced water, f is the density of water

$$= 1000 \text{ kg/m}^3$$

$$w = 7.5 \text{ N}$$

$$7.5 = 1000 \times V \times 10$$

$$V = \frac{7.5}{1000 \times 10}$$

$$= 0.00075 \text{ m}^3$$

Therefore, mass and volume of the pumpkin :

$$\text{Pumpkin} = \frac{\text{Mass}}{\text{Volume}} = 0.75 \text{ kg/v}$$

From eq. (i)

$$v = 0.00075 \text{ m}^3$$

$$\text{Therefore, Pumpkin} = \frac{0.25 \text{ kg}}{0.00075 \text{ m}^3} \\ = 1000 \text{ kg/m}^3$$

103. (C) Given,

Ratio of masses = 1:7

Ratio of diameters = 2:1

According to Newton's third law of gravitation any two objects always exert equal and opposite forces on each other.

Therefore, the ratio of forces acting between the planets = 1 : 1

104. (D) Given,

Weight of the car

$$W = 1000 \text{ kg}$$

$$u = 72 \text{ km/h} = 20 \text{ m/s}$$

$$v = 0 \text{ km/h}, t = 0.2 \text{ sec}$$

By Newton's first law of motion,

$$v = u + at$$

$$0 = 20 + a \times 0.2$$

$$a = \frac{-20}{0.2} = -100 \text{ m/s}^2$$

Retarding force, $F = ma$

$$= 1000 \times -100 \text{ N}$$

$$= -100 \text{ kgN}$$

$$|F| = 100 \text{ kN}$$

105. (A) Given,

$$m = 320 \text{ gm} = 0.32 \text{ kg}$$

$$u = 0$$

Potential energy

$$P = 625 \text{ J}$$

We know that,

$$P = mgh \\ 625 = 0.32 \times 10 \times h$$

$$h = \frac{625}{0.32 \times 10}$$

$$= \frac{625 \times 100}{32 \times 10}$$

$$= \frac{625 \times 5}{16} \text{ m}$$

Velocity of a freely falling body

$$= \sqrt{2gh}$$

$$(v^2 = u^2 + 2gh)$$

$$(v^2 = 0 + 2gh)$$

$$(v = \sqrt{2gh})$$

$$v = \sqrt{\frac{2 \times 625 \times 5 \times 10}{16}}$$

$$= \sqrt{\frac{625 \times 10 \times 10}{16}}$$

$$v = \frac{25 \times 10}{4}$$

$$= 62.5 \text{ m/s}$$

106. (A) On a skydiver, two forces P and Q act perpendicular.

In relative to both the forces, Q is due to friction and P is due to gravity. We have to remember that gravitational force is neither increasing or decreasing therefore the force of gravity varies across the surface of the earth.

107. (D) For hollow object, C_1 ,

Buoyant force

$$= B_1$$

$$B_1 = m_1 g$$

$$m_1 g = \rho_w V_{\text{sub}}$$

$$m_1 = \rho_w V_{\text{sub}}$$

$$[\because \rho = \frac{m}{v} \Rightarrow m = \rho V]$$

$$m_1 = \rho_w V_{\text{sub}} \quad [m_1 = \rho_1 V_1] \\ \rho_1 V_1 = \rho_w V_{\text{sub}} \quad [\because V_{\text{sub}} < V_1]$$

$$\rho_1 = \rho_w \left(\frac{V_{\text{sub}}}{V_1} \right)$$

$$[\therefore \frac{V_{\text{sub}}}{V_1} < 1]$$

$$\therefore \rho_1 < \rho_w$$

For hollow object, C_2

$$m_2 g = B_2$$

$$m_2 g = \rho_w V_{\text{sub}} g$$

$$m_2 = \rho_w V_{\text{sub}}$$

$$m_2 = \rho_w V_{\text{sub}}$$

$$\rho_2 V_2 = \rho_w V_{\text{sub}}$$

$$\rho_2 = \rho_w \left(\frac{V_{\text{sub}}}{V_2} \right)$$

$$\rho_2 > \rho_w \quad \left[\begin{array}{l} \therefore V_{\text{sub}} > V_2 \\ \therefore \frac{V_{\text{sub}}}{V_2} > 1 \end{array} \right]$$

Therefore: $\rho_1 < \rho_w < \rho_2$

108. (C) Among the given statements, statement (C) best defines the concept of heat, which is the transfer of energy due to temperature difference. Although the other statements are also correct regarding the concept of heat.

109. (B) Among the given heat transfer situations, a cup of coffee left to cool in a room is an example of Newton's law of cooling. According to Newton's law of cooling, the rate of cooling of an object depends on the temperature difference between the object and its surroundings and heat is transferred from the hotter end to the cooler end in objects.

110. (C) Given:

$$R_1 = 5.0 \Omega$$

$$R_2 = 7.0 \Omega$$

$$R_3 = 36 \Omega$$

According to the question,

R_1 and R_2 are in the series

So, $R' = R_1 + R_2 = 5 + 7 = 12 \Omega$

Again according to the question,

R' and R_3 are in a parallel

$$\text{Then, } \frac{1}{R''} = \frac{1}{R'} + \frac{1}{R_3}$$

$$\frac{1}{R''} = \frac{1}{12} + \frac{1}{36} = \frac{3+1}{36}$$

$$= \frac{4}{36} = \frac{1}{9}$$

$$R'' = 9 \Omega$$

111. (C) Lightning is caused by the accumulation of positive and negative charges at the base and top of clouds, respectively. When the difference between these opposite charges becomes large enough, a rapid discharge of electricity occurs between the clouds and the ground, creating a lightning bolt.

This discharge is accompanied by a bright flash of light and a loud clap of thunder and sometimes causes damage.

112. (D) In the given options, the bulb in options (D) will glow the brightest because in this option the batteries are connected in series, which will provide a higher voltage to the bulb. Additionally the given arrangement is in parallel which will provide more power to the bulb.

113. (D) Given,

Resistance $R = 200 \Omega$

Current, $I = 2 \text{ Amp}$

Time, $t = 10 \text{ hours}$

From, $P = I^2 R$

$$P = (2)^2 \times 200$$

$$P = 800 \text{ Watt}$$

Total energy $E = P \times t$

$$= 800 \times 10$$

$$= 8000 \text{ Watt}$$

$$= 8 \text{ kWh}$$

Cost of energy consumption = 8×5

(kWh \times price/kWh)

$$= ₹ 40$$

Since 20% power (P) is being

converted into light, the produced

light energy = $0.2 \times 800 \text{ watt}$

$$= 160 \text{ watt}$$

Therefore the cost of producing

light = $0.2 \times 40 \text{ watt}$

$$= ₹ 8$$

114. (A) In India, the AC main domestic supply current changes direction 100 times per second. The supply changes direction 100 times per second. Since the frequency of the alternating current in India is 50 Hz and its potential is 220 volts.

115. (B) Given,

$$R_1 = 100 \Omega \quad I_1 = 3A$$

$$R_2 = 200 \Omega \quad I_2 = ?$$

$$R_3 = 300 \Omega \quad I_3 = ? \quad V = ?$$

Therefore:

$$\frac{1}{\text{Requ.}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{100} + \frac{1}{200} + \frac{1}{300}$$

$$= \frac{6+3+2}{600} = \frac{11}{600}$$

$$\therefore \text{Requ.} = \frac{600}{11} \Omega$$

By ohm's law:

$$V = IR$$

Substituting I_1

$$V = I_1 R_1$$

$$= 3 \text{ amp} \times 100 \Omega = 300 \text{ volt}$$

Since the circuit is a parallel circuit, the potential difference across the circuit remains the same. Therefore potential difference of the circuit $V = 300 \text{ V}$

Therefore for R_2

By ohm's law

$$V = I_2 R_2$$

$$I_2 = \frac{V}{R_2} = \frac{300}{200} = 1.5$$

$$I_3 = \frac{V}{R_3} = \frac{300}{300} = 1$$

$$\text{Total } I = 3 + 1.5 + 1$$

$$I = 5.5$$

116. (A) The lens used in the given options is a convex lens, which is a converging lens. In the converging lens, the refracted rays bend towards the principal axis.

Therefore option (a) shows the correct ray diagram.

117. (B) When a point object is placed at the center of curvature of a spherical concave mirror, the image formed will be at the center of curvature and the size of the image will be real, inverted and smaller than the size of the object.

118. (B) For a person suffering from nearsightedness (myopia), statement (B) is correct. This person can see nearby objects clearly but cannot see distant objects clearly. A concave lens is used for this.

119. (C) According to the question :

$$P_1 = 2.5 \text{ D}$$

$$P_2 = -2 \text{ D}$$

$$\text{Then the combination } P = P_1 + P_2 = 2.5 - 2 = 0.5 \text{ D}$$

$$\text{Then focal length } f = 1/P = 1/0.5 = 2 \text{ m.}$$

120. (C) The mixing of particles of two pure substances on their own is called diffusion. Diffusion is a result of the kinetic properties of matter. In this process, the particles mix with each other until they are evenly distributed. The mixing of ether and water is a good example of diffusion.

121. (B) Chemical Reaction :

$2\text{AgCl (s)} \rightarrow 2\text{Ag (s)} + \text{Cl}_2 \text{ (g)}$
occurs in sunlight. In this reaction, the shine of silver is lost, and its color becomes gray.

122. (C) In the given reactions, the rusting of iron is an oxidation reaction. Oxidation reactions involve the reaction with oxygen. In this process, electrons are lost and a large amount of energy is released.

123. (D) The mixture of NaOH and HCl is an example of a chemical change because two new substances are formed in this reaction, such as sodium chloride (NaCl) and water (H₂O). Remember that in a chemical reaction, the properties of the reactants change, and new substances are formed which are stable and cannot be easily brought back to their original state.
124. (B) In some elements, there are two or more atoms present in their molecules. They are called polyatomic elements. Polyatomic elements usually form strong acids of non-metallic type.
NOTE : Phosphorus (P₄) also falls under the category of polyatomic elements.
125. (A) Among the given anions, the valency of nitrite is -3, the valency of nitrate is -1, the valency of sulphide is -2, and the valency of sulphate is -2. Valency is the combining capacity of an element's atom with the atoms of other elements to form molecules.
126. (B) According to the question,
The mass of nitrogen gas = 0.5 gm mol.
We know that the molecular weight of nitrogen gas = 28 gm/mol
Then, the molar mass = mass of gas / molecular weight
= $0.5 \times 28 = 14$
127. (C) Among the given elements, the valency of nitrogen is 3, although its valency can also be 5. Because nitrogen has 5 electrons in its outer shell, to achieve a stable configuration, nitrogen needs to either gain 3 electrons or lose 5 electrons.
128. (C) Diamond is a pure form of carbon with metallic bonding. Since it does not exhibit chemically compound properties, it is the hardest substance found in nature and is generally considered an electrical and thermal insulator. However, it is sensitive to gamma rays, which is why it is used in medical monitors.
129. (A) The maximum number of electrons in the first shell of an atom is 2. The principal quantum number (n) for the first shell of an atom is 1. The atomic number of hydrogen is 1.
130. (A) Among the given fertilizers, urea is a source of nitrogen. It contains 46% nitrogen. Although urea was discovered by Hilaire Rouelle, a French chemist, the credit for its synthesis is given to the German scientist Friedrich Wohler. He synthesized urea from ammonium cyanate. Superphosphate, calcium cyanamide and ammonium sulphate are also nitrogenous fertilizers.
131. (C) Different types of cells are separated through the centrifugation technique in blood testing laboratories.
132. (B) At a pressure of 277 atm, water exhibits its maximum density. The volume of water decreases with increasing temperature. On the Celsius scale, water has its maximum density at 4°C.
133. (D) The valency of Al is 3. Among the given statements, the statement that Al has a valency of 2 is incorrect. The other statements, such as Al having an atomic number of 13, an atomic mass of 27, 13 protons and 14 neutrons are correct.
134. (C) Organisms belonging to the phylum Porifera are known as sponges. Sponges are invertebrate, porous, marine organisms. They are usually asymmetrical and are predominantly multicellular animals. Sponges have a developed water transport system that enables them to survive in aquatic environments.
135. (B) Among the given statements about lysosomes, statement B is incorrect. Lysosomes break down all organic materials, including fats, proteins and carbohydrates. The other statements, such as lysosomes being involved in cellular digestion and being called "suicide bags," are correct.
136. (C) The cell organelles Mitochondria and Plastids contain genetic material. They contain the necessary information for the formation and organization of the cell. The cell organelle Mitochondria are also called energy house or power house of the cell. It is a sensitive cell organelle.
137. (B) Ligament helps in joining two bones. It is a connective tissue found in the skeletal system of the body which provides stability to bones. Tendon is a tough connecting tissue which joins bones to muscles or muscle to muscles.
138. (B) The source of energy in cells is ATP, its form is Adenosine Triphosphate. It is also called energy factor because it is a releasable energy source in the bond between the first and third phosphate groups which leads to a heat reaction. Muscle contraction is achieved through the synthesis of RNA and Nucleic acid
139. (A) Vegetative propagation in potatoes occurs through eye buds. Potato tuber has some protrusions on its surface called eyes. These protrusions develop into roots and stems and a new plant is formed. Keep in mind that it is a sexual form of reproduction.
140. (A) Gelatin is a type of poly hydroxy gel. It is commonly used in ventilators as an antiseptic, anti-skipping agent etc. It is also used as a solvent based oxidative as well as in the preparation of leaves.
141. (C) Cartilage is not found in the human body, which is called the respiratory tract, the upper respiratory tract experiences insensibility to the connective tissue, this is because they lack nerves and vessels, the respiratory tract has a sensitive membrane. The bladder is the second organ in the human body in which cartilage is not found.
142. (B) The human kidney has nephrons for the filtration of blood. The kidney is a very important organ. The part called renal vein is the excretory organ. In humans, it is in the excretory organ. Its smallest unit is the nephron, which not only filtrates the blood, but also removes urea from the respiratory tract through the tube.
143. (C) Deficiency of vitamin D in babies causes rickets in babies, which usually occurs in children and is also called dry rot. In this disease the development of bones of children gets hampered, for this purpose sunlight exposure and vitamin rich nutrition are given. Deficiency of vitamin A causes osteomalacia and osteoporosis in adults.
144. (B) Among the relevant food components, carbohydrates, vitamins, proteins, fats, mineral fibers and water composition most appropriately represent the components of a balanced diet. Balanced diet is food which fulfils the overall nutritional requirements. In a balanced diet, carbohydrates are quick sources of energy production, whereas fats are the most energy producing substances.
145. (B) Among the relevant statements only 2, 3 and 4 are correct respectively. The 15th BRICS summit to be held

in the year 2023 was chaired by South Africa and in the year 2013, the Vikasit Bharat Sankalp Yatra was flagged off from Jharkhand. Both the statements are correct while statements 4 and 2 are wrong because both the events were held in New Delhi.

146. (D) Among the military exercises in question, the Varuna military exercise is not a joint military exercise held between India and the United States of America (USA). It is a naval joint exercise between India and France, the first edition of which was held in the Arabian Sea. In this military exercise, guided missiles, frigates, helicopters and helicopters of both the countries took part.

147. (C) In January 2024, Bhutan announced to provide grant assistance for a 20-meter Bailey bridge to the country. In the year 2024, Bhutan announced to provide grant assistance for a 20-meter Bailey bridge.

148. (B) The Indian Mission to ASEAN organized the ASEAN-India Nutrient Cereals Festival 2023 in Indonesia. The event was held in Jakarta, the capital of Indonesia on 8 November, 2023. The festival aims to promote and develop markets for nutritive cereals products in ASEAN countries.

149. (A) Statement (1) is correct regarding NATO because NATO was formed as a result of the North Atlantic Treaty Organization. This treaty

was signed between 12 countries on 4 April, 1949. The purpose of this organization was to establish a common military cooperation and collective defense in Europe after the Second World War. At present, there are 32 member countries in this organization. Statement (2) is correct about NATO.

150. (B) Dose of Fitness, “Aadha Ghanta Roz Adtiyan” is associated with the Fit India programme, the Fit India programme was started by the Government of India in the year 2024 from New Delhi, a target has been set to connect 7.5 crore people from Jayam Bharat in this programme, this programme was inaugurated by Minister of youth and sports-Anurag Thakur.

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