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**UPSC CAPF AC 07 Aug 2022**

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1. Which one of the following is the oldest Central Paramilitary Force in India?
- The Central Reserve Police Force
  - The Border Security Force
  - The Assam Rifles
  - The Commando Battalion for Resolute Action
2. Which of the following statements about 'Agency Houses' is/are correct?
- They were important commercial formations in the late eighteenth and nineteenth century India.
  - The operation of managing agencies remained confined to Calcutta.
- Select the correct answer using the code given below.
- 1 only
  - 2 only
  - Both 1 and 2
  - Neither 1 nor 2
3. Which one of the following statements about *Tolkappiyam* is **not** correct?
- It is a treatise on grammar.
  - It was composed between first to fourth century CE.
  - It was part of the Sangam corpus.
  - It was composed by Panini.
4. Which one of the following statements about 'Princely States' in India is **not** correct?
- The British Government declared that States were free to join either India or Pakistan or remain independent.
  - The decision to join either India or Pakistan or remain independent was left not to the people of Princely States but to the Princely Rulers.
  - The Ruler of Travancore first decided to remain independent.
  - The State of Travancore finally joined India through a plebiscite.
5. Which one of the following books was authored by Harshavardhana?
- Harshacharita*
  - Kadambari*
  - Ratnavali*
  - Gitagovinda*
6. 'The King of Dance' is a description of
- Trimurti at Elephanta Caves
  - Kaliyamardan of Krishna
  - Bodhisattva Maitreya at Gandhara
  - Bronze Nataraja of the Cholas
7. Anasagar Lake is located in which one of the following States?
- Gujarat
  - Uttarakhand
  - Rajasthan
  - Karnataka



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8. The World Wetland Day is celebrated on which one of the following dates every year?

- (a) 10th June
- (b) 13th February
- (c) 9th March
- (d) 2nd February

9. Ganga water is being shared at Farakka with which one of the following countries?

- (a) Nepal
- (b) Bhutan
- (c) Bangladesh
- (d) Myanmar

10. Which one of the following is a part of Deccan Plateau?

- (a) Aravalli Hills
- (b) Karbi Anglong Hills
- (c) Shivalik Hills
- (d) Vindhyan Hills

11. In which one of the following States, more than 50% area is under Jhum cultivation?

- (a) Manipur
- (b) Assam
- (c) Sikkim
- (d) Mizoram

12. 'Dhivehi' is a principal language of which one of the following Union Territories?

- (a) Puducherry
- (b) Ladakh
- (c) Lakshadweep
- (d) Jammu and Kashmir

13. Which of the following is/are source/sources of Law in India?

1. Constitution of India
2. Statutes
3. Customary Law
4. Case Law

Select the correct answer using the code given below.

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

14. Which among the following is/are the function/functions of the Cabinet Secretariat?

1. To ensure interministerial coordination
2. Management of major crisis situations in the country

Select the correct answer using the code given below.

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

15. Which of the following statements about the Committee on Public Undertakings is/are correct?

1. There are more members from the Rajya Sabha than the Lok Sabha in the Committee.
2. The Chairperson of the Committee is appointed by the Speaker of the Lok Sabha.

Select the correct answer using the code given below.

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

16. Which one of the following statements is **not** correct?

- (a) A censure motion can be moved against a single Minister of the Council of Ministers.
- (b) A motion of no-confidence cannot be moved against the Prime Minister alone.
- (c) A censure motion cannot be moved against the entire Council of Ministers.
- (d) A censure motion can be moved against a group of Ministers.

17. Which one of the following is **not** a thrust area of the 'Atal Mission for Rejuvenation and Urban Transformation (AMRUT)' ?

- (a) Water supply
- (b) Storm water drainage to reduce flooding
- (c) Motorized urban transport and capacity building
- (d) Green spaces and park

18. Nowadays, 'nonfungible tokens' are talked about in the context of

- (a) digital assets on a blockchain
- (b) operations of 'banking correspondents' in rural areas
- (c) multifactor authentication security requirement in banking transactions
- (d) transactions through 'small finance banks'

19. The term 'Sagittarius A\*', sometimes mentioned in news, refers to

- (a) a supermassive black hole in our Milky Way Galaxy
- (b) two giant black holes spiralling around each other several light-years away from the Earth
- (c) a Supernova explosion seen in real time for the first time ever by scientists
- (d) a huge asteroid that passed by very close to the Earth

20. Consider the following statements with reference to the latest guidelines issued by the Indian Computer Emergency Response Team (CERT-In) :

1. Data centres and service providers shall compulsorily report cyber security breaches within 24 hours.
2. Virtual Private Network providers shall retain user data for at least five years and share records with authorities when required.

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

21. The principle of 'common but differentiated responsibilities and respective capabilities', often talked about in media, refers to

- (a) WHO's COVID-19 Global Vaccination Drive
- (b) contributions to the International Monetary Fund
- (c) reduction of greenhouse gas emissions
- (d) contributions to the United Nations Peacekeeping Operations

22. With reference to Indian economy, the term 'bad bank', frequently mentioned in news, refers to

- (a) an asset reconstruction company
- (b) an asset management company
- (c) a bank with huge 'nonperforming assets'
- (d) a bank that has become insolvent

23. Which one of the following was **not** a feature of the art of painting in India in the 19th century?

- (a) Art was being produced for the open market.
- (b) The artist (Shilpi) became distinct from the artisan (Karigar).
- (c) The technique of oil painting was developed.
- (d) The distinction between elite and popular art widened.

24. As part of the Look/Act East Policy, which one of the following capitals of North-East Indian States is proposed to be connected with Bangladesh via rail route?

- (a) Agartala
- (b) Kohima
- (c) Imphal
- (d) Itanagar

25. Which one of the following is correct in respect of the appointment of District Judges?

- (a) They are appointed by the Chief Justice of the concerned High Court.
- (b) They are appointed by the President of India on the advice of the Chief Justice of the concerned High Court.
- (c) They are appointed by the Governor in consultation with the High Court of the concerned State.
- (d) They are appointed by the Supreme Court on the advice of the concerned High Court.

26. Which one of the following artworks was hailed by Sister Nivedita as the 'first masterpiece of Indian art' ?

- (a) *Bharatmata* by Abanindranath Tagore
- (b) *Arjuna and Subhadra* by Raja Ravi Varma
- (c) *Sita in Captivity in Lanka* by Abanindranath Tagore
- (d) *Sati* by Nandalal Bose

27. 'Operation Sankalp' was initiated and implemented by the

- (a) Indian Air Force
- (b) Indian Army
- (c) Indian Navy
- (d) Ministry of Home Affairs

28. Which one of the following statements is **not** true with regard to tribal welfare?

- (a) The Comprehensive Tribal Development Programme aims at land development activities, improvement of roof houses, infrastructure development and so on.
- (b) As per the Scheduled Tribes and Other Traditional Forest Dwellers Act, villages in forests are provided with community rights.
- (c) The Special Area Development Programme aims at distribution of forest area produces to the tribals equitably.
- (d) The Special Central Assistance to Tribal Subplan provides dairy cows to tribal groups living below the poverty line.

29. Which one of the following statements is **not** correct?

- (a) The 'Swarna Jayanti Shahari Rozgar Yojana' is an urban self-employment programme.
- (b) Drought-Prone Area Programme and Desert Development Programme were launched in 1970s.
- (c) The 'Sampoorna Grameen Rozgar Yojana' was launched after restructuring the 'Integrated Rural Development Programme' in 2001.
- (d) The 'Swarna Jayanti Gram Swarozgar Yojana' is a rural self-employment programme.

30. The Battle of Rakshasi-Tangadi is popularly known as the

- (a) Battle of Talikota
- (b) Battle of Khanwa
- (c) Battle of Panipat
- (d) Battle of Dharmat

31. Ashokan inscriptions in Afghanistan are written in which one of the following scripts?

- (a) Brahmi
- (b) Sharada
- (c) Kharoshthi
- (d) Greek-Aramaic

32. Which one of the following statements about coins struck during 200 BCE to 300 CE in the Indian subcontinent is **not** correct?

- (a) The Indo-Greeks introduced bilingual and bscript legends on their coins.
- (b) The Kushanas minted large quantities of gold coins as well as copper coins of low denomination.
- (c) The Satavahanas issued coins of silver, copper, lead and potin.
- (d) Absence of Negama coins suggests the declining power and authority of merchant guilds.

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

List-I (Vedic name of river)	List-II (Modern name)
------------------------------------	--------------------------

- |                |             |
|----------------|-------------|
| A. Drishadvati | 1. Chenab   |
| B. Askini      | 2. Chautang |
| C. Vitasta     | 3. Ravi     |
| D. Purushni    | 4. Jhelum   |

Code :

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

34. When was the Kothari Commission appointed by the Government of India to look into the education sector of India?

- (a) 1967
- (b) 1966
- (c) 1965
- (d) 1964

35. Which one of the following is **not** correct?

- (a) The Gulf Stream is a warm ocean current.
- (b) The North Atlantic Drift is a warm ocean current.
- (c) The Labrador Current is a cold ocean current.
- (d) The California Current is a warm ocean current.

36. Which of the following statements about maps are correct?

1. Maps that maintain the true shapes of areas are known as conformal maps.
2. Maps are used to show spatial relationships.
3. Maps cannot show route from one place to another.

Select the correct answer using the code given below.

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

37. Which one of the following statements about 'great circle' is **not** correct?

- (a) Every great circle divides the Earth into equal halves.
- (b) Every great circle is a circumference of the Earth.
- (c) Great circles mark the longest travel routes between locations on the Earth's surface.
- (d) Great circle is the largest circle that can be drawn around the Earth through two particular points.

38. Which one of the following statements is correct with reference to normal lapse rate?

- (a) Temperature is highest at ground level and decreases with increasing altitude.
- (b) Temperature is lowest at ground level and increases with increasing altitude.
- (c) Temperature remains stable with increasing altitude.
- (d) Temperature first increases with increasing altitude and gradually starts decreasing.

39. Which one of the following is a tributary of the Brahmaputra River?

- (a) Ghaggar
- (b) Mahi
- (c) Kosi
- (d) Manas

40. The landmark case of *D. C. Wadhwa vs. State of Bihar* in the Supreme Court is related to which one of the following powers of the Governor?

- (a) To repromulgate ordinances
- (b) To appoint a Chief Minister
- (c) To grant pardon, etc.
- (d) To revise the emoluments and allowances of the MLAs

41. 'Operation Flood' is also popularly known as

- (a) the Green Revolution
- (b) the White Revolution
- (c) the Blue Revolution
- (d) the Yellow Revolution

42. The 'Stand-Up India Scheme' is related to which one of the following issues?

- (a) Social security during old age
- (b) Providing technical knowhow to young, educated or skilled workers from rural areas
- (c) Promoting entrepreneurship amongst women, SC and ST communities
- (d) Insurance cover to people in the age group of 18-50 years



43. Which one of the following is **not** a feature of Indian federalism?

- (a) Courts can interpret the Constitution and powers of different levels of the Government.
- (b) Sources of revenue for the Union Government and the State Governments are specified.
- (c) Powers of the Union and the States are specified in the Constitution.
- (d) Indian federalism is based on the principle of Separation of Powers.

44. Consider the following statements :

1. The early Malwa school of paintings was influenced by Shirazi school while the early Mughal paintings initially followed Bihzad school.
2. The major exponents of Bihzad school in India were Sayyid Ali and Abdus Samad.

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

45. Which of the following statements about 'Ek Bharat Shreshtha Bharat' programme is/are correct?

1. It was announced in the year 2014.
2. Its aim is to create an environment which promotes learning between the States by sharing best practices and experiences.

Select the correct answer using the code given below.

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

46. Consider the following statements :

1. Mirage 2000 is a twin-engine fighter jet.
2. HAL Tejas is a delta-winged fighter jet.
3. Rafale is a hypersonic fighter jet.

Which of the statements given above is/are correct?

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

47. Which one of the following aerospace companies designed and manufactured 'Falcon 9', a reusable rocket?

- (a) Blue Origin
- (b) Boeing
- (c) Lockheed Martin
- (d) SpaceX

48. 'The Kh-47M2 Kinzhal', a nuclear-capable hypersonic missile, belongs to which one of the following countries?

- (a) China
- (b) France
- (c) Russia
- (d) USA

49. Mariupol city, frequently mentioned in news in the context of Russia-Ukraine conflict, is situated on the coast of

- (a) Aral Sea
- (b) Baltic Sea
- (c) Caspian Sea
- (d) Sea of Azov

50. Recently, with which one of the following countries did India sign the 'Comprehensive Economic Partnership Agreement'?

- (a) Egypt
- (b) Israel
- (c) South Africa
- (d) United Arab Emirates

51. Consider the following historical events in India carefully :

1. The Indian press failed to protest against the Vernacular Press Act of 1878.
2. The Vernacular Press Act of 1878 was introduced by Viceroy Lytton against the counsel of his own Law Member.

Which of the above is/are correct?

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

52. Which of the following pairs of years and historical events is correctly matched?

- (a) 1878 : Second Anglo-Afghan War
- (b) 1885 : Ilbert Bill Controversy
- (c) 1785 : Fox's India Bill
- (d) 1898 : Lord Curzon becomes the Viceroy

53. Which of the following sets of Indian States are landlocked and do **not** have an international boundary?

- (a) Andhra Pradesh, Chhattisgarh, Haryana, Jharkhand and Madhya Pradesh
- (b) Chhattisgarh, Haryana, Jharkhand, Madhya Pradesh and Telangana
- (c) Chhattisgarh, Haryana, Himachal Pradesh, Madhya Pradesh and Telangana
- (d) Andhra Pradesh, Chhattisgarh, Haryana, Himachal Pradesh and Madhya Pradesh

54. Arrange the following passes from West to East direction :

1. Bara Lacha La → HP
2. Shipki La → HP
3. Jelep La → Sikkim
4. Bomdi La → Assam

Select the correct answer using the code given below.

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

55. Which of the following statements is/are correct?

1. The jet streams are high altitude easterly winds.
2. El Niño is a warm ocean current.
3. El Niño appears along the Peru coast.

Select the correct answer using the code given below.

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

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

List-I (Type of plain)	List-II (Characteristic feature)
A. Bhabar	1. Marsh
B. Bhangar	2. Silt
C. Khadar	3. Gravels
D. Delta	4. Kankar

Code :

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

57. A non-banking financial company **cannot**

- (a) give loans
- (b) make investments
- (c) borrow from bank
- (d) seek demand deposits from public and cannot issue cheques

58. The Swaran Singh Committee recommended the insertion of which one of the following provisions into the Constitution of India?

- (a) Doctrine of Pleasure
- (b) Fundamental Duties
- (c) Nomination of Anglo-Indian Members to the Lok Sabha
- (d) Impeachment of the President of India

59. The proceeds from disinvestment are included as

- (a) non-tax revenue
- (b) revenue receipts
- (c) capital receipts
- (d) tax revenue

60. GST is a/an

- (a) destination-based consumption tax
- (b) origin-based production tax
- (c) destination-based sales tax on transaction
- (d) origin-based tax on sales transaction

61. In the first quarter of fiscal year 2020-21, GDP contracted by 23.9 percent and in the second quarter, by 7.5 percent. The Economic Survey, 2020-21 preferred to call it a recovery in

- (a) U-shape
- (b) V-shape
- (c) K-shape
- (d) W-shape

62. Based on the scoring on SDG (Sustainable Development Goals) India Index, the NITI Aayog has classified various States into certain categories. Which one of the following is **not** one of the categories?

- (a) Aspirants
- (b) Performers
- (c) Fast runners
- (d) Achievers

63. Who among the following is credited with the introduction and popularization of Dhrupad form of music?

- (a) Raja Man Singh Tomar of Gwalior
- (b) Tansen
- (c) Naik Gopal
- (d) Shaikh Bahauddin of Barnawa

64. Who among the following is the author of the famous partition narrative, *The Other Side of Silence*?

- (a) Amrita Pritam
- (b) Urvashi Butalia
- (c) Saadat Hasan Manto
- (d) Manju Kapur

65. Which one of the following cities on the banks of Ganges declined in importance when the railway link to Bombay started operating?

- (a) Benaras
- (b) Kanpur
- (c) Mirzapur
- (d) Patna

66. When was the first All India Census attempted?

- (a) 1871
- (b) 1872
- (c) 1881
- (d) 1861

67. Consider the following statements about the seaports in India :

1. There are 4 major and 25 minor seaports in India.
2. The major ports are under the administrative control of the Ministry of Ports, Shipping and Waterways.
3. The minor ports are under the jurisdiction of respective State Maritime Board/State Government.

Which of the statements given above is/are correct?

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

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

List-I (Regional block)	List-II (Headquarters)
A. ASEAN	1. Brussels
B. CIS	2. Vienna
C. EU	3. Minsk
D. OPEC	4. Jakarta

Code :

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

69. Solifluction is a geomorphic process involving a special type of soil flow that is noticed in

- (a) desert regions ✗
- (b) karst regions
- (c) permafrost regions
- (d) savanna regions

70. Which one of the following geologic time periods is associated with the first appearance of the marsupials?

- (a) Lower Cretaceous
- (b) Upper Cretaceous
- (c) Early Jurassic
- (d) Middle Jurassic

71. Which of the following statements about the Border Roads Organization (BRO) is/are correct?

1. BRO is concerned with the construction and maintenance of roads in strategically sensitive areas.
2. BRO undertakes snow clearance in high altitude areas.

Select the correct answer using the code given below.

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

72. Which among the following countries is **not** a member of the North Atlantic Treaty Organization (NATO)?

- (a) Hungary
- (b) Poland
- (c) Belarus
- (d) Turkey

73. Which of the following statements is/are correct?

1. The 15th ASEAN-India Summit was held virtually in March 2022.
2. European Union is India's largest regional trading partner.

Select the correct answer using the code given below.

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

74. What is the term of office of the Chairperson and Members of the National Human Rights Commission?

- (a) 5 years or up to 70 years of age
- (b) 3 years or up to 70 years of age
- (c) 5 years or up to 65 years of age
- (d) 3 years or up to 65 years of age

75. Which of the following sets of nations are members of the BIMSTEC Initiative?

- (a) Bangladesh, Bhutan, Nepal, India and Sri Lanka
- (b) Bangladesh, Bhutan, Nepal, India, Sri Lanka, Thailand and Myanmar
- (c) Bangladesh, Bhutan, Nepal, India, Sri Lanka and Maldives
- (d) Bangladesh, Bhutan, Nepal, India, Myanmar, Sri Lanka and Indonesia

76. At the time of short circuit, the current in an electric circuit

- (a) becomes zero
- (b) remains same
- (c) increases sharply
- (d) decreases sharply

77. If the linear momentum of a moving object changes by two times, then its kinetic energy will change by a factor of

- (a) 2
- (b) 4
- (c) 6
- (d) 8

78. Which one of the following oxides reacts with both acid and base?

- (a) Aluminium oxide
- (b) Calcium oxide
- (c) Sodium oxide
- (d) Potassium oxide

79. Which of the following makes bread soft and spongy when baking soda is added?

- (a) Sodium salt of acid
- (b)  $\text{NaHCO}_3$
- (c)  $\text{CO}_2$
- (d)  $\text{H}_2\text{O}$

80. The average age of father and elder son is 35 years, the average age of father and younger son is 32 years and the average age of the two sons is 17 years. What is the average age of the father and his two sons?

- (a) 30 years
- (b) 27 years
- (c) 28 years
- (d) 29 years

$$\begin{aligned} f + S &= 70 \\ f + Y_S &= 64 \\ \hline S + Y_S &= 34 \\ \hline f - S &= 30 \\ f + S &= 70 \\ \hline 2f &= 100 \\ f &= 50 \\ S &= 20 \\ Y_S &= \frac{14}{3} = 28 \end{aligned}$$

81. A number is 124 more than its one-third. What is that number?

- (a) 194
- (b) 180
- (c) 189
- (d) 186

$$\begin{aligned} x &= 124 + \\ \frac{x}{1} - \frac{x}{3} &= 124 \\ \frac{2x}{3} &= 124 \\ x &= 186 \end{aligned}$$

82. A car travels  $\frac{3}{4}$ th of the distance at a speed of 60 km/hr and the remaining  $\frac{1}{4}$ th of the distance at a speed of  $v$  km/hr. If the average speed for the full journey is 50 km/hr, then the value of  $v$  is

- (a) 40
- (b) 30
- (c)  $100/3$
- (d) 35

$$50 = \frac{4}{20 + \frac{1}{v}}$$

$$50 = \frac{4 \times v}{20v + 1}$$

$$50(20v + 1) = 4v$$

$$1000v + 50 = 4v$$

$$996v = 50$$

$$v = \frac{50}{996} \approx \frac{100}{2000} = \frac{1}{20}$$

$$AV = \frac{\text{Total (d)}^2}{\text{tot} \times r}$$

$$50 = \frac{4}{\frac{1}{20} + \frac{1}{v}}$$

$$50 = \frac{4 \times 20v}{1 + 20v}$$

$$50(1 + 20v) = 80v$$

$$50 + 1000v = 80v$$

$$920v = 50$$

$$v = \frac{50}{920} = \frac{5}{92}$$

$$AV = \frac{\text{Total (d)}^2}{\text{tot} \times r}$$

$$50 = \frac{4}{\frac{1}{20} + \frac{1}{v}}$$

$$50 = \frac{4 \times 20v}{1 + 20v}$$

$$50(1 + 20v) = 80v$$

$$50 + 1000v = 80v$$

$$920v = 50$$

$$v = \frac{50}{920} = \frac{5}{92}$$

83. Suppose A and B can complete a work together in 10 days. If B alone can complete the work in 15 days, then in how many days can A alone finish the work?

- (a) 20 days
- (b) 24 days
- (c) 25 days
- (d) 30 days

$$A + B = 10$$

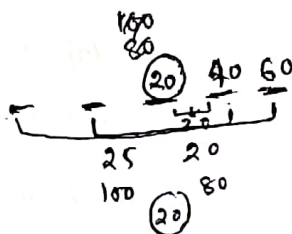
$$B = 15$$

$$\frac{3}{2} \times 30 = 45$$

$$\frac{30}{1} = 30$$

84. If the average of the first four of five numbers in decreasing order is 25 and the average of the last four numbers is 20, then what is the difference between the first and the last number?

- (a) 5
- (b) 10
- (c) 15
- (d) 20



85. Borax is prepared from

- (a) calcium carbonate
- (b) magnesium carbonate
- (c) potassium carbonate
- (d) sodium carbonate

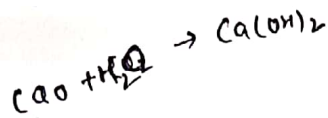
86. Cinnabar is an ore of

- (a) mercury
- (b) zinc
- (c) copper
- (d) lead

87. White gold is an alloy of

- (a) gold, nickel and palladium
- (b) gold, cobalt and palladium
- (c) gold, titanium and platinum
- (d) gold, magnesium and palladium





88. Hydrogenation of alkenes can be carried out in the presence of

- (a) copper
- (b) zinc
- (c) aluminium
- (d) nickel

89. Calcium oxide reacts with water to produce slaked lime. It is an example of

- (a) combination reaction
- (b) decomposition reaction
- (c) oxidation reaction
- (d) addition reaction

90. The atomic radius of hydrogen atom is

- (a) 37 nanometer
- (b) 37 picometer
- (c) 17 picometer
- (d) 57 picometer

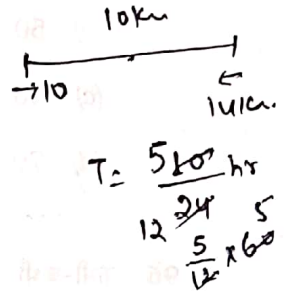
91. There is a group of 5 people among which there is one couple. In how many ways can these 5 people be seated in a row having 5 chairs if the couple is to be seated next to each other?

- (a) 24
- (b) 48
- (c) 60
- (d) 120



92. Two friends 10 km apart start running towards each other at speeds of 10 km/hr and 14 km/hr respectively. After how much time will they meet each other?

- (a) 20 minutes
- (b) 25 minutes
- (c) 28 minutes
- (d) 30 minutes



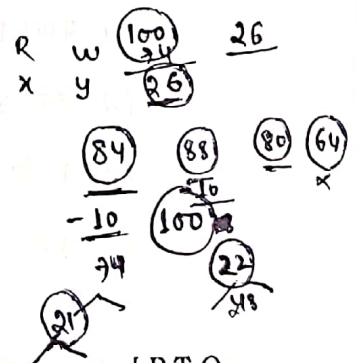
93. A coin is tossed 3 times. The probability of getting exactly 2 heads is

- (a)  $\frac{1}{3}$
- (b)  $\frac{3}{8}$
- (c)  $\frac{1}{2}$
- (d)  $\frac{5}{8}$



94. A test consists of 25 MCQs. Each correct answer gives +4 marks and incorrect answer gives -1 mark. If a candidate scores 74 marks, then how many questions were left unattempted?

- (a) 4
- (b) 3
- (c) 5
- (d) 9



95. A person has a total of 100 coins consisting of ₹ 2 and ₹ 5 coins. If the total value of the coins is ₹ 320, then the number of ₹ 2 coins is

- (a) 40  
(b) 50  
(c) 60  
(d) 70

$$\begin{array}{l}
 \text{100 (coins)} \\
 \swarrow \quad \searrow \\
 2x \quad \quad 5(100-x) \\
 \\
 2x + 5(100-x) = 320 \\
 2x + 500 - 5x = 320 \\
 3x = 180 \\
 x = 60
 \end{array}$$

96. The technology known as 'Electromagnetic Air Lift System' is sometimes talked about in reference to

- (a) launching guided missiles from silos  
(b) launching aircraft from warships  
(c) navigation of nuclear-powered submarines  
(d) development of reusable rockets

97. Consider the following statements :

- Aluminium powder is used as a solid fuel for rocket engines.
- Compared to liquid fuel propelled rocket engines, the thrust per amount of fuel burned is higher in solid fuel propelled rocket engines.

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

98. Consider the following missiles :

- Agni-I
- BrahMos
- Dhanush

Which of the above is/are cruise missile/missiles?

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

99. With reference to India's defence, consider the following helicopters :

- Cheetah
- Chetak
- Rudra

Which of the above has/have turret gun, rocket system and air-to-air missile?

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

100. Recently, India gave a coastal radar system to which one of the following countries?

- (a) Bangladesh  
(b) Maldives  
(c) Sri Lanka  
(d) United Arab Emirates

101. Which one of the following is the difference of the sum of cubes of first ten natural numbers and the sum of squares of first ten natural numbers?

- (a) 2400
- (b) 2640
- (c) 2880
- (d) 2000

$$1^3 + 2^3 + 3^3 + \dots + 10^3$$

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

$$S_n^2 = \frac{(2a+1)(6^2)}{2}$$

102. A person buys an item from a shop for which the shopkeeper offers a discount of 10% on the marked price. The person pays using an e-wallet which gives 10% cash back. Which one of the following is the value of effective discount?

- (a) 20%
- (b) 18%
- (c) 19%
- (d) 21%

$$-10 - 10 + \frac{10 \times 10}{100}$$

$$= -20 + 1$$

$$= -19\%$$

104. Suppose a bank gives an interest of 10% per annum compounded annually for a fixed deposit for a period of two years. What should be the simple interest rate per annum if the maturity amount after two years is to remain the same?

- (a) 10%
- (b) 10.5%
- (c) 11%
- (d) 12%

100 → P

$$\frac{10}{10+1}$$

21 → CI

121

$$21 = \frac{100 \times R \times 2}{100}$$

$$\frac{21}{2} = \dots$$

105. A runner's average speed reduces by 25% every hour. If he runs 16 km in the first hour and he runs for 3 hours, then what is his overall average speed?

- (a) 12 km/hr
- (b) 12.33 km/hr
- (c) 10.33 km/hr
- (d) 13 km/hr

16 km

Total D = 39 km

Total Time

$$\frac{16 \times 3}{3 \text{ hour}}$$

103. A solid spherical ball made of iron is melted and two new balls are made whose diameters are in the ratio of 1:2. The ratio of the volume of the smaller new ball to the original ball is

- (a) 1:3
- (b) 1:5
- (c) 2:9
- (d) 1:9

1:2

$$D = 1:2$$

$$r = \frac{1}{2} : \frac{2}{2}$$

$$r = 1:2$$

$$r = 2D = 2$$

$$r = 2:4 \quad D = 2r$$

$$\frac{2 \times \frac{4}{3} \pi \times 1^3}{1 \times \frac{4}{3} \pi \times 1^3} = \frac{16}{37}$$

$$1 \times \frac{4}{3} \pi r^3 = 2 \times \frac{4}{3} \pi r^3$$

$$1 \times \frac{4}{3} \pi r^3 = 2 \times \frac{4}{3} \pi (r/2)^3$$

106. Trough and ridge are

- (a) elongated area of low pressure and of high pressure respectively
- (b) elongated areas of low pressure
- (c) elongated areas of high pressure
- (d) elongated area of high pressure and of low pressure respectively

$$\frac{4 \times \pi \times 3^3}{3} = \frac{4 \times \pi \times 1}{3}$$

[P.T.O.]

$$1:2 = \frac{1}{2} : \frac{2}{2}$$

$$\frac{1}{3} \pi r^3 = \frac{1}{3} \pi \left(\frac{r}{2}\right)^3$$

$$r^3 = \frac{1}{8} r^3$$

$$r = \frac{1}{2} r$$

107. The boundary layer of the forest at which the energy exchange occurs and some insolation is returned directly to space is

- (a) forest floor
- (b) forest soil
- (c) forest canopy
- (d) forest litter

108. The organisms that prefer high salt concentration habitats refer to as

- (a) alkaliphiles
- (b) calcifuges
- (c) halophiles
- (d) nitrophiles

109. Which one of the following is **not** an operating system?

- (a) MS-Windows
- (b) Linux
- (c) Ubuntu
- (d) MS-Excel

110. Which one of the following protocols is **not** an application layer of the TCP/IP model?

- (a) FTP
- (b) HTTP
- (c) DNS
- (d) IP

111. Which one of the following is a semi-conductor device that is used to increase the power of the incoming signals by preserving the shape of the original signal?

- (a) Register
- (b) Transistor
- (c) Flip-flop
- (d) Diode

112. Which of the following combinations correctly represents the genetic materials in prokaryotes and eukaryotes respectively?

- (a) Nucleoid and Chromatin
- (b) Chromatin and Nucleoid
- (c) Nucleoid and Nucleolus
- (d) Nucleolus and Chromatin

113. Lysosomes are sacs of the cell filled with digestive enzymes. These digestive enzymes are synthesized by

- (a) Golgi bodies
- (b) smooth endoplasmic reticulum
- (c) rough endoplasmic reticulum
- (d) lysosome itself

114. Which of the following best represents the cells of a meristem of plant?

- (a) Dense cytoplasm, thin cell wall, large nuclei and absence of vacuoles
- (b) Dense cytoplasm, thin cell wall, large nuclei and large vacuoles
- (c) Dense cytoplasm, thin cell wall, small nuclei and absence of vacuoles
- (d) Dense cytoplasm, thick cell wall, small nuclei and large vacuoles

115. Which one of the following animals has a four-chambered heart?

- (a) King cobra
- (b) Turtle
- (c) Chameleon
- (d) Crocodile

116. One way of incorporating desired characters into crop varieties is hybridization. In this process, there is crossing between genetically dissimilar plants. Which one of the following crossings will **not** refer to hybridization?

- (a) Intervarietal
- (b) Interspecific
- (c) Intergenic
- (d) Intragenic

117. Depending on the requirements, plant nutrients are classified as micronutrients and macronutrients. Which one of the following is an example of a macronutrient?

- (a) Manganese
- (b) Copper
- (c) Magnesium
- (d) Chlorine

118. Buds produced in the notches along the leaf margin of Bryophyllum fall on soil and develop into new plants. This is an example of which one of the following types of reproduction?

- (a) Vegetative propagation
- (b) Budding
- (c) Spore formation
- (d) Regeneration

119. Phloem tissues are mostly responsible for transport of

- (a) water
- (b) oxygen
- (c) minerals
- (d) food

120. Two objects,  $x$  and  $y$ , have equal mass and are moving with speeds  $u$  and  $3u$  respectively. Their kinetic energies  $k_x$  and  $k_y$  are related as

- (a)  $k_x = k_y$
- (b)  $2k_x = k_y$
- (c)  $9k_x = k_y$
- (d)  $3k_x = k_y$

121. Which one of the following is **not** the unit of pressure?

- (a) pascal (Pa)
- (b)  $\text{N/m}^2$
- (c)  $\text{J/m}^2$
- (d) bar

122. Which one of the following materials **cannot** be used to make a convex lens?

- (a) Aluminium
- (b) Glass
- (c) Sapphire
- (d) Water

123. The optical phenomenon responsible for the blue colour of sky is

- (a) dispersion
- (b) reflection
- (c) refraction
- (d) scattering

124. The electrical device used for converting mechanical energy into electrical energy is called

- (a) voltmeter
- (b) ammeter
- (c) motor
- (d) generator

125. The magnitude of focal length of a concave lens is  $2\text{ m}$ . What is the power of the lens?

- (a)  $+0.5$  dioptre
- (b)  $-0.5$  dioptre
- (c)  $+2.0$  dioptre
- (d)  $-1.0$  dioptre

$$P = \frac{1}{f(\text{m})}$$
$$P = -\frac{1}{2}$$