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1. A wavefront is an imaginary surface where
 - (A) constant phase difference is maintained
 - (B) phase changes at constant rate in all directions along the surface
 - (C) phase is always same for all points
 - (D) phase changes with the rate of $2\pi/\lambda$ per unit length in all directions along the surface
2. The metallurgical process in which metal is obtained in fused state, is called
 - (A) calcination
 - (B) roasting
 - (C) smelting
 - (D) froth floatation
3. The ion possessing maximum magnetic moment is
 - (A) Cr^{2+}
 - (B) Mn^{2+}
 - (C) Fe^{2+}
 - (D) Ti^{2+}
4. The energy released in fission of one atom and fusion of two atoms is
 - (A) dependent on atom
 - (B) equal
 - (C) greater in fusion
 - (D) greater in fission
5. The radius of curvature of the path of a charged particle in uniform magnetic field is directly proportional to
 - (A) momentum of particle
 - (B) charge of particle
 - (C) energy of particle
 - (D) intensity of field
6. Linear structure is **not** assumed by
 - (A) HCN
 - (B) SnCl_2
 - (C) CS_2
 - (D) NO_2^+
7. Lanthanides and actinides resemble in
 - (A) formation of complex
 - (B) electronic configuration
 - (C) oxidation state
 - (D) ionization energy
8. Among the following aqueous solutions, which one shows highest pH?
 - (A) CaCl_2
 - (B) CH_3COONa
 - (C) NaCl
 - (D) $(\text{NH}_4)_3\text{PO}_4$

9. A metal piece is heated up to T K and the temperature of surrounding is t K. The heat loss to the surrounding due to radiation is directly proportional to
- $T^2 - t^2$
 - $(T - t)^4$
 - $(T - t)^{1/4}$
 - $T^4 - t^4$
10. An ideal transformer is used on 220 V line to deliver 2 A current at 110 V. The current through its primary is
- 10 A
 - 0.5 A
 - 1 A
 - 2 A
11. A sinusoidal voltage $V_0 \sin \omega t$ is applied across a series R - L circuit. The amplitude of current in the circuit is
- $V_0 / (R + \omega L)$
 - $V_0 / \sqrt{R^2 - L^2 \omega^2}$
 - V_0 / R
 - $V_0 / \sqrt{R^2 + \omega^2 L^2}$
12. The continuous X-ray spectrum produced by an X-ray machine at constant voltage exhibits
- minimum frequency
 - maximum wavelength
 - minimum wavelength
 - single wavelength
13. In a diffraction experiment, what happens when the red light source is replaced by violet light source?
- Diffraction bands will disappear
 - No change occurs in diffraction pattern
 - Diffraction bands become broader and are far apart
 - Diffraction bands become narrower and are crowded
14. A copper ring is held horizontally and a magnet is dropped through the ring with its length along the axis of copper ring. The acceleration of the falling magnet
- depends upon diameter of ring and length of magnet
 - is equal to that of gravity
 - is less than that due to gravity
 - is greater than that due to gravity
15. Air is compressed suddenly by a piston and then maintained at same position. With time,
- increase or decrease of pressure depends on gas nature
 - pressure increases
 - pressure decreases
 - pressure remains same

16. Which of the following is a temporary memory?
- RAM and ROM
 - EPROM
 - RAM
 - ROM
17. Tendency of pollutants to become concentrated in successive trophic levels is called
- biorhythm
 - biomagnification
 - bioremediation
 - biopiracy
18. Which of the following is **not** a freshwater biome?
- Lotic
 - Lentic
 - Spring
 - Deep sea
19. Burning of lime to yield calcium oxide and carbon dioxide is called
- decomposition process
 - oxidation process
 - reduction process
 - disproportionation process
20. Tendency of electrode to gain electrons is called
- EMF
 - electrode potential
 - reduction potential
 - oxidation potential
21. Which of the following elements is **not** radioactive?
- Zirconium
 - Astatine
 - Francium
 - Tritium
22. If a particle executes SHM with frequency f , its kinetic energy oscillates with frequency
- $4f$
 - $f/2$
 - f
 - $2f$
23. The absolute temperature of a gas is increased three times. The root-mean-square velocity of molecules will be
- $\sqrt{3}$ times
 - 3 times
 - 9 times
 - $1/3$ times
24. In order to increase the resolving power of a telescope, it is necessary to
- decrease diameter of objective
 - increase diameter of eyepiece
 - decrease diameter of eyepiece
 - increase diameter of objective
25. Fraunhofer spectrum is
- line-emission spectrum
 - band-absorption spectrum
 - line-absorption spectrum
 - band-emission spectrum

26. A charge q is placed at the centre of the line joining two equal charges Q . This system will be in equilibrium when the value of q is
- (A) $+\frac{Q}{4}$
(B) $-\frac{Q}{4}$
(C) $+\frac{Q}{2}$
(D) $-\frac{Q}{2}$
27. A body is moved along a straight line by a machine delivering constant power. The distance moved by the body in time t is proportional to
- (A) t^2
(B) $t^{3/2}$
(C) $t^{1/2}$
(D) $t^{1/4}$
28. A compiler of high-level language that runs on one machine and produces code for different machines is called
- (A) cross-compiler
(B) multipass compiler
(C) one-pass compiler
(D) optimizing compiler
29. The storage capacity of 3.5" floppy is
- (A) 3.14 MB
(B) 1.44 MB
(C) 1.24 MB
(D) 2.44 MB
30. The darker zone in lakes where light penetration is negligible, is called
- (A) benthic zone
(B) euphotic zone
(C) littoral zone
(D) limnetic zone
31. The nuclear material(s) in bacteria is/are
- (A) nucleic acid and histone protein
(B) nucleic acid and cytoplasm
(C) only nucleic acid
(D) All of the above
32. The chemical killing or preventing the growth of microorganism is called
- (A) tranquilizer
(B) disinfectant
(C) antiseptic
(D) antibiotic
33. The alkali metal giving hydrated salt is
- (A) Cs
(B) Li
(C) Na
(D) K
34. The least stable ion among the following is
- (A) C^-
(B) Li^-
(C) Be^-
(D) B^-
35. Gas among the following with highest rate of diffusion is
- (A) N_2
(B) O_2
(C) CO_2
(D) NH_3

36. The bond dissociation energies of four bonds C—A, C—B, C—D and C—E are respectively 240 kJ mol^{-1} , 382 kJ mol^{-1} , 276 kJ mol^{-1} and 486 kJ mol^{-1} . The atom with smallest size is
(A) B
(B) E
(C) D
(D) A
37. Which metal among the following is kept in wax to preserve it?
(A) Mg
(B) Na
(C) Li
(D) K
38. The main buffer system of the human blood is
(A) $\text{NH}_2\text{CONH}_2 - \text{NH}_2\text{CONH}^+$
(B) $\text{H}_2\text{CO}_3 - \text{HCO}_3^-$
(C) $\text{H}_2\text{CO}_3 - \text{CO}_3^{2-}$
(D) $\text{CH}_3\text{COOH} - \text{CH}_3\text{COO}^-$
39. Which of the following is correct from dimensional point of view?
(A) $T = 2\pi\sqrt{R^2/GM}$
(B) $T = 2\pi\sqrt{GM/R^3}$
(C) $T = 2\pi\sqrt{GM/R^2}$
(D) $T = 2\pi\sqrt{R^3/GM}$
40. The red flower kept in green light looks
(A) black
(B) red
(C) green
(D) white
41. Speed of cathode rays is
(A) greater than speed of light
(B) equal to speed of light
(C) less than speed of light
(D) Any of the above
42. Apparent weight of a body in the lift will be double of its real weight when
(A) the lift comes down with velocity 9.8 m/sec
(B) the lift comes down with acceleration g
(C) the lift goes up with velocity 9.8 m/sec
(D) the lift goes up with acceleration g
43. In the absence of external forces, the shape of liquid drop is determined by
(A) surface tension
(B) density of liquid
(C) viscosity of liquid
(D) None of the above
44. A proton injected into magnetic field and moving perpendicular to the lines of force takes
(A) helical path
(B) straight path
(C) parabolic path
(D) circular path
45. In electroplating, the article to be electroplated serves as
(A) conductor
(B) cathode
(C) anode
(D) electrolyte

46. If E_n and L_n respectively represent the total energy and angular momentum of an electron in the n th orbit of hydrogen like atom, then E_n and L_n are interrelated as
- $E_n \propto 1/L_n^2$
 - $E_n \propto L_n$
 - $E_n \propto L_n^2$
 - $E_n \propto 1/L_n$
47. The element that can be used as micronutrient in plant is
- Zn
 - P
 - Mg
 - Ca
48. The rate constant of a certain reaction is $10.8 \times 10^{-5} \text{ mol dm}^{-3} \text{ sec}^{-1}$. The order of reaction is
- 3
 - 1
 - 0
 - 2
49. The compound known as pearl ash is
- CaCO_3
 - NaHCO_3
 - K_2CO_3
 - Na_2CO_3
50. The number of d electrons in Fe^{2+} ($Z = 26$) is **not** equal to that of
- p electrons in Cl ($Z = 17$)
 - s electrons in Mg ($Z = 12$)
 - p electrons in Ne ($Z = 10$)
 - d electrons in Fe ($Z = 26$)
51. The hybrid state of C atoms in molecule is
- dsp^2
 - sp
 - sp^2
 - sp^3
52. Nucleophile is
- positively-charged species
 - Lewis acid
 - electron-deficient species
 - electron-rich species
53. Which of the following is **not** an electronic computer?
- PC-DOS
 - IBM 1620
 - ENIAC
 - IBM PC
54. Integrated circuits were first used in
- IVth generation system
 - Ist generation system
 - IInd generation system
 - IIIrd generation system
55. Which of the following conceptual spheres of environment shows least storage capacity for matter?
- Lithosphere
 - Hydrosphere
 - Biosphere
 - Atmosphere

56. Which of the following is the cause of skin cancer?
 (A) Allergen
 (B) Ozone depletion
 (C) Acid rain
 (D) None of the above
57. The user can interact with compiler on a computer system through
 (A) interpreter
 (B) translator
 (C) memory
 (D) None of the above
58. Refreshing cycle is required in which memory?
 (A) SRAM and DRAM
 (B) ROM
 (C) SRAM
 (D) DRAM
59. The focal length of convergent lens made of glass with refractive index μ have been measured for violet and red colour as f_v and f_r respectively. Which of the following is true?
 (A) $f_v = n f_r$
 (B) $f_v = f_r$
 (C) $f_v < f_r$
 (D) $f_v > f_r$
60. The relation $a = -\omega^2 y$ describes SHM of a body. Which of the following is true?
 (A) Kinetic energy is minimum at $y = 0$
 (B) Acceleration is maximum at the end of motion
 (C) Periodic time, $T = 2\pi\sqrt{\omega}$
 (D) Potential energy is maximum at $y = 0$
61. A $2 \mu\text{F}$ capacitor after charging with 12 V potential difference is connected across an inductor of 0.6 mH. The current in the circuit at a time when the potential difference is 6 V, would be
 (A) 0.36 A
 (B) 0.6 A
 (C) 0.3 A
 (D) 1.2 A
62. Intensity of light scattered by air molecules in atmosphere is proportional to
 (A) $1/\lambda^2$
 (B) $1/\lambda$
 (C) $1/\lambda^4$
 (D) $1/\lambda^3$
63. Xylem conducts water from
 (A) tracheids to vessels
 (B) leaves to roots
 (C) fibres to tracheids
 (D) roots to leaves
64. Decomposable and manageable pollutants in nature are termed as
 (A) biodegradable pollutants
 (B) renewable pollutants
 (C) non-biodegradable pollutants
 (D) None of the above
65. Biodegradable waste among the following is
 (A) glass
 (B) plastic
 (C) eggshell
 (D) polythene

66. The least powerful computer among the following is
 (A) minicomputer
 (B) mainframe computer
 (C) supercomputer
 (D) microcomputer
67. The language understood by computer is
 (A) C+ language
 (B) machine language
 (C) assembly language
 (D) All of the above
68. The process to solve a problem on a computer is called
 (A) information
 (B) resource
 (C) algorithm
 (D) None of the above
69. Which of the following is a natural dye?
 (A) Crystal violet
 (B) Phenolphthalein
 (C) Aniline blue
 (D) Alizarin
70. The protein responsible for blood clotting is
 (A) fibrinogen
 (B) albumin
 (C) globulin
 (D) fibroin
71. The outermost electronic configuration of most electronegative elements is
 (A) ns^2np^6
 (B) ns^2np^3
 (C) ns^2np^4
 (D) ns^2np^5
72. A catalyst alters
 (A) activation energy
 (B) entropy
 (C) enthalpy
 (D) internal energy
73. The boiling point (BP) at unit atmospheric pressure is called
 (A) saturated BP
 (B) standard BP
 (C) normal BP
 (D) van der Waals BP
74. There is no atmosphere on the moon because
 (A) escape velocity of gas molecules is less than root-mean-square velocity
 (B) it revolves around the earth
 (C) it is closer to the earth
 (D) it gets light from the sun
75. Two cells of e.m.f. E and internal resistance r are connected in parallel across a resistance R . The power delivered to resistance R is maximum when
 (A) $R = 0$
 (B) $R = r/2$
 (C) $R = r$
 (D) $R = 2r$

76. Which is the biggest hydropower project (in terms of generation) in India?
- (A) Tehri Hydroelectric Project
(B) Bhakra Project
(C) Nathpa Jhakri Project (Now SJVN)
(D) Koyna Hydroelectric Project
77. Which of the following States is the biggest rice producer in India?
- (A) Andhra Pradesh
(B) Uttar Pradesh
(C) Bihar
(D) West Bengal
78. The World's highest Post Office has been renovated with a letter box-shaped building recently and it is located in
- (A) Burtuk village in Sikkim
(B) Hikkim village (Kinnaur) in Himachal Pradesh
(C) Khirsu village in Uttarakhand
(D) Tawang village in Arunachal Pradesh
79. The word 'budget' comes from the Old French word 'bougette', meaning
- (A) briefcase
(B) book
(C) file
(D) small leather purse/bag
80. In the Union Budget, 2022-23, what amount has been allocated for Education Sector?
- (A) 89750 crore
(B) 88000 crore
(C) 98000 crore
(D) 104278 crore
81. The Article 267 of the Indian Constitution relates to
- (A) Distribution of Revenue between Centre and States
(B) Consolidated Fund of India
(C) Contingency Fund of India
(D) None of the above
82. Who among the following Indians has won the 2021 Miss Universe Crown?
- (A) Harnaaz Sandhu
(B) Andrea Meza
(C) Priyanka Chopra
(D) Deepika Padukone
83. Who is the Author of the book titled, *Pride, Prejudice and Punditry*?
- (A) Shashi Tharoor
(B) Bhalchandra Munekar
(C) Anuradha Roy
(D) None of the above
84. Which of the following States has emerged as the poorest State in India at all dimensions as per the Multidimensional Poverty Index (MPI) released by the NITI Aayog?
- (A) Odisha
(B) Bihar
(C) West Bengal
(D) Andhra Pradesh

85. When was Jharkhand carved out of Bihar?
- (A) 2000
(B) 1995
(C) 2007
(D) 2005
86. When a bill is referred to a joint sitting of both the Houses of Parliament, it has to be passed by
- (A) absolute majority of the Houses
(B) a simple majority of the members present and voting
(C) $\frac{3}{4}$ th majority of the members present and voting
(D) $\frac{2}{3}$ rd majority of the Houses
87. Deepika Kumari sportsperson who was conferred Padma Shri and Arjuna Award for which of the following sports?
- (A) Archery
(B) Cricket
(C) Hockey
(D) None of the above
88. What is the forest-covered area in Bihar?
- (A) 7305.99 sq km
(B) 7805 sq km
(C) 6500 sq km
(D) 9500 sq km
89. Which one of the following is the National Aquatic Animal of India?
- (A) Gharial
(B) Saltwater crocodile
(C) Olive ridley turtle
(D) Gangetic dolphin
90. Among the following, which one is the largest exporter of rice in the World in the last five years?
- (A) Vietnam
(B) China
(C) India
(D) Myanmar
91. What is the position of the 'Right to Property' in India at present?
- (A) Fundamental right available to citizens only
(B) Legal right available to citizens only
(C) Legal right available to any person
(D) None of the above
92. The Parliament of India can make any law for whole or any part of India for implementing International treaties
- (A) without the consent of any State
(B) with the consent of all the States
(C) with the consent of more than half of the States
(D) with the consent of the State concerned

93. Which country has won maximum/highest number of ICC Women's World Cup (One Day International) Cricket Matches?
- (A) India
(B) England
(C) Australia
(D) South Africa
94. Nusantara has been selected as the new capital of which of the following countries?
- (A) Indonesia
(B) Japan
(C) Vietnam
(D) South Korea
95. Who among the following has been reelected as the President of Germany for another term of 5 years?
- (A) Frank-Walter Steinmeier
(B) Olaf Scholz
(C) Angela Merkel
(D) Robert Habeck
96. Three countries have jointly topped the Corruption Perception Index (CPI), 2021 released by the Transparency International. Which are those countries?
- (A) France, UK and Germany
(B) New Zealand, Denmark and Finland
(C) Denmark, UK and Sweden
(D) Finland, Norway and Hongkong
97. According to UN World Happiness Report, 2022, which country has been identified as the happiest country in the world?
- (A) Finland
(B) Norway
(C) Denmark
(D) Switzerland
98. Who is the top self-made female billionaire in the world?
- (A) Cheng Xue
(B) Wu Yajun
(C) Fan Hongwei
(D) Denise Coates
99. As per World Air Quality Report, 2021 released on March 2022, which country was found most polluted country in the world?
- (A) India
(B) Pakistan
(C) Bangladesh
(D) Chad
100. Katalin Eva Novak has been elected as the first ever Female President of which of the following countries?
- (A) Belarus
(B) Hungary
(C) Poland
(D) Slovakia

- 101.** Who has climbed Mount Everest maximum times (26 times)?
 (A) Surya Bhahadur Thapa
 (B) Kami Rita Sherpa
 (C) Tenzing Norgay
 (D) None of the above
- 102.** The renowned cricket player (all rounder) who died in road accident on 14th May, 2022, belonged to which country?
 (A) Australia
 (B) West Indies
 (C) South Africa
 (D) England
- 103.** Who are four Indians who have won Pulitzer Prize, 2022 in the feature photography category?
 (A) Manu Brabo, Santi Palacios, Emilio Morenatti and Amit Dave
 (B) Slain photo journalist Danish Siddiqui, Adnan Abidi, Sanna Irshad and Amit Dave
 (C) Sanna Irshad, Amit Dave, Rajkumar and Adnan Abidi
 (D) None of the above
- 104.** 'Good Governance Day' is celebrated every year on 25th December to commemorate the birth anniversary of which of the following Prime Ministers of India (former)?
 (A) Sh. Lal Bhadur Shastri
 (B) Dr. Manmohan Singh
 (C) Smt. Indira Gandhi
 (D) Sh. Atal Bihari Bajpayee
- 105.** Chanu Saikhom Mirabai of India is associated with which of the following sports?
 (A) Archery
 (B) Wrestling
 (C) Boxing
 (D) Weight lifting
- 106.** When was Article 370 abrogated/removed from the Indian Constitution?
 (A) 26th June, 2019
 (B) 26th July, 2019
 (C) 9th May, 2018
 (D) 6th August, 2019
- 107.** Under the provisions of which Article of the Constitution, the Supreme Court ordered the release of Rajiv Gandhi assassination case convict A. G. Perarivalan?
 (A) Article 123
 (B) Article 142
 (C) Article 260
 (D) Article 161
- 108.** As per Transparency International Report, Corruption Perception Index (CPI), 2021, India's ranking is
 (A) 65th
 (B) 105th
 (C) 40th
 (D) 85th

- 109.** Ruchi Soya the largest manufacturer of edible oil company in India was acquired by which of the following?
- (A) Amul Company
(B) Patanjali Ayurved Group
(C) Adani Group
(D) Ambani Group
- 110.** Which Indian (Woman) billionaire topped the 'Hurun Richest self-made Women in World 2022' in the country?
- (A) Mrudula Parekh
(B) Kiran Mazumdar-Shaw
(C) Falguni Nayar
(D) Radha Vembu
- 111.** As per the Economist Intelligence Unit (EIU) released Democracy Index, 2021, India was ranked in the index at
- (A) 46th
(B) 75th
(C) 70th
(D) 65th
- 112.** As per Bloomberg Billionaire Index, who is the Wealthiest Person in Asia (in 2022)?
- (A) Ratan Tata
(B) Mukesh Ambani
(C) Gautam Adani
(D) None of the above
- 113.** Which is the dirtiest capital city in the world?
- (A) Kabul
(B) Dhaka
(C) Dushanbe (Tajikistan)
(D) Delhi
- 114.** Which of the following States has highest forest-covered area in India?
- (A) Madhya Pradesh
(B) Arunachal Pradesh
(C) Himachal Pradesh
(D) Maharashtra
- 115.** In which State of India largest gold reserves have been found?
- (A) Rajasthan
(B) Maharashtra
(C) Bihar
(D) Chhattisgarh
- 116.** Name the Indian cities which have been recognised as the 2021 Tree City of the World by FAO of the UN.
- (A) Mumbai and Hyderabad
(B) Kolkata and Mumbai
(C) Shimla and Dehradun
(D) Indore and Hyderabad
- 117.** Which of the following Indian cities has been ranked second most noise polluted city globally as per the UNEP 'Annual Frontier Report, 2022'?
- (A) Delhi
(B) Moradabad
(C) Mumbai
(D) Kanpur

- 118.** Name the India's First State Assembly which has become totally paperless by implementing National e-Vidhan Application (NeVA) Programme.
- (A) Kerala
(B) Meghalaya
(C) Himachal Pradesh
(D) Nagaland
- 119.** What was the name of the operation launched by the Government of India to bring back its nationals from Ukrain (in 2022)?
- (A) Operation Ganga
(B) Jai Bharat
(C) Operation Jai Hind
(D) None of the above
- 120.** Which road tunnel in India has been recognized as the World's Longest Highway Tunnel (above 10000 ft) by World Book of Records?
- (A) Atal Tunnel
(B) Zojila Tunnel
(C) Banihal-Qazigund Tunnel
(D) Dr. Shyama Prasad Tunnel
- 121.** Which novel has become the first Hindi novel to win International Booker Prize, 2022?
- (A) *Tomb of Sand*
(B) *A Suitable Boy*
(C) *Non-resident Bihari*
(D) *Chaak*
- 122.** The Election Commission of India derives its powers from which of the following Articles of the Indian Constitution?
- (A) Article 224
(B) Article 246
(C) Article 324
(D) None of the above
- 123.** Who is/was the first person from Dalit Caste elected as the President of India?
- (A) K. R. Narayanan
(B) Dr. V. V. Giri
(C) Giani Zail Singh
(D) Ram Nath Kovind
- 124.** According to the World Bank Report on 'Migration and Development' which country has topped the foreign remittance recipient list by receiving \$89 billion (in 2021)?
- (A) Pakistan
(B) China
(C) India
(D) Mexico
- 125.** Which of the following States has largest reserve of copper ore in India?
- (A) Jharkhand
(B) Rajasthan
(C) Odisha
(D) Madhya Pradesh