

1. The value of $1000\left(\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{999 \times 1000}\right)$ is
 (1) 1000 (2) 999 (3) 0 (4) 1001
2. If $(x + a)^2 + (y + b)^2 = 4(ax + by)$, where x, a, y, b are real, the value of $xy - ab$ is
 (1) a (2) 0
 (3) b (4) None of these
3. Number of real roots of the equation $(x^2 + 1)^2 - x^2 = 0$ is
 (1) 4 (2) 2 (3) 1 (4) 0
4. If $r > 0$ and $\sqrt{r} + \frac{1}{\sqrt{r}} = 2$, the value of $r^2 + \frac{1}{r^2}$ is
 (1) 2 (2) 4 (3) 8 (4) 16
5. The number of solution of the equation $\sqrt{6 - 4x - x^2} = x + 4$ is
 (1) 0 (2) 1 (3) 2 (4) 4
6. A common factor of $(41^{43} + 43^{43})$ and $(41^{41} + 43^{41})$ is
 (1) $43 - 41$ (2) $41^{41} + 43^{41}$
 (3) $41^{43} + 43^{43}$ (4) $41 + 43$
7. If $px + qy = 2$, $qx - py = 3$ and $x^2 + y^2 = 1$, the value of $p^2 + q^2$ is
 (1) 11 (2) 12 (3) 13 (4) 15
8. If 'm' men can complete a work in 'd' days, (m + r) men will complete the work in
 (1) (d + r) days (2) $\frac{d}{m}(m + r)$ days
 (3) $\frac{d}{m+r}$ days (4) $\frac{md}{m+r}$ days
9. In a class of 35 students, position of Ram is 7th from the bottom ; whereas position of Rahim is 9th from the top. If position of Tania is exactly the middle of Rahim and Ram, the position of Ram from Tania is
 (1) 11th (2) 13th (3) 10th (4) 9th
10. If 4 lemons are sold at the cost price of 5 lemons, the percentage of profit is
 (1) 15% (2) 20% (3) 25% (4) 22%
11. If the height of a right circular 'cone' is increased by 20%, its volume will be increased by
 (1) 10% (2) 20% (3) 25% (4) 30%
12. If the radii and the heights of a hemisphere, right circular cylinder and a cone be all equal, the ratio their volumes is
 (1) 2 : 3 : 1 (2) 2 : 1 : 3
 (3) 1 : 2 : 3 (4) 3 : 2 : 1
13. If the number of angular points, edges and faces of a tetrahedron be x, y and z respectively, the value of $x - y + z$ is
 (1) 2 (2) 3 (3) 4 (4) 5
14. In ΔABC , BD and CE are perpendicular to CA and AB respectively. If $BD = CE$, then ΔABC is
 (1) Equilateral (2) Isosceles
 (3) Right-angled (4) Scalene
15. Let C_1 and C_2 be the inscribed and circumscribed circles of a triangle with sides 3 cm, 4 cm and 5 cm. Then $\frac{\text{area of } C_1}{\text{area of } C_2}$ is equal to
 (1) $\frac{16}{25}$ (2) $\frac{4}{25}$ (3) $\frac{9}{25}$ (4) $\frac{9}{16}$
16. If the greatest and least values of $(p + q \sin \theta)$ are 9 and 7 respectively, the values of p and q are respectively
 (1) 8, 1 (2) 5, 4 (3) 6, 3 (4) 7, 2
17. If the angles of a triangle are in the ratio 1 : 2 : 1, the ratio of their corresponding sides is
 (1) 2 : 1 : 2 (2) 1 : 2 : $\sqrt{2}$
 (3) 1 : $\sqrt{2}$: 1 (4) $\sqrt{2}$: 1 : $\sqrt{2}$
18. If $\tan \theta + 4 \cot \theta = 4$, the value of $\tan \theta + \cot \theta$ is
 (1) $8\frac{1}{8}$ (2) $2\frac{1}{2}$ (3) $7\frac{9}{8}$ (4) $27\frac{1}{27}$

19. In $\triangle ABC$, if $\angle B = 60^\circ$, $\angle C = 30^\circ$, AD is perpendicular drawn from A on BC. then the value of $\frac{\sin^2 \angle BAD - \cos^2 \angle BAD}{\cos^2 \angle CAD - \sin^2 \angle CAD}$
- (1) 1 (2) $\frac{1}{3}$ (3) $\frac{3}{4}$ (4) $1\frac{1}{3}$
20. The maximum value of $\cos^6\theta + \sin^6\theta$ is
 (1) 1 (2) 0 (3) 4 (4) 2
21. In the equation of motion : $s = at + bt^2$, the unit of a and b are respectively
 (1) m/s^2 , m/s^2 (2) m/s , m/s^2
 (3) m/s^2 , m/s^3 (4) m/s , m/s^3
22. A body of mass m collides against a wall with velocity v and rebounds with the same speed. The change of momentum of the body is given by
 (1) Zero (2) mv (3) 2mv (4) -mv
23. Electromotive force denotes
 (1) Energy
 (2) Energy per unit charge
 (3) Current
 (4) Force
24. Fuel used in atomic reactor is
 (1) H^1 (2) D_2 (3) D_2O (4) U^{235}
25. Angular momentum is a
 (1) Scalar quantity
 (2) Polar vector quantity
 (3) Axial vector quantity
 (4) None of these
26. The working principle of Jet engine depends on the principle of
 (1) Conservation of mass
 (2) Conservation of energy
 (3) Conservation of linear momentum
 (4) Conservation of angular momentum
27. Which of the following pair have same unit?
 (1) Heat and Specific Heat
 (2) Thermal Capacity and Water Equivalent
 (3) Specific Heat and Thermal Capacity
 (4) Heat and Work
28. When light wave is refracted from one medium to another medium, which of the following quantity will not change in respect of the wave?
 (1) Wavelength (2) Amplitude
 (3) Frequency (4) Velocity
29. A $12\ \Omega$ resistance wire is doubled on itself. Calculate the value of the new resistance offered by the wire.
 (1) $3\ \Omega$ (2) $4\ \Omega$
 (3) $6\ \Omega$ (4) $24\ \Omega$
30. The half life and disintegration constant of two radioactive elements are T_1 , T_2 and λ_1 , λ_2 respectively. If $T_1 < T_2$ then the correct relation is
 (1) $\lambda_1 > \lambda_2$ (2) $\lambda_1 < \lambda_2$
 (3) $\lambda_1 = \lambda_2$ (4) $\lambda_1 = 2\lambda_2$
31. The frequency of two sound sources are 480 Hz and 960 Hz respectively. If T_1 and T_2 are the time periods, the correct relation is
 (1) $T_1 = T_2$ (2) $T_1 = 2T_2$
 (3) $2T_1 = T_2$ (4) $3T_1 = T_2$
32. The resistance of an ideal ammeter should be
 (1) Zero (2) very low
 (3) Very high (4) Infinite
33. What is the equivalent resistance between any two opposite corner points of a quadrilateral, if the sides of the quadrilateral are of equal resistance R?
 (1) $3R$ (2) $2R$ (3) R (4) $\frac{2R}{3}$
34. The linear momentum p of a body having mass m is given by
 (1) $p = \sqrt{2mE}$ (2) $p = \sqrt{\frac{E}{2m}}$
 (3) $p = \sqrt{\frac{2m}{E}}$ (4) $p = \frac{E^2}{2m}$
35. Which one of the following is true about the two statements?
 Statement-I : All the isotopes of a given element show.
 Statement-II : Chemical properties of an element is controlled by the number of electrons in the atoms of it.
 (1) Both I & II are correct
 (2) Both I & II are false
 (3) I is correct but II is false
 (4) II is correct but I is false

- 36.** Which two metals turns passive in contact with concentrated HNO_3 out of the following?
Zn, Fe, Mg, Cu, Al, Sn, Hg, Ag
(1) Zn, Mg (2) Fe, Al
(3) Cu, Sn (4) Hg, Ag
- 37.** 1 litre of N_2 and $\frac{7}{8}$ litre of O_2 are mixed together under the same conditions of temperature and pressure. What relation will exist between the masses of the two gases in the mixture?
(1) $m_{\text{N}_2} = 3 m_{\text{O}_2}$ (2) $m_{\text{N}_2} = 8 m_{\text{O}_2}$
(3) $m_{\text{N}_2} = m_{\text{O}_2}$ (4) $m_{\text{N}_2} = 16 m_{\text{O}_2}$
- 38.** Which set of compounds will be used in correct order for separation of a mixture of methane, ethylene and acetylene?
Concentrated H_2SO_4 , KMnO_4 , Br_2 , Concentrated HCl, Ammoniacal $\text{Cu}_2\text{Cl}_2, \text{Cl}_2$
(1) Ammoniacal Cu_2Cl_2 , concentrated HCl and Concentrated H_2SO_4
(2) Br, concentrated HCl, Ammoniacal Cu_2Cl_2
(3) Ammoniacal Cu_2Cl_2 concentrated H_2SO_4 , KMnO_4
(4) Ammoniacal $\text{Cu}_2\text{Cl}_2, \text{Cl}_2$ concentrated HCl
- 39.** The number of gram-molecule of Oxygen in 6.022×10^{24} molecules of carbon monoxide is
(1) 5 gm molecule (2) 10 gm molecule
(3) 1 gm molecule (4) 0.5 gm molecule
- 40.** When the same quantity of Zn is allowed to act separately with excess of H_2SO_4 and NaOH, the volume of H_2 gas evolved at same temperature and pressure will be in the ratio
(1) 1 : 1 (2) 1 : 2 (3) 2 : 1 (4) 9 : 4
- 41.** For an ideal gas, the number of moles per litre in terms of pressure P, gas constant R and temperature T is
(1) $\frac{PT}{R}$ (2) PRT (3) $\frac{P}{RT}$ (4) $\frac{RT}{P}$
- 42.** The atomic number of a metal M is 11. The formula of its oxide will be
(1) MO (2) M_2O (3) M_2O_3 (4) MO_2
- 43.** Which of the following mixture on mixing with distilled water will make the water hard?
(1) $\text{Na}_2\text{SO}_4 + \text{NaCl}$ (2) $\text{NaNO}_3 + \text{NH}_4\text{NO}_3$
(3) $\text{MgSO}_4 + \text{Na}_2\text{SO}_4$ (4) $\text{KCl} + \text{NaCl}$
- 44.** Which of the following pairs of compounds perform both combustion and addition reaction?
(1) $\text{C}_2\text{H}_6, \text{C}_3\text{H}_8$ (2) $\text{C}_2\text{H}_6\text{O}, \text{C}_3\text{H}_8\text{O}$
(3) $\text{C}_2\text{H}_2, \text{C}_2\text{H}_4$ (4) $\text{C}_4\text{H}_{10}, \text{C}_5\text{H}_{12}$
- 45.** Which of the following elements is most non-metallic?
(1) Na (2) F (3) Be (4) S
- 46.** Which one of the following statements is applicable regarding the number of bonds and the nature of bonds between two carbon atoms in CaC_2 compound?
(1) One Sigma (σ) bond and one Pi (π) bond
(2) One Sigma (σ) bond and two Pi (π) bond
(3) One Sigma (σ) bond and one and half Pi (π) bonds.
(4) One Sigma bond.
- 47.** Formula of a metallic oxide is M_2O_3 . Upon reduction with hydrogen the metallic oxide gives pure metal and water. 0.112 gm metal is produced by 6 mg of hydrogen after complete reduction. Atomic mass of the metal is
(1) 28 (2) 160 (3) 56 (4) 8
- 48.** The primary electron acceptor in cyclic photophosphorylation is
(1) a protein that contains iron and sulphur
(2) Carbon-di-oxide
(3) FAD
(4) NADP⁺
- 49.** The two strands of a double-helix model of DNA are held together by hydrogen bonds between
(1) sugar and phosphate groups
(2) sugars and nitrogenous bases
(3) phosphate group and nitrogenous bases
(4) nitrogenous bases
- 50.** The energy source that drives the upward flow of water in plant is
(1) light (2) sucrose
(3) solar heat (4) ATP

51. Nitrogen fixation by bacteria requires the enzyme
(1) decarboxylase (2) nitrogenase
(3) nitrogen deaminase (4) nitrodioxidase
52. The maximum number of microvilli occur in
(1) Distal convoluted tubule
(2) Proximal convoluted tubule
(3) Loop of Henle
(4) Collecting tubule
53. Brunners gland occur in
(1) Stomach (2) Duodenum
(3) Jejunum (4) Caecum
54. Function of Eustachian tube is
(1) Air flows through it
(2) Connected mouth cavity with the middle ear
(3) Maintain equilibrium of air pressure on either side of the tympanum
(4) Both (2) and (3)
55. Which one of the following is a true statement?
(1) Sweat and tears contain germ killing substances.
(2) Antibiotics are useful against viral disease.
(3) DPT vaccination is given against diphtheria pertussis and typhoid.
(4) Our body can produce only a limited variety of different antibiotics.
56. When CO_2 concentration in blood increases, breathing becomes
(1) Shallower and slow
(2) There is no effect on breathing
(3) Slow and deep
(4) Faster and deeper
57. The greenish colour of bile is due to
(1) biliverdin and bilirubin (2) melanin
(3) haematochrome (4) all of these
58. In an ecosystem volvox is a
(1) Plankton (2) Necton
(3) Benthos (4) Phyto plankton
59. Which of the following is a hormone secreted from the stomach?
(1) gastrin (2) Bradykinin
(3) Somatomedin (4) Renin
60. Which of the options given below would not work in the following sentence?
In order for the body to absorb and use _____ these must be broken down by hydrolysis into _____.
(1) polysaccharides, monosaccharides
(2) amino acids, proteins
(3) fats, glycerol and fatty acids
(4) disaccharides, monosaccharides
61. The Mauryan dynasty was overthrown by
(1) Harshavardhana (2) Samudragupta
(3) Pushyamitra Sunga (4) Kanishka
62. Who presided over the fourth Buddhist Council?
(1) Basumitra (2) Basubandhu
(3) Kanishka (4) Nagarjuna
63. Whose pseudonym was P. N. Thakur?
(1) Rashbehari Bose
(2) Jatindranath Mukhopadhyay
(3) Birendranath Chattopadhyay
(4) Batukeshwar Dutta
64. 'The Atmiya Sabha' was founded by
(1) Raja Rammohan Roy
(2) Devendranath Tagore
(3) Keshab Chandra Sen
(4) Shibnath Shastri
65. The famous bronze image of Nataraja is a fine example of
(1) Chola Art (2) Gandhara Art
(3) Pallava Art (4) Mauryan Art
66. The Court language of the Mughals was
(1) Arabic (2) Hindi
(3) Urdu (4) Persian
67. Who among these was not a 'moderate'?
(1) Surendranath Banerjee
(2) Ferozeshah Mehta
(3) Lala Lajpat Rai
(4) Gopal Krishna Gokhale
68. Who was the Prime Minister of England at the time of Indian Independence ?
(1) Ramsay Mac Donald (2) Stanley Boldwin
(3) Winston Churchill (4) Clement Attlee
69. Which day is celebrated as the 'United Nation's Day'?
(1) 25th April, 1945
(2) 26th June, 1945
(3) 24th October, 1945
(4) 31st December, 1945

- 70.** Who became the first Election Commissioner of India?
 (1) T. N. Seshan
 (2) Sukumar Sen
 (3) Rammonohar Lohia
 (4) A. K. Gopalan
- 71.** The result of the perihelion position of the earth is
 (1) Earth's temperature increases
 (2) The northern hemisphere is tipped maximum towards the sun
 (3) Velocity of earth's rotation and revolution increases
 (4) Duration of day increases than night in northern hemisphere
- 72.** If a person crosses international date line from east to west what will be the result
 (1) He will lose one day
 (2) He will gain one day
 (3) He will lose 12 hours
 (4) He will lose two days
- 73.** To determine the location (Latitude & Longitude) of a ship on the sea which of the following instruments and charts are necessary
 (1) Compass, sextant or theodolite, nautical almanac (a chart which shows declination)
 (2) Sextant or Theodolite, Compass, Chronometer
 (3) Sextant or Theodolite, Chronometer, Nautical almanac
 (4) Prismatic compass, Sextant, Chronometer.
- 74.** Dalerite, a semi crystalline rock is composed of felsic minerals, These are
 (1) Iron and silica (2) Feldspar and silica
 (3) Magnesium and silica (4) Nickel and silica
- 75.** The magnitude of earthquake of Gujrat, in 2001 was 6.9 Richter, where as the earthquake of Indonesia in 2004 it was 8.9 Richter. If the intensity of energy released by the 1st one is 10 unit then what will be the intensity of 2nd one ?
 (1) 200 units (2) 100 unit
 (3) 1,000 unit (4) 10,000 unit
- 76.** Which of the following factors control weathering?
 (1) Structure of rocks
 (2) Nature of ground slope
 (3) Climatic variations
 (4) All of these
- 77.** Highest humidity is found in the atmosphere during the rainy season in the
 (1) Midnight (2) Evening
 (3) Noon (4) Morning
- 78.** Which of the following climatic type is said to be characterised by 'Three eighties' 80°F of temperature, 80% of humidity and 80 inches of rainfall?
 (1) Equatorial climate
 (2) Mediterranean climate
 (3) Tropical monsoon climate
 (4) Temperate climate
- 79.** Cotton textile industries are widely distributed throughout the country, because of
 (1) High quality cotton is produced throughout the country
 (2) Cotton is a pure raw material
 (3) Cotton is a weight losing raw material
 (4) Transportation cost of raw cotton is relatively low
- 80.** Which of the following is the best example of 'Playas'?
 (1) Tarim basin (2) Mississippi basin
 (3) Congo basin (4) None of these
- 81.** How many fundamental rights are there in the Constitution of India?
 (1) 5 (2) 6 (3) 7 (4) 8
- 82.** Lok Sabha is elected for
 (1) Three years (2) Four years
 (3) Five years (4) Seven years
- 83.** The Chief Election Commissioner of India is appointed by
 (1) The President of India
 (2) The Prime Minister of India
 (3) The Chairman of the Rajya Sabha
 (4) The Speaker of the Lok Sabha
- 84.** The final interpreter of the Indian Constitution is the
 (1) Parliament (2) President
 (3) Supreme Court (4) Election Commission
- 85.** 'The Prince' was written by
 (1) Thomas Hobbes (2) Niccolo Machiavelli
 (3) Aristotle (4) David Easlon
- 86.** Who said that "Law is the Command of Sovereign"?
 (1) John Austin (2) Green
 (3) Laski (4) Hegel

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| <p>87. The theory of 'General Will' was opagated by
 (1) Bentham (2) Rousseau
 (3) James Milli (4) Alan Ball</p> <p>88. The name of the present Secretary General United Nations is
 (1) Ban Ki Moon (2) U Thant
 (3) Hammarskjold (4) Waldheim</p> <p>89. The Government of which country is federal in form?
 (1) Britain
 (2) Bangladesh
 (3) The United Slates of American
 (4) France</p> <p>90. Who is the father of Political Science?
 (1) Marx (2) Gettle
 (3) Plato (4) Aristotle</p> <p>91. The supply of which factor of production is fixed?
 (1) Land (2) Labour
 (3) Capital (4) Organisation</p> <p>92. In an open economy GDP (Gross Domestic Product) and GNP (Gross National Product) are
 (1) never equal
 (2) always equal
 (3) equal only in quilibrium
 (4) equal when income from abroad is zero</p> <p>93. NABARD stands for
 (1) National Aeronautics and Ballastic Research Development
 (2) National Bank for Agriculture and Rural Development
 (3) National Bank for Agricultural Research and Development
 (4) National Board for Aquatic Research and Development</p> | <p>94. If an increase in the price of petrol leads to a decrease in the demand for cars 'petrol' and 'cars' are
 (1) substitute (2) complements
 (3) normal goods (4) inferior goods</p> <p>95. Devaluation of rupee means
 (1) fall in the weight of coins
 (2) fall in the domestic purchasing power of rupee
 (3) fall in the external purchasing power of rupee
 (4) fall in the face value of rupee</p> <p>96. The pole to pole diameter of the earth is approxi- mately:
 (1) 12715 km (2) 12714 km
 (3) 12757 km (4) 13714 km</p> <p>97. Aeroplanes can fly round the Earth following the Mercator's:
 (1) Diagram (2) Map
 (3) Chart (4) Theory</p> <p>98. All planetary bodies including sun, moon & planets show _____outlines.
 (1) Flat (2) Circular
 (3) Sharp (4) Bulged</p> <p>99. When we look forward in open field the sky has seemed to us as merged with the surface of the earth called:
 (1) Horizon (2) Zenith
 (3) Surface (4) Circumference</p> <p>100. Around _____BC, the great Aristotle first de- clared that the earth was round or sphere-like ob- ject.
 (1) 250 (2) 600
 (3) 350 (4) 500</p> |
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