

Physics

1. A ray of light is incident at an angle of incidence 60° from air to liquid. What is the ratio of width from air to liquid if angle of refraction is 45° ?
- (a) $\frac{\sqrt{2}}{3}$ (b) $\sqrt{\frac{3}{2}}$
(c) $\sqrt{\frac{2}{3}}$ (d) $\frac{1}{\sqrt{2}}$
(e) $\frac{\sqrt{3}}{2}$
2. The nature of path of an electron when it moves in transverse electric field is
- (a) circle (b) ellipse
(c) parabola (d) hyperbola
(e) straight line
3. In photoelectric emission, one photon is capable of emitting
- (a) one electron
(b) two electrons
(c) more electrons
(d) Both (a) and (b)
(e) None of the above
4. Identify the incorrect relation.
- (a) $\alpha = \frac{\beta}{1 - \beta}$ (b) $\beta = \frac{\alpha}{1 - \alpha}$
(c) $\alpha = \frac{\beta}{1 + \beta}$ (d) $1 - \alpha = \frac{1}{1 + \beta}$
(e) $\beta = \alpha(1 + \beta)$
5. The depletion layer in p - n junction region is caused by
- (a) drift of electrons
(b) migration of impurity ions
(c) drift of holes
(d) diffusion of charge carriers
(e) None of the above
6. Dimensional formula for entropy is identical to that of
- (a) universal gas constant
(b) specific heat
(c) Boltzmann constant
(d) gravitational potential
(e) None of the above
7. If the velocity of projection is increased by 1% (other things remaining constant), the horizontal range will increase by
- (a) 1% (b) 2%
(c) 4% (d) 8%
(e) 10%
8. A mass m is placed on an inclined plane. If the mass is in equilibrium, the maximum inclination of the plane with the horizontal would be : (where μ is the coefficient of friction between the mass and surface)
- (a) $\tan^{-1}(\mu)$ (b) $\tan^{-1}\left(\frac{\mu}{2}\right)$
(c) $\tan^{-1}\left(\frac{\mu}{m}\right)$ (d) $\cos^{-1}(\mu)$
(e) $\tan^{-1}\left(\frac{m}{\mu}\right)$
9. Light of two different frequencies whose photons have energies 1 eV and 2.5 eV successively illuminate a metal of work function 0.5 eV. The ratio of the maximum speeds of the emitted electrons will be

- (a) 1 : 5
(c) 1 : 2
(e) 2 : 1
- (b) 1 : 4
(d) 1 : 1
10. The half-life of a radioactive element depends upon
(a) temperature
(b) pressure
(c) nature of element
(d) amount of radioactive element
(e) None of the above
11. The gravitational field in a region is given by $I = (4\hat{i} + \hat{j}) \text{ N/kg}$. The work done by this field is zero when a particle is moved along the line
(a) $x + y = 6$
(c) $y + 4x = 6$
(e) $x + y = 8$
(b) $x + 4y = 6$
(d) $x - y = 6$
12. A satellite with kinetic energy E revolving round the earth in a circular orbit. The minimum additional KE required for it to escape into outer space is
(a) $\sqrt{2}E$
(c) $E/\sqrt{2}$
(e) $\frac{E}{2}$
(b) $2E$
(d) E
13. The magnitude of the force developed by raising the temperature from 0°C to 100°C of the iron bar 1.0 m long and 1 cm^2 cross-section, when it is held so that it is not permitted to expand or bend is ($\alpha = 10^{-5}/^\circ\text{C}$, $Y = 10^{11} \text{ N/m}^2$)
(a) 10^3 N
(c) 10^5 N
(e) 10^2 N
(b) 10^4 N
(d) 10^9 N
14. The alpha and beta particles cause ionisation because of
(a) photoelectric emission
(b) Compton collision
(c) pair production
(d) the electrostatic force
(e) None of the above
15. Which one of the following is the weakest kind of bonding in solids?
(a) Ionic
(c) van der Waal's
(e) None of these
(b) Metallic
(d) Covalent
16. A wave travelling along a stretched string is represented by $y = 3 \cos \pi(100t - x)$. Its wavelength is
(a) 3 cm
(c) 2 cm
(e) 8 cm
(b) 100 cm
(d) 5 cm
17. A disc of mass 10 g is kept horizontally in air by firing bullets of mass 5 g each at the rate of 10 per second. If the bullets rebound with the same speed, what is the velocity with which the bullets are fired?
(a) 49 cm/s
(c) 147 cm/s
(e) 208 cm/s
(b) 98 cm/s
(d) 196 cm/s
18. Frequency of the series limit of Balmer series of hydrogen atom in term of Rydberg constant R and velocity of light c is
(a) $\frac{4}{Rc}$
(c) $\frac{Rc}{4}$
(e) $\frac{Rc}{2}$
(b) $4Rc$
(d) Rc
19. The inductive reactance X_L of induction coil is
(a) always constant in AC circuit
(b) directly proportional to frequency of AC
(c) inversely proportional to frequency of AC
(d) directly proportional to time period
(e) None of the above
20. A 100 mH coil carries 1 A current. Energy stored in its magnetic field is
(a) 0.1 J
(c) 0.5 J
(e) None of these
(b) 0.05 J
(d) 1 J
21. Liquids and gases never show
(a) diamagnetic properties
(b) paramagnetic properties
(c) ferromagnetic properties
(d) Both (a) and (b)
(e) None of the above
22. The deflection of tangent galvanometer is governed
(a) by a horse shoe magnet
(b) by current in a circular coil
(c) by current in a rectangular coil placed between the pole pieces of a magnet

- (d) by pole pieces of an external bar magnet
(e) None of the above
23. Two small magnets each of magnetic moment 10 Am^2 are placed in end on position 0.1 m apart from their centres. The force acting between them is
(a) $0.6 \times 10^7 \text{ N}$ (b) $0.06 \times 10^{-7} \text{ N}$
(c) 0.6 N (d) 0.06 N
(e) $0.06 \times 10^{-10} \text{ N}$
24. A coil of cross-sectional area 400 cm^2 having 30 turns is making 180 rev/min in a magnetic field of 1 T . The peak value of the induced emf is
(a) 0.4 V (b) 0.6 V
(c) 226 V (d) 2.26 V
(e) 22.6 V
25. For a thermocouple, the temperature of cold junction (T_c), the neutral temperature (T_n) and the temperature of inversion (T_i) are 0°C , 285°C , 570°C respectively. If the temperature of cold junction (T_c) is raised to 10°C , then
(a) $T_n = 275^\circ\text{C}$ and $T_i = 570^\circ\text{C}$
(b) $T_n = 275^\circ\text{C}$ and $T_i = 560^\circ\text{C}$
(c) $T_n = 285^\circ\text{C}$ and $T_i = 560^\circ\text{C}$
(d) $T_n = 295^\circ\text{C}$ and $T_i = 580^\circ\text{C}$
(e) $T_n = 560^\circ\text{C}$ and $T_i = 285^\circ\text{C}$
26. The wires A and B are of same material and same length but their radii are in the ratio $1 : 2$. They are stretched by the same force. Strain produced in two wires is
(a) $2 : 1$ (b) $1 : 2$
(c) $1 : 4$ (d) $4 : 1$
(e) $1 : 8$
27. Heat is transmitted from higher to lower temperature due to the molecular collision in
(a) conduction
(b) radiation
(c) convection
(d) convection and radiation
(e) None of the above
28. A wire of length 10 cm is placed horizontal on the surface of water and is gently pulled up with a force of $1.8 \times 10^{-2} \text{ N}$ to keep the wire in equilibrium. The surface tension of water will be
(a) 0.99 N/m (b) 0.09 N/m
(c) 0.59 m (d) 59 N/m
(e) None of these
29. A solid sphere rolls down without slipping from rest on a 30° incline. Its linear acceleration is
(a) $\frac{5g}{7}$ (b) $\frac{5g}{14}$
(c) $\frac{2g}{3}$ (d) $\frac{g}{3}$
(e) $\frac{5g}{17}$
30. The time period of simple pendulum in a satellite is
(a) 4 s
(b) zero
(c) cannot be calculated
(d) infinite
(e) $\frac{3}{2} \text{ s}$
31. An electric bulb has power rating of 60 W , 220 V . If it is connected to a source of rms voltage 110 V , the power consumed is
(a) 125 W (b) 15 W
(c) 30 W (d) 60 W
(e) 40 W
32. In an AC circuit, $E = 220 \sin 100\pi t$. If the impedance is 110Ω and phase angle $\phi = 60^\circ$, the power consumption is
(a) 440 W (b) 220 W
(c) 110 W (d) 55 W
(e) 1000 W
33. The Lyman series of hydrogen lies in the region
(a) microwave
(b) infrared
(c) visible
(d) ultraviolet
(e) None of the above
34. A radioactive element disintegrates 2 h and its $1/16$ th part remain undisintegrated. Half life of the element will be
(a) 0.5 h (b) 1 h
(c) 8 h (d) 4 h
(e) 2 h

35. Ozone layer blocks the radiation of wavelength
 (a) more than 3×10^{-7} m
 (b) less than 3×10^{-7} m
 (c) equal to 3×10^{-7} m
 (d) equal to 10^{-7} m
 (e) more than 10^6 m
36. The resistance of discharge tube is
 (a) non-ohmic (b) zero
 (c) ohmic (d) one
 (e) None of these
37. A bulb has specifications of 1 kW and 250 V, the resistance of bulb is
 (a) 625 Ω (b) 0.25 Ω
 (c) 6.25 Ω (d) 62.5 Ω
 (e) 2.5 Ω
38. The internal energy of the working substance in any cyclic process
 (a) increases (b) decreases
 (c) remain constant (d) becomes zero
 (e) None of these
39. Out of the following electromagnetic radiations which has the shortest wavelength?
 (a) Radiowaves (b) Infrared
 (c) Ultraviolet (d) Visible light
 (e) X-rays
40. The modulus of elasticity is dimensionally equivalent to
 (a) strain
 (b) force
 (c) stress
 (d) coefficient of viscosity
 (e) Work
41. A tiger chases a deer 30 m ahead of it and gains 3 m in 5 s after the chase began. The distance gained by the tiger in 10 s is
 (a) 6 m (b) 12 m
 (c) 18 m (d) 20 m
 (e) 16 m
42. The speed of projection of a projectile is increased by 10% without changing the angle of projection. The percentage increase in the range will be
 (a) 10% (b) 20%
 (c) 15% (d) 5%
 (e) 25%
43. A sphere is suspended by a thread of length l . The minimum horizontal velocity which has to be imparted to the sphere for it to reach the height of suspension is
 (a) $2\sqrt{gR}$ (b) $\sqrt{2gl}$
 (c) $2gl$ (d) gl
 (e) $\sqrt{gl/2}$
44. A vehicle of mass 120 kg is moving with a uniform velocity of 108 km/h. The force required to stop the vehicle in 10 s is
 (a) 90 N (b) 180 N
 (c) 360 N (d) 720 N
 (e) 810 N
45. The change in potential energy when a body of mass m is raised to a height nR from the centre of earth ($R =$ radius of earth)
 (a) $mgR \frac{(n-1)}{n}$ (b) $nmgR$
 (c) $mgR \left(\frac{n^2}{n^2+1} \right)$ (d) $mgR \left(\frac{n}{n+1} \right)$
 (e) mgR
46. A particle of mass 1 kg is moving in SHM with an amplitude 0.02 m and a frequency of 60 Hz. The maximum force in newton acting on the particle is
 (a) $188\pi^2$ (b) $144\pi^2$
 (c) $288\pi^2$ (d) $12\pi^2$
 (e) None of these
47. The equation of a spherical progressive wave is
 (a) $y = a \sin \omega t$
 (b) $y = a \sin(\omega t - kr)$
 (c) $y = \frac{a}{\sqrt{r}} \sin(\omega t - kr)$
 (d) $y = \frac{a}{r} \sin(\omega t - kr)$
 (e) None of the above
48. The moment of inertia of a rod (length l , mass m) about an axis perpendicular to the length of the rod and passing through a point equidistant from its mid-point and one end, is
 (a) $\frac{ml^2}{12}$ (b) $\frac{7}{48} ml^2$
 (c) $\frac{13}{48} ml^2$ (d) $\frac{19}{48} ml^2$
 (e) $\frac{14}{48} ml^2$

49. At constant volume, temperature is increased, then
- collision on walls will be less
 - number of collisions per unit time will increase
 - collisions will be in straight lines
 - collisions will not change
 - None of the above
50. A rain drop of radius 0.3 mm has a terminal velocity 1 m/s in the air. The viscosity of air is 18×10^{-5} P. The viscous force on it is
- 101.73×10^{-4} dyne
 - 101.73×10^{-5} dyne
 - 16.95×10^{-5} dyne
 - 16.95×10^{-4} dyne
 - 1.6×10^{-4} dyne
51. Magnetic field intensity due to a dipole varies as d^n ; d = distance of observation point from dipole, where n is equal to
- 2
 - 2
 - 3
 - 3
 - None of these
52. If the photon of energy 12.1 eV is incident on hydrogen gas, the gas will emit per second
- few lines in Balmer and Lyman series
 - all the lines in Balmer series
 - few lines in Balmer series
 - Balmer series only
 - None of the above
53. A body is moving in circular motion of constant radius, then
- the net acceleration of the body may be towards the centre of the circle
 - the net acceleration of the body may not be towards the centre of the circle
 - the velocity of the body must change
 - All of the above
 - None of the above
54. For a constant hydraulic stress on an object, the fractional change in the object's volume $\left(\frac{\Delta V}{V}\right)$ and its bulk modulus (B) are related as

- $\frac{\Delta V}{V} \propto B$
 - $\frac{\Delta V}{V} \propto \frac{1}{B}$
 - $\frac{\Delta V}{V} \propto B^2$
 - $\frac{\Delta V}{V} \propto B^{-2}$
 - $\frac{\Delta V}{V} \propto B^{3/2}$
55. A person cannot see the object beyond 100 cm. The power of a lens to correct his vision will be
- +2D
 - 1D
 - +5D
 - 0.5D
 - +6D
56. The moment of inertia of a body about a given axis is 1.2 kg m^2 . Initially the body is at rest. In order to produce a rotational kinetic energy of 1500 J, an angular acceleration of 25 rad/s^2 must be applied about that axis for a duration of
- 4 s
 - 2 s
 - 8 s
 - 10 s
 - 3 s
57. The following equation represents induced transmutation
- $${}_4\text{Be}^9 + {}_2\text{He}^4 \longrightarrow {}_6\text{C}^{12} + X$$
- In this equation, X represents
- one negative β -particle
 - α -particle
 - a positron
 - a neutron
 - γ -particle
58. Cyclotron is a device which is used to
- measure the charge
 - measure the voltage
 - accelerate protons
 - accelerate electrons
 - None of the above
59. If boiling point of water is 95 F, what will be the reduction at celsius scale?
- 7°C
 - 65°C
 - 63°C
 - 35°C
 - 70°C
60. The refractive indices of violet and red light are 1.54 and 1.52 respectively. If the angle of prism is 10° , the angular dispersion (in degree) is
- 0.02
 - 0.20
 - 3.06
 - 30.6
 - 306

Chemistry

- Which of the following reacts fastest with a mixture of anhydrous $ZnCl_2$ and conc. HCl ?
 - Trimethyl carbinol
 - Ethanol
 - Propanol
 - Methanol
 - Iso-propanol
- The reagent with which both acetaldehyde and acetophenone reacts easily are
 - Fehling's solution
 - Schiff's reagent
 - Tollen's reagent
 - sodium bisulphite
 - 2, 4-dinitrophenylhydrazine
- The main component of glass which gives heat resistance to laboratory glassware is

(a) PbO	(b) MgO
(c) B_2O_3	(d) Al_2O_3
(e) P_2O_5	
- Thomas slag is referred to as
 - calcium silicate
 - calcium phosphate
 - barium phosphate
 - strontium silicate
 - barium silicate
- Each $B-H-B$ bridge in B_2H_6 is formed by the sharing of

(a) 2 electrons	(b) 4 electrons
(c) 1 electron	(d) 3 electrons
(e) 8 electrons	
- The one electron species having ionisation energy of 54.4 eV is

(a) H	(b) He^+
(c) B^{4+}	(d) Li^{2+}
(e) Be^{2+}	
- Density of a crystal remains unchanged as a result of
 - ionic defect
 - Schottky defect
 - Frenkel defect
 - crystal defect
 - point defect
- The mass of 11.2 L of ammonia gas at STP is

(a) 8.5 g	(b) 85 g
(c) 17 g	(d) 1.7 g
(e) 4.25 g	

- Identify the correct statement from below, concerning the structure of $CH_2=C=CH_2$.
 - The molecule is planar
 - One of the three carbon atoms is in sp^3 hybridized state
 - The molecule is non-planar with the two $-CH_2$ groups being in planes perpendicular to each other
 - All the carbon atoms are sp -hybridized
 - The molecule is bent with the $-C-C-C-$ angle being 120 degrees
- The enthalpy of a monoatomic gas at T Kelvin is

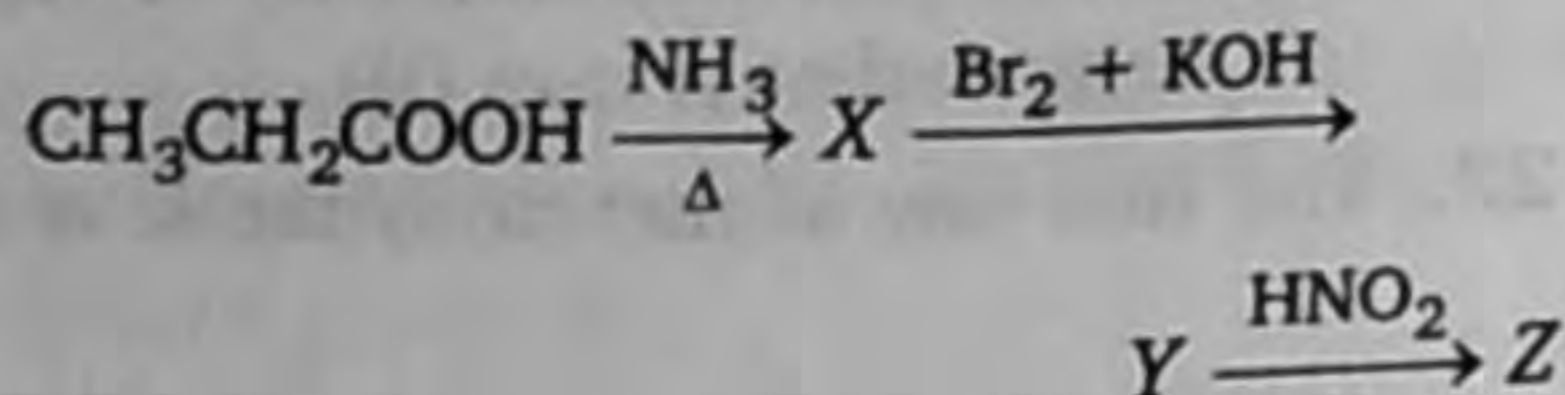
(a) $\frac{7}{2}RT$	(b) $\frac{3}{2}RT$
(c) $\frac{1}{2}RT$	(d) $\frac{1}{2}mv^2$
(e) $\frac{5}{2}RT$	
- The dissociation constant of acetic acid K_a is 1.74×10^{-5} at 298 K. The pH of a solution of 0.1 M acetic acid is

(a) 2.88	(b) 3.6
(c) 4.0	(d) 1.0
(e) 2.0	
- In the given reaction,

$$2X(g) + Y(g) \rightleftharpoons 2Z(g) + 80 \text{ kcal,}$$
 Which combination of pressure and temperature will give the highest yield of Z at equilibrium?
 - 1000 atm and $200^\circ C$
 - 500 atm and $500^\circ C$
 - 1000 atm and $100^\circ C$
 - 500 atm and $100^\circ C$
 - 1000 atm and $500^\circ C$
- $E_{Cu^{2+}/Cu}^\circ = 0.34 \text{ V}$, $E_{Zn^{2+}/Zn}^\circ = -0.76 \text{ V}$. A Daniell cell contains 0.1 M $ZnSO_4$ solution and 0.01 M $CuSO_4$ solution at its electrodes. EMF of the cell is
 - 1.10 V
 - 1.04 V
 - 1.16 V
 - 1.07 V
 - 1.00 V

14. A radioactive isotope has a half-life of 8 days. If today 125 mg is left over, what was its original weight 32 days earlier?
- (a) 6 g (b) 5 g
(c) 4 g (d) 2 g
(e) 1 g
15. On addition of 1 mL solution of 10% NaCl to 10 mL gold solution in the presence of 0.025 g of starch, the coagulation is prevented because starch has the following gold number
- (a) 25 (b) 0.025
(c) 0.25 (d) 2.5
(e) 0.0025
16. IUPAC name of acraldehyde is
- (a) but-3-en-1-al
(b) propenyl aldehyde
(c) but-2-ene-1-al
(d) propanal
(e) prop-2-ene-1-al
17. A molecule of urea can show
- (a) chain isomerism
(b) position isomerism
(c) geometrical isomerism
(d) tautomerism
(e) None of the above
18. The presence of Ag^+ ion increases the solubility of alkenes due to the formation of
- (a) $d\pi-d\sigma$ bonding (b) $p\sigma-p\pi$ bonding
(c) $p\pi-d\pi$ bonding (d) $p\pi-p\pi$ bonding
(e) None of these
19. Glycerine contains
- (a) 1° carbon
(b) 2° carbon
(c) 3° carbon
(d) both 1° and 2° carbon
(e) both 2° and 3° carbon
20. α and β -glucose differ in the orientation of —OH group around
- (a) C_1 (b) C_2
(c) C_3 (d) C_4
(e) C_5
21. Which one of the following has the highest molar conductivity?
- (a) Diamminedichloroplatinum (II)
(b) Tetramminedichlorocobalt (III) chloride
(c) Potassium hexacyanoferrate (II)
(d) Hexaaquochromium (III) bromide
(e) Pentacarbonyl iron (0)
22. The first law of thermodynamic is expressed as
- (a) $Q - W = \Delta E$ (b) $\Delta E = Q - p\Delta V$
(c) $Q = \Delta E - W$ (d) $W = Q + \Delta E$
(e) None of these
23. The Markownikoff's rule is the best applicable to the reaction between
- (a) $\text{C}_2\text{H}_4 + \text{HCl}$
(b) $\text{C}_3\text{H}_6 + \text{Br}_2$
(c) $\text{C}_3\text{H}_6 + \text{HBr}$
(d) $\text{C}_3\text{H}_8 + \text{Cl}_2$
(e) $\text{C}_2\text{H}_4 + \text{I}_2$
24. Phenol can be distinguished from ethanol by the following reagents except
- (a) sodium
(b) NaOH/I_2
(c) neutral FeCl_3
(d) $\text{Br}_2/\text{H}_2\text{O}$
(e) phthalic anhydride/conc. H_2SO_4 and NaOH
25. The enol form of acetone after treatment with D_2O , gives
- (a) $\text{H}_3\text{C}-\underset{\text{OD}}{\text{C}}=\text{CH}_2$
(b) $\text{H}_3\text{C}-\underset{\text{O}}{\text{C}}-\text{CD}_3$
(c) $\text{H}_2\text{C}=\underset{\text{OH}}{\text{C}}-\text{CH}_2\text{D}$
(d) $\text{H}_2\text{C}=\underset{\text{OH}}{\text{C}}-\text{CHD}_2$
(e) $\text{D}_2\text{C}=\underset{\text{OD}}{\text{C}}-\text{CD}_3$
26. An alkene on reductive ozonolysis gives 2-molecules of $\text{CH}_2(\text{CHO})_2$. The alkene is
- (a) 2, 4-hexadiene
(b) 1, 3-cyclohexadiene
(c) 1, 4-cyclohexadiene
(d) 1-methyl-1, 3-cyclopentadiene
(e) 1, 2-dimethylcyclopropene

27. Identify the compound Z in this reaction sequence.



- (a) CH_3OH (b) $\text{CH}_3\text{CH}_2\text{NH}_2$
 (c) $\text{CH}_3\text{CH}_2\text{OH}$ (d) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
 (e) CH_3NH_2

28. The following homogeneous gaseous reactions were experimentally found to be second order overall.

- I. $2\text{NO} \longrightarrow \text{N}_2 + \text{O}_2$
 II. $3\text{O}_2 \longrightarrow 2\text{O}_3$
 III. $\text{N}_2\text{O}_3 \longrightarrow \text{NO} + \text{NO}_2$
 IV. $\text{H}_2 + \text{I}_2 \longrightarrow 2\text{HI}$

Which of these are most likely to be elementary reactions that occur in one step?

- (a) III only (b) I and III
 (c) I and IV (d) III and IV
 (e) I, II and III

29. On a humid day in summer, the mole fraction of gaseous H_2O (water vapour) in the air at 25°C can be as high as 0.0287. Assuming a total pressure of 0.977 atm, what is the partial pressure of dry air?

- (a) 94.9 atm
 (b) 0.949 atm
 (c) 949 atm
 (d) 0.648 atm
 (e) 1.248 atm

30. For which of the following sparingly soluble salt, the solubility (s) and solubility product (K_{sp}) are related by the expression $s = (K_{sp} / 4)^{1/3}$?

- (a) BaSO_4 (b) $\text{Ca}_3(\text{PO}_4)_2$
 (c) Hg_2Cl_2 (d) Ag_3PO_4
 (e) CuS

31. At certain temperature, a 5.12% solution of cane sugar is isotonic with a 0.9% solution of an unknown solute. The molar mass of solute is

- (a) 60 (b) 46.17
 (c) 120 (d) 90
 (e) 92.34

32. Which of the following is true in respect of adsorption?

- (a) $\Delta G < 0; \Delta S > 0; \Delta H < 0$
 (b) $\Delta G < 0; \Delta S < 0; \Delta H < 0$
 (c) $\Delta G > 0; \Delta S > 0; \Delta H < 0$
 (d) $\Delta G < 0; \Delta S < 0; \Delta H > 0$
 (e) $\Delta G > 0; \Delta S > 0; \Delta H > 0$

33. The amine which will not liberate nitrogen on reaction with nitrous acid is

- (a) trimethyl amine (b) ethyl amine
 (c) sec-butyl amine (d) *t*-butyl amine
 (e) *iso*-propyl amine

34. One mole of acidified $\text{K}_2\text{Cr}_2\text{O}_7$ on reaction with excess KI will liberate ... mole(s) of I_2 .

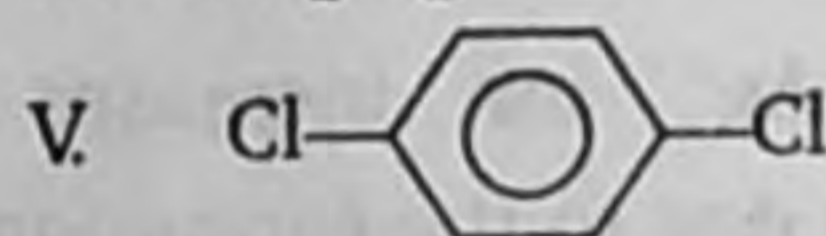
- (a) 6 (b) 1
 (c) 7 (d) 2
 (e) 3

35. Which of the following exists as Zwitter ion?

- (a) *p*-aminophenol (b) Salicylic acid
 (c) Sulphanilic acid (d) Ethanolamine
 (e) *p*-aminoacetophenone

36. Consider the following halogen containing compounds

- I. CHCl_3 II. CCl_4
 III. CH_2Cl_2 IV. CH_3Cl



The compounds with a net zero dipole moment are

- (a) II and V only (b) III only
 (c) III and IV only (d) I and IV only
 (e) II only

37. Which of the following is bacteriostatic?

- (a) Penicillin (b) Erythromycin
 (c) Amino glycodine (d) Ofloxacin
 (e) Bithional

38. Which one of the following set of quantum numbers is not possible for electron in the ground state of an atom with atomic number 19?

- (a) $n = 2, l = 0, m = 0$
 (b) $n = 2, l = 1, m = 0$
 (c) $n = 3, l = 1, m = -1$
 (d) $n = 3, l = 2, m = +2$
 (e) $n = 4, l = 0, m = 0$

39. The sequence that correctly describes the relative bond strength pertaining to oxygen molecule and its cation or anions is
- $O_2^{2-} > O_2^- > O_2 > O_2^+$
 - $O_2 > O_2^+ > O_2^- > O_2^{2-}$
 - $O_2^+ > O_2 > O_2^{2-} > O_2^-$
 - $O_2^+ > O_2 > O_2^- > O_2^{2-}$
 - $O_2 > O_2^- > O_2^{2-} > O_2^+$
40. The hybrid rocket propellant consists of
- acrylic rubber and liquid nitrogen tetraoxide
 - polyurethane and ammonium perchlorate
 - nitroglycerine and nitrocellulose
 - liquid hydrogen and liquid oxygen
 - hydrogen peroxide
41. Boric acid is used in carom boards for smooth gliding of pawns because
- H_3BO_3 molecules are loosely chemically bonded and hence soft
 - its low density makes it fluffy
 - it can be powdered to a very small grain size
 - it is chemically inert with the plywood
 - H-bonding in H_3BO_3 gives it a layered structure
42. The pair of $[Co(SO_4)(NH_3)_5]Cl$ and $[CoCl(NH_3)_5]SO_4$ constitutes
- optical isomers
 - linkage isomers
 - coordination isomers
 - hydrate isomers
 - ionisation isomers
43. Which one of the following pairs of elements is called 'chemical twins' because of their very similar chemical properties?
- Mn and W
 - Mo and Tc
 - Fe and Re
 - Hf and Zr
 - Fe and Co
44. The IUPAC name of $[Co(NH_3)_5ONO]^{2+}$ ion is
- pentammine nitrito cobalt (IV) ion
 - pentammine nitrito cobalt (III) ion
 - pentammine nitro cobalt (III) ion
 - pentammine nitro cobalt (IV) ion
 - None of the above
45. Hydration of different ions in aqueous solution is an example of
- ion-induced dipole interaction
 - dipole-dipole interaction
 - dipole-induced dipole interaction
 - attractive dispersion forces between atoms
 - ion-dipole interaction
46. The vapour pressure of two liquids X and Y are 80 and 60 Torr respectively. The total vapour pressure of the ideal solution obtained by mixing 3 moles of X and 2 moles of Y would be
- 68 Torr
 - 140 Torr
 - 48 Torr
 - 72 Torr
 - 54 Torr
47. The elements present in the core of earth are collectively known as
- lithophiles
 - nucleophiles
 - chalcophiles
 - siderophiles
 - atmophiles
48. Concentrated sulphuric acid can be reduced by
- NaCl
 - NaF
 - NaOH
 - $NaNO_3$
 - NaBr
49. Consider the ions : K^+ , S^{2-} , Cl^- and Ca^{2+} . The radii of these ionic species follow the order
- $Ca^{2+} > K^+ > Cl^- > S^{2-}$
 - $Cl^- > S^{2-} > K^+ > Ca^{2+}$
 - $Ca^{2+} > Cl^- > K^+ > S^{2-}$
 - $K^+ > S^{2-} > Cl^- > Ca^{2+}$
 - $S^{2-} > Cl^- > K^+ > Ca^{2+}$
50. A compound in which a metal ion M^{x+} ($Z = 25$) has a spin only magnetic moment of $\sqrt{24}$ BM. The number of unpaired electrons in the compound and the oxidation state of the metal ion are respectively
- 4 and 2
 - 5 and 3
 - 3 and 2
 - 4 and 3
 - 3 and 1

51. To an aqueous solution containing anions, a few drops of acidified KMnO_4 are added. Which one of the following anions, if present will not decolourise the KMnO_4 solution?

- (a) I^- (b) CO_3^{2-}
 (c) S^{2-} (d) NO_2^-
 (e) Cl^-

52. The ion that is more effective for the coagulation of As_2S_3 sol is

- (a) Ba^{2+} (b) Na^+
 (c) PO_4^{3-} (d) SO_4^{2-}
 (e) Al^{3+}

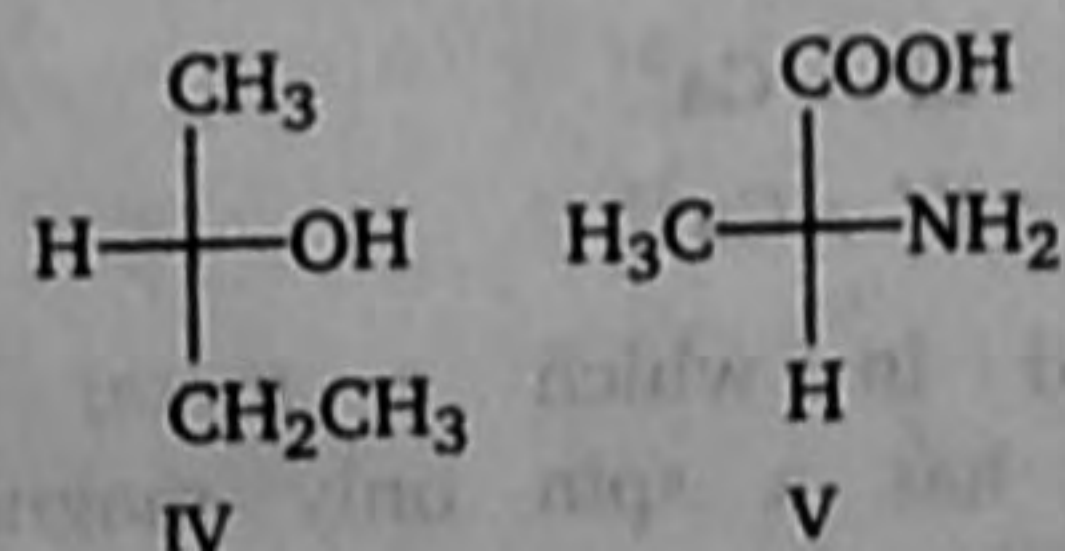
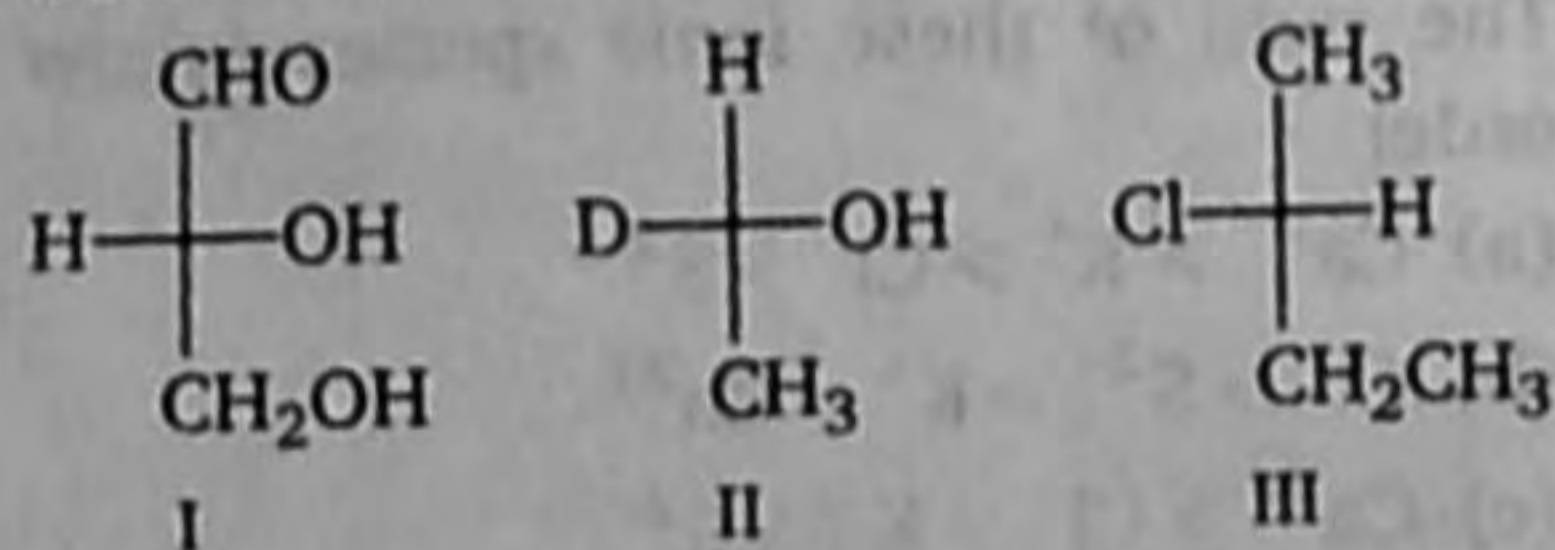
53. Lassaigne's test for the detection of nitrogen fails in

- (a) $\text{H}_2\text{N}-\text{CO}-\text{NHNH}_2 \cdot \text{HCl}$
 (b) $\text{NH}_2-\text{NH}_2 \cdot \text{HCl}$
 (c) $\text{NH}_2-\text{CO}-\text{NH}_2$
 (d) $\text{C}_6\text{H}_5-\text{NH}-\text{NH}_2 \cdot \text{HCl}$
 (e) $\text{C}_6\text{H}_5\text{CONH}_2$

54. The alkyl halide that undergoes $\text{S}_\text{N}1$ reaction more readily is

- (a) ethyl bromide
 (b) *iso*-propyl bromide
 (c) vinyl bromide
 (d) *n*-propyl bromide
 (e) *t*-butyl bromide

55. Select *R*-isomers from the following



- (a) I and III
 (b) II, IV and V
 (c) I, II and III
 (d) II and III
 (e) I, III and V

56. Which of the following is a better reducing agent for the following reduction?



- (a) SnCl_2/HCl
 (b) $\text{NaBH}_4/\text{ether}$
 (c) H_2/Pd
 (d) $\text{N}_2\text{H}_4/\text{C}_2\text{H}_5\text{ONa}$
 (e) $\text{B}_2\text{H}_6/\text{H}_3\text{O}^+$

57. The ore that is concentrated by froth floatation process is

- (a) zincite (b) cinnabar
 (c) bauxite (d) malachite
 (e) corundum

58. The oxide of an element whose electronic configuration is $1s^2, 2s^2, 2p^6, 3s^1$ is

- (a) neutral (b) amphoteric
 (c) basic (d) acidic
 (e) data insufficient

59. Among the following, the compound that contains ionic, covalent and coordinate linkage is

- (a) NH_3 (b) NH_4Cl
 (c) NaCl (d) CaO
 (e) $\text{C}_6\text{H}_5\text{CHO}$

60. Which of the following is fully fluorinated polymer?

- (a) PVC
 (b) Thiokol
 (c) Teflon
 (d) Neoprene
 (e) Saran

Biology

- Plants restricted to certain localities are referred to as
 - exotic
 - endemic
 - introduced
 - natural
- Some bacteria are not easily killed by antibiotics or heat treatment because of their
 - capsule
 - chitinous cell wall
 - mucopolysaccharides in cell wall
 - mesosomes
- Which type of ribosome is found in *Nostoc* cells?
 - 70 S
 - 80 S
 - 55 S
 - 30 S
- Haploid cells can be obtained from
 - leaf
 - stem
 - seed
 - anther
- Bromelain is an enzyme extracted from
 - yeast
 - Ficus*
 - pineapple
 - papaya
- Genes not located within the nucleus are almost always found in
 - cytosol
 - ribosome
 - cytoskeleton
 - cell membrane
- Spine formation is found in
 - Opuntia*
 - Nepenthes*
 - Asparagus*
 - Drosera*
- Which one reproduces vegetatively?
 - Allium cepa*
 - Allium sativum*
 - Pisum sativum*
 - Zea mays*
- Gall flowers of figs are
 - staminate
 - pistillate
 - neutar
 - naked
- Quiescent centre possesses
 - actively dividing cells
 - meristematic cells
 - passive cells
 - storage cells
- Stomata are evenly distributed on upper and lower surfaces of leaf in
 - potato
 - mulberry
 - Vallisneria*
 - Eichhornia*
- Cork cells are dead because they do not possess
 - cellulosic cell wall
 - permeable cell wall
 - protoplast
 - meristematic activities
- Transfusion tissue is meant for translocation of
 - organic solutes
 - sap
 - food materials
 - All of these
- An alcohol-dipped cell kept in hypertonic sucrose solution will
 - burst
 - plasmolysed
 - remain unchanged
 - become turgid
- The plant ash is an indication of
 - mineral salts absorbed by the plant
 - organic matter of the plant
 - both mineral salts and organic matter
 - None of the above
- The smallest known plant having the same pigments as grasses and trees, belongs to
 - Chlorophyceae
 - Schizomycetes
 - Bryophyta
 - Angiosperms
- Synthesis of ATP in mitochondria requires
 - NADP
 - FMN
 - oxygen
 - pyruvic acid
- Polygonum* type 7-celled embryo sac closely resembles to
 - Allium* type
 - Drusa* type
 - Adoxa* type
 - All of these
- Fruit formation is directly associated with stimulus of
 - pollination
 - fertilization
 - endospore formation
 - None of the above
- Hormone related to phototropism is
 - IAA
 - GA₃
 - kinetin
 - 2, 4-D
- In mangrove forest, there occur
 - rich biodiversity
 - very severe interspecific competition
 - very severe intraspecific competition
 - no competition

22. Secondary growth is not seen in
 (a) succulents (b) xerophytes
 (c) hydrophytes (d) mangroves
23. Important Value Index (IVI) is determined using quantitative data of
 (a) relative density
 (b) relative frequency
 (c) relative dominance
 (d) All of the above
24. Maximum radiant energy is trapped by
 (a) algae (b) herbs
 (c) shrubs (d) trees
25. Which of the weed is most harmful?
 (a) *Azolla* (b) *Parthenium*
 (c) *Salvinia* (d) *Salicornia*
26. Early blight disease is related to
 (a) sugarcane (b) potato
 (c) onion (d) rose
27. Bioenergy is always
 (a) ecofriendly
 (b) cheap
 (c) non-polluting
 (d) Both (a) and (b)
28. Axenic culture means
 (a) cell culture
 (b) cell culture free from microorganisms
 (c) cell culture free from plants
 (d) None of the above
29. Nif genes are fixing genes for
 (a) nitrogen (b) oxygen
 (c) carbon (d) nitrate
30. A cell having genetically different DNA strands is called
 (a) callus (b) cybrid
 (c) chimera (d) plasmid
31. Glisson's capsule is related to
 (a) intestine (b) liver
 (c) lung (d) stomach
32. Crypts of Lieberkuhn have
 (a) α -cells (b) β -cells
 (c) paneth cells (d) Kupffer's cells
33. Circulation is closed type in
 (a) frog (b) human
 (c) monkey (d) earthworm
34. Frogs and toads belong to the order
 (a) Caudata (b) Apoda
 (c) Anura (d) Gymnophiona
35. The Vibrissae of a rat is arranged in
 (a) 2 groups (b) 3 groups
 (c) 4 groups (d) 5 groups
36. Kwashiorkor is a deficiency disease of
 (a) protein (b) fat
 (c) carbohydrate (d) minerals
37. Which refers to biocatalysts?
 (a) Erepsin, amylase, rennin
 (b) Rhodopsin, pepsin, steapsin
 (c) Myosin, oxytocin, adrenaline
 (d) Glucose, amino acids, fatty acids
38. Which of them possess non-elastic lungs with elastic air sacs connected to them?
 (a) Birds (b) Reptiles
 (c) Mammals (d) Amphibians
39. The yellow colour of urine is due to
 (a) urea (b) bilirubin
 (c) uric acid (d) urochrome
40. Retinal cells involved in colour vision are
 (a) cones (b) cornea
 (c) neurons (d) neuroglial cells
41. Pituitary lies in the sella turcica of
 (a) nasal (b) vomer
 (c) ethmoid (d) sphenoid
42. Glucagon characteristically increases all the following except
 (a) ketogenesis in the liver
 (b) glycogenolysis in muscle
 (c) lipolysis in adipose tissue
 (d) urea synthesis in liver
43. Membrane attack complex (Mac) is formed by
 (a) B-lymphocytes (b) macrophages
 (c) T-lymphocytes (d) complements
44. Which one is not related to hallucinogens?
 (a) LSD (b) Marijuana
 (c) Psilocybin (d) Heroin
45. Chromatoid bodies in *Entamoeba histolytica* are found in
 (a) cyst (b) minuta
 (c) metacyst (d) trophozoite
46. Animals which have well-marked digestive cavity are put under
 (a) Metazoa
 (b) Bryozoa
 (c) Parazoa
 (d) Enterozoa

47. Blood of earthworm is red because its haemoglobin is
 (a) reduced (b) oxidised
 (c) intracellular (d) intercellular
48. Larva of housefly lacks
 (a) eyes (b) abdomen
 (c) fins (d) spiracles
49. Which of the following stain is obtained from the female scale insect *Coccus cacti*?
 (a) Carmine (b) Orcein
 (c) Haematoxylin (d) Crystal violet
50. Creatinine is formed metabolically from
 (a) arginine (b) histidine
 (c) tryptophan (d) phenylalanine
51. Example of a phosphoprotein is
 (a) mucin (b) casein
 (c) ferritin (d) haemoglobin
52. Which of the following diseases is related to colour blindness?
 (a) Night blindness
 (b) Haemophilia
 (c) Cataract
 (d) Cancer
53. The category of molecules produced by Miller-Urey experiment was
 (a) organic polymers
 (b) inorganic polymers
 (c) organic monomers
 (d) inorganic monomers
54. Which of them are not homologous?
 (a) Insect legs
 (b) Insect mouth parts
 (c) Vertebrate forelimbs
 (d) Birds and insect wings
55. An example of vestigial organ is
 (a) hair of bear
 (b) ear of cow
 (c) tusk of elephant
 (d) nictitating membrane of man
56. The closest relative of modern man is considered to be
 (a) monkey (b) chimpanzee
 (c) ape (d) gorilla
57. Why pea plants were more suitable than dogs for Mendel's experiment?
 (a) Dogs have many genetic traits
 (b) Pea plants can be self fertilized
 (c) No pedigree records of dogs
 (d) Pea plants favour cross fertilization
58. Super position image formation takes place in cockroach during
 (a) dim light (b) diffused light
 (c) bright light (d) None of these
59. Scales are absent in
 (a) *Catla* (b) *Wallago*
 (c) *Cirrhinus* (d) *Scoliodon*
60. The mammals evolved from the reptile in the
 (a) Cretaceous (b) Triassic
 (c) Devonian (d) Carboniferous

English

1. The ICC Executive Board has declared that 14-team will be eligible for the 2015 World Cup, to be held in Australia and New Zealand. What number has been decided for 2019 World Cup?
 (a) 10 (b) 12
 (c) 14 (d) 16
2. In which of following States the Sick Newborn Care Units (SNCUs) are being set up in all district hospital with a view to minimizing the infant and child mortality rate?
 (a) Gujarat (b) Punjab
 (c) Bihar (d) Haryana
3. Which famous temple in Kerala sparked widespread interest when a treasure trove amounting to \$ 22 was unearthed during a stock-taking exercise?
 (a) Sri Guruvayr Temple
 (b) Sri Padmanabhaswamy Temple
 (c) Sri Lakshman Temple
 (d) Puthukulangara Sree Bhadrakli Temple
4. Which of these is the capital of the newly constituted country South Sudan?
 (a) Abei
 (b) Juba
 (c) Jongli
 (d) Bahr al Ghazal

5. The 17th SAARC Summit will be held in the Republic of Maldives from Nov 10-11, 2011. What will be the theme of this summit?
- Investing for Future
 - Building Cross-Border Confidence
 - Respect for Elders and Love for Children
 - Building Bridges for Peace, Friendship And Security
6. The first UID number was issued on Sept 29, 2010, in a village of Nandurbar district of Maharashtra. Since then, one crore Indians have been issued their Unique Identification Numbers. The government targets of issuing 60 crore Aadhaar numbers by which year?
- 2013
 - 2014
 - 2015
 - 2016
7. Which of the following biosphere reserves (NBR) is going to be showcased for the award instituted by the UNESCO to mark the 40th year of its theme "Man and Biosphere"?
- Sunderban
 - Nilgiris
 - Manas
 - Nokrek
8. The World Chess Championship Title match in 2012 will be held in Chennai in April-May. The title clash will be between defending champion Viswanathan Anand of India and Boris Gelfand, who belongs to
- Spain
 - Belarus
 - Israel
 - Russia
9. Basant Nayak, who passed away recently, was a film-maker of which among the following film industry?
- Tamil
 - Telugu
 - Oriya
 - Bhojpuri
10. Which day is observed as the international day against drug abuse and illicit trafficking throughout the world?
- June 23
 - June 24
 - June 25
 - June 26
11. Which of the following rivers is also called 'Ganga of the South'?
- Krishna
 - Godavari
 - Cauveri
 - Tapti
12. Maximum crude petroleum in India is produced in
- Asom
 - Gujarat
 - Off-shor Bombay High
 - Coastal Tamil Nadu
13. Lines which join the places receiving equal amount of rainfall are called
- Contours
 - Isohyets
 - Isotherms
 - Isobars
14. Which among the following rivers makes an estuary?
- Cauveri
 - Krishna
 - Narmada
 - Ganga
15. Which State of India has the largest area under forests?
- Arunachal Pradesh
 - Madhya Pradesh
 - Maharashtra
 - Nagaland
16. The highest peak of India is
- Everest
 - K2
 - Pokalde
 - Nanda Devi
17. Oil reserves are found mainly in following rocks
- Metamorphic
 - Sedimentary
 - Igneous
 - None of these
18. Which State in India is famous for sandal wood?
- Maharashtra
 - Karnataka
 - Kerala
 - Andhra Pradesh
19. Indian Standard Time is calculated on the basis of that longitude, which is near
- Allahabad
 - Lucknow
 - Kanpur
 - Varanasi
20. The shape of the earth is oblong spheroid due to
- attraction of moon
 - internal structure
 - revolution around the sun
 - rotation about its axis
21. During which geological age did dinosaurs roam on the earth?
- Jurrasic
 - Tommotian
 - Cambrian
 - Precambrian
22. The Southernmost point of mainland India is
- Chennai
 - Kanyakumari
 - Thiruvananthpuram
 - Mangalore

23. Which of the following scales is used to measure earthquake intensity?
 (a) Mohr's scale (b) Richter scale
 (c) Beaufort scale (d) None of these
24. Teen-Bigha Corridor links
 (a) Bangladesh and India
 (b) India and Nepal
 (c) Bangladesh and Nepal
 (d) India and Pakistan
25. A solar eclipse occurs when
 (a) the earth comes in between the sun and the moon
 (b) the sun comes in between the moon and the earth
 (c) the moon, the sun and the earth are in a straight line
 (d) the moon comes in between the sun and the earth
26. The Panama Canal connects
 (a) the Atlantic ocean and the mediterranean sea
 (b) the Atlantic ocean and the Indian ocean
 (c) the Pacific and the Atlantic oceans
 (d) None of the above
27. On which river is the highest waterfall in India located?
 (a) Krishna (b) Godavari
 (c) Sharavati (d) Tapti
28. The country with highest population density in the world is
 (a) England (b) Nauru
 (c) Japan (d) India
29. The 'Chipko Movement' was about
 (a) forest conservation
 (b) wildlife preservation
 (c) scientific agriculture
 (d) deforestation
30. Which is the longest National Highway in India?
 (a) NH 1 (b) NH 24
 (c) NH 7 (d) NH 6
31. The city known as the 'Pittsburg of India' is
 (a) Jamshedpur
 (b) Tatanagar
 (c) Hardwar
 (d) Bhilai
32. Which of the following is the best type of coal?
 (a) Anthracite (b) Lignite
 (c) Peat (d) Limonite
33. India's largest lake Chilka is situated in
 (a) Odisha (b) Maharashtra
 (c) West Bengal (d) Karnataka
34. A storm is indicated if atomospheric pressure
 (a) falls suddenly
 (b) rises gradually
 (c) rises suddenly
 (d) falls gradually
35. Who is credited with the design of Taj Mahal?
 (a) Ustad Isa (b) Mir Ali
 (c) Syed Hussain (d) Abdus Samad
36. The Qutub Minar at Delhi was built to commemorate honour
 (a) Qutubuddin Aibak
 (b) Iltutmish
 (c) Qutubuddin Bakhtiyar Kaki
 (d) Alauddin Khalji
37. Tripitakas are the sacred texts of which religion?
 (a) Jainism (b) Buddhism
 (c) Pashupatas (d) None of these
38. Which leader started the now hugely popular 'Ganapati Festival' in Maharashtra?
 (a) Dadabhai Nauroji
 (b) MG Ranade
 (c) Bal Gangadhar Tilak
 (d) None of the above
39. Bahadur Shah Zafar, the last Mughal, was exiled to
 (a) Maldives (b) Kala Pani
 (c) Rangoon (d) London
40. The Mughal Emperor who again imposed Jaziya on Hindus was
 (a) Aurangzeb (b) Akbar
 (c) Shah Jahan (d) Humayun
41. The Bengal Partition was announced in
 (a) 1911 (b) 1901
 (c) 1905 (d) 1916
42. Who was called the 'Nightingale of India'?
 (a) Pandita Ramabai
 (b) Kalpana Dutt
 (c) Sucheta Kriplani
 (d) Sarojini Naidu

43. Where did in India Mahatma Gandhi first try his techniques of Satyagraha?
 (a) Poona (b) Champaran
 (c) Delhi (d) Sabarmati
44. 'Lilavati' an ancient work on Mathematics, was written by
 (a) Aryabhatta (b) Varahmihira
 (c) Bhaskaracharya (d) Banabhatta
45. Which of the following was a famous physician?
 (a) Charvak (b) Kamban
 (c) Charak (d) Bhaskar
46. Which Gupta ruler has been depicted on his coins as playing veena?
 (a) Skandagupta (b) Chandragupta
 (c) Samudragupta (d) None of these
47. In which year was the battle of Plassy fought?
 (a) 1761 (b) 1757
 (c) 1857 (d) 1843
48. Alberuni has given the detailed account of his visit to India in
 (a) Kitab-ul-Hind
 (b) Tarikh-i-Yamini
 (c) Futuh-us-Alamgiri
 (d) Hamzanamah
49. Who was the British Prime Minister at the time of independence of India?
 (a) McDonald (b) Atlee
 (c) Churchill (d) Cripps
50. The ancient name of Bengal was
 (a) Gaud (b) Sopara
 (c) Kamarupa (d) Panchala
51. Name the founder of the Widow Remarriage Association in the 19th century.
 (a) Ishwar Chandra Vidyasagar
 (b) Vishnu Shastri Pandit
 (c) Raja Ram Mohan Roy
 (d) Gopal Hari Deshmukh
52. Which Mughal Emperor got constructed the Peacock throne?
 (a) Jahangir (b) Aurangzeb
 (c) Shah Jahan (d) Akbar
53. Who was the only Indian Governor-General of India?
 (a) Jawahar Lal Nehru
 (b) Narendra Kriplani
 (c) Rajendra Prasad
 (d) C Rajagopalachari
54. In which language was the Sangam literature composed?
 (a) Sanskrit (b) Aramaic
 (c) Prakrit (d) Tamil
55. Which of the following objects has been discovered at all the Harappan sites?
 (a) Seals (b) Ploughshare
 (c) Gold ornaments (d) Spindles
56. The revenue system of Mughal Empire was revamped by
 (a) Raja Birbal (b) Raja Man Singh
 (c) Todarmal (d) Bairam Khan
57. At which session of the Congress it split due to the differences between the Extremists and the Moderates?
 (a) 1903 (b) 1904
 (c) 1906 (d) 1907
58. Who among the following was called 'The Grand Old Man of India'?
 (a) Mahatma Gandhi
 (b) Dadabhai Nauroji
 (c) AO Hume
 (d) Badruddin Tyabji
59. Which Mughal ruler got executed Teg Bahadur, the 9th Sikh Guru?
 (a) Jahangir (b) Aurangzeb
 (c) Bahadur Shah I (d) Shah Jahan
60. 'Prithviraj Raso' was written by
 (a) Bilhan (b) Amir Khusro
 (c) Chand Bardai (d) Kalhana
61. Gandhiji withdrew the Non-Cooperation Movement due to
 (a) agreement with Lord Irwin
 (b) Jalianwala Bagh violence
 (c) Chauri Chaura incident
 (d) None of the above
62. Mahatma Gandhi was the President of the Congress in which session?
 (a) Bombay, 1942
 (b) Belgaum, 1924
 (c) Calcutta, 1920
 (d) None of the above

63. Which of the following bodies is not a constitutional body?
- Planning Commission
 - Election Commission
 - Finance Commission
 - Union Public Service Commission
64. The Zero hour is set aside for
- asking questions
 - rest break between two meetings of the House
 - discussing budget proposals
 - miscellaneous business
65. The Pro-tem Speaker
- swears-in members and hold charge till a regular Speaker is elected
 - officiates as Speaker when the Speaker is unlikely to be elected
 - conducts the proceedings of Houses in absence of the Speaker and the Deputy Speaker
 - checks if the election certificates of the members are in order
66. Which among the following is referred to as the 'First Citizen of India'?
- The Prime Minister
 - The Chief Justice of India
 - The Lok Sabha Speaker
 - The President
67. The ninth schedule of Indian Constitution deals with
- anti-defection legislation
 - Panchayati Raj
 - land reforms
 - distribution of powers between the Union and States
68. Which of the following UTs sends most MPs to the Lok Sabha?
- Chhattisgarh
 - Delhi
 - Puducherry
 - Andaman
69. Indian Constitution heavily borrowed from
- the erstwhile USSR Constitution
 - the British Constitution
 - the Govt of India Act, 1935
 - the US Constitution
70. Who officiates as the President when offices of both the President and the Vice-President are vacant?
- The Lok Sabha Speaker
 - The Rajya Sabha Chairman
 - The Chief Justice
 - The Home Minister
71. Who was the first woman Governor of a State?
- Indira Gandhi
 - Sarojini Naidu
 - Vijaya Lakshmi Pandit
 - Lakshmi Sehgal
72. The Constitution states that India shall be
- a Union of States
 - Unitary State
 - a Federation
 - a Confederation
73. The number of Fundamental Duties mentioned in the Constitution is
- | | |
|--------|--------|
| (a) 12 | (b) 10 |
| (c) 11 | (d) 13 |
74. The maximum permissible time-gap between two consecutive sessions of Parliament is
- | | |
|--------------|--------------|
| (a) 3 months | (b) 2 months |
| (c) 6 months | (d) 4 months |
75. Right to education to all children of the age-group of 6 to 14 years is
- a Directive Principle of State Policy
 - a Fundamental Right
 - a Statutory Right
 - None of the above
76. A joint sitting of the two Houses of Parliament is summoned by the
- Prime Minister
 - President
 - Members of Lok Sabha
 - Members of Rajya Sabha
77. Who among the following is called the First Law Officer of India?
- Attorney-General
 - Law Minister
 - Chief Justice
 - Law Secretary
78. The President can impose central rule on a State under
- | | |
|-----------------|-----------------|
| (a) Article 356 | (b) Article 256 |
| (c) Article 370 | (d) Article 377 |

79. How many members can the President nominate to the Rajya Sabha?
 (a) 12 members (b) 18 members
 (c) 6 members (d) 15 members
80. 'World Bank' is also known as
 (a) International Bank for Research and Development
 (b) International Bank for Rehabilitation and Development
 (c) International Bank for Refinance and Development
 (d) International Bank for Reconstruction and Development
81. The headquarters of the Asian Development Bank is at
 (a) Manila (b) Singapore
 (c) Delhi (d) Bangkok
82. 'CAPART' is engaged primarily in
 (a) e-governance
 (b) share market
 (c) rural development
 (d) pollution control
83. The difference between the GNP and the NNP is equal to the
 (a) consumer expenditure on durable goods
 (b) indirect tax revenue
 (c) direct tax revenue
 (d) capital depreciation
84. Bank rate is the rate at which the RBI provides loans to
 (a) Public Sector Undertakings
 (b) Private Corporate Sector
 (c) Scheduled Commercial Banks
 (d) Non-Banking Financial Institutions
85. Which sector of India's economy employs the maximum number of people?
 (a) Primary sector
 (b) Secondary sector
 (c) Tertiary sector
 (d) None of the above
86. What does AGMARK signify?
 (a) A quality guarantee stamp for agricultural produce
 (b) Regulated agricultural produce markets
 (c) Farmers' cooperatives
 (d) A cooperative for egg production
87. The term 'Green Revolution' indicates higher production through
 (a) enhanced agricultural productivity
 (b) planting more trees
 (c) creation of grasslands
 (d) creation of garden in urban areas
88. 'Wall Street' is
 (a) the financial centre of USA
 (b) the newspaper centre of Britain
 (c) the great wall of China
 (d) a renowned street in France
89. GDP is defined as the value of all
 (a) final value of goods and services produced in an economy in a year
 (b) goods and services produced in an economy in a year
 (c) final goods produced in an economy in a year
 (d) goods produced in an economy in a year
90. ATM stands for
 (a) Automatic Tally Machine
 (b) Automotive Teller Machine
 (c) Automatic Teller Machine
 (d) Automated Tally Mechanism
91. Which States of India benefited most from Green Revolution?
 (a) Punjab, Haryana and Western Uttar Pradesh
 (b) Rajasthan, Gujarat and Maharashtra
 (c) Bihar, Uttar Pradesh and Assam
 (d) Tamil Nadu, Andhra Pradesh and Karnataka
92. Who is the brand ambassador of Thums Up?
 (a) Salman Khan
 (b) Amir Khan
 (c) Akshay Kumar
 (d) Shahrukh Khan
93. When was the General Agreement on Tariffs and Trade (GATT) absorbed into the World Trade Organization (WTO)?
 (a) 1991 (b) 2000
 (c) 1995 (d) 2005
94. The First Five Year Plan adopted
 (a) Harrod Domar model
 (b) Mahalanobis model
 (c) Lewis Fei model
 (d) Stalin model

95. The Mid-day Meal Scheme was launched by the Union Ministry of
 (a) Home Affairs
 (b) Social Welfare
 (c) HRD
 (d) None of the above
96. Public Distribution System was launched to
 (a) prevent hoarding and black-marketing
 (b) provide food security to the poor
 (c) prevent overcharging by traders
 (d) All of the above
97. Which year is known as the Year of Great Divide with respect to population growth in India?
 (a) 1947
 (b) 1921
 (c) 1911
 (d) None of these
98. Which type of unemployment can occur even in a situation of full employment?
 (a) Structural unemployment
 (b) Functional unemployment
 (c) Cyclical unemployment
 (d) Disguised unemployment
99. The number of companies covered under the 'BSE Sensex' is
 (a) 20
 (b) 25
 (c) 30
 (d) 50
100. Nuclear fission is caused by the impact of
 (a) proton
 (b) electron
 (c) neutron
 (d) None of these
101. Which of the following has the least penetrating power?
 (a) Alpha particles
 (b) Beta particles
 (c) Gamma rays
 (d) All have the same penetrating power
102. Which of the following are the discoveries of Einstein?
 (a) Radioactivity and photoelectric effect
 (b) Radioactivity and theory of relativity
 (c) Theory of relativity and photoelectric effect
 (d) X-rays and photoelectric effect
103. Cryogenic engines find applications in
 (a) rocket technology
 (b) frost-free refrigerators
 (c) submarine propulsion
 (d) researches in superconductivity
104. Optic fibres are mainly use for which of the following?
 (a) Communication
 (b) Weaving
 (c) Musical instruments
 (d) Food industry
105. Which of the following is used as a coolant in nuclear reactors?
 (a) Heavy water
 (b) Cadmium
 (c) Liquid sodium
 (d) Graphite
106. Which of the following is the lightest metal?
 (a) Mercury
 (b) Silver
 (c) Lithium
 (d) Lead
107. An alloy used in making heating elements for electric heating devices is
 (a) solder
 (b) alloy steel
 (c) nichrome
 (d) German silver
108. Carbon, diamond and graphite are together called
 (a) isomers
 (b) allotropes
 (c) isomorphs
 (d) isotopes
109. Which of the following is used in beauty parlours for hair setting?
 (a) Chlorine
 (b) Sulphur
 (c) Phosphorus
 (d) Silicon
110. Balloons are filled with
 (a) helium
 (b) oxygen
 (c) nitrogen
 (d) argon
111. Which of the following compounds are responsible for 'acid rain'?
 1. Nitrogen dioxide
 2. Silicon dioxide
 3. Sulphur dioxide
 4. Carbon monoxide
 Select the correct answer from the codes given below
 (a) 1 and 2
 (b) 1 and 3
 (c) 2 and 4
 (d) 3 and 4
112. Washing soda is the common name for
 (a) calcium carbonate
 (b) calcium bicarbonate
 (c) sodium carbonate
 (d) sodium bicarbonate

113. A person who lives exclusively on milk, egg and bread is likely to become a victim of
(a) rickets
(b) scurvy
(c) xerophthalmia
(d) None of the above
114. During sleep a man's blood pressure
(a) increases
(b) decreases
(c) remains constant
(d) fluctuates
115. Ready source of energy available for athletes is
(a) carbohydrates
(b) fats
(c) proteins
(d) vitamins
116. Alzheimer's disease in human beings is characterised by the degeneration of
(a) kidney cells
(b) nerve cells
(c) brain cells
(d) liver cells
117. The pH of human blood is between
(a) 6.5 - 7
(b) 7.5 - 8
(c) 8 - 9
(d) 4.5 - 5
118. Flower colours are due to
(a) chlorophyll
(b) melanin
(c) phytochromes
(d) anthocyanin
119. Which vitamin is provided by sunlight to the body?
(a) Vitamin-A
(b) Vitamin-B
(c) Vitamin-C
(d) Vitamin-D
120. Human body is
(a) heart
(b) liver
(c) kidney
(d) brain