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VARIOUS SCHOOLS

- School of Engineering & Technology
- School of Management Studies
- School of Pharmacy
- School of Architecture
- Surya Polytechnic College

**+2 Physics & Chemistry one mark
year Questions with Answers**

SURYA GROUP OF INSTITUTIONS

Std : +2

Vikravandi

Sub : **Physics**

Public Examination - One mark Questions with answer.

Lesson -1

1. Unit of electric charge is [$\text{Nm}^2 \text{C}^{-1}$]
2. An electric dipole is placed in a uniform electric field with its axis parallel to the field. It experiences [neither a net force nor a torque]
3. The work done in moving $4 \mu\text{C}$ charge from one point to another in an electric field is 0.012J .
The potential difference between them is [3000V]
4. The electric field outside the two oppositely charged plane sheets each of charge density is σ is [zero]
5. -----is a scalar quantity [Electric potential]
6. Torque on a dipole in a uniform electric field is maximum when angle between P and E is . [90°]
7. Potential energy of two equal negative point charges of magnitude $2\mu\text{C}$ placed 1m apart in air is [0.036J]
8. A hollow metallic spherical shell carrying an electric charge produces no electric field at points [inside the sphere]
9. The unit of electric field intensity is [Vm^{-1}]
10. Four charges $+q, +q, -q$ and $-q$ respectively are placed at the corners A, B, C and D of a square of side a .
The electric potential at the centre O of the square is [zero]
11. The value of permittivity of free space is [$1/4\pi \times 9 \times 10^9 \text{C}^2\text{N}^{-1}\text{m}^{-2}$]
12. The principle used in lightning conductors is [corona discharge]
13. The unit of electric dipole moment is [Coulomb metre(Cm)]
14. Electric potential energy of an electric dipole in an electric field is given as [$-pE \cos\theta$]
15. Electric field intensity is 400Vm^{-1} at a distance of 2m from a point charge. It will be 100Vm^{-1} at a distance [4m]
16. The work done in moving $500\mu\text{C}$ charge between two points on equipotential surface is [zero]
17. The direction of electric field at a point on the equatorial line due to an electric dipole is [along the equatorial line away from the dipole]
18. The number of electric lines of force originating from a charge of a microcoulomb is [1.129×10^9]
19. The equivalent capacitance of two capacitors in series is $1.5\mu\text{F}$. The capacitance of one of them is $4\mu\text{F}$. The value of capacitance of the other is. [$2.4\mu\text{F}$]
20. The law that governs the force between electric charges is [Coulom's law]
21. The unit of permittivity is [$\text{C}^2\text{N}^{-1}\text{m}^{-2}$]
22. An electric dipole placed at an angle θ in a non - uniform electric field experiences [both force and torque]
23. A capacitor of capacitance of $6 \mu\text{F}$ is connected to a 100V battery. The energy stored in the capacitor is [0.03J]
24. When an electric dipole of dipole moment P is aligned parallel to the electric field E then the potential energy of the dipole is given as [$-PE$]
25. The capacitance of a parallel plate capacitor increases from $5\mu\text{F}$ to $60 \mu\text{F}$ when a dielectric is filled between the plates. The dielectric constant of dielectric is [12]
26. Quantisation of electric charge is given by [$q = ne$]
27. An example of conductor is [human body]
28. The magnitude of the force acting on a charge of $2 \times 10^{-10}\text{C}$ placed in a uniform electric field of 10Vm^{-1} is [$2 \times 10^{-9}\text{N}$]
29. Electric potential energy (U) of two point charges is [$q_1q_2/4\pi\epsilon_0r$]
30. The torque (τ) experienced by an electric dipole placed in a uniform electric field (E) at an angle θ with the field is [$PE\sin\theta$]

31. The capacitance of a parallel plate capacitor increases from $5\mu\text{F}$ to $50\mu\text{F}$ when a dielectric is filled between the plates. The dielectric constant of the dielectric is [10]
32. The negative gradient of potential is [Electric field intensity]
33. When a point charge of $6\mu\text{C}$ is moved between two points in an electric field, the work done is $1.8 \times 10^{-5}\text{J}$. The potential difference between the two points is [3V]
34. Three capacitors of capacitances $1\mu\text{F}$, $2\mu\text{F}$ and $3\mu\text{F}$ are connected in series. The effective capacitance of the capacitors is [$6/11\mu\text{F}$]
35. An electric dipole of moment P is placed in a uniform electric field of intensity E at an angle θ with respect to the field. The direction of the torque is [perpendicular to the plane containing P and E]
36. The electric field intensity at a distance r due to infinitely long straight charged wire is directly proportional to [$1/r$]
37. The ratio of electric potential at points 10cm and 20cm from the centre of an electric dipole along its axial line is [4:1]
38. The capacitance of a capacitor is
[directly proportional to the charge q and inversely proportional to the potential V]
39. The intensity of the electric field that produces a force of 10^{-5}N on a charge of $5\mu\text{C}$ is [2NC^{-1}]
40. The unit of the number of electric lines of force passing through a given area is [Nm^2C^{-1}]
41. If a point lies at a distance x from the mid -point of the dipole, the electric potential at this point is proportional to [$1/x^2$]
42. A dielectric medium is placed in an electric field E_0 . The field induced inside the medium [acts opposite to E_0]
43. A non - polar dielectric is placed in an electric field (E) Its induced dipole moment
[acts opposite to the direction of E]
44. n capacitors each of capacitance C are connected in series. The effective capacitance is [C/n]

Lesson -2

1. The current flowing in a conductor is proportional to [Drift velocity]
2. Resistance of a metal wire of length 10cm is 2Ω . If the wire is stretched uniformly to 50cm, the resistance is [50Ω]
3. A copper wire has a resistance R . On doubling its length, the specific resistance [Will remain the same]
4. The material through which electric charge flows easily is [Copper]
5. The transition temperature of mercury is [4.2k]
6. The colour code on carbon resistor is red-red -black. The resistance of the resistor is [22Ω]
7. The brown ring at one end of a carbon resistor indicates a tolerance of [$\pm 1\%$]
8. The unit of conductivity is [mho - m^{-1}]
9. When two 2Ω resistances are in parallel their effective resistance is [1Ω]
10. The power of the electric heater working in 5A current at 200V is [1000W]
11. In the case of insulators, as the temperature decreases, the resistivity. [increases]
12. The electrolyte used in Leclanche cell is [NH_4Cl]

PART - 3

1. Joule's law of heating is [$H = VIt$]
2. Nichrome wire is used as the heating element because it has [high specific resistance]
3. Fuse wire is an alloy of [Lead and Tin]
4. [484Ω] is the resistance of the filament of 100W , 220V electric bulb.
5. [Sb - Bi] pairs of metals of a thermocouple, the emf is maximum.
6. In a thermocouple the temperature of the cold junction is 20°C , the inversion temperature is 600°C , then the neutral temperature is [310°C]
7. [Seebeck effect] is the Principle used in a thermopile.

8. Thermopile is used to [detect thermal radiation]
9. Peltier effect is the converse of [seebeck effect]
10. Unit of peltier coefficient is [Volt]
11. Biot - Savart law's equation $d\vec{B} = \frac{\mu_0}{4\pi} \frac{Id\vec{l} \times \vec{r}}{r^3}$
12. The unit of reduction factor of tangent galvanometer is [Ampere]
13. In a tangent galvanometer a current 1A, produces a deflection of 30° . The current required to produces a deflection of 60° is [3A]
14. In a tangent galvanometer, for a constant current, the deflection is 30° . The plane of the coil is rotated through 90° . Now, for the same current, the deflection will be[0°]
15. The magnitude and direction of the magnetic - Lorentz force is given by [$\vec{F} = q(\vec{v} \times \vec{B})$]
16. A proton enters into a uniform magnetic field of induction 2.5T with a velocity $2.5 \times 10^6 \text{ms}^{-1}$ by making an angle of 30° with the direction of the field, the Lorentz force on the proton is.[$5 \times 10^{-13}\text{N}$]
17. The period of revolution of a charged particle accelerated by a cyclotron does not depend on [Velocity and radius of the path]
18. If a current carrying conductor is placed parallel to magnetic field, the force acting on the conductor is [0]
19. The torque experienced by a rectangular current loop placed perpendicular to a uniform magnetic field is [0]
20. Phosphor-bronze wire is used for suspension in a moving coil galvanometer, because it has [Small couple per unit twist]
21. [Ammeter of range 0 - 10A] device has a small resistance
22. A galvanometer is converted into a voltmeter by connecting a [high resistance in series]
23. An ideal voltmeter has[Infinite resistance]

PART - 4

1. Electromagnetic induction is not used in [Room heater]
2. The angle between the area and the area vector is [$\pi/2$]
3. Lenz's law is in accordance with the law of [conservation of energy]
4. An emf of 12 V is induced when the current in the coil changes from 2A to 6A in 0.5 S. The coefficient of self inductance of the coil is [1.5H]
5. An emf of 12 V is induced when the current in the coil changes at the rate of 40AS^{-1} . The coefficient of self inductance of the coil is [0.3H]
6. The self inductance of a straight conductor is [0]
7. An emf of 60 mV is induced in a coil when the current in the neighbouring coil changes from 11A to 5A in 0.1S. The coefficient of mutual induction is [1m H]
8. How can you arrange the two coils so as to have the maximum coefficient of mutual induction?
[Coils are wound on a soft iron core]
9. If the flux associated with a coil varies at the rate of $1\text{Wb}/\text{minute}$ then the induced emf is [$1/60\text{V}$].
10. A coil of area of cross section 0.5m^2 with 10 turns is in a plane which is perpendicular to a uniform magnetic field of $0.2 \text{Wb}/\text{m}^2$. The magnetic flux through the coil is [1Wb]
11. The generator rule is [Flemings right hand rule]
12. In a three phase AC generator the three coils are fastened rigidly together and are displaced from each other by an angle [120°]
13. In an a.c.circuit, the current $I = I_0 \sin(\omega t - \pi/2)$ lags behind the emf $e = E_0 \sin(\omega t + \pi/2)$ by [π]
14. In an ac circuit the applied emf $e = E_0 \sin(\omega t + \pi/2)$ leads the current $I = i_0 \sin(\omega t - \pi/2)$ by [π]
15. Eddy currents are used in [Electric fan]
16. Transformer works on [Ac only]
17. In a step up transformer the input voltage is 220V and the output voltage is 11 kV. The ratio of number of turns of primary to secondary is [1:50]

18. In a transformer, eddy current loss is minimised by using [Laminated core made of steel]
19. [Input power] cannot be stepped up in a transformer?
20. An electric power of 11000 W is transmitted at 220V through a wire of resistance 1Ω , then the power loss is [2500W]
21. The power loss is less in transmission line when [voltage is more and current is less]
22. A power of 11000 W transmitted at 220V, The current through the line wires is [50V]
23. The rms value of an ac voltage with a peak value of 311V is [220V]
24. A DC of 5A produces the same heating effect as an AC of [5A rms current]
25. The voltage rating of an alternating emf is 200V, then the peak value of voltage is [282.8V]
26. In a ac circuit with an inductor [Current lags voltage by $\pi/2$]
27. The reactance offered by 300 mH inductor to an AC supply of frequency 50Hz is [94.2 Ω]
28. For a dc circuit, the value of capacitive reactance X_c is [Infinity]
29. In an AC circuit with capacitor only, if the frequency of the signal is zero, then the capacitive reactance is [Infinity]
30. [Capacitors] device does not allow direct current to pass through it. $Q = \frac{1}{R} \sqrt{\frac{L}{C}}$
31. In LCR series ac circuit, the phase difference between current and voltage is 30° . The reactance of the circuit is 17.32Ω . The value of resistance is [30 Ω]
32. In LCR circuit when $X_L = X_C$, the current [Is in phase with voltage]
33. The Q factor (quality factor) of an ac circuit containing a resistance R, inductance L and capacitor C is
34. The average power consumed over one cycle in an a.c circuit is [$E_{rms} I_{rms} \cos \phi$]
35. In an a.c circuit [The average value of current is zero]
36. The core used in audio frequency chokes is [Iron core]
37. The part of the AC generator that passes the current from the coil to the external circuit is [brushes]
38. The rms value of alternating current (AC) flowing through a resistor is 5A. Its peak value is [7.07A]

PART - 5

1. The existence of electromagnetic waves was confirmed experimentally by [Hertz]
2. When a drop of oil is introduced between the glass plate and plano-convex lens in Newton's rings system, the ring system [expands]
3. When a ray of light is incident on a glass surface at polarising angle of 57.5° , the angle between the incident ray and the reflected ray is [115°]
4. Unpolarised light passes through a tourmaline crystal. The emergent light is analysed by an analyser. When the analyser is rotated through 90° , then intensity of light [Varies between maximum and zero]
5. In an electromagnetic wave, the phase difference between electric field E and magnetic field B is [0]
6. Velocity of the electromagnetic waves through vacuum is [$1/\sqrt{\mu_0 \epsilon_0}$]
7. In a plane diffraction grating, the unit of grating element is [metre]
8. If C is the velocity of light in vacuum, the velocity of light in a medium with refractive index μ is [C/μ]
9. A ray of light passes from a denser medium into a rarer medium. For an angle of incidence of 45° , the refracted ray grazes the surface of separation of the two media. The refractive index of the denser medium is [$1/\sqrt{2}$]
10. The radiations used in physiotherapy is [IR rays]
11. In Newton's rings experiment, light of wavelength 5890\AA is used. The order of the dark ring produced where the thickness of the air film is $0.589 \mu\text{m}$ is [2]
12. Atomic spectrum should be [pure line spectrum]
13. An example of Optically active material is [sodium chloride]
14. A diffraction pattern is obtained using a beam of red light. What happens if the red light is replaced by blue light [Diffraction patterns becomes narrower and crowded together]
15. In Young's double slit experiment, the separation between the slits is halved, and the distance between the slits and the screen is doubled. Then the fringe width is [quadrupled]

16. The phenomenon of light used in the formation of Newton's rings is [Interference]
17. An example of uniaxial crystal is [tourmaline]
18. In Raman effect, the spectral line with lower frequency than the incident frequency is [Stoke line]
19. The optical rotation does not depend on [Intensity of the light used]
20. [electric filament lamp] is the source of continuous emission spectrum
21. When a drop of water is introduced between the glass plate and plano-convex lens in Newton's rings system, the ring system [Contracts]
22. A light of wavelength 6000\AA is incident normally on a grating 0.005m wide with 2500 lines.
Then the maximum order is [3]
23. The transverse nature of light waves is demonstrated only by the phenomenon of [Polarisation]
24. If the velocity of light in a medium is $2.25 \times 10^8\text{ms}^{-1}$ then the refractive index of the medium will be [1.33]
25. The polarising angle for water is $53^\circ 4'$. If the light is incident at this angle on the surface of water, the angle of refraction in water is [$36^\circ 56'$]
26. The refractive index of the medium, for the polarising angle 60° is [1.732]
27. In case of Fraunhofer diffraction, the wavefront undergoing diffraction is [Plane wavefront]
28. A ray of light is incident on a glass surface such that the reflected ray is completely plane polarised.
The angle between the reflected ray and the refracted ray is [90°]
29. Soap bubbles exhibit brilliant colours in sunlight due to [Interference]
30. The radii of Newton's dark rings are in the ratio [$1: \sqrt{2} : \sqrt{3}$]
31. In an electromagnetic wave power [Is transmitted in a direction perpendicular to both the fields]
32. In the grating formula $\sin \theta = Nm\lambda$, the unit of N is [metre⁻¹]
33. If the wavelength of the light is reduced to one fourth, then the amount of scattering is [Increased by 256 times]
34. The ratio of the radii of the 4th and 9th dark rings in Newton's rings experiment is [2: 3]
35. Electromagnetic waves are [Transverse]
36. In Newton's ring experiment, the radii of m^{th} and $(m+4)^{\text{th}}$ dark rings are respectively $\sqrt{5}\text{mm}$ and $\sqrt{7}\text{mm}$.
What is the value of m [10]
37. [Calcium chloride] is not an optically active material
38. The dark lines found in the solar spectrum are called [Fraunhofer lines]
39. In Young's experiment, the third bright band for wavelength of light 6000\AA coincides with the fourth bright band for another source in the same arrangement. The wavelength of another source is [4500\AA]
41. A ray of light travelling in a rarer medium and reflected at the surface of a denser medium automatically undergoes a.....
[Path difference of by $\lambda /2$]
42. In Raman effect, the incident photon makes collision with an excited molecule of the substance.
The scattered photon gives rise to [Anti-stoke line]
43. The refractive index of glass is 1.5. The velocity of light in glass is [$2 \times 10^8\text{ms}^{-1}$]

PART - 6

1. The chromium ions doped in the ruby rod [absorbs green light]
2. The wavelength of D_1 and D_2 lines emitted by sodium vapour lamp is [589.6nm , 589nm]
3. If the minimum wavelength of X-rays produced in a Coolidge tube is 0.62\AA , the operating potential is [20KV]
4. Wave number is defined as [The number of waves per unit length]
5. The energy of the electron in the first orbit of hydrogen atom is -13.6eV . Its potential energy is [-27.2eV]
6. In an X-ray tube, the intensity of the emitted X-ray beam is increased by [Increasing the filament current]
7. In sommerfeld atom model, for a given value of n, the number of values l can take is [n]
8. The ratio of areas enclosed by first three Bohr orbits of hydrogen atom is [1:16:81]

9. In a and b are semi-major and semi-minor axes of the ellipse respectively and l is the orbital quantum number then the expression to find the possible elliptical orbits is $[b/a = l+1/n]$
10. X-ray is [the phenomenon of conversion of kinetic energy in to radiation]
11. According to Bohr's postulates, [Angular momentum] take discrete values.
12. A crystal diffracts monochromatic X-rays. If the angle of diffraction for the second order is 90° , then that for the first order will be $[30^\circ]$
13. If R is Rydberg's constant, the minimum wavelength of hydrogen spectrum is $[1/R]$
14. The ratio of the radii of the first three Bohr orbits is $[1:4:9]$
15. In holography, [Phase] and [Amplitude] are recorded on a photographic film.
16. The unit of Rydberg constant is $[m^{-1}]$
17. For the first order X-ray diffraction, the wavelength of the X-ray is equal to the lattice spacing at a glancing angle of $[30^\circ]$.
18. A Coolidge tube operates at 18600V. The maximum frequency of X-radiation emitted from it is $[4.5 \times 10^{18} \text{Hz}]$
19. The first excitation potential energy or the minimum energy required to excite the atom from ground state of hydrogen atom is $[10.2 \text{eV}]$
20. The spectral series of hydrogen atom in UV region are called [Lyman series]
21. The energy of a photon of characteristic X -ray from a Coolidge tube comes from [An atomic transition in the target]
22. Maser materials are [Paramagnetic ions]
23. A three dimensional image of an object can be formed by [Holography]
24. In a discharge tube, the source of positive rays (canal rays) is [gas atom present in the discharge tube]
25. The minimum wavelength of X-rays produced in an X-ray tube at 1000kV is $[0.0124 \text{\AA}]$.
26. The ionisation potential of hydrogen atom is $[13.6 \text{V}]$
27. When an electric field is applied to an atom each of the spectral lines split into several lines.
This effect is known as [stark effect]
28. The direction of viscous force in Millikan's oil drop experiment is [opposite to the direction of motion of the oil drop]
29. In Millikan's experiment, the plates are kept at a distance of 16mm and are maintained at a potential difference of 10000V. The electric field intensity is $[6.25 \times 10^5 \text{V/m}]$
30. If R is Rydberg constant, the shortest X wavelength of Paschen series is $[25/R]$
31. e/m of cathode ray particle is independent of [nature of electrodes and gas used]
32. If C is the velocity, γ the frequency and λ the wavelength of a radiation, then its frequency is defined as
[The number of waves in a distance of C]
33. A Coolidge tube operates at 24800V. The maximum frequency of X-radiation emitted from Coolidge tube is $[6 \times 10^{18} \text{Hz}]$
34. The elliptical orbits of electron in the atom were proposed by [Sommerfeld]
35. The wave number of spectral line of hydrogen atom is equal Rydberg's constant. The line is [Series limit lyman series]
36. Cathode rays are [a stream of electrons]

PART - 7

1. The value of stopping potential when the frequency of light is equal to the threshold frequency is [zero]
2. Two photons, each of energy 2.5eV are simultaneously incident on the metal surface. If the work function of the metal is 4.5eV then from the surface of the metal [not a single electron will be emitted]
3. According to the theory of relativity the length of a rod in motion [is less than its rest length]
4. According to special theory of relativity the only constant in all frames is [velocity of light]
5. At the threshold frequency, the velocity of the photoelectrons is [zero]
6. The work function of a metal is $6.626 \times 10^{-19} \text{J}$. The threshold frequency is $[1 \times 10^{15} \text{Hz}]$
7. The momentum of the electron having wavelength 2\AA is $[3.3 \times 10^{-24} \text{kgms}^{-1}]$
8. When a material particle of rest mass ' m_0 ' attains the velocity of light, its mass becomes $[\infty]$
9. A photon of frequency γ is incident on a metal surface of threshold frequency γ_0 . The kinetic energy of the emitted photoelectron is $[h(\gamma - \gamma_0)]$

10. The work function of a photo-electric material is 3.3eV. The threshold frequency will be equal to $[8 \times 10^{14} \text{Hz}]$
11. The wavelength of matter wave is independent of [Charge]
12. An electron of mass m and charge e accelerated from rest through a potential of V volt, then its final velocity is $[\sqrt{2Ve/m}]$
13. Einstein's photoelectric equation is $[w + 1/2mv_{\text{max}}^2 = h\nu]$
14. If 1kg of substance is fully converted into energy, the energy produced is $[9 \times 10^{16} \text{J}]$
15. The de Broglie wavelength of electron accelerated with a potential V is . $[\lambda = h/\sqrt{2meV}]$
16. Electron microscope works on the principle of [wave nature of moving electron]
17. The photoelectric effect can be explained on the basis of [Quantum theory of light]

PART - 8

1. The nuclear force is due to the continuous exchange of particles called [Mesons]
2. In the following nuclear reaction ${}_7\text{N}^{14} + {}_0\text{n}^1 \rightarrow \text{X} + {}_1\text{H}^1$ the element X is $[_6\text{C}^{14}]$
3. The time taken by the radioactive element to reduce to $1/e$ times is [Mean life]
4. [Electron] is an example for: lepton
5. One amu is equal to [931MeV]
6. The time taken by a radioactive element to reduce to $e^{-1/2}$ times its original amount is its [Mean life period/2]
7. The radio-isotope used in agriculture is $[_{15}\text{P}^{32}]$
8. The penetrating power is maximum for [gamma rays]
9. Anaemia can be diagnosed by $[_{26}\text{Fe}^{59}]$
10. The moderator used in nuclear reactor is [Heavy water]
11. The numbers of α and β particles emitted when an isotope ${}_{92}\text{U}^{238}$ undergoes α and β decays to form ${}_{82}\text{Pb}^{206}$ are respectively [8 and 6]
12. The nuclei ${}_{13}\text{Al}^{27}$ and ${}_{14}\text{Si}^{28}$ are examples of [Isotones]
13. An element ${}_z\text{X}^A$ successively undergoes three α - decays and four β -decays and gets converted to an element Y.
The mass number and atomic number of the element Y are respectively [$A-12, z-2$]
14. The fuel used in Kamini reactor is $[_{92}\text{U}^{233}]$
15. The binding energy of ${}_{26}\text{Fe}^{56}$ nucleus is [493 MeV]
16. The half-life period of a certain radioactive element with disintegration constant 0.0693 per day is [10 days]
17. The mean life (τ) and half-life ($T_{1/2}$) of a radioactive element are related as $[\tau = T_{1/2}/0.6931]$
18. If the nuclear radius is $2.6 \times 10^{-15} \text{m}$, the mass number will be [8]
19. Slow neutrons are neutrons having energies between [0 eV to 1000eV]
20. In the nuclear reaction, ${}_{80}\text{Hg}^{198} + \text{X} \rightarrow {}_{76}\text{Au}^{198} + {}_1\text{H}^1$. X stands for [neutron]
21. Particle that has no charge and no rest mass but travels with velocity of light is [photon]
22. In β - decay [neutron number decreases by one]
23. The explosion of atom bomb is based on the principle of [uncontrolled fission reaction]
24. belongs to Baryon group [proton]
25. The ionisation power is maximum for [α -ray]
26. According to the law of disintegration $N = N_0 e^{-\lambda t}$ the number of radioactive atoms that have been decayed during a time of t is $[N_0 - N]$
27. Isotopes have [same proton number but different neutron number]
28. The coolant used in fast breeder reactor is [Liquid sodium]
29. $[_6\text{C}^{14}, {}_8\text{O}^{16}]$ is an example of isotones
30. Arrange α , β and γ rays in the increasing order of their ionising power [γ , β and α]
31. Mean life period of radon is 5.5 days. Its half life period is [3.81 days]
32. Half life period of a radioactive element is 300 days. Its decay constant is [0.00231/day]

SURYA GROUP OF INSTITUTIONS

Std : +2

Vikiravandi

Sub : CHEMISTRY

Public Examination - One mark Questions with answer

Lesson 1,2

1. Dual character of an electron was explained by (de Broglie)
2. The momentum of a particle which has a de-Broglie wavelength of 1 \AA ($6.6 \times 10^{-24} \text{ kg ms}^{-1}$)
3. de-Broglie equation is ($\lambda = h/mv$)
4. The bond order of Hydrogen molecule is (1)
5. The circumference of the circular orbit of the electron must be a integral multiple of the (Wave length)
6. The hybridisation in IF_7 molecule is (sp^3d^3)
7. The (β particle) particle having same kinetic energy would have the maximum de-Broglie wavelength.
8. The intermolecular hydrogen bonding is present in (HF (or) H_2O (or) Ethanol)
9. The hybridisation in XeF_6 is (sp^3d^3)
10. The intramolecular hydrogen bonding is present in (o-nitrophenol)
11. Energy levels of molecular orbitals have been determined experimentally by (Spectroscopic studies)
12. The hybridisation in SF_6 is (sp^3d^2)
13. A molecule is having 8 electrons in bonding molecular orbitals and 4 electrons in antibonding molecular orbitals. The bond order of the molecule is (2)
14. $E_n = -313.6/n^2$ If the value of $E_i = 34.84$ to which value 'n' corresponds (3)
15. Liquid state of water is due to (Hydrogen bond)
16. The hybridisation in SO_4^{2-} ion is (sp^3)
17. The number of spherical nodes in $2s$ orbital is (1)
18. The hybridisation in CO_3^{2-} ion is (sp^2)
19. The energy of electron in an atom is given by ($E_n = 2\pi^2me^4/n^2h^2$)
20. The bond order of oxygen molecule is (2)
21. If the energy of an electron in the second Bohr orbit of H-atom is $-E$, energy of the electron in the Bohr's first orbit is ($-4E$)
22. The order of ionization energy ($s > p > d > f$)
23. Effective nuclear charge (Z^*) can be calculated by using the formula ($z^* = z - s$)
24. On moving down the group, the radius of an ion (Increases)
25. The scale which is based on an empirical relation between the energy of a bond and the electronegativities is (Pauling)
26. When $X_A \gg X_B$, A - B bond is (ionic)
27. The unit of ionisation energy is (KJ/mole)
28. The electron affinity of chlorine is then that of fluorine. (higher)
29. Noble gases have (zero) electron affinity.
30. Across the period, electron affinity (increases)

LESSON -3,5

1. The general electronic configuration of carbon family is (ns^2np^2)
2. Give an example of metalloid (Ge)
3. The toxic element of Boron family is (Thallium)
4. An element is burnt in limited supply of air to give an oxide 'A' which on treatment with water gives an acid 'B'. Acid 'B' on heating gives acid C which gives yellow precipitate with silver nitrate solution. Oxide A is (P_2O_3)
5. The noble gases are unreactive because they (have stable electronic configuration)
6. The (HF) has the property of etching on glass
7. The compound used to arrest the bleeding is (potash alum)
8. The compound used in smoke screen is (PH_3)
9. An element which belongs to Group 14 is soft in nature does not react with pure water, but dissolves in water containing dissolved air. Then the element is (Pb)
10. Among the halogen acids, the weakest acid is (HF)

11. The shape of XeF_4 is (Square planner)
12. The shape of PCl_5 is (Trigonal bipyramidal)
13. Which shows only -1 oxidation state? (F)
14. An element which is in 15th group and third period was burnt in limited supply on air to give oxide 'A'. 'A' is (As_2O_3)
15. The elements in which extra electron enter $(n-1)f$ orbitals are (f-block elements)
16. The isotope used as a power source in long mission in space probes is (Pu-238)
17. Elements that form oxocations are (actinides)
18. The radio active lanthanide is (promethium)
19. Among the Lanthanide elements, with the increase in atomic number, the tendency to act as reducing agent. (decreases)
20. The compound used in gas lamp material is (CeO_2)
21. Alloys of lanthanides called as (mish metals)
22. The common oxidation state of actinides is (+4)
23. the common oxidation state of Lanthanides is (+3)
24. The maximum oxidation state exhibited by lanthanides is (+4)
25. ThO_2 is used in (gas lamp materials)
26. is the oxidation state of U in UF_6 . (+6)
27. According to Fajan's rule decrease in size of Ln^{3+} ion $\text{Ln}(\text{OH})_3$ (increases the covalent character)
28. The Lanthanides contraction is due to (Imperfect shielding of 4f electron)
29. Actinide contraction is due to imperfect shielding of (5f orbitals)

LESSON- 4

1. The transition elemt with the lowest atomic number is (scandium)
2. The transition element showing maximum oxidation state is (+8)
3. The general outer electronic configuration of d block elements is $(n-1) d^{1-10} ns^{1-2}$
4. The correct electronic configuration of copper ($[\text{Ar}] 4s^1 3d^{10}$)
5. The metal is used in galvanising iron sheets (Zn)
6. The colour of Purple of Cassius is (purple or red)
7. Silver obtained from silver coin is purified by fusion with (borax)
8. $\text{K}_2\text{Cr}_2\text{O}_7$ reacts with KI and dilute sulphuric acid and liberates (I_2)
9. is called as a Blue vitrial ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$)
10. The correct electronic configuration of chromium is ($[\text{Ar}] 4s^1 3d^5$)
11. A metal which precipitates gold from its aurocyanide complex is ($\text{K}[\text{Au}(\text{CN})_2]$)
12. $\text{AgNO}_2 \rightarrow \dots? \dots + \text{NO}_2$ (Ag)
13. The reagent is added first in the separation of silver from silver coin is (Con. HNO_3)
14. Spitting of silver can be prevented by covering the molten metal with a thin layer of (Charcoal)
15. is used to cure of skin disease. (ZnCO_3)

Lesson - 6,7

1. The type of isomerism fond in the complexes $[\text{Pt}(\text{NH}_3)_4][\text{CuCl}_4]$ and $[\text{Cu}(\text{NH}_3)_4][\text{PtCl}_4]$ is (Co-ordinate Isomerism)
2. An example of a ambidentate ligand is (NO_2)
3. An example of a cationinc complex is ($[\text{Cu}(\text{NH}_3)_4]\text{Cl}_2$)
4. An example of a chelating ligand is (en)
5. In $[\text{Fe}(\text{CN})_6]^{4-}$, the central metal ion is (Fe^{2+})
6. $[\text{FeF}_6]^{4-}$ is paramagnetic because (F^- is a weaker ligand)
7. The co-ordination number of Cr (III) in $[\text{Cr}(\text{HO})_4\text{Cl}_2]\text{Cl} \cdot 2\text{H}_2\text{O}$ is (6)
8. The coordination number of Nickel in the complex ion $[\text{NiCl}_4]^{2-}$ is. (4)
9. An example of bidentate ligand is (en)
10. The geometry of $[\text{Ni}(\text{CN})_4]^{2-}$ is (Square planner)
11. After 24 hours 0.125 g of the initial quantity of 1 g of a radioactive isotope is left out. The half-life period is (8 hrs.)
12. The particle used to bombard ${}_{13}\text{Al}^{27}$ to give ${}_{15}\text{P}^{30}$ and a neutron is (α -particle)
13. Loss of β - particle is equivalent to (increases of one proton)

14. Radioactivity is due to (Stable electronic configuration)
15. When ${}_{7}\text{N}^{15}$ is bombarded with a proton it gives ${}_{6}\text{C}^{12}$ and $(\alpha\text{-particle})$
16. In nuclear reactionis / are balanced on both sides (mass and energy)
17. The reaction ${}_{5}\text{B}^8 \rightarrow {}_{4}\text{Be}^8$ takes place due to (positron particle)
18. Half-life period of a radioactive element is 1500years. The value of disintegration constant in terms of seconds is $(0.1465 \times 10^{-10} \text{ sec}^{-1})$
19. The most penetrating radiations are (γ -rays)
20. Half life period of a radioactive element is 100 seconds. Its average life period is (144 sec.)
21. ${}_{92}\text{U}^{238}$ nucleus absorbs a neutron and disintegrates into ${}_{54}\text{Xe}^{139}$, ${}_{38}\text{Sr}^{94}$ and X . The product X will be.(2 Neutrons)

LESSON - 8,9

1. In a simple cubic cell, each point on a corner is shared by (eight unit cells)
2. Semiconductor which exhibit conductivity due to the flow of excess negatively charged electron are called (n-type semiconductors)
3. The Crystal structure of CsCl is (body centred cube)
4. An ion leaves its regular site and occupies a position in the space between the lattice sites. This defect is called as (Frenkel defects)
5. The total Number of atoms per unit cell in bcc is (2)
6. An example for metal deficiency defect is (Fes)
7. In Bragg's equation n represents (order of reflection)
8. The Co-ordination number of body centred cubic is [4]
9. The size of the anion frenkel defect crystal is [larger than the cation]
10. The number of Cl^- ions present in a unit cell of CsCl lattice [8]
11. Give one Example for Frenkel Defects [AgBr]
12. The fundamental repeating portion of a crystal lattice is called [Unit cell]
13. Bragg's equation is $[n\lambda = 2d \sin \theta]$
14. The change of entropy for the process $\text{H}_2\text{O}(\text{liq}) \rightarrow \text{H}_2\text{O}(\text{vap})$ involving $\Delta H_{\text{vap}} = 40850 \text{ Jmol}^{-1}$ at 373 K is $[109.52 \text{ Jmole}^{-1} \text{ K}^{-1}]$
15. Give one Example for Entropy increased process (Irreversible process)
16. The amount of heat exchanged with the surrounding at constant temperature and pressure is called. [ΔH]
17. If ΔG for a reaction is negative, the change is [Spontaneous]
18. Change in Gibbs free energy is given by $[\Delta G = \Delta H - T\Delta S]$
19. For the reaction $2\text{Cl}(\text{g}) \rightarrow \text{Cl}_2(\text{g})$ the sign's of ΔH and ΔS are respectively [-,-]
20. When a liquid boils, there is [an increase in entropy]
21. The entropy change involved in the process of $\text{H}_2\text{O}(\text{s}) \rightarrow \text{H}_2\text{O}(\text{l})$ at 0°C and 1atm pressure involving $\Delta H_{\text{fusion}} = 6008 \text{ Jmol}^{-1}$ is $[22.007 \text{ J.mole}^{-1}\text{K}^{-1}]$
22. The SI unit of entropy is $[\text{J.K}^{-1}]$
23. $\text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2\text{O}(\text{g})$ In this process the entropy [increases]
24. The percentage efficiency of a heat engine that operates between 127°C and 27°C is [decrease of free energy]
25. Which of the processes is always non-feasible? [25%]
26. The network obtained from a system is given by $[-\Delta G = W - P\Delta V]$

LESSON - 10,11

1. For the homogeneous gas reaction at 600k $4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g}) \rightleftharpoons 4\text{NO}(\text{g}) + 6\text{H}_2\text{O}(\text{g})$ the equilibrium constant K_c has the unit $[\text{mol.dm}^{-3}]$
2. $2\text{H}_2\text{O}(\text{g}) + 2\text{Cl}_2(\text{g}) \rightleftharpoons 4\text{HCl}(\text{g}) + 5 \text{O}_2(\text{g})$, the value of K_p and K_c are related as $[k_p > k_c]$
3. Decomposition of hydrogen peroxide is retarded in the presence of (glycerine)
4. The first order rate constant of a reaction is 0.0693 min^{-1} . Then the time required for 50% completion of a reaction is [10minutes]
5. If the equilibrium constant of the reaction $2\text{A} \rightleftharpoons \text{B}$ is K_1 and that of $\text{B} \rightleftharpoons 2\text{A}$ is K_2 , then. $[k_1 = 1/k_2]$
6. When $\Delta n(\text{g})$ in a homogeneous gaseous equilibrium is positive, then $[k_p > k_c]$
7. 50% of a first order reaction is completed in 20 minutes. The time required for 75% completion is [40 minutes]
8. In the reversible reaction $2\text{HI} \rightleftharpoons \text{H}_2 + \text{I}_2$, K_p is [Equal to K_c]
9. In an endothermic equilibrium reaction, if k_1 and k_2 are the equilibrium constants at T_1 and T_2 temperatures respectively and if T_2 is greater than T_1 then $[k_1 < k_2]$

10. The maximum yield of ammonia by Haber's process is [37%]
11. The sum of the powers of the concentration terms that occur in the rate equation is called [Order]
12. In a reaction $2O_3 \rightleftharpoons 3O_2$ the value of K_c is $([O_2]^3/[O_3]^2)$
13. In the synthesis of NH_3 between N_2 and H_2 reaction the unit of K_p is $[atm^{-2}]$
14. State of a chemical equilibrium is [dynamic equilibrium]
15. Half -life period of a first order reaction is 20min. The time taken for the completion of 99.9% of the reaction is [200 min.]
16. The optimum range of temperature used in contact process for the manufacture of SO_3 is $[350^{\circ}C$ to $450^{\circ}C]$
17. The excess energy which a molecule possesses to become active is known as [activation energy]
18. Reactions in which the reacting molecules react in more than one way yielding different set of products are called [parallel reactions]
19. Hydrolysis of an ester by dilute HCl is an example for [consecutive Reaction]
20. Calculate the $\Delta n(g)$ value for the reaction of $2H_2O(g) + 2Cl_2(g) \rightleftharpoons 4HCl(g) + O_2(g)$ [1]

Lesson - 12,13,14

1. The iron catalyst used in the Haber's process is poisoned by [H_2S]
2. Curd is a colloidal solution of [Solid in liquid]
3. An emulsion is a colloidal solution of [two liquids]
4. Tyndall's effect is not observed in [true solutions]
5. Decomposition of hydrogen peroxide is retarded in the presence of [glycerine]
6. An example of gel is [curd]
7. In case of physical absorption, there is desorption when [Temperature increases]
8. Smoke is a colloidal solution of [solid in gas]
9. Colloidal medicines are more effective because [They are easily assimilated and adsorbed]
10. Colloids are purified by [dialysis]
11. Fog is a colloidal solution of [Liquid in gas]
12. The type of colloid in a sol is [solid in liquid]
13. The platinum catalyst used in the oxidation of SO_2 by contact process is poisoned by [As_2O_3]
14. Coconut charcoal has a great capacity of the [Adsorption] of gases.
15. Emulsifying agent is used for [stabilization of an emulsion]
16. The Tyndall effect is associated with colloidal particle due to [Scattering of light]
17. One of the factors which is false regarding catalyst is [initiate the reaction]
18. The function $FeCl_3$ in the conversion of $Fe(OH)_3$ precipitate into a colloid is [peptising agent]
19. An example of lyophilic colloid is [starch]
20. In the reaction between oxalic acid and potassium permanganate, in the presence of dil. H_2SO_4 , [$MnSO_4$] acts as an autocatalyst.
21. The blue colour of the sky is due to [tyndall effect]
22. Catalyst used in Deacon's method of manufacture of chlorine is [$CuCl_2$]
23. Argyrol is [colloidal silver]
24. The emulsifying agent used in O/w emulsion is [protein]
25. The colloid used for stomach disorder is [Milk of Magnesia]
26. The migration of colloidal particles under the influence of an electric field is known as [electrophoresis]
27. The decomposition of H_2O_2 in the presence of platinum catalyst is an example of [positive catalysis]
28. When one coulomb of electricity is passed through an electrolytic solution, the mass deposited on the electrode is equal to [electrochemical equivalent]
29. The indicator suitable for the titration of oxalic acid against $NaOH$ is [phenolphthalein]
30. When sodium acetate is added to acetic acid the degree of ionisation of acetic acid [decreases]
31. The indicator suitable for the titration of ammonium hydroxide against HCl is [methyl orange]
32. If 0.2 ampere can deposit 0.1978g of copper in 50 minutes, how much of copper will be deposited by 600 coulombs? [0.1978g]
33. When pH of a solution is 2, the hydrogen ion concentration in moles litre⁻¹ is [1×10^{-2}]
34. Equivalent conductance of acetic acid $25^{\circ}C$ is $80 \text{ ohm}^{-1} \text{ cm}^2(\text{gram equivalent})^{-1}$ and at infinite dilution is $400 \text{ ohm}^{-1} \text{ cm}^2(\text{gram equivalent})^{-1}$. The degree of dissociation is [0.2]

35. When 10^{-6} mole of a monobasic strong acid is dissolved in one litre of solvent, the pH of the solution is [6]
36. Faraday's laws of electrolysis are related to [equivalent weight of the electrolyte]
37. Ostwald's dilution law is applicable in the case of [CH_3COOH]
38. The pH of solution containing 0.1N NaOH solution is [13]

LESSON - 15,16,17

1. Oxidation of glycerol with bismuth nitrate gives [meso oxalic acid]
2. Ethylene diamine forms glycol with [Nitrous acid]
3. The characteristic odour of lower phenols is [carbolic acid]
4. The compound that reacts the fastest with Lucas reagent is [2-Methyl 2-propanol]
5. A compound that undergoes bromination easily is [Phenol]
6. The reaction ethylene glycol with PI_3 gives [$\text{CH}_2=\text{CH}_2$]
7. The number of secondary alcoholic group in glycerol is [1]
8. Anisole on bromination yields [o and p-Bromo Anisole]
9. Which compounds is oxidised to give ethyl methyl ketone? [2-Butanol]
10. When phenol is distilled with zinc dust, it gives [Benzene]
11. The number of Primary alcoholic group(s) in glycerol is [2]
12. Order of reactivity of alcohol towards sodium metal is ($1^{\circ} > 2^{\circ} > 3^{\circ}$)
13. According to Lewis concept of acids and bases, ethers are [lewis base]
14. The compound mixed with ethanol to serve as substitute for petrol is [Di ethyl ether]
15. When ethers are exposed to air for a long time, they form [Peroxides]
16. The isomerism exhibited by 1-propanol and methoxy ethane is [functional isomerism]
17. Oxygen atom of ether is [inert]
18. Diethyl ether behaves as a [lewis base]
19. Zeisel's method of detection and estimation of alkoxy group in alkaloids involves the reaction of ether with. [HI]
20. The ether used in perfumery is [methyl phenyl ether]
21. Ether is formed when alkyl halide is treated with sodium alkoxide. The method is known as. [Williamson synthesis]
22. The number of ether isomers possible for $\text{C}_4\text{H}_{10}\text{O}$ is [3]
23. When ethyl iodide is treated with dry silver oxide, it forms [di ethyl ether]
24. Diethyl ether can be decomposed with [HI]
25. The preparation of diethyl ether by Williamson's synthesis is an [nucleophilic substitution reaction]
26. In the formation of oxonium salt when etherial oxygen reacts with strong mineral acid is called [protonation]
27. The IUPAC name of phenatole is [ethoxy Benzene]
28. Ethers should never be evaporated to dryness because [they form explosive peroxide]
29. Higher ethers can be prepared from lower members by the action of [Grignard Reagent]
30. Compound which is used as medicine for asthma and whooping cough is [Benzyl alcohol]

LESSON - 18

1. Aldol is [3- hydroxy Butanal]
2. The formation of a cyanohydrin with a ketone is an example of [nucleophilic addition]
3. Schiff's reagent gives pink colour with [aldehydes]
4. Tertiary butyl alcohol can be prepared by treating methyl magnesium iodide with [Acetone]
5. Hydrogenation of benzoyl chloride in the presence of Pd and BaSO_4 gives [Benzaldehyde]
6. The compound that does not reduce Fehling solution is [Benzaldehyde]
7. Propanone is usually characterised by [iodoform test]
8. Which compound that does not undergo Cannizzaro reaction is [Acetaldehyde]
9. Calcium acetate + Calcium benzoate \rightarrow [Acetophenone]
10. The compound used in the preparation of the tranquilizer sulphonal is [Acetone]
11. A Cyanohydrin of a compound X on hydrolysis gives lactic acid. X is [Acetaldehyde]