# B.Sc. (Part-I)

# Physics

### Paper: First

## (Mechanics, Properties of Matter and Vector)

### Section-A

### (Short Answer Type Questions)

1. Define Cartesian coordinate system and derive the expression for velocity & acceleration in Cartesian System.
2. What are fictitious forces? Discuss centrifugal forces as an example of fictitious force.
3. Prove that conservative force is negative gradient of potential Energy F=-Grad U.
4. For an elastic collision prove that $v = 2u/(1 + m/M)$

   Where M= Particle mass u=Particle velocity m=Target of Particle mass (at rest)   V=Velocity of particle (M) after collision $v$= Velocity of Target of Particle (m) after collision.

5. State and Prove theorem of Perpendicular axes.
6. Derive an expression for excess pressure on curved surface.
7. Define Surface Tension and give molecular interpretation of surface tension.
8. What are Pseudo forces? Explain Pseudo force giving an example.
9. Prove that the linear restoring force is conservative.
10. What do you understand by Reynold's number?
11. State and prove the Stoke's theorem.
12. The steel girders are manufactured with their section in the form of I.
13. Explain Coriolis force.
14. Explain (i) Velocity gradient (ii) Coefficient of Viscosity.
15. Write a short note on double stage rocket.
16. Define Plane polar coordinate system and derive the expression for velocity & Acceleration in plane polar coordinate system.
17. Of two capillaries of radii $r_1$ and $r_2$ having lengths $l_1$ and $l_2$ respectively are set in parallel then show that the rate flow :

$$V = \frac{\pi^p}{8\eta} \left( \frac{r_1^4}{l_1} + \frac{r_2^4}{l_2} \right)$$

18. State and Prove theorem of parallel axis.
19. Prove that $\nabla * (\nabla \varphi) = 0$.
20. What is the Physical signification of moment of Inertia.

## Section-B
## (Long Answer type Question)

1. Derive an expression for potential and field due to a solid sphere when Point is (i)outside (ii)on the surface (iii)inside.
2. Prove that K=y/3(1-2σ), where symbols have their usual meanings.
3. Define Energy of flowing fluid. Derive Euler's equation of motion of a non-viscous fluid.
4. Derive Poiseuille's formula for flo0w of a liquid through a capillary tube.
5. (a) Deduce Euler's equation for the flow of non-viscous liquid.
   (b) Obtain the depression of a bean supported at its end and loaded in the middle.

6. Define vector triple product and Prove that

   A*(B*C)=B*(A*C)-C*(A*B).


7. Prove that
      Div(a*b)=B.curl A-A.curl B
8. Derive an expression for Moment of inertia of a spherical shell: (i) About a Diameter (ii) About a tangent.
9. Write a Kepler's laws and its solve.
10. State and Prove theorem of parallel axes.

**B.Sc.(Part-I)**

# Physics

**Paper:- Second**

**(Electricity, Magnetism and Electromagnetic Theory)**

**Section-A**

**(Short Answer Type Questions)**

1. What is Gauss's law? With the help of Gauss's law find out field at a pt. at a distance r from a charged rod whose charge density is λ.
2. Prove the relationship

$$\vec{D} = \in_0 \vec{E} + \vec{p}$$

   Where $\vec{D}$= Displacement vector

   $\vec{E}$= Electric field

   $\vec{P}$= Polarisation Vector
3. State Biot and Savart's law.
4. Discuss growth of the current in an R-C circuit.
5. What is lenz's law? Define Self Induction and Mutual Induction.
6. Define magnetic permeability, susceptibility and Hysteresis.
7. Write down Maxwell's equations.
8. What is an electric dipole? Find out electric field at a point which is at the perpendicular bisector and is at a distance r from the dipole.
9. State Gauss theorem and write down its expression.
10. Define line integral of electric field.
11. Write down the boundary conditions satisfied by electric field and electric displacement vector.
12. Drive current continuity equation.
13. Represent the impedance Ź=R+ jwL(i=$\sqrt{-1}$) in the vector form on complex plane.
14. Define Lorentz force and write its equation.
15.  Derive an expression for magnetic field due to a long straight current carrying wire using Ampere's circuital law.
16. Write the Faraday's laws of electromagnetic induction.
17.  Derive an expression for decay of current in a R-C circuit.
18. Write down electromagnetic wave equation in vacuum and define the term contained in it.
19. What is meant by self induction? Define self induction coefficient of a coil.
20. Define magnetic susceptibility and magnetic permeability. Establish the relation between them.

# Section-B

## (Long Answer Type Questions)

1. Find electric field due to a charged solid sphere of charge density $\rho$ at a point
   - (i)     Out side the sphere
   - (ii)    On the surface of the sphere
   - (iii)   Inside the sphere.

Plot a graph between E and distance r from the centre of the sphere.

2. What are series and parallel resonant circuit? Calculate frequency in each case and explain why one is called acceptor and the other a rejecter circuit.
3. For D.C.LCR circuit discuss the critically damped charge case when capacitor is getting charged through L and R.
4. For a moving coil galvanometer prove that $i=\frac{c}{nAB}\theta$

   Where i= Current

   $\theta$=Deflection

   N=No. of turns

   A=Area of the coil

   B=Magnetic field density

5. Drive electric field due to (i) an infinite non conducting flat sheet of charge and (ii) near a charged conductor.
6. Derive an expression for magnetic field on the axis of a circular loop.
7. Derive expressions for angular momentum and magnetic moments for an electron revolving in an atom.
8. Derive an expression for skin depth for electromagnetic wave in a conductive medium.
9. Deduce Maxwell's equation for free space and prove that electromagnetic waves are transverse.
10. What is Poynting vector? Explain its significance. If $\vec{S}$ is the pointing vector, show that $\vec{S}=\frac{1}{\mu_0}(\vec{E}x\vec{B})$ Where the symbols have their usual meanings.

# B.Sc.(Part-I)

# Physics

### Paper:- Third

### (Oscillations and Special theory of Relativity)

## Section-A

### (Short Answer Type Questions)

1. Write down the differential equation for the oscillations of L-C circuit and calculate the time period.
2. At what displacement the Kinetic and potential energy are equal for harmonic oscillator.
3. Establish the equation of motion for a system of two simple Pendulums coupled together.
4. What is meant by the quality factor of a damped harmonic oscillator? Write its expression.
5. Write a short note on sharpness of resonance.
6. What is time dilation? Explain proper time interval.
7. Derive the formula:
$$E^2 = M_0^2 c^4 + p^2 c^2$$
$where$ symbols have their usual meaning.
8. Differentiate between the periodic motion and the simple harmonic motion, giving two examples of each.
9. What is Helmholtz resonator? How is it used to determine the frequency?
10. A particle of mass 0.1 kg is situated in the potential field V=$5x^2$+10 joule/kg. Write down the differential equation of the motion of the particle.
11. What is meant by interference? What are coherent sources?
12. Write short note on resonance and its sharpness.
13. The amplitude of a damped oscillator falls to 1/10 in 110 second. Find the relaxation time of oscillator.
14. Write down the mass-energy equation and explain it.
15. What do you mean by the relativistic velocity of a particle?
16. Explain the meaning of transient state and steady state in reference of a forced oscillator.
17. Define quality factor and connect it with the relaxation time.
18. What do you understand by Lissajous figures, explain with an examples?
19. Deduce an expression for the frequency of an Torsional pendulum.
20. Explain the inertial and non-inertial reference frames, giving an example of each.

# Section-B

## (Long Answer Type Questions)

1. Explain Lissajons figures when two simple harmonic oscillations of the frequency ratio 1:1 and phase difference varying between 0 and $\pi$ superpose.
2. Solve the equation for damped harmonic oscillator.
3. State the postulates of special theory of relativity and deduce from them the Lorentz transformations. Prove that the Lorentz transformations reduce to Galilan transformations when v<<c.
4. What is compound pendulum? Write the differential equation of its motion and educe an expression for its time period also.
5. State the principle of superposition. Deduce expression for the amplitude of resultant motion obtained due to superposition of two simple harmonic motions of same frequencies and in one line.
6. Explain the power absorption, quality factor and resonance of a forced oscillator.
7. What do you mean by relativistic energy? What is rest energy? Deduce the relationship between the relativistic momentum and energy.
8. Deduce an expression for potential energy kinetic energy and total energy for the simple harmonic oscillator and prove that the average kinetic energy is equal to the average potential energy.
9. What do you understand by the two coupled oscillator? Deduce the expression for the energy of two couple masses connected by springs.
10. What is time dilation? Using Lorentz transformation equations find the expression for time dilation and, discuss an experiment which supports the time dilation in special relativity.

# B.Sc.(Part-II)

# Physics

**Paper:- First**

## (Optics and Lasers)

## Section-A

### (Short Answer Type Questions)

1. Define aperture stop and field stop.
2. Explain the difference between magnifying power and resolving power of a telescope.
3. What is meant by chromatic aberration of a lens?
4. State and explain conditions for the interference of light.
5. Explain the of Rayleigh's refractometer and write down it's uses.
6. What should be the number of lines in a grating, which will just resolve in the third order for the sodium doublet?
7. Using Fresenel's theory of half period zone, discuss Rectilinear propagation of light.
8. In comparison to 'ordinary light' give the uses of 'Laser'.
9. Write short notes on any one of the following-(a) Ruby laser (b) Newton's ring.
10. State and explain 'Fermat's' principle of extremum path.
11. Explain Chromatic aberration. What is achromatism?
12. Describe conditions to obtain sustained interference.
13. Differential between Newton's ring and circular fringes obtained by Michelson's interferometer.
14. Distinguish between frenel's and Fraunhaffer class diffraction.
15. How is a concave reflection grating superior over a plane diffraction grating.
16. The wavelength of two yellow line of sodium light are $5890A^0$ and $5896A^0$ respectively. What should be the resolving power of a grating to just resolve these lines?
17. What do you understand by double refraction? Explain Ordinary and extraordinary rays.
18. Differentiate between spontaneous emission and stimulated emission.
19. What are Haidinger Fringes?
20. What are the cardinal point of a coaxial lens system?

# Section-B

## (Long Answer Type Questions)

1. Explain the principles of Fabry Parot interferometer. Obtain an expression for the intensity distribution in the transmitted light and explain the sharpness of the fringes.
2. Explain Gaussian Eye-Piece and compare Huygen's and Ramsdan's Eye-Piece.
3. What is meant by diffraction of light? Explain the phenomenon of diffraction of light at a straight edge.
4. Explain with figure can we produce and analysis plane, circular and elliptically polarized light from the unpolarized light.
5. Discuss the formation of Newton's rings. Obtain expression for diameter of bright and darx ring. How will you determine wavelength of monochromatic light with this experiment?
6. Explain the construction and working of a zone plate. Show that a one plate behaves like a convex lens of multiple foci. Deduce the expression for its focal length.
7. Describe the construction and working of Bi-quartz polarimeter. Explain how specific rottion of an optically active substance is measured with it's help.
8. Prove that the intensity of fringes of Fabry Perot interometer is given by the following relation:

$$I = \frac{I_{max}}{1 + F\sin^2\emptyset/2}$$

   Where the symbols have their usual meaning.

9. Obtain expression for the intensity distribution due to diffraction at a single slit and dicuss it graphically. Distinguish between the interference fringes due to two narrow slits.
10. (a) What is spherical aberration? Obtain condition to minimize it by combination of two lenses.
    (b) What is LASER? How is laser radiation different from ordinary light?

# B.Sc. (Part-II)

# Physics

**Paper :- second**

## (Wave, Acoustics & Statistical Physics)

## Section-A

### (Short Answer Type Questions)

1. What do you understand by phase velocity?
2. What is transducer?
3. Define Bel and Decibel.
4. Calculate the importance of medium and the intensity of sound for plane wave with pressure amplitude of IN$m^{-2}$, if the speed of sound is 340 m se$c^{-1}$ and density of air is 1.29 Kg $m^{-3}$.
5. Explain micro-canonical ensemble.
6. Define the terms Accessible and non-accessible micro states.
7. Explain the statistical interpretation of entropy.
8. A bag contains 8white and 6 black balls. Two balls are taken out one after the other. Calculate the probability for both the balls to be black.
9. Prove that the velocity of gravity waves is given as:
$$V=\sqrt{g\lambda/2\pi}$$
10. Obtain the expression for the velocity of the gravity waves on the surface of the liquid.
11. State necessary condition for propagation of transverse waves in an ideal string.
12. What are the defects of Diatonic scale? What is temperature?
13. Define the term mechanical impedance and electrical impedance in relation to a transducer.
14. Define partition function. What does it tell?
15. Four particle a, b, c and d are distributed in two identical boxes X and Y with equal probabilities. Find the different possible macro states.
16. Explain in brief the Doppler broadening of spectral lines.
17. What is reverberation period? Write down the Sabine's formula for it.
18. At what temperature the r.m.s. speed of hydrogen molecules will be equal to the escape velocity on the earth surface?
19. What is sonar? Explain it's use.
20. Write uses of ultrasonic sound.

## Section-B

### (Long Answer Type Questions)

1. Distinguish between the intensity and loudness of sound. How are they related?
2. State the law of equation of energy and deduce it statistically.
3. What do you mean by the Doppler's broadening of spectral line? Explain it and obtain an expression for the half width of spectral line.
4. What are Transducers? Explain the working of any one transducer.
5. Explain the Phase-space representation. Explain the difference between $\mu$-space and $\tau$-space.
6. Obtain the Maxwell's Boltzmann distribution function for the speed of molecules of a gas and use it to find the average speed and root mean square speed.
7. Give the physical significance of Maxwell's speed wise distribution. Describe a method for the experimental verification of Maxwell's law of distribution of speed.
8. Define phase velocity and group velocity and derive a relationship between them. Show that both are equal in non-dispersive medium.
9. What do you mean by the acoustic impedance of a medium? Obtain an expression for it.
10. A single particle of mass m is enclosed in vessel of folume V. find the number of accessible microstates in the energy range (i)0 to E, (ii) E and E+dE.

# B.Sc. (Part-II)

# Physics

### Paper :- Third

### (Kinetic Theory & Thermodynamics)

### Section-A

### (Short Answer Type Questions)

1. Explain, what do you mean by degree of freedom of a particle?
2. Explaine Boyle's law on the basis of Kinetics theory of gases.
3. What do you understand by the exchange forces?
4. Deduce an expression for joule's coefficient for a Vander waals gas.
5. What is temperature of inversion curve? Draw it.
6. Define coefficient of performance of a refrigerator.
7. What is meant by collision cross-section? Write expression for it.
8. Differentiate between the path function and point function.
9. Prove that

$$C_v = -T \left(\frac{\partial^2 F}{\partial T^2}\right)_v$$

   Where the symbols have their usual meanings.

10. If the energy obtained from the sun on earth surface is 0.1 J $Cm^{-2}\ sec^{-1}$ and the diameter of the earth is nearly $10^7$ meter, then assuming the earth to be a perfect absorber, calculate the total force on earth due to solar radiations.
11. Define internal work and external work.
12. How will you use temperature entropy diagram to derive the expression of efficiency of a carnor's engine?
13. Derive Maxwell's general thermo-dynamical relation.
14. Derive Rayligh-Jean's law from planck's distribution law.
15. Find out the value of specific heat ratio for a diatomic gas.
16. Define critical constants for gases. What is the value of critical coefficient?
17. Define Boyle temperature and temperature of inversion.
18. What are Helmholtz free energy F and Gibbs Free energy G?
19. Describe the principle of cascade cooling.
20. For an Otto engine, the adiabatic compression ratio is 8 and specific heat ratio is 1.4. Calculate it's efficiency (Take $(\frac{1}{8})^{0.4}$=0.44).

# Section-B

## (Long Answer Type Questions)

1. Deduce Van der Waal's equation of state for a real gas and discuss nature of Van der Waal's forces. Also compare it with the experimental p-V curves (Andrw's Curves). Write drawbacks of Van der Waal's equation.
2. Describe the principle and method of Liquifaction of Hydrogen.
3. Write Short notes on any two:
   (i)Brownian Motion
   (ii)Joule-Thomson effect
   (iii)Maxwell's Thermodynamic relations
   (iv)Radiation pressure
4. State Wien's displacement law of black body radiation. Prove it on the basis of thermodynamic principles.
5. Give statement of Carnot's theorem and establish equivalence of Kelvin-planck and Clausius statements of second law of thermodynamics.
6. Define mean free path and collision cross section. Establish an exact expression for mean free path and discuss its dependence on density, temperature and pressure.
7. Deduce (i) Wien's law (ii) Rayleigh-jean's law from the Planck's distribution law.
8. Derive the four Maxwell's thermodynamic relations.
9. What is entropy? Show that the entropy is a point function of the state of the system.
10. Explain Joule-Thomson effect for an ideal gas.

# B.Sc. (Part-III)

# Physics

### Paper:- First

### (Quantum Mechanics & Nuclear Physics)

### Section-A

### (Short Answer Type Questions)

1. State and explain Ritz combination principle in spectra.
2. What is photoelectric effect? How did Einstein explain it? Discuss.
3. Write Heisenberg's uncertainety principle and prove that $\Delta Ex \Delta t \geq \hbar/2$.
4. What do you mean by operator? Derive the operator for Momentum and Kinetic energy.
5. Explain the physical significance of wave function $\varphi$.
6. Establish time dependent Schrodinger equation.
7. Show that the phase velocity of de-Broglie wave is greater than the velocity of light.
8. Prove that the eigen values of Hermitian operator are real.
9. Calculate the de-broglie wave length of an electron accelerated though a potential difference of 1.25 kilo-Volt.
10. Normalise the eigen function $\varphi$(x)=N$e^{-x^2/2}$ for the states.
11. On the Basis of de-broglie concept, find energy states of a particle enclosed in a box.
12. Explain the main assumptions of Nuclear shell model.
13. Explain the terms packing fraction, mass defect and binding energy of a nucleus.
14. If radius of hydrogen nuclei is 1.4 fermi then calculate radius of nuclei$^{16}_{8}$0.
15. What the main assumption of nuclear shell model.
16. The spectrum of black body radiation at each temperature is continuous. Why?
17. What is Ritz Combination Principle. Explain its use.
18. Prove that the velocity of a non-relativistic free particle is half of group velocity.
19. An electron is moving with velocity 5.9*$10^6$ m/s.
20. What is difference between classical and quantum statistics?
21. State the postulates of Bohr atomic theory.
22. Define and explain various quantum numbers.
23. What do you mean by the distinguishability and indistinguishability of particles?
24. How can the range of $\alpha$-particles be measured experimentally?
25. Mention basic properties of atomic nuclei.
26. State and explain Geiger-Nuttal law.
27. Explain energy product in stras by Carbon-cycle.
28. Write a short note on cloud chambers.

29. The energy levels of a particle in a one dimentional box are discrete. Explain the statement.
30. What is the meaning of operators? Write operators for momentum and energy.


# Section-B

## (Long Answer Type Questions)

1. Give Quantum mechanical theory of linear harmonic oscillator and obtain expression for its Zero point energy.
2. Discuss the behavior of photons in black body chamber.
3. Explain the construction and working of G.M. counter.
4. Discuss the shell model of the nucleus. What are its merits and demerits.
5. Obtain Schrodinger wave equation for hydrogen atom. Explain radial wave function and energy eigen values.
6. State the condition of Bose-Einstein statistics and establish its distribution law.
7. Define nuclear reaction. Describe various conservation law in nuclear reactions.
8. Discuss the construction and working of proportional counter.
9. Write down and solve the Schrodinger equation for simple harmonic oscillator. Show that energy Levels of oscillator are discrete and equispaced .
10. What is Compton Effect? Explain it on the Basis of quantum theory? Prove that in Compton effect, scattering angle of photon and charge in wave length are related by the following equation:

$$\Delta\lambda = \frac{h}{m_0 c}(1\text{-}\cos\theta)$$

*Where* symbols have their usual meaning.

# B.Sc. (Part-III)

# Physics

**Paper:- second**

## (Atomic, Molecular & Solid State physics)

## Section-A

**(Short Answer Type Questions)**

1. Explain Mosley's Law.
2. Define J-J Coupling.
3. What is Ionic crystal? Explain it.
4. Explain paramagnetic substance.
5. Derive Ohm's Law.
6. Explain Lattice Libration.
7. What is Miller Indices?
8. Write the transition rule for pure vibrational Spectra.
9. What is Unit Cell?
10. Give Laue Theory.
11. Define Electronic Collision and Drift Velocity.
12. Name sources of excitation in visible region.
13. Define Debye Model.
14. Write selection rule for spectral lines.
15. Define Magnetic domain.
16. Explain fine structure of $H_\alpha$ Line.
17. Write draw backs of Bohr's theory.
18. 20 KV potential is applied across an X-Ray tube, calculate the minimum wave length of X-rays emitted.
19. Write distinction between the X-rays spectra and optical spectra.
20. Explain spectroscopic technique for IR spectra.
21. What is ionic bond? Explain it.
22. Give difference between the crystalline and Glassy solids.
23. Define magnetic permeability.
24. Write the transitional rule for pure rotational spectral.
25. Explain complementary character of raman and infrared spectra.
26. State application of Moseley's law.

27. Explain the difference between continuous and characteristics X-rays.
28. What are stokes and anti stokes line in Raman scattering?
29. Explain discrete set of electronic energies of molecules.
30. Describe the Laue method for the study of crystal structure.

# Section-B

## (Long Answer Type Questions)

1. What is Raman Effect? What are stoke's and anti-stoke's line in Raman scatting? Explain Raman Effect Quantatively by quantum theory of light.
2. Discuss the pure vibrational spectra in diatomic molecules. Show that the vibrational energy state of a diatomic molecule is quantized and equi spaced.
3. Explain the cycle of magnetization and hysteresis loss. Show that hysteresis loss per cycle of magnetization per unit volume of substance is equal to the area of B-H loop.
4. Discuss the assumption of Lorentz-Drude theory for motion of free electron inside a metal. And use it to deduce Ohm's Law.
5. Explain continuous X-ray spectrum? State Duane and Hunt's Limit.
6. Explain simple Harmonic oscillator. Deduce expression for second order expansion of Linnard-jone's potential.
7. What is Raman Effect? Describe the experimental arrangement to study it.
8. Explain the Rotational spectrum of a diatomic molecule. Show that its rotation energy states are quantized but not equidistant.
9. What do you mean by ultraviolet and infrared spectroscopy? Write two application for each.
10. How is rotational Spectrum of a diatomic molecular are useful in the determination of inter nuclear distance? Explain.

# B.Sc. (Part-III)

# Physics

### Paper:- Third

## (Solid State Device & Electronics)

## Section-A

### (Short Answer Type Questions)

1. Explain the difference between UJT and BJT.
2. Give a brief account of P-N junction diode equation. Discuss the effect of temperature on the diode current.
3. Explain why the input resistance of a transistor is low while the output resistance is high.
4. What is the meaning of ripple factor? Explain.
5. What is transistor biasing? Discuss it.
6. Write short notes on h-parameters of a transistor.
7. What is R-C Coupled Amplifier? State two merits and demerits of R-C Coupled Amplifier.
8. Describe half adder and full adder with circuit diagrams.
9. Two binary input signals to a NOR gate are A=$100101_2$ and B=$110110_2$. What is its output?
10. For a MOSFET, the drain current is given as $I_D$=k$[V_{GS} - (V_{GS})_{threshold}]^2$ if $(V_{GS})_{threshold}$ =3V and Drain current $I_D$ is 8 mA when the gate-source voltage $V_{GS}$ is 5V, find the drain current at gate source voltage 8V.
11. Draw the logic circuit for the following Boolean expression: Y=ABC+$\vec{D}$
12. What is the meaning of Load lines? Explain the rectifier and alternating load lines.
13. Write short notes on Multistage Amplifiers.
14. Draw the characteristics curves of field effect transistor and explain their shapes.
15. What are the intrinsic and Extrinsic semiconductors?
16. Define Electron Hole theory.
17. Define doping state in semiconductors.
18. Explain p-n junction diode.
19. Define diffusion principle in p-n junction diode.
20. What are the differences between Zener diode and avalanche diode.
21. Give the operation of pnp-transistor.
22. Define h-parameter.
23. Explain FET.
24. Define optoelectronic Devices.
25. What is multistage amplifier.
26. Give the application of negative feedback.
27. Explain logic gates.

28. Define Oscillators.
29. What are the noises in electronic circuits.
30. Explain Solar cell.

# Section-B

## (Long Answer Type Questions)

1. Write short notes on following:
   (i) Tunnel diodes,
   (ii) Emitter Follower,     (iii) Laser diode,
2. Describe the construction of metal oxide semiconductor field effect transistor in enhancement mode.
3. Derive expressions for current gain, voltage gain, Input resistance and Output resistance of a common emitter transistor.
4. Explain the principle of feedback in Amplifiers. What are Negative and Positive Feedback? Describe how negative feedback does improve the performance of a amplifier. Why is positive feedback not often used to increase gain in amplifiers.
5. Explain semi conductor on the basis of band theories.
6. What is MOSFET? Explain its working.
7. Explain solar cell.
8. Define the application of zener diode as voltage stabilizer with an example.
9. What do you mean by Rectification? Draw the circuit diagram of a full wave rectifier and explain its working. Deduce the expression for its efficiency and ripple factor.
10. Draw a circuit-diagram of PNP transistor in CE mode. Obtain its characteristic curves also define current gain.