Experiment #1:-

Q1.what is the object of your experiment?

Ans: To determine the horizontal component of earth magnetic field strength "H_e" by Tangent galvanometer.

Q2.what is the tangent galvanometer?

Ans: It is a current measuring instrument which works on the principle of tangent law of magnetism.

Q3.what are the main parts of tangent galvanometer?

Ans: A tangent galvanometer consists of a coil of insulated copper wire wound on a circular non-magnetic frame. The frame is mounted vertically on a horizontal base provided with levelling screws. The coil can be rotated on a vertical axis passing through its center. A compass box is mounted horizontally at the center of a circular scale. It consists of a tiny, powerful magnetic needle pivoted at the center of the coil. The magnetic needle is free to rotate in the horizontal plane. The circular scale is divided into four quadrants. Each quadrant is graduated from 0° to 90°. A long thin aluminum pointer is attached to the needle at its center and at right angle to it. To avoid errors due to parallax, a plane mirror is mounted below the compass needle.

Q4.what is the function of rheostat in this experiment?

Ans: It acts as a load in the circuit and it varies the magnetic field perpendicular to the earth's magnetic field by varying current.

Q5.what is geomagnetism?

Ans: The branch of geology concerned with the magnetic properties of the earth.

Q6.what is the formula for finding the horizontal component of earth's magnetic field?

Ans: H_e= where H_e is the horizontal component, H is the magnetizing force, is the angle between the resultant of two fields and earth's magnetic field.

Q7.why needle of tangent galvanometer move with increasing or decreasing current?

Ans: The galvanometer is oriented so that the plane of the coil is vertical and aligned along parallel to the horizontal component H_e of the Earth's magnetic field (i.e. parallel to the local "magnetic meridian"). When an electrical current flows through the galvanometer coil, a second magnetic field H is created. At the center of the coil, where the compass needle is located, the coil's field is perpendicular to the plane of the coil. These two perpendicular magnetic fields add vectorially, and the compass needle points along the direction of their resultant H_e + H. The current in the coil causes the compass needle to rotate by an angle.

Q8.what is tangent law?

Ans: The tangent of the angle a compass needle makes is proportional to the ratio of the strengths of the two perpendicular magnetic fields.

Q9.what is the function of reversing keys in this experiment?

Ans: They reverse the direction of current it is done to reduce the error in reading produced by E.M.I (Electromagnetic interference).An average is taken of clockwise and anti-clockwise reading.

Q10.why the tangent galvanometer is set into magnetic meridian?

Ans: This is done so that the plane of the coil is parallel to the horizontal component of earth's magnetic field.

Note: A problem with tangent galvanometer is that its resolution degrades at both high currents and low currents. The maximum resolution is obtained when the value of is 45°. When the value of is close to 0° or 90°, a large percentage change in the current will only move the needle a few degrees.

Formulas: H_e= and 1amp per meter = 0.01256 oersted

Experiment #2:-

Q1.what is the object of your experiment?

Ans: To study the characteristics of an acceptor circuit and determine unknown inductance.

Q2.what is an acceptor circuit?

Ans: A series-resonant circuit which provides a lower impedance at the tuned frequency, while offering a higher impedance at the rest. Such a circuit may be used, for instance, if seeking to pass only a desired frequency.

Q3.what are the application of an acceptor circuit?

Ans: A very frequent use of these circuits is in the tuning circuits of analogue radios. There are also used for filtering where the resistor *R* becomes the load that the filter is working into. Both parallel and series resonant circuits are used in induction heating. A series resonant circuit provides voltage magnification.

Q4.what is resonant frequency?

Ans: Resonance is the tendency of a system to oscillate with greater amplitude at some frequencies than at others. Frequencies at which the response amplitude is a relative maximum are known as the system's resonant frequencies, or resonance frequencies. At these frequencies, even small periodic driving forces can produce large amplitude oscillations, because the system stores vibrational energy.

Q5. How the resonant frequency varies with capacitance and inductance?

Ans: The resonant frequency is inversely proportional to the square root of the product inductance and capacitance. This is shown in the following formula where L is inductance, C is

capacitance and f is resonant frequency.

Q6.what is inductive reactance?

Ans: Inductive reactance is an opposition to the change of current on an inductive element. Inductive reactance X_L is proportional to the sinusoidal signal frequency f and the inductance L.

Q7.what is capacitive reactance?

Ans: Capacitive reactance is an opposition to the change of voltage across an element. Capacitive reactance X_C is inversely proportional to the signal frequency f (or angular frequency ω) and the capacitance C.

Q8.what is impedance?

Ans: Electrical impedance is the measure of the opposition that a circuit presents to the passage of a current when a voltage is applied. In quantitative terms, it is the complex ratio of the voltage to the current in an alternating current (AC) circuit.

Q9.what is phase angle?

Ans: In the context of vectors and phasors, the term phase angle refers to the angular component of the polar coordinate representation. In the context of periodic phenomena, such as a wave, phase angle is synonymous with phase. Phase in sinusoidal functions or in waves has two different, but closely related, meanings. One is the initial angle of a sinusoidal function at its origin and is sometimes called phase offset or phase difference. Another usage is the fraction of the wave cycle which has elapsed relative to the origin.

Q10.what is the phase difference between voltage and current at resonance?

Ans: The phase variation between applied Voltage as well as resulting current is actually zero inside a LCR circuit at resonance that is at resonance, the load current is in phase with the supply voltage.

Q11.what are the units of inductance or self-inductance?

Ans: The S.I unit of inductance is henry (H).

H=

Where,

A = ampere, C = coulomb, F = farad, J = joule, kg = kilogram, m = meter, s = second, Wb = weber, V = volt, Ω = ohm.

Q12.what is the energy stored in the magnetic field of the inductor?

Ans: The energy stored in the magnetic field of an inductor can be expressed as
where,

W = energy stored (Joules), L = inductance (henrys, H), I = current (Amperes, A)

Q13.what is the energy stored in the electric field of a capacitor?

Ans: The energy stored in the electric field of a capacitor can be expressed as

where,

Q=charge, V=voltage, C=capacitance

Q14.what is the natural frequency of an acceptor or a rejecter circuit?

Ans: The resonance frequency is defined in terms of the impedance presented to a driving source. It is still possible for the circuit to carry on oscillating (for a time) after the driving source has been removed or it is subjected to a step in voltage (including a step down to zero). This is similar to the way that a tuning fork will carry on ringing after it has been struck, and the effect is often called ringing. This effect is the peak natural resonance frequency of the circuit and in general is not exactly the same as the driven resonance frequency, although the two will usually be quite close to each other. Various terms are used by different authors to distinguish the two, but resonance frequency unqualified usually means the driven resonance frequency. The driven frequency may be called the undamped resonance frequency or undamped natural frequency and the peak frequency may be called the damped resonance frequency or the damped natural frequency. Damping is caused by the resistance in the circuit. It determines whether or not the circuit will resonate naturally (that is, without a driving source).

Q15.what is the equivalent of self-inductance in mechanics?

Ans: Mass.

Q16.what is non-inductive winding of a wire resistor?

Ans: To minimize the effect of self-inductance the wire is doubled back on itself before being coiled up that is the windings are wired anti-series to null out self-inductance.

Q17.what is self-induction?

Ans: In an electric circuit, a changing electric current through a circuit that has inductance induces a proportional voltage which opposes the change in current (self-inductance).

Q18. How the inductance of a coil can be changed without changing its dimension or number of turns?

Ans: The material of core which the coil is wrapped around can be changed a core material with greater magnetic permeability results in greater magnetic field flux for example instead of air a soft iron core could be used. Or you could just increase the current.

Q19.what do you mean by inductance of 1.0 Henry of a coil?

Ans: A circuit will have an inductance value of one Henry when an emf of one volt is induced in the circuit were the current flowing through the circuit changes at a rate of one ampere/second. Here instead of circuit we have coil which means that we are talking about an inductor.

Q20.what are the uses of an inductor?

Ans: Inductors are used extensively in analog circuits and signal processing. Inductors in conjunction with capacitors and other components form tuned circuits which can emphasize or filter out specific signal frequencies. Applications range from the use of large inductors in power supplies, which in conjunction with filter capacitors remove residual hums known as the

mains hum or other fluctuations from the direct current output, to the small inductance of the ferrite bead or torus installed around a cable to prevent radio frequency interference from being transmitted down the wire. Smaller inductor/capacitor combinations provide tuned circuits used in radio reception and broadcasting, for instance.

Two (or more) inductors that have coupled magnetic flux form a transformer, which is a fundamental component of every electric utility power grid.

Formulas:

Experiment #3:-

Q1.what is the object of your experiment?

Ans: To study the characteristics of a rejecter circuit and determine unknown resistance.

Q2.what is a rejecter circuit?

Ans: A parallel resonant circuit where resistance, inductance and capacitance are connected in parallel at resonance impedance is infinite so the current almost reduces to zero.

Q3.what are the applications of a rejecter circuits?

Ans: A parallel resonant circuit provides current magnification. A parallel resonant circuit can be used as load impedance in output circuits of RF amplifiers. Due to high impedance, the gain of amplifier is maximum at resonant frequency. Both parallel and series resonant circuits are used in induction heating.

For Questions 4 to Question 20 refer experiment 2.

Experiment #4:-

Q1.what is the object of your experiment?

Ans: To determine the mechanical equivalent of heat “J” by calendar and barne’s apparatus.

Q2.what do you mean by mechanical equivalent of heat or joule’s constant “j”?

Ans: The amount of work required to produce one.calorie amount of heat is called mechanical equivalent of heat.

Q3.what happens to electrical energy when a current passes through a resistor?

Ans: When an electric current flows through a resistor, part of the electrical energy it carries is converted into heat energy. This is known as heating effect of electric current.

Q4.will the value of “j” be same if AC were used instead of DC?

Ans: Joules measure energy (power x time). If the AC voltage is expressed as rms (root mean square) and not peak, and there are no capacitors or inductors in the circuit, then the joules per second (=power) will be the same.

Q5.what will you do to rise the temperature difference without changing the current?

Ans: The rate at which the water flows through the glass tube should be reduced to experience maximum temperature difference.

Q6.what is the specific heat of a substance?

Ans: The number of units of heat required to raise the temperature of a unit mass of the substance at that temperature by one degree.

Q7.what are the advantages of calendar and barne's apparatus (constant flow method) for determination of value of "J"?

Ans: One advantage of the flow calorimeter is that, since the temperatures T1 and T2 are kept constant, the thermal capacities of the calorimeter, heating element, and thermometers are not involved in the computations.in other words, conditions are steady and accurate results can be obtained.

Q8.what is a calorie?

Ans: The energy needed to raise the temperature of 1 gram of water through 1 °C (now usually defined as 4.1868 joules).

Q9.how can you apply a correction for the loss of heat due to radiation?

Ans: To correct this loss %error is calculated by using the following formula. Furthermore to minimize this loss cotton can be used for insulation.

Q10.why should the difference of temperature be small in this experiment?

Ans: This is done to reduce the time taken and minimize the errors.

Q11.why should water flow in a slow stream?

Ans: This is done to achieve a measurable temperature difference.

Note the rate of flow should be 20ml per min

Formulas:- ,

Experiment #5:-

Q1. Explain the construction and working of photocell?

Ans: CONSTRUCTION:A photocell consists of an evacuated sealed glass tube containing a wire anode and a concave cathode of suitable emitting material such as Cesium (Cs) The material of cathode responds to a given frequency range. WORKING: When light of frequency greater than the threshold frequency of the cathode material falls on the cathode, photoelectrons are emitted. These electrons are collected by the anode and an electric current starts flowing in the external circuit. The current increases with the increase in the intensity of light. The current would stop, if the light does not fall on the cathode.

Q2.what sensitive material is used when the cell is to be used for a visible light?

Ans: Cadmium sulphide is used when the photocell is to be used with visible light this is so

because its spectral response curve closely matches to that of the human eye.

Q3.what is threshold frequency?

Ans: Threshold frequency is defined as the minimum frequency of incident light which can cause photo electric emission i.e. this frequency is just able to eject electrons without giving them additional energy.

Q4.what is photo-electric work function?

Ans: Minimum amount of energy which is necessary to start photo electric emission is called Work Function. If the amount of energy of incident radiation is less than the work function of metal, no photo electrons are emitted. It is a property of material. Different materials have different values of work function. Generally, elements with low I.P values have low work function such as Li, Na, K, Rb, and Cs.

Q5. How will you determine the stopping potential?

Ans: The stopping voltage varies linearly with frequency of light, but depends on the type of material. Where, K_{max}=kinetic energy max it can also be substituted by hf. q_e charge of electron and V_o is stopping potential.

Q6. Does the violet light have more energy than red light?

Ans: Yes violet light has more energy as E=hf and violet has greater frequency than red it possess higher amount of energy.

Q7.what is the effect of intensity of light on photoelectric effect?

Ans: After reaching the threshold frequency if the intensity of light is increased than the number of electrons emitted will also be increased.

Q8.what is the order of current in photocell?

Ans: usually the order of current is in microamperes but here it is in milliampere.

Q9.what is the object of you experiment?

Ans: To study the spectral characteristics and determine the Planck's constant.

Formulas:-

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Experiment #6:-

Q1.what is the object of your experiment?

Ans: To determine the charge to mass ratio (e/m) of electron.

Q2. Define Lorentz Force?

Ans: The Lorentz force is the force on a point charge due to electromagnetic fields. If a particle of charge *q* moves with velocity v in the presence of an electric field E and a magnetic field B, then it will experience a force.

Q3. How motion of electrons is affected by uniform magnetic field?

Ans: Electrons move in circles at a constant speed if projected into magnetic field at right angles to the field but if it is projected along the direction of the field than it will move in straight lines at a constant speed.

Q4. Describe the working of electron gun?

Ans: The electron gun starts with a small heater, which is a lot like the hot, bright filament of a regular light bulb. It heats a cathode, which emits a cloud of electrons (thermionic emission). Two anodes turn the cloud into an electron beam: The accelerating anode attracts the electrons and accelerates them toward the screen. The focusing anode turns the stream of electrons into a very fine beam.

When the electrons leave the accelerating anode, they are traveling at a reasonable fraction of the speed of light, and this gives them a lot of energy. When they hit the phosphor coating on the back of the front glass, the phosphor converts the electron beam's energy to photons and lights up.

Q5. How diameter of circulating electrons changes by increasing the magnetizing current of coils?

Ans: In a magnetic field the force is always at right angles to the motion of the electrons (Fleming's left hand rule) so magnetic force=centripetal force thus the radius of curvature is inversely proportional to magnetic field strength.

Q6. What is the effect of accelerating voltage on the diameter of circulating electrons?

Ans: A rectilinear path of moving electrons is observed.

Formulas:- Note: The unit is coulomb per kg

Experiment #7:-

Q1.what is the object of your experiment?

Ans: To determine the refractive index of the material of a prism using spectrometer.

Q2.what is refractive index of a material?

Ans: The refractive index or index of refraction *n* of a substance (optical medium) is a dimensionless number that describes how light, or any other radiation, propagates through that medium. It is defined as

Q3.Is there any effect of wavelength on refractive index?

Ans: Refractive index of materials varies with the wavelength. This is called dispersion; it

causes the splitting of white light in prisms and rainbows, and chromatic aberration in lenses. In opaque media, the refractive index is a complex number: while the real part describes refraction, the imaginary part accounts for absorption.

Q4.what is the relation between refractive index and velocity of light?

Ans: The refractive index can be seen as the factor by which the velocity and the wavelength of the radiation are reduced with respect to their vacuum values: The speed of light in a medium is

Q5.what is the spectrometer?

Ans: It is an instrument used to measure properties of light over a specific portion of the electromagnetic spectrum, typically used in spectroscopic analysis to identify materials. The variable measured is most often the light's intensity but could also, for instance, be the polarization state. The independent variable is usually the wavelength of the light or a unit directly proportional to the photon energy, such as wavenumber or electron volts, which has a reciprocal relationship to wavelength. A spectrometer is used in spectroscopy for producing spectral lines and measuring their wavelengths and intensities.

Q6.what are the different parts of spectrometer?

Ans: The main parts of the spectrometer are

(a) The collimator

(b) Prism table and

(C) The telescope

in the working of the spectrometer first the white light is sent into the collimator in which all the rays are rendered parallel and sent onto the prism which is mounted on the prism table the rays refracted by the prism are collected by the telescope from which we can view the spectrum below the prism table there are two scales to take the reading the spectrometer is used to find out the index of refraction of different materials.

Q7.what is the angle of minimum deviation?

Ans: The minimum deviation is the angle between the incident and emerging light ray after transmission through an object such as a prism or a water drop. The angle is also referred to as "the angle of minimum deviation".

Q8.why the white light dispersed when passed through a prism?

Ans: Since white light is a combination of all the colors, so when it passes through a prism they are all refracted and due to the different wavelengths they are then split into individual colors (dispersed).

Q9. In visible spectrum which wave deviated more (red or blue)?

Ans: Blue light refracts more than red light because of its higher frequency. This causes blue light to deviate from its original path by a greater angle than the red light.

Q10.what is a spectrum and how it is formed?

Ans: Spectrum (plural: Spectra), the distribution of radiant energy arranged by wavelength, frequency, or some other measurable order. The electromagnetic spectrum includes the entire range of radiant energy from the shortest gamma rays to the longest electric waves perhaps the most familiar spectrum is that of visible light. It occurs in nature when sunlight passes through raindrops to form a natural spectrum known as a rainbow. A spectrum may be either continuous or discontinuous. A continuous spectrum spreads out in the spectroscope to form an unbroken, rainbow like band of colors from violet through red. In a discontinuous spectrum the band is broken by colorless gaps or by dark lines called Fraunhofer lines.

Q11.what is monochromatic light?

Ans: Monochromatic light is technically light having only a single wavelength, however no real electromagnetic radiation is purely monochromatic, so monochromatic light is said to have a wavelength within a very short wavelength range.

Q12.what do you mean by ionization?

Ans: It is the process of converting an atom or molecule into an ion by adding or removing charged particles such as electrons or ions.

Q13. How is the sodium light produced in a sodium lamp?

Ans: A sodium-vapor lamp is a gas-discharge lamp that uses sodium in an excited state to produce light. An amalgam of metallic sodium and mercury lies at the coolest part of the lamp and provides the sodium and mercury vapor that is needed to draw an arc.

Q14.what do you mean by diffraction of light?

Ans: when light passes sharp edges or goes through narrow slits the rays are deflected and produce fringes of light and dark bands.

Q15. Differentiate between interference and diffraction?

Ans: Interference is a phenomenon in which two waves superimpose to form a resultant wave of greater or lower amplitude. Diffraction refers to various phenomena which occur when a wave encounters an obstacle.

Formulas:-

Experiment #8:-

Q1.what is the object of your experiment?

Ans: To determine the velocity of wave propagation in stretched string by using sonometer.

Q2.what is sonometer?

Ans: A Sonometer is a device for demonstrating the relationship between the frequency of the sound produced by a plucked string, and the tension, length and mass per unit length of the string. It is also called monochord as it often has only one string.

Q3.what type of wave is produced on the string?

Ans: The wave produced is transverse.

Q4.what are nodes and anti-nodes?

Ans: A node is a point along a standing wave where the wave has minimal amplitude. The opposite of a node is an anti-node, a point where the amplitude of the standing wave is a maximum.

Q5.why the sonometer does consists of a hollow wooden box?

Ans: When the sine wave is produced by driver the air enclosed in the hollow box starts to vibrate. This increases the intensity of sound.

Q6.what do you mean by stationary or standing waves?

Ans: It is a wave that remains in a constant position.

Q7.what is the function of bridges in sonometer?

Ans: Bridges can be used to get any desired length of the wire that can be set into vibration.

Q8.what is resonance?

Ans: Resonance is the tendency of a system to oscillate with greater amplitude at some frequencies than at others.

Formulas:- ,

Experiment #9:-

Q1.what is the object of your experiment?

Ans: To determine the unknown high resistance by Neon flash lamp apparatus.

Q2.what is neon lamp?

Ans: It is a miniature gas discharge lamp that contains a penning mixture of 99.5% neon and 0.5% of argon at low pressure in a glass capsule.

Q3. On what principle this experiment is based on?

Ans: It is based on the principle of coronal discharge that is an electrical discharge brought on by the ionization of a fluid surrounding a conductor that is electrically energized. It is also based on the Pearson-Anson effect the phenomenon of an intermittent electrical current through an electrical load exhibiting S-shaped negative resistance (e.g., a neon lamp) connected in parallel to an accumulating element. In Pearson and Anson's original circuit, a neon lamp is connected in parallel to the capacitor of an RC circuit that is permanently supplied by a voltage source.

Q4.what is time constant?

Ans: The time constant is used to characterize the frequency response of various signal processing systems.

Q5. How the time constant vary with the resistance and capacitance?

Ans: The time constant is directly proportional to resistance and capacitance. Note for resistance and inductance

Q6.why it is not possible to determine the value of low resistance using this experiment?

Ans: As the resistance decreases so will the delay between flashes and if the resistance becomes very small than the time between flashes would become unmeasurable thus making it impossible to determine resistance.

Q7.what is striking potential?

Ans: It is also known as breakdown voltage of an insulator that is the minimum voltage that causes a portion of an insulator to be electrically conductive.

Q8.what is quenching potential?

Ans: The potential at which the conductor stops conducting.

Q9. Can you find out the capacitance of the capacitor?

Ans: Yes the capacitance can be determined if time constant and resistance are known by using the following formula

Q10.what causes the neon lamp to give flashes?

Ans: This is due to the Pearson-Anson effect that as an A.C source is used with the capacitor its charge discharge results in flashes.

Experiment #10:-

Q1.what is the object of your experiment?

Ans: To determine the Co-efficient of viscosity of a given liquid (Glycerin) by Stock's Method.

Q2.what is viscosity?

Ans: The viscosity of a fluid is a measure of its resistance to gradual deformation by shear stress or tensile stress.

Q3.what is the cause of viscosity?

Ans: Viscosity is due to friction between neighboring parcels of the fluid that are moving at different velocities.

Q4.what do you mean by the coefficient of viscosity?

Ans: The degree to which a fluid resists flow under an applied force, measured by the tangential friction force per unit area divided by the velocity gradient under conditions of streamline flow.

Q6.define poise?

Ans: The poise is the unit of dynamic viscosity in the centimeter gram second system of units.

Q7.what is the effect of pressure on viscosity?

Ans: viscosity decreases with a rise in temperature.

Q8.what is meant by terminal velocity?

Ans: The terminal velocity of a falling object is the velocity of the object when the sum of the

drag force (F_d) and buoyancy equals the downward force of gravity (F_G) acting on the object. Since the net force on the object is zero, the object has zero acceleration.

In fluid dynamics, an object is moving at its terminal velocity if its speed is constant due to the restraining force exerted by the fluid through which it is moving.

Q9. State stoke's law?

Ans: The law that the force that retards a sphere moving through a viscous fluid is directly proportional to the velocity of the sphere, the radius of the sphere, and the viscosity of the fluid.

Q10.what is velocity gradient?

Ans: The change in velocity per unit of distance along the vertical velocity curve.

Formulas:- ,

Experiment #11:-

Q1.what is the object of your experiment?

Ans: To find the ionization potential of mercury using a gas filled diode.

Q2.what are ions?

Ans: An ion is an atom or molecule in which the total number of electrons is not equal to the total number of protons, giving the atom a net positive or negative electrical charge.

Q3.what do you mean by ionization?

Ans: It is the process of converting an atom or molecule into an ion by adding or removing charged particles such as electrons or ions.

Q4.what is excitation?

Ans: Excitation is an elevation in energy level above an arbitrary baseline energy state.

Q5.what is ionization potential?

Ans: The ionization energy of an atom or molecule describes the amount of energy required to remove an electron from the atom or molecule in the gaseous state.

Q6. Differentiate between excitation and ionization potential?

Ans: In excitation an electron jumps from a lower energy level to a higher energy level whereas in ionization an atom is converted into an ion by the removal of an electron.

Formulas:-

Experiment #12:-

Q1.what is the object of your experiment?

Ans: To draw a Hysteresis curve for a given ferromagnetic material (Iron) and determine retentivity and coercivity of given material.

Q2.what does Hysteresis curve shows?

Ans: It shows the relationship between the induced magnetic flux density and the magnetizing force.

Q3.what is retentivity?

Ans: The ability to retain magnetization after the removal of the magnetizing force.

Q4.what is coercive force?

Ans: A measure of the magnetization of a ferromagnetic material as expressed by the external magnetic field strength necessary to demagnetize it. Measured in amperes per meter.

Q5.what do you understand by paramagnetic, diamagnetic and ferromagnetic substances?

Ans: Paramagnetic materials show magnetism in the presence of a magnetic field but lose their magnetic properties once external field is removed. Diamagnetic materials create a magnetic field in opposition to an externally applied magnetic field. Ferromagnetic materials can retain a magnetic field in the absence of a magnetic field as long as they were once in contact with a magnetic field.

Q6. Define permeability of magnetic substance?

Ans: Permeability is the measure of the ability of a material to support the formation of a magnetic field within itself. In other words, it is the degree of magnetization that a material obtains in response to an applied magnetic field.

Q7.what is magnetic susceptibility?

Ans: The magnetic susceptibility is a dimensionless proportionality constant that indicates the degree of magnetization of a material in response to an applied magnetic field.

Q8.what are the practical applications of this experiment?

Ans: There are a great variety of applications of the hysteresis in ferromagnets. Many of these make use of their ability to retain a memory, for example magnetic tape, hard disks, and credit cards. In these applications, *hard* magnets (high coercivity) like iron are desirable so the memory is not easily erased.

Soft magnets (low coercivity) are used as cores in electromagnets.

This practical helps us determine the hysteresis of different ferromagnetic materials.

Q9.why do we prefer soft iron bar over steel?

Ans: The nonlinear response of the magnetic moment to a magnetic field boosts the response of the coil wrapped around it. The low coercivity reduces that energy loss associated with hysteresis. Soft magnets (low coercivity) are used as cores in electromagnets.

Sources: Wikipedia and Google.