Physics viva

(1) Why newton's ring are circular?

→ As the lens is said to be symmetric along its axis the thickness is said to be constant along the circumference which is of a ring of a given radius. Hence we see that Newton's rings are circular

(2) Why the center of Newton's ring always dark?

→ The central spot of Newton's rings is dark when the medium b/w plano convex lens and plane glass is rarer than the medium of lens and glass.

(3) What will happen in Newton's ring experiment if white light is incident?

→ When viewed with white light, it forms a concentric ring pattern of rainbow colors, because the diff. wavelengths of light interfere at different thicknesses of the air layer b/w the surfaces.

(4) What is the wavelength of a sodium lamp?

→ 589nm

(5) What is 1 Å in mm?

→ 1.0×10^{-7} mm

(6) What is a galvanometer?

→ It is a device that is used to detect a small electric current or measure its magnitude.

(7) How we can convert a galvanometer into a voltmeter?

→ By connecting a high resistance in series with the galvanometer.

→ acts as a voltmeter as long as we pass a very min. voltage like 1mv. This is because a galvanometer has a specific resistance R_G.

(6) Galvanometer to ammeter?

→ by connecting a low resistance in parallel with the galvanometer.

(8) What happens if we take small resistance instead of high for the voltmeter?

→ if its resistance is low, most of the current will be diverted through it, instead of the component across which the potential difference has to be measured. So, a voltmeter has a very high resistance.

(9) Resistance of ideal voltmeter ~ infinite
" ammeter ~ zero (0)

(10) what will happen if we put an oil drop in the air filter and why?

→ increases pressure on your engine and decreases mileage or fuel efficiency.

(11) Monochromatic light? → single wavelength light.

→ * Eg:- Laser light, Sodium light, Light emitting diodes etc.

(12) what are newton's rings?

→ It is a phenomenon in which an interference pattern is created by the reflection of light b/w two surfaces ~~- a spherical surface~~

(13) What is rectification?

→ The process of converting ac AC to into DC

(14) Smallest value that can be measured by a instrument → Least Count

(15) What is Ripple effect?

→ Occurs when an initial disturbance to a system propagates outward to disturb an increasingly larger portion of the system.

(16) AC v/s DC

AC	DC
→ easy to be transferred over a longer distances (without energy loss)	→ Cannot be transferred over a very long dist. (loses electric power)
→ rotating magnets cause the change in direct^{n} of electric flow	→ steady magnetism make DC flow in a single direct^{n}
→ the frequency is 50 Hz or 60 Hz (India)	→ 0 frequency

(17) Wavelength of yellow Light? → 575 - 585 ~~m~~ nm

(18) Define shunt?

→ an electrical element that creates a low resistance path in ckt. and allows the current to flow through it. Used for measuring amount of current flowing through it

(19) Interference of light?

→ Superposition of two or more ~~wavefronts~~ wavefronts to produce non uniform distribution of energy.

(20) Coherent sources?

→ The source which emits a light wave with the same frequency wavelength and phase or having a constant phase difference.

(21) Least count of the spectrometer? → half a degree

(22) Three main component of a spectrometer
→ 1) collimator 2) diffracting element 3) telescope

(23) State Heisenberg's uncertainly principle?
→ States that we cannot know both the position and speed of a particle such as photon or electron, with perfect accuracy.

(24) On what factors photoelectric currents depends on?
→ the intensity of the incident radiation.

(25) Threshold frequency ? → the lowest frequency below which the photoelectric effect does not occur.

(26) What is inductance? unit?
→ the tendency of a electrical conductor to oppose a change in the electric current flowing through it. Unit :- Henry (H)

(27) What is step up/ step down transformer?
→ A transformer that increases the voltage from primary to secondary is called a step up transformer. Conversely, a transformer designed to do just the opposite is called a step down transformer.

(28) What is Reactance? unit?
→ A form of opposition generated by components in an electric circuits when alternating current (AC) passes through it. Unit :- ohms (Ω)

(29) what do you mean by resonance in an LCR circuit?
→ when the value of inductive and capacitive reactances have equal magnitude but a phase difference of 180°

(30) Power factor :- the ratio of the resistance to the total impedance of the circuit.

(31) what is meant by oscillations in electric circuit?

→ A repeating cyclical variation in voltage or current in an electrical circuit, resulting in a periodic waveform.

(32) Time Constant :- The time required for a current turned into a circuit under steady electromotive force to reach $\frac{(e-1)}{e}$ or 0.632 of its final strength

(33) How do you slow down the discharge of a capacitor?

→ Add a resistor to the series with the motor.

(34) During charging / Discharging why do we get saturation curves?

→ A constant capacitance in parallel with a resistance.

Bcoz of

(35) How can a rheostat be used as a potential divider?

→ For this, the input potential is applied ~~or~~ across the terminals of the rheostat

(36) Calibration ? :- the process of configuring an instrument to provide a result for a sample within an acceptable range.

(37) Condition for Interference : monochromatic (source of light)

(38) if white light source is used in NR experiment?

→ This result in the pattern of concentric bright and dark rings, interference fringes.

(39) Why do ~~it~~ you use an extended source of light?

→ ~~are~~ excellent for achieving diffuse lighting, and more uniform light spread

(40) What will happen is the glass plate is silvered polished.

→ The fringes will disappear.

(41) What happen if transparent liquid is inserted in between the lense and glass plate?

→ refractive index increases

(42) Violet light dispersed (Max.)

(43) Planck's constant = $6.626070015 \times 10^{-34}\ m^2 kg/s$