

Physics - 12th Class Physics Full Book Short Questions Preparation

Q1. What is self-quenching in Geiger Muller Counter?

Ans 1: A small amount of gas is added into the GM counter is called self quenching or internal quenching, In GM counter the phenomena of quenching is to save the counter from spurious or false counts.

Q2. How n type semiconductors are formed?

Ans 1: When a silicon crystal is doped with a pentavalent element, e.g. arsenic, antimony or phosphorus etc. four valence electrons of the impurity atom form covalent bond with the four neighbouring Si atoms, while the fifth valence electrons provide a free electron in the crystal. Such a doped semiconductor is called n type semiconductor.

Q3. Why does no current pass through Galvanometer in a balanced wheat stone bridge although the keys in the circuit are closed ?

Ans 1: No current pass through the galvanometer when wheat stone bridge is balanced. Because at this stage, both the terminals of the galvanometer are at the same potential. Hence no current will flow through it.

Q4. What is semiconductor diode?

Ans 1: p-n junction is called semiconductor diode.

Q5. A suspended magnet is oscillating freely in the horizontal plane. The oscillation are strongly damped when a metal plate is placed under, The magnet. Explain why its occurs.

Ans 1: The oscillating magnet produces change of magnetic flux close to it. The metal plate placed below it experiences the change the magnetic flux, As the result eddy currents are produced inside the metal. According to Lenz's law these eddy currents oppose the cause which produce it, So the oscillation of magnet are strongly damped.

Q6. When the primary of a transformer is connected to AC mains the current in it increase when secondary circuit is closed. Explain why?

Ans 1: When the secondary circuit is closed the output power increase. To produce the power, transformer will draw large current from the A.C mains to increase its primary power.

Q7. If you swallowed a alpha source and beta source, which would be more dangerous to you ? Explain

Ans 1: As alpha particle have greater energy and ionizing power than beta particle, so alpha particle are more dangerous than beta particle.
Critical volume: The volume of critical mass is called critical volume.

Q8. Define Half line and discuss its dependence.

Ans 1: The half line $T_{1/2}$ of a radioactive element is that period in which half of the atom decays.

Dependence: The number of decaying atoms is proportional to the number of atoms present in the beginning of the period and is proportional to time interval.

Q9. Define crystal lattice.

Ans 1: The whole structure obtained by the repetition of unit cell is known as crystal lattice.

Q10. Give any two characteristics of operational amplifier.

Ans 1: Input Resistance: It is the resistance between the + and - input of the amplifier, whose value is of the order of several mega ohms.

Output resistance: It is the resistance between the output terminal and ground. Its value is only a few ohms.

Q11. What is choke? Why is it used in AC circuit?

Ans 1: A choke is a coil made of thick insulated copper wire wound closely in a large number of turns over a soft iron laminated core. It is used to control alternating current through a circuit without much loss of energy.

Q12. Define characteristics of X-rays and continuous x-rays.

Ans 1: Characteristics X-rays: The x-rays emitted from inner shell transitions are called characteristic x-rays and their energy depends on the type of target material.

Continuous X-rays: The x-rays emitted having a continuous range of frequencies due to bremsstrahlung effect are called continuous x-rays.

Q13. What is photodiode? Write down its two main applications.

Ans 1: Photodiode is used for the detection of light. It is used in reverse biased state. Reverse current increases with the intensity of incident light. When no light is incident, then reverse current will be negligible. It is used as

1. Detection of both visible and invisible radiations
 2. Automatic switching
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Q14. What do short circuit and open circuit mean to you?

Ans 1: When switched is closed and current is passing through the circuit, it is called a closed circuit and in this situation resistance is zero, whereas the circuit is said to be open if it has infinite resistance and no current is passing through it.

Q15. What is meant by strain energy? How can it be determined from the force-extension graph?

Ans 1: The amount of P.E. stored in a material due to displacement of its molecules from its equilibrium position under the action of

stress is called strain energy, Strain energy can be determined from the force extension graph according to the following reasons
Strain energy = $\frac{1}{2}L_1F_1$

Q16. State the Lenz's law and define Henry.

Ans 1: Lenz's Law: It states that the direction of induced current is always so as to oppose the change which causes the current.
Henry: If the current in the primary is changing at the rate of one ampere per second and the emf induced across the ends of the secondary coil is one volt then the mutual inductance is called one henry.

Q17. What do you know mean by phase lag and phase lead?

Ans 1: The angle θ which specifies the instantaneous value of the alternative voltage current, gives the phase lag or phase lead of one quantity over the other. The phase difference between two alternative quantities is observed at different points. The quantity which has greater phase at all points is said to be leading and the other is said to be lagging behind.

Q18. Write any two uses of CRO.

Ans 1:

1. The CRO is used for displaying the waveform of given voltage.
 2. Once the waveform is displaying, we can measure the voltage, its frequency and phase.
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Q19. Define pair production and annihilation of matter.

Ans 1: Pair production: The change of very high energy photon into an electron-positron pair is called pair production.
Annihilation of matter: When a positron comes close to an electron, they annihilate and produce two photons in the gamma ray range. It is called annihilation of matter.

Q20. How is a Wheatstone bridge used to determine an unknown resistance?

Ans 1: Wheatstone bridge is an especially designed electrical circuit used to calculate the accurate value of any unknown resistance. It consists of four resistances, a galvanometer, a battery and a switch connected. When the switch is closed, current passes through the galvanometer and then the three known resistances R_1, R_2 and R_3 are adjusted in such a way that the galvanometer shows no deflection. In this balanced condition, the fourth unknown resistance R_4 can be calculated by using this relation: $R_1/R_2 = R_3/R_4$.
