# Physics - ICS Part 2 Physics Full Book Short Questions Preparation

Q1. What is back emf in motors?

**Ans 1:** When to coil motor rotates across the magnetic field by the applied potential difference V,an emf is induced in it.The induced emf is in such a direction that opposes the emf running motor.Due to this reasons,the induced emf is called back emf of the motor.The magnitude of the back emf increase with the speed of motor.

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Q2. Why the base current is transistor is very small?

**Ans 1:** Base is very thin so a number of electrons attracted by collector and very few enter into the base.And base current is very small.

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Q3. Photoelectric effect give the evidence of the particle nature of light,Explain it how?

**Ans 1:** If light were simple a wave like phenomena ,then increasing the intensity and thereby increasing the total energy failing on the surface would be expected to eventually provide enough energy to release electron no matter what the frequency .Furthermore in the classical picture one would expect the maximum energy of the emitted electrons to depend on the intensity of light--but it does not.So this is evidence that light behaves as if it were a particle.

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Q4. What is the difference between intrinsic and extrinsic semiconductors?

**Ans 1:** Intrinsic Semiconductor:A semiconductor in its extremely pure form is known as Intrinsicsemiconductors,Pure elements of silicon and germanium are Intrinsic semiconductors,These semiconductors elements have atoms with four valence electrons.

**Ans 2:** Extrinsic Semiconductor: The doped semiconductors material are called Extrinsic Semiconductor.The electrical behaviour of semiconductors is substantially changed introducing a small impurity into pure semiconductors,and this process is called doping.

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Q5. What are glassy solids?Do they possessed property of flow?

**Ans 1:** Amorphous solids are called as glassy solids.Any non-crystalline solid in which the atoms and molecules are not organized in a definite lattice pattern is called glassy solid.NO they do not possess the property of flow.

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Q6. What is meant by Tolerance? Also give one example.

**Ans 1:** Tolerance mean the possible variation in the value of resistance of a carbon resistors from a marked value.In case of silver and gold ban its value is +-10% and +-5% .

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Q7. What is the negative coefficient of temperature?

**Ans 1:** If the resistance of a substance decrease with an increase in temperature ,then it is termed as negative coefficient of temperature,For example ,silicon and germanium have negative coefficient of temperature.

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Q8. Give two postulate of special theory of relativity.

**Ans 1:** Postulate of special theory of relativity are states as

1. The laws of physics are the same in all inertial frames.
2. The speed of light in free space has the same value for all observes,regardless of their state of motion.

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Q9. The anode of a diode is 0.2V positive with respect to the cathode,It it forward biased?

**Ans 1:** Yes when anode is 0.2V positive with respect to cathode,it is forward biased.But the value of potential barrier for germanium is 0.3 V and for silicon is 0.7 V.Therefore there will be no conduction of current.

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Q10. Define normal population and population inversion.

**Ans 1:** In normal population ,the lower energy state has a greater population than the higher energy state.
Population inversion occurs when no more electron are in a higher energy state than in lower energy state.

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Q11. What do you understand by "background radiation "?State two source of this radiation?

**Ans 1:** When no radioactive source is placed near the radiation detector,it records radiation,These radiations are called background radiations..
Its source are

1. Cosmic rays
2. presence of radioactive substance Earth crust and atmosphere.

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Q12. Describe the force on positive charge when placed between parallel plates with opposite and equal charges.

**Ans 1:** When a positive point charge is placed between parallel plates with opposite but equal amount of charge ,then electric field intensity due to one plate is equal in magnitude but in same direction of the electric field intensity due to the other plate.So the value of resultant electric field intensity is non-zero.Hence the point charge will be accelerated towards negative plate.

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Q13. Is E is necessary zero inside a charged rubber balloon if balloon is spherical?

**Ans 1:** Yes, E is necessarily zero inside a charged rubber balloon if balloon is spherical.

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Q14. Define mass defect and binding energy.

**Ans 1:** Mass defect: The mass of the nucleus is always less than the total mass of the protons and neutrons that make up the nucleus,The difference of the two masses is called mass defect.
Binding energy:The missing mass is converted into energy at the formation of the nucleus and is called binding energy.

Q15. What are paramagnetic Substance?Give an example

**Ans 1:** The solid in which the orbital and spin axes of the electrons in an atom are so oriented that their magnetic field support each other are called paramagnetic substance.For example ozone,platinum etc

Q16. Why moderators are used in the core of nuclear reactor?

**Ans 1:** The moderator ae used in the core to slow the neutrons down so that they can be captured and keep the chain reaction going.

Q17. Center of planetary system is oppositely charged to the rest of planets.How orbits of planets would be modified?

**Ans 1:** It would add or subtract the gravitational force if the charge was ;large enough and the sun was charged.So the radius of the orbits would be changed

Q18. Describe the difference between proportional limit and elastic limit.

**Ans 1:** Proportional Limit: The greatest stress that a material can endure without losing straight line proportionally between stress and strain.Hooke's law is obeyed in this region.

**Ans 2:** Elastic limit: The greatest stress that a material can endure without any permanent deformation is called elastic limit.This kind of behavior is called elasticity.

Q19. What is short circuit and open circuit mean to you?

**Ans 1:** when switched is close and current is passing through the circuit,It is called 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.

Q20. What does the equation $H=I^2Rt$ show?

**Ans 1:** This equation show the heating effect,During their motion free electrons collide frequently with the atom of metal.on each collision they transfer some of their kinetic energy to the atom with which they collide.And these collisions produce heating effect in the wire.