

VALUE BASED QUESTIONS

Electromagnetic induction And AC

1. A distribution transformer supplies electricity to a locality. This supply consists of three phases and one neutral. A portion of the locality complained of strong fluctuations in the supply. The supplier found that a consumer has installed a welding set in his premises. Do you think that it is cause of fluctuations and why? What can be done to check this trouble?
2. Shamsher wants to purchase speed regulators for his fans. He was surprised to see variety of regulators available in the market. One crude looking regulator was costlier whereas a fancy Looking regulator was cheaper. The shopkeeper recommended the second one. Shamsher purchased both. Can you guide the shopkeeper and Shamsher for your expects findings.
3. In science city you may find a cycle brings you picture on the screen if you peddle it briskly a small boy curiously observing it tries to do it but fails again and again. He is desperate. What can you do to make him spirited .What devices are used in this arrangement?
4. A fluorescent tube seller boasts of the quality of his fitting with a beautiful choke fitted on it. The customer installs it and finds the tube working fine but giving strong him. He and his wife found the hum to be tolerable but their young children said that it is too high to be tolerated. What do you think about the Cause of hum, difference in the opinions and character of the seller?
5. Supplier can give better quality of the quality of electricity in case he earns profit. A supplier increases his rates to meet with expenses. Increases in rates encourage the unscrupulous Employees and consumers to indulge in theft of electricity to earn more profit. They try to temper the Energy meter which is mainly nothing but a wall meter .What suggestions you give as a representative of the supplier and then as a consumer.
6. Pooja went to the market with her mother and decided to come back home by metro. At Metro station they were made to pass through a gate way for security check. Pooja passed through it and was waiting for her mother to come. She heard a long beep when her mother passed through metal detector. Pooja was confused why metal detector beeped in

case of her mother. She asked the duty staff, who explained her in detail. Both were satisfied with the security system.

- What values are displayed by pooja?
- What is cause of sound through metal detector?
- Write the Principle on which a Metal detector works.

7. Mr. Sanjeev, a physics teacher, was doing an experiment in lab using dry cell battery. The dry cell was weak, giving less voltage, which was not sufficient to give proper reading. One of the student asked, “Sir, can’t we step-up the voltage using a transformer?” Teacher replied, No, we cannot step up DC voltage using step-up transformer and explained the reason and working of a transformer .the student then constructed a transformer for his Physics project and studied the factors responsible for losses in a transformer.

- What values are displayed by the student?
- Why transformer cannot be used to step-up DC voltage ?

8. Raj Pal Yadav, a retired Physics Teacher was working in his field with his grandson. There was a big high tension tower carrying thick wires in their field. Grandson wanted to know as to why can’t the tower be removed from their field, so that they may get more space for crops. Raj Pal explained him the necessity of HT tower, and said it is very high voltage AC transmission line and is a lifeline of their town. • What values are displayed by Raj Pal Yadav?

- Why Long distance AC transmission is done at very high voltage.
- What is the principle of transformer?
- What are the energy losses in transformer?

9. Rahul after having lived in US for 12years returned back to India. He had a discussion with his cousin Sumit on domestic power supply in US and in India. In US domestic power supply is at 110v, 50Hz, whereas in India it is 220V, 50Hz. Rahul was stressing that US supply is better than Indian supply. Both went to Sumit’s father an electrical Engineer and asked his opinion on the issue. He explained that both the supplies have advantages as well as disadvantages.

- What values are used by Rahul and Sumit?
- Write one advantage and one disadvantage of 220V supply over 110V supply

10. One Sunday Rahul and Rama were enjoying with their friends at home. Suddenly their ceiling fan stopped working. Out of sheer enthusiasm Rahul first switched off the power supply of the fan and opened the cap of the fan to check the problem. Vipin tried to stop him but he did not listen. The moment he touched the interior part of the fan, he fell down because of electric shock. All friends were scared as to what has happened as the power supply was already switched off.

- i)What negative trait do you think has been displayed by Rahul?
- ii) What could be the possible cause of electric shock?
- iii) Write expression of current and emf of the component used in fan with phase difference.

COMMON VALUE POINTS:

1. Concern for others
2. Care for elder people
3. Presence of mind
4. Knowledge of day to day happenings.
5. Sympathy
6. Empathy
7. Cooperation with friends