PHYSICS

BOOKS - FULL MARKS PHYSICS (TAMIL ENGLISH)

MAGNETISM AND ELECTROMAGNETISM

Exercise Choose The Correct Answer

1. Which of the following converts electrical energy into mechanical energy?

A. motor

B. battery

C. generator

D. switch

Answer: A

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2. The part of the AC generator that passes the current from the armature coil to the external circuit is.....

A. field magnet

B. split rings

C. slip rings

D. brushes

Answer: D

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3. Transformer works on

A. AC only

B. DC only

C. both AC and DC

D. AC nor effectively than DC

Answer: A

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4. The unit of magnetical flux density is .....

A. Weber

B. weber/metre

C. $\text{weber}/\text{meter}^2$

D. $\text{weber}.\text{meter}^2$

Answer: C

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Exercise Fill In The Blanks

1. The SI unit of magnetic field induction is .....

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2. Devices which is used to convert high alternating current to low alternating current is .....

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3. An electric motor converts.....

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4. A device for producing electric current is .....

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Exercise Match The Following

1. Match the following

	Column - I		Column - II
1.	Magnetic material	(*a*)	Oersted
2.	Non-magnetic material	(*b*)	iron
3.	Current and magnetism	(*c*)	induction
4.	Electromagnetic induction	(*d*)	wood
5.	Electric generator	(*e*)	Faraday

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Exercise True Or False

1. A generator converts mechanical energy into electrical energy

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2. Magnetic field lines always repel each other and do not intersect

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3. Fleming's left hand rule is also known as Dynamo rule

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4. The speed of rotation of an electric motor can be increased by decreasing the area of the coil

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5. A transformer can step up direct current

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6. In a step down transformer the number of turns in primary coil is greater than that of the number of turns in the secondary coil

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Exercise Answer In Brief

1. State Fleming's Left Hand Rule.

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2. Define magnetic flux density.

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3. List the main parts of electric motor.

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4. Draw and label the diagram of an AC generator.

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5. State the advantages of AC over DC.

6. What are step-up and step-down transformers ?

7. A portable radio has a built in transformer so that it can work from the mains instead of batteries. Is this a step up or step down transformer?

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8. State Faraday's laws of electromagnetic induction.

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Exercise Answer In Detail

1. Explain the principle, construction and working of a DC motor.

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2. A transformer

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3. From a rifle of mass 4 kg, a bullet of mass 50 g is fired with an initial velocity of 35 m s-1. Calculate the initial recoil velocity of the rifle.

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Additional Questions Short Answers Questions

1. What are natural magnets?

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2. How can the speed of rotation of a coil be increased? Write at least three methods.

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3. What is the connection between electricity and magnetism?

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4. What are the factors that determine the strength of the magnet?

5. Name some equipments that use electromagnetism for functioning.

6. Explain why the ozone layer is not affected by the solar wind.

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7. Write the properties of magnetic lines of force.

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Additional Questions Long Answers Questions

1. What do you know about Michael Faraday?

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2. Explain in detail about the application of electromagnets.

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In Text Problems

1. A conductor of length 50 cm carrying a current of 5A is placed perpendicular to a magnetic field of induction 2×10^{-3} T. Find the force on the conductor.

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2. A current carrying conductro of certain length, kept perpendicular to the magnetic field experiences a force F. What will be the

force if the current is increased four times, length is halved and magnetic field is tripled?

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3. The primary coil of a transformer has 800 turns and the secondary coil has 8 turns. I connected to a 220 V as supply. What will be the output voltage?

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Activity

1. Put a magnet on a table and place some paper clips nearby . If you push the magnet slowly towards the paper clips there will be a point at which the paper clips jump across and stick to the magnet .what do you understand from this ?

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