

TALEEMI DUNYA

Test Syllabus: Unit # 4

St. Name		Test	PHYSICS	T. Marks	30	Time	60 Min
F.Name		Class	12 th	T. Code	U#4	T. Date	

NOTE: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that Question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question. **6.**

1	A metal rod of 1m is moving at a speed of in a direction making an angle with 0.5 T magnetic field. The emf produced is:						
(a)	0.25 N	(b)	2.5 N	(c)	0.25 V	(d)	2.5 V
2	The negative sign with induced emf in Faraday's law is in accordance is in:						
(a)	Lenz's law	(b)	Amperes law	(c)	Gauss law	(d)	Boyle's law
3	Lenz's Law deals with:						
(a)	Magnitude of emf	(b)	Direction of emf	(c)	Direction of induced current	(d)	Resistance
4	Energy density in inductor is given by:						
(a)	$\frac{1}{2} \frac{B}{\mu_0}$	(b)	$\frac{1}{2} \frac{B}{\mu^2_0}$	(c)	$\frac{1}{2} \frac{B^2}{\mu_0}$	(d)	$\frac{1}{2} \frac{B^2}{\mu^2_0}$
5	Which one of the following is not present in an A.C generator?						
(a)	Armature	(b)	Magnet	(c)	Slip rings	(d)	Commutate
6	The principle of an electric generator is based upon:						
(a)	Ampere's law	(b)	Faraday's law	(c)	Coulomb's law	(d)	Kirchhoff's law

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Q.2 Write short answers of the following questions.

(8x2=16)

1. Name four methods to produce induce emf.
2. Is it possible to change both the area of the loop and the magnetic field passing through the loop and still not have induced emf in the loop?
3. Does the induced emf always act to decrease the magnetic flux through a circuit?
4. In a certain region the earth's magnetic field point vertically down, when a plane flies due to north, which wingtip is positively charged?
5. A square loop of wire is moving through a uniform magnetic field. The normal to the loop is oriented parallel to the magnetic field. Is an emf induced in the loop? Give a reason for your answer.
6. A suspended magnet is oscillating freely in a horizontal plane. The oscillations are strongly damped when a metal plate is placed under the magnet. Explain why this occurs?
7. On which factors the mutual inductance of the two coils depends?
8. How would you position a flat loop of wire in a changing magnetic field so that there is no emf induced in the loop?

Q.3 Write long answers of the following questions.

(4+4=8)

- (a) Derive the formula for energy stored in an inductor. Also define inductor.
- (b) A solenoid has 250 turns and its self inductance is 2.4 m H. What is the flux through each turn? When the current is 2A? What is induced emf when the current changes at the rate of 20As⁻¹