

## ST. LAWRENCE HIGH SCHOOL

## A JESUIT CHRISTIAN MINORITY INSTITUTION



## **WORK SHEET 28**

Subject: PHYSICS

07.07.20

CLASS: XII

Topic: Magnetic flux, Faraday's laws and

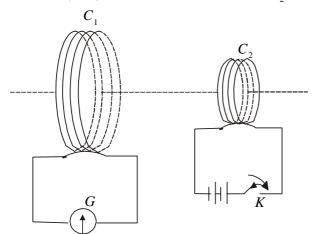
e.m.f, Lenz's law, induced e.m.f in

an a.c generator.

## Chapter: Electromagnetism **Multiple Choice Question:**

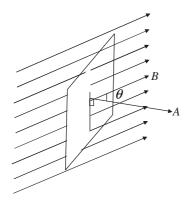
 $1 \times 15 = 15$ 

- 1. The pioneering experiments of Faraday and Henry have led directly to the development of modern day's
  - (a) generator
- (b) transformer
- (c) dynamo
- (d) both (a) and (b)
- 2. When they key K is released, the current  $C_2$  and the resulting magnetic field



- (a) increase from zero to maximum value
- (b) first increase, then decrease
- (c) remain same
- (d) maximum value to zero

Magnetic flux through a plane of area A placed in a uniform magnetic field B can be written as



- (a)  $\phi_B = B \times A$
- (b)  $\phi_B = \boldsymbol{B} \times \boldsymbol{A}$
- (c)  $\phi_B = B \cdot A$
- (d)  $\phi_{R} = \mathbf{B} \cdot \mathbf{A}$
- The net magnetic flux through any closed surface, kept in a magnetic field is
  - (a) Zero

- (b)  $\frac{\mu_0}{4\pi}$  (c)  $4\pi\mu_0$  (d)  $\frac{4\mu_0}{\pi}$
- 5. A circular coil of diameter 21 cm is placed in a magnetic field of induction 10<sup>-4</sup> T. The magnitude of flux linked with coil when the plane of coil makes an angle 30° with the field is
  - (a) 1.44 x 10<sup>-6</sup> Wb

(b)  $1.732 \times 10^{-6} \text{ Wb}$ 

(c)  $3.1 \times 10^{-6} \text{ Wb}$ 

(d)  $4.2 \times 10^{-6} \text{ Wb}$ 

varies with time $t(s)$ as $\phi = 50$ $t^2 + 4$ . Current at 2 s is  (a) 0.5 A  (b) 0.1A  (c) 2 A  (d) 1A  8. Wire loop is rotated in a magnetic field. The frequency of change of direction of the indu  (a) once per revolution  (b) twice per revolution  (c) four times per revolution  (d) six times per revolution  9. A copper disc of radius 0.1 m is rotated about its centre with 20 rev/s in a uniform mag  0.1 T with its plane perpendicular to the field. The emf induced across the radius of the d  (a) $\frac{\pi}{20}V$ (b) $\frac{\pi}{10}V$ (c) $20\pi$ mV  (d) non  10. Which of the following is the fundamental significance of the Faraday's discovery?  (a) a changing magnetic field can exert a force on the stationary charge  (b) a changing magnetic field can exert a force on the neutral particle  (c) a constant magnetic field can exert a force on the neutral particle  11. Which method is used to induce an emf or current in a loop in a AC generator?  (a) a change in the loop's orientation  (b) a change in its effective area  (c) both (a) and (b)  (d) neither (a) nor (b)  12. The polarity of induced emf is such that it tends to produce a current which opposes the magnetic flux that produced it, is statement of  (a) Faraday's law  (b) Lenz's law  (c) Fleming's right hand rule  13. A closed loop moves normal to the constant electric field between the plates of a large cap current induced in the loop when it is wholly inside the region between the capacitor. plate (a) yes  (b) no  (c) may be possible  (d) may not be possible	о.	(a) electric current	(b) emf	8	(a) and (b)	(d) neither (a) nor (b)		
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Ambarnath Banerjee