وزارة التربية والتعليم
مدرسة خليفة بن زايد- العين

مادة : الفيزياء
الثاني عشر - متقدم

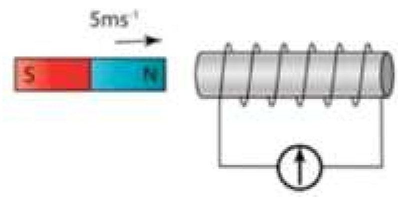
Review for

Physics

Grade 12 Advance

By : Mahmoud Awadallah

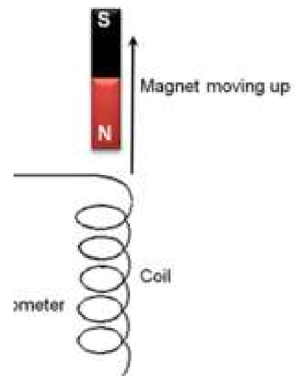
1- *What is the direction of the induced magnetic field?*



A. Left **B. Up**

C. right **D. Down**

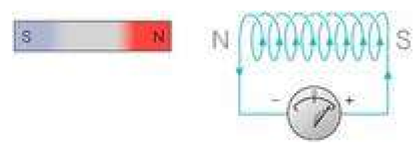
2- *What is the direction of the induced magnetic field?*



A. Left **B. Up**

C. right **D. Down**

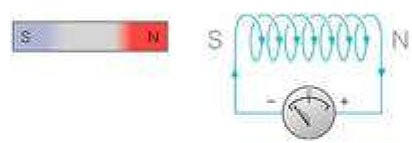
3- *In what direction is the magnet moving?*



A. Left **B. Up**

C. right **D. Down**

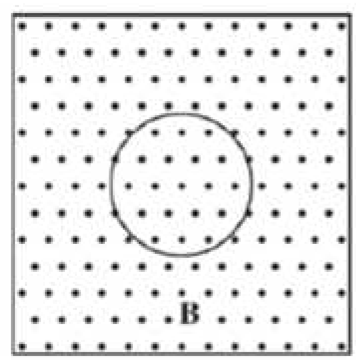
4- *In what direction is the magnet moving?*



A. Left **B. Up**

C. right **D. Down**

5- *A circular conducting loop is in a region of magnetic field **B** directed out of the page, as shown below. The magnitude of the magnetic field is **decreasing.** The direction of the induced current in the loop is*



A. Clockwise

B. counterclockwise

C. Undefined because the current is zero

D. Impossible to determine without knowing the rate of change of field

6- *The normal to a certain 1-m^2 area makes an angle of 60° with a uniform magnetic field. The magnetic flux through this area is the same as the flux through a second area that is perpendicular to the field if the second area is:*

A. $0.866m^2$ B. $1.15m^2$

C. $0.5m^2$ D. $2m^2$

7- *Suppose this page is perpendicular to a uniform magnetic field and the magnetic flux through it is 5Wb. If the page is turned by 30° around an edge the flux through it will be:*

A. **2.5Wb** B. **4.3Wb**

C. **5Wb** D. **5.8Wb**

8- *A (2T) uniform magnetic field makes an angle of 30° with the z axis. The magnetic flux through a 3-m^2 portion of the xy plane is:*

A. **2.0Wb** B. **3.0Wb**

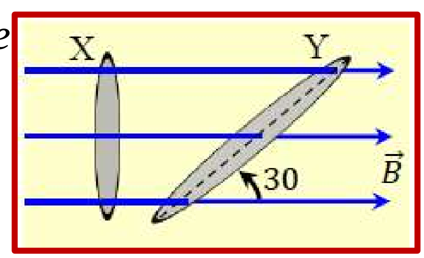
C. **5.2Wb** D. **6.0Wb**

9- *1weber is the same as:*

A. **1V/s** B. **1T/s**

C. **1T/m** D. **$1T.m^2$**

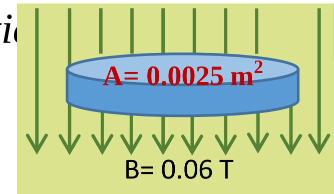
10- *What Ratio of magnetic flux passes the surface of the loop(y)) To the magnetic flux that traverses the ring surface (X) In the adjacent figure If the surface area of the ring (Y) is twice the area of the ring surface (X)?*



A. $\frac{1}{2}$ B. $\frac{2}{1}$

C. $\frac{1}{\sqrt{2}}$ D. $\frac{1}{1}$

11- *In the adjacent figure. Find the magnitude of magnetic flux that passes the upper surface of the disc.*

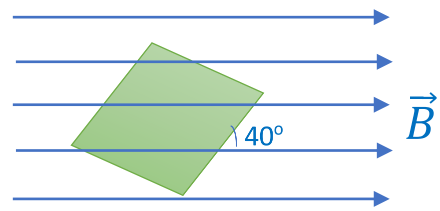


A. $+1.5\times10^{-4}\ Tm^2$ **B.** $-4.17\times10^{-2}\ Tm^2$

C. $-1.5\times10^{-4}\ Tm^2$ **D.** $+4.17\times10^{-2}\ Tm^2$

12- An 8-turn coil has square loops measuring 0.200 m along a side and a resistance of 3.00 Ω. It is placed in a magnetic field that makes an angle of 40.0° with the plane of each loop. The magnitude of this field varies with time according to $B = 1.50t^3$, where t is measured in seconds and B in teslas.

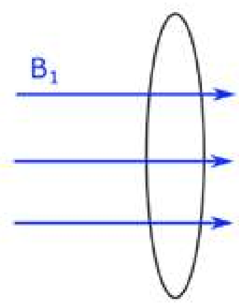
What is the induced current in the coil at t = 2.00 s?



A. $2.46A$ **B.** $1.46A$

C. $2.23A$ **D.** $1.23A$

13- Suppose a magnet with an initial field of 1.20 T is quenched in 20.0 s, and the final field is approximately zero. Under these conditions, what is the average induced potential difference around a conducting loop of radius 1.00 cm oriented perpendicular to the field?



A. $6.0\times10^{-6}V$ **B.** $1.88V$

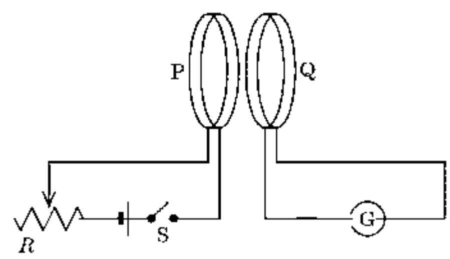
C. $9.8\times10^{-5}V$ **D.** $1.88\times10^{-5}V$

14- **Calculate the potential difference induced between the tips of the wings of a Boeing 747-400 with a wingspan of 64.67 m in level flight at a speed of 913 km/h. Assume that the downward component of the Earth's magnetic field is $B = 5.00\times10^{-5}$ T.**

A. ***0.82V*** **B.** ***2.95V***

C. ***10.4V*** D. ***225V***

15- *Coils P and Q each have a large number of turns of insulated wire. When switch S is closed, the pointer of galvanometer G is deflected toward the left. With (S) now closed, to make the pointer of G deflect toward the right one could.*



A. *move coil P toward coil Q*

B. *move coil Q toward coil P*

C. *open S*

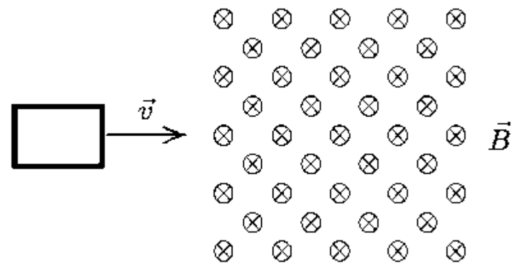
D. *move the slide of the rheostat R quickly to the right*

16- *An (10) turn coil. Coil surface area of the loop equal to ($0.02m^2$) has and a resistance of 5.0 Ω. Its surface is perpendicular to the magnetic field. The magnitude of this field varies with time according to (**$B = 2.5t^2$**), where(t) is measured in seconds and B in teslas. What is the **induced current** in the coil at(t = 4.0 s)?*

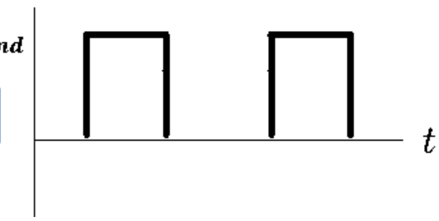
A. *4.0A* **B.** *0.8A*

C. *0.4A* **D.** *1.23A*

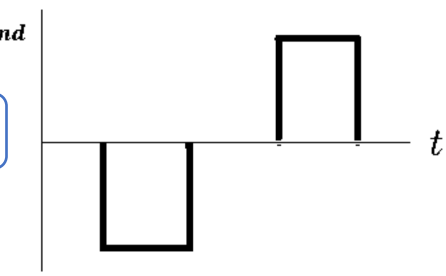
17- *.A square loop of wire moves with a constant speed v from a field-free region into a region of constant uniform magnetic field, as shown. Which of the five graphs correctly shows the induced voltage difference(ΔV_{ind}) in the loop as a function of time(t)?*



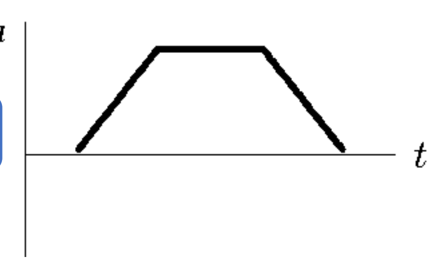
A



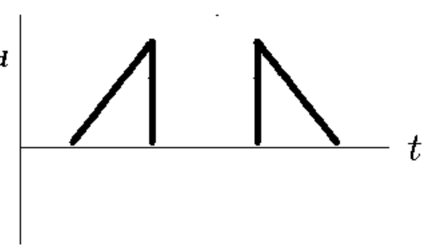
B



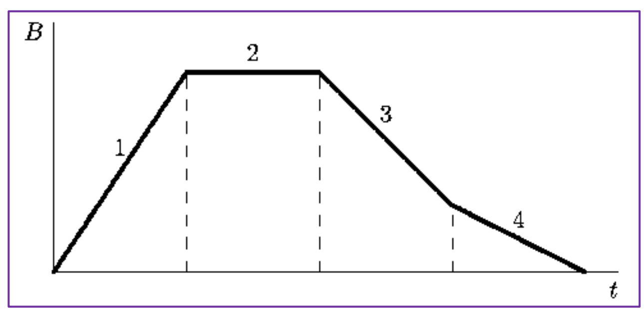
C



D



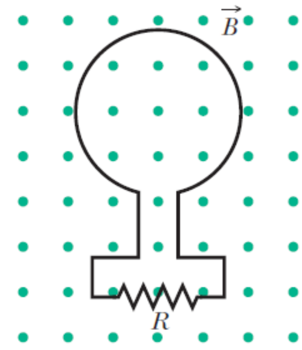
18- *The graph shows the magnitude B of a uniform magnetic field that is perpendicular to the plane of a conducting loop. Rank the five regions indicated on the graph according to the magnitude of the (ΔV_{ind}) induced in the loop, from least to greatest.*



A) 1, 2, 3, 4 **B)** 4, 3, 1, 2

C) 2, 4, 3, 1 **D)** 1, 3, 4, 2

19- In Fig. The magnetic flux through the loop increases according to the relation ($\Phi_B = 6.0t^2 + 7.0t$), where Φ_B is in <u>milliwebers</u> and (t) is in seconds. What is the magnitude of the ΔV_{ind} induced in the loop when (t= 2.0 s)



A. 31mV **B.** 62mV

C. 45mV **D.** 38mV

20- A wire of length ($\ell = 10cm$) is moving with constant velocity in the xy-plane; the wire is parallel to the y-axis and moving along the x-axis. If a magnetic field of magnitude **(1.00 T)** is pointing along the positive z-axis, what must the velocity of the wire be in order to induce a potential difference of **(2.00 V)** across it?

A. 0.2 m/s **B.** 1.0 m/s

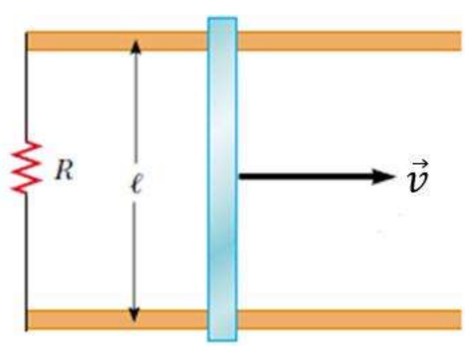
C. 20m/s **D.** 5.0 m/s

21- A rod of length L and electrical resistance R moves through a constant uniform magnetic field $\vec{B}$, perpendicular to the rod. The force that must be applied by a person to keep the rod moving with constant velocity $\vec{v}$ is:

A. 0 **B.** BLv

C. BLv/R **D.** B^2L^2v/R

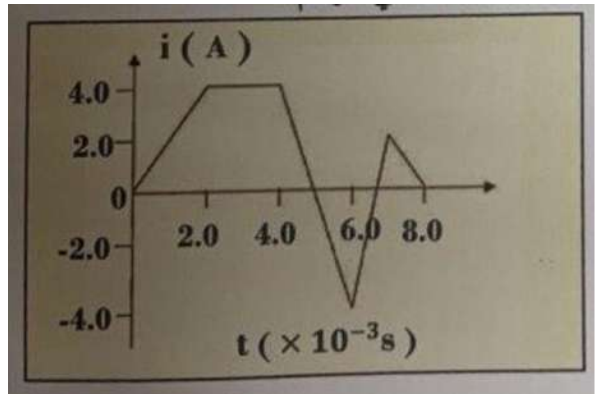
22- Consider the arrangements show in Figure. Assume that R=6.0Ω , $\ell = 1.2m$, and a uniform 2.5T magnetic field is direction into the page. At what speed should the bar be moved to produce a current of 0.5 A in the resistor?



A. 0.1 m/s **B.** 1.0 m/s

C. 3m/s **D.** 2 m/s

23– Figure shows changes in current intensity with time and in a coil of inductance coefficient of 10mH. What is the amount of the largest induced voltage difference in the coil during the time period?



A. ***20 V*** **B.** ***60 V***

C. ***30 V*** **D.** ***40V***

24- A solenoid of cross-sectional area 0.25 cm^2 and length 10 cm contains 200 turns of wire and the solenoid is air filled. Calculate the self-inductance L of the solenoid.

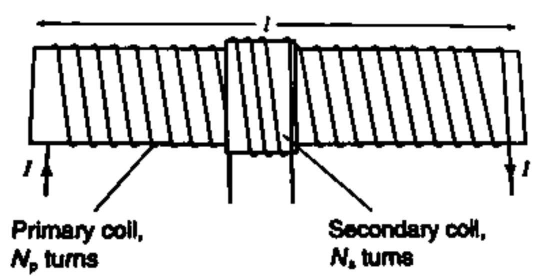
A. 7.5 μH **B.** *9.6* μH

C. *11* μH **D.** *13* μH

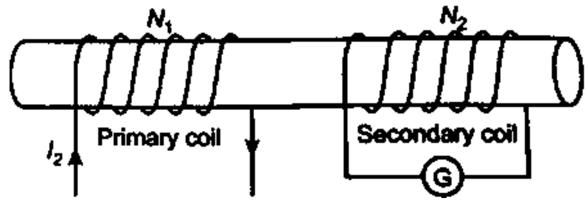
25- If $l = 2.44\ m$, N_p =300, N_s =100, A=1.26 $\times 10^{-3} m^2$ and teh solenoid is air-filled, calculate the mutual inductance between the solenoids.

A. $1.95 \times 10^{-5} H$ **B.** $4.75 \times 10^{-5} H$

C. $3.15 \times 10^{-5} H$ **D.** $1.16 \times 10^{-4} H$



26- ***If the current in the primary coil decreases uniformly from 12.0 A to zero in 58.0 ms and the (ΔV_{ind}) induced in the secondary coil is 8.03 V, calculate the mutual inductance, M.***



A. $1.66\ mH$ **B.** $38.8\ mH$

C. $39.3\ mH$ **D.** $40.5\ mH$

27- ***The unit of inductance is:***

A. Volt ***B. Ampere***

C. Henry ***D. Farad***

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