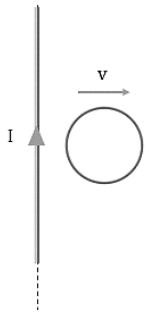
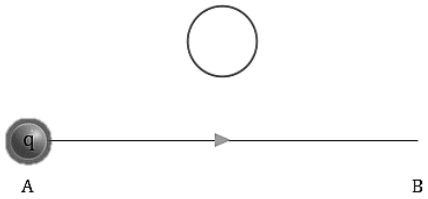
Q.1 A circular loop of radius r is moved away from a long current carrying wire, then induced current in a circular loop will be -
Assume the loop and the wire are in the plane of slide and the observer is observing in the front of the plane of slide



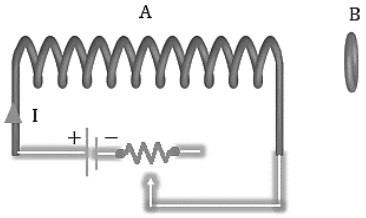
(A) Clockwise
(B) Anti-clockwise
(C) No current will be induced
(D) initially clockwise, then anti-clockwise

Q.2 A charge particle moves along the line *AB*, which lies in the same plane as that of a circular loop of conducting wire, as shown in the fig. Then,



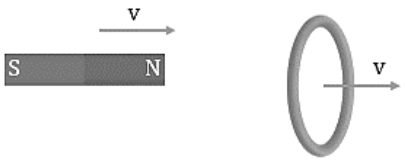
(A) No current will be induced in the loop
(B) The current induced in the loop will change its direction as the charged particle goes from point A to point B
(C) The current induced will be anticlockwise throughout
(D) The current induced, will be clockwise throughout

Q.3 An aluminum ring *B* faces an electromagnet *A*. The current through *A* can be altered. Then which of the following statements is correct:



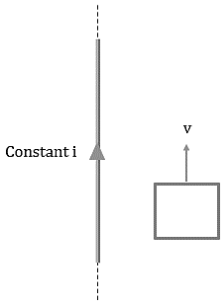
(A) If current decreases, *A* will repel *B*
(B) Whether current increases or decreases, *B* will not experience any force
(C) If current increases, *A* will repel *B*
(D) If current increases, *A* will attract *B*

Q.4 In the figure shown, a bar magnet and a metallic ring have the same velocity. The induced current in the ring, as observed by an observer at the left side of the ring is,



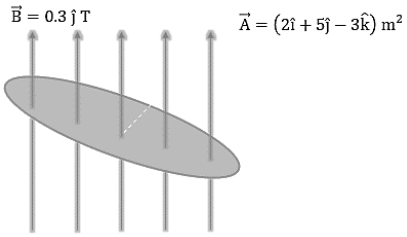
(A) Zero
(B) In a clockwise sense
(C) In an anti-clockwise sense
(D) In a clockwise sense initially and anti-clockwise sense finally

Q.5 Figure shows a long current carrying wire and a rectangular loop moving with velocity$\boldsymbol{v}$. The induced current in the loop is



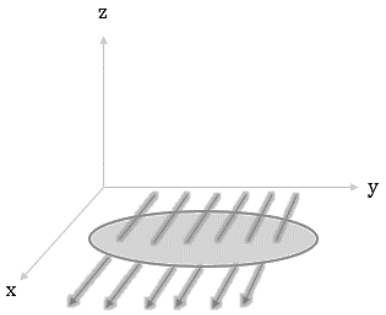
(A) In a clockwise sense
(B) In an anti-clockwise sense
(C) First clockwise, then anti-clockwise
(D) Zero

Q.6 A loop of wire is placed in a magnetic field$\vec{\mathbf{B}} = \mathbf{0.3}\,\hat{\mathbf{j}}\ \mathbf{T}$. Find the flux through the loop, if the area vector is $\vec{\mathbf{A}} = \left(\mathbf{2}\hat{\mathbf{i}} + \mathbf{5}\hat{\mathbf{j}} - \mathbf{3}\hat{\mathbf{k}}\right)\ \mathbf{m^2}$



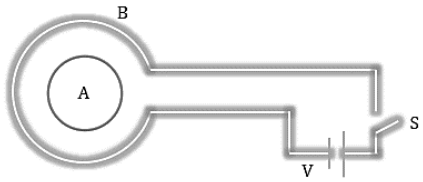
(A)1 Wb **(B)**1.5 Wb **(C)**1 Wb **(D)**4.5 Wb

Q.7 The magnetic field in a certain region is given by$\vec{\mathbf{B}} = \left(\mathbf{4}\hat{\mathbf{i}} - \hat{\mathbf{k}}\right)\ \mathbf{T}$. How much magnetic flux passes through the loop of area $\mathbf{0.1\ m^2}$ in this region, if the loop lies flat in **xy** plane?



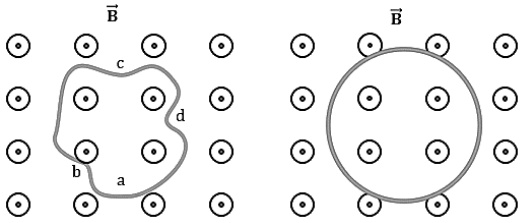
(A)5 Wb **(B)**2.5 Wb **(C)**1 Wb **(D)**0.1 Wb

Q.8 An isolated inner coil **A** is placed concentrically inside an outer coil **B** as shown in the figure. What will be the direction of current in the coil**A**, as the switch **S** is closed?



(A) Clockwise **(B)**Anticlockwise
(C) First anticlockwise and then clockwise **(D)**First clockwise and then anticlockwise

Q.9 A wire of irregular closed shape is turning into a circular shape as shown in the figure. Determine the direction of flow of induced current in the loop if the magnetic field is constant.



(A) Clockwise **(B)**Anticlockwise
(C) First anticlockwise and then clockwise **(D)**No current will be induced

Q.10 A conducting loop of area $\mathbf{10\ cm^2}$ is placed in a magnetic field which varies sinusoidally with time as$\mathbf{B = 2 \sin 100t}$. The normal to the coil makes an angle of $\mathbf{60^\circ}$ with direction of the field. Find the maximum magnetic flux through the coil.

(A)2 mWb **(B)**0.2 mWb **(C)**1 mWb **(D)**0.1 mWb

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10
Sol.	(A)	(B)	(C)	(A)	(D)	(B)	(D)	(A)	(A)	(C)