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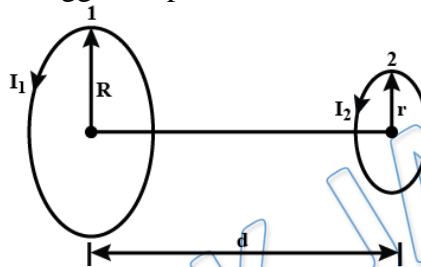
Written Solution on Website:- <https://physicsaholics.com/note/notesDetailis/61>

- Q 1. The coefficient of self inductance of a solenoid is 0.18 mH. If a core of soft iron of relative permeability 900 is inserted, then the coefficient of self inductance will become nearly
- (a) 5.4 mH (b) 162 mH  
(c) 0.006 mH (d) 0.0002 mH
- Q 2. If a rate of change of current of 4 A/s induces an emf of 20 mV in a solenoid, the self inductance of the solenoid is
- (a) 5 mH (b) 80 mH  
(c) 0.25 mH (d) zero
- Q 3. A solenoid having 500 turns and length 2 m has radius of 2 cm, then self inductance of solenoid?
- (a)  $4 \times 10^{-4}$  H (b)  $2 \times 10^{-4}$  H  
(c)  $8 \times 10^{-4}$  H (d)  $16 \times 10^{-4}$  H
- Q 4. A solenoid have the self inductance 2H. If length of the solenoid is doubled having turn density (turns per unit length) and area constant then new self inductance is going to be the:-
- (a) 4H (b) 1H  
(c) 8H (d) 0.5H
- Q 5. A thin copper wire of length 100m is wound as a solenoid of length ( $l$ ) and radius ( $r$ ) its self inductance is found to be L. Now if same length of wire is would as a solenoid of length ( $l$ ) of radius ( $\frac{r}{2}$ ). Then its self inductance will be
- (a) 4L (b) 2L  
(c) L (d)  $\frac{L}{2}$
- Q 6. What is the self - inductance of an air core solenoid 50 cm long and 2 cm radius if it has 500 turns ?
- (a) 8 mH (b) 0.8 mH  
(c) 4 mH (d) 12 mH
- Q 7. A solenoid is of length 50 cm and has a radius of 2 cm. It has 500 turns. Around its central section a coil of 50 turns is wound. Calculate the mutual inductance of the system (nearly)
- (a) 0.08  $\mu$ H (b) 0.8  $\mu$ H  
(c) 8  $\mu$ H (d) 80  $\mu$ H



- Q 8. A solenoid of length 50 cm with 20 turns per cm and area of cross section  $40 \text{ cm}^2$  completely surrounds another co-axial solenoid of the same length, area of cross section  $25 \text{ cm}^2$  with 25 turns per cm. Calculate the mutual inductance of the system
- (a) 2.21 mH                      (b) 3.81 mH  
(c) 7.85 mH                      (d) 12.88 mH

- Q 9. A circular loop of radius 0.3cm lies parallel to a much bigger circular loop of radius 20cm. The center of the small loop is on the axis of the bigger loop. The distance between their centers is 15cm. If a current of 2.0A flows through the smaller loop, then the flux linked with bigger loop is



- (a)  $6 \times 10^{-11} \text{ Wb}$   
(b)  $3.3 \times 10^{-11} \text{ Wb}$   
(c)  $6.6 \times 10^{-9} \text{ Wb}$   
(d)  $9.1 \times 10^{-11} \text{ Wb}$
- Q 10. An L-R circuit has a cell of e.m.f. E, which is switched on at time  $t = 0$ . The current in the circuit after a long time will be
- (a) zero                      (b)  $\frac{E}{R}$   
(c)  $\frac{E}{L}$                       (d)  $\frac{E}{\sqrt{L^2+R^2}}$
- Q 11. The self-inductances of two identical coils are 0.1H. They are wound over each other. Mutual inductance will be-
- (a) 0.1 H                      (b) 0.2 H  
(c) 0.01 H                      (d) 0.05 H
- Q 12. Two coils of self-inductance 2 mH and 8 mH are placed so close together that the effective flux in one coil is completely linked with the other. The mutual inductance between these coil is:
- (a) 1 mH                      (b) 6 mH  
(c) 4 mH                      (d) 16 mH



## Answer Key

<b>Q.1 b</b>	<b>Q.2 a</b>	<b>Q.3 b</b>	<b>Q.4 a</b>	<b>Q.5 c</b>
<b>Q.6 b</b>	<b>Q.7 d</b>	<b>Q.8 c</b>	<b>Q.9 d</b>	<b>Q.10 b</b>
<b>Q.11 a</b>	<b>Q.12 c</b>			

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