Q.1 The **SI** unit of inductance, **henry**, can be written as

(A) Wb/A **(B)** $V - s/A$

(C) Both options (A) and (B) **(D)** none of these

Q.2 An average emf of $\mathbf{20\ V}$ is induced in an inductor when the current in it is changed from $\mathbf{2.5\ A}$ in one direction to $\mathbf{5.5\ A}$ in the opposite direction, in $\mathbf{0.1\ s}$. Find the self-inductance of the inductor

(A) 0.75 H **(B)** 0.85 H **(C)** 0.25 H **(D)** 0.45 H

Q.3 The self-inductance of a closed-packed coil is $\mathbf{8\ mH}$. A current of $\mathbf{5\ mA}$ is passed through it. Find the magnetic flux per unit turn of the coil, if it has $\mathbf{100}$ turns.

(A) 2×10^{-7} Wb **(B)** 4×10^{-7} Wb **(C)** 2×10^{-6} Wb **(D)** 4×10^{-6} Wb

Q.4 A plot of magnetic flux ($\boldsymbol{\phi}$) versus current $\boldsymbol{I}$ is shown below. Which of the following statements is correct.

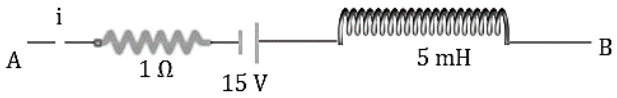
(A) Self-inductance of A> self-inductance of B

(B) Self-inductance of *B*> self-inductance of *A*.

(C) Bothe A and B have the same self-inductance.

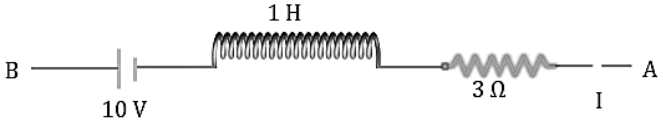
(D) None of the above

Q.5 The circuit shown in the figure is a part of a big network. If at a certain instant of time, the current ($\mathbf{i}$) through it is $\mathbf{5\ A}$ and is decreasing at the rate of $\mathbf{10^3\ A/s}$, then $\mathbf{V_B - V_A}$ at that instant is –



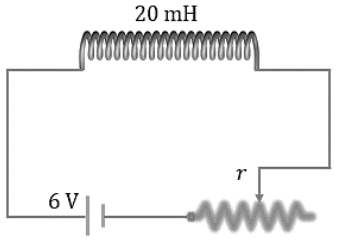
(A) 50 V **(B)** 10 V **(C)** 15 V **(D)** 20 V

Q.6 In the given branch **AB** of a circuit, a current, $\mathbf{I = (10t + 5)\ A}$ is flowing, where **t** is time in seconds. At $\mathbf{t = 0}$, the potential difference between points **A** and **B**, $\mathbf{V_A - V_B}$ is –



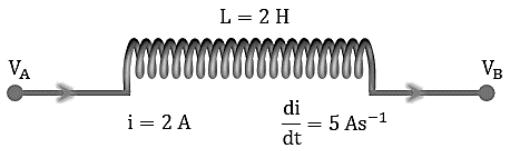
(A) 15 V **(B)** −5 V **(C)** −15 V **(D)** 5 V

Q.7 Consider the circuit shown in the figure. The sliding contact is being pulled towards the right so that the resistance in the circuit is increasing. Its value at the instant shown is $\mathbf{12\ \Omega}$. The current flowing in the circuit is **i**. Then:



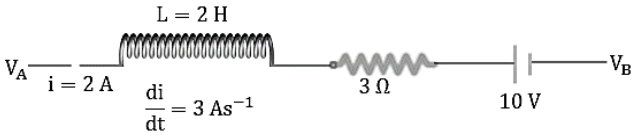
(A) $i < 0.5$ A **(B)** $i > 0.5$ A **(C)** $i = 0.5$ A **(D)** None of the above

Q.8 Find $\mathbf{V_A - V_B}$ in the given figure?



(A)10 V **(B)**−10 V **(C)**5 V **(D)**20 V

Q.9 Find $V_A - V_B$ for the given network?



(A)11 V **(B)**−22 V **(C)**22 V **(D)**55 V

Q.10 A current of **1.0 A** is established in a tightly wound solenoid of radius **2 cm** having **1000 turnsmeter**. Find the magnetic energy stored in each meter of the solenoid.

(A)1.6×10^{-3} J **(B)**3.2×10^{-4} J **(C)**4.5×10^{-3} J **(D)**7.9×10^{-4} J

ANSWER KEY

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