

**Electromagnetism: Effect of Current Electricity– Typical Questions (Set 2)***(Only Answers)*

A-1	$4 \Omega$
A-2	(a) 6 V, 2 V (b) AD = 66.7 cm (c) Zero (d) 6 V, -1.5 V no such point D exists
A-3	(a) 320 cm (b) $\frac{3E}{22r}$
A-4	$4 \mu\text{C}$
A-5	(a) 0.2 A (b) $32 \mu\text{J}$
A-6	$2 \mu\text{C}$ , $8 \mu\text{C}$ , $9 \mu\text{C}$ and $12 \mu\text{C}$
A-7	25 V, 75 V
A-8	(a) $E$ (b) $\frac{E}{R}$ (b) $E$ (d) $\frac{1}{2}CE^2$ (c) $\frac{E^2}{R}$ (f) $\frac{E^2}{R}$
A-9	$0.18 \mu\text{s}$
A-10	$5 \text{ k}\Omega$
A-11	$76 \mu\text{C}$
A-12	(a) $60 \mu\text{C}$ (b) $44 \mu\text{C}$ (b) $18 \mu\text{C}$ (d) $2.7 \text{ nC}$
A-13	(a) 0.25 A (b) 0.09 A
A-14	$1.6 \times 10^4 \text{ Vm}^{-1}$
A-15	$6.3 \times 10^{-10} \text{ J}$
A-16	-
A-17	0.69 in both cases
A-18	6.9
A-19	1.23
A-20	0.69
A-21	$\frac{E^2}{4R^3} CR \ln 2$
A-22	(a) 2.21 A (b) 13.3 W (c) 4.88 W (d) 8.37 W

A-23	$\frac{1}{2}\left(1 - \frac{1}{e^2}\right) CV^2$
A-24	-
A-25	$\epsilon_0 \rho K$
A-26	$10 \mu\text{C}$
A-27	22 mA
A-28	$70 \mu\text{C}$
A-29	$q = EC\left(1 - e^{-\frac{t}{RC}}\right)$ , where $C = \frac{C_1 C_2}{C_1 + C_2}$
A-30	$\frac{Q}{2}\left(1 - e^{-\frac{2t}{RC}}\right)$
A-31	$EC\left(1 - e^{-\frac{t}{RC}}\right) + Qe^{-\frac{t}{RC}}$
A-32	Yes
A-33	No, $r = \sqrt{R_1 R_2}$
A-34	No
A-35	$\Delta Q$ , $\Delta U$ and $\Delta W$ are non-zero and positive.
A-36	No
A-37	Yes if temperature is measured in Celsius with otherwise not
A-38	Yes if temperature is measured in Celsius with otherwise not
A-39	No
A-40	Yes
A-41	(a)
A-42	(d)
A-43	(b)
A-44	(c)
A-45	(a)
A-46	(b)
A-47	(c)
A-48	(c)

A-49	(a), (d)
A-50	All
A-51	(a), (b)
A-52	(c)
A-53	(a)
A-54	6.0 kJ
A-55	2.8 min
A-56	125 $\Omega$ , 62.5 $\Omega$
A-57	(a) 125 $\Omega$ (b) 62.5 m (c) 2500 turns
A-58	5.3 mW
A-59	40 W, 71 W
A-60	98 W, 102 W
A-61	Upto 270 V
A-62	29 minutes
A-63	(a) 49 paise

	(b) 62 paise
A-64	29%
A-65	(a) 2.9 <sup>0</sup> C (b) 3.6 <sup>0</sup> C
A-66	$-4.6 \times 10^{-8}$ V
A-67	$1.04 \times 10^{-5}$ V
A-68	330 <sup>0</sup> C, 659 <sup>0</sup> C
A-69	(a) $1.6 \times 10^{-19}$ C (b) $3.2 \times 10^{-19}$ C
A-70	2.01 g
A-71	15 A
A-72	29 minutes
A-73	(a) 26.8 g.mol <sup>-1</sup> (b) 12.1 g
A-74	42 minutes
A-75	190 kJ
A-76	2 g
A-77	7.2 kJ, 17 K