Jules' Workshop

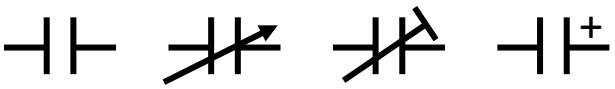
Standard

Unit 7 – ANSWERS

Q1. What is a capacitor?

Capacitor is an electronic component that stores electric charge.

Q2. Name the capacitor symbols.



Fixed cap Variable cap Trimmer cap Polorised cap

Q3. What are the variables in designing a capacitor?

- **Area of the plates**
- **Distance between the plates.**
- **Dielectric**

Q4. What is the total capacitance of these capacitors in series?

C1	C2	C3	C Total
3 mF	10 mF	2 mF	**1.07 mF**
6 pF	3 pF	1 pF	**1.5 pF**
6 nF	12 nF	1 nF	**0.8 nF**

Q 5. What is the total capacitance of these capacitors in parallel?

C1	C2	C3	C Total
3 mF	10 mF	2 mF	**15 mF**
6 pF	3 pF	1 pF	**10 pF**
6 nF	12 nF	1 nF	**19 nF**

Q6 Complete the charge table for the follo.

$$Q = CE$$

Q	C	E
6 Q	**0.5 F**	12 V
15 nQ	3 nF	5 V
2 Q	12 mF	**166 V**

Q7 Complete the energy table for the following.

$$W = \frac{E^2 x\ C}{2}$$

W	C	E
2 J	**0.11 F**	6 V
37.5 J	3 F	5 V
5 J	11 F	**0.95 V**

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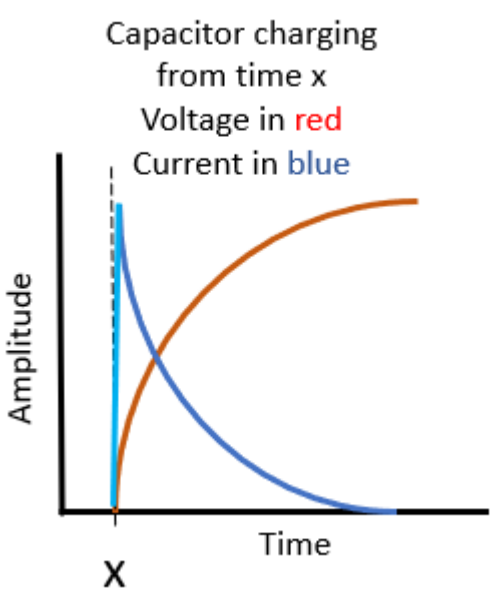
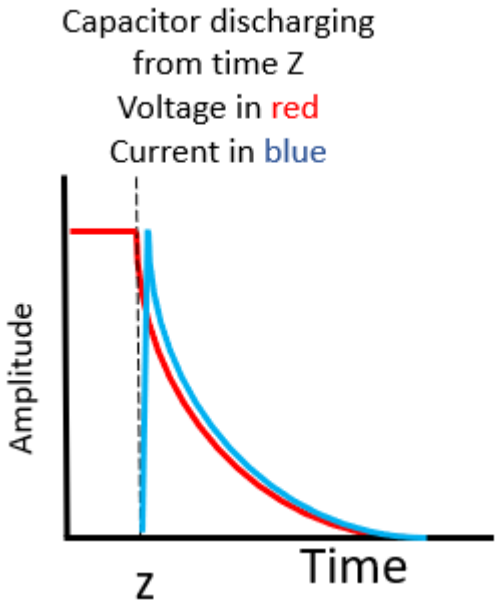
Q8 Explain in your own words and diagrams, the charging and discharging of a capacitor focusing on the voltage and current.





Q9 What is an inductor?

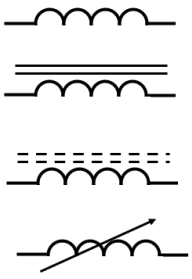
An inductor, also called a coil, choke, or reactor, is a device that stores energy in a magnetic field.

Q 10 Complete the energy table for the following.

$$W = \frac{I^2 \, x \, L}{2}$$

W	L	I
2 J	**1 H**	2 A
37.5 J	3 mH	5 mA
5 J	11 H	**0.95 A**

Q11 Identify the following symbols.



Air core inductor

Ferrous core inductor

Ferrite core inductor

Variable inductor

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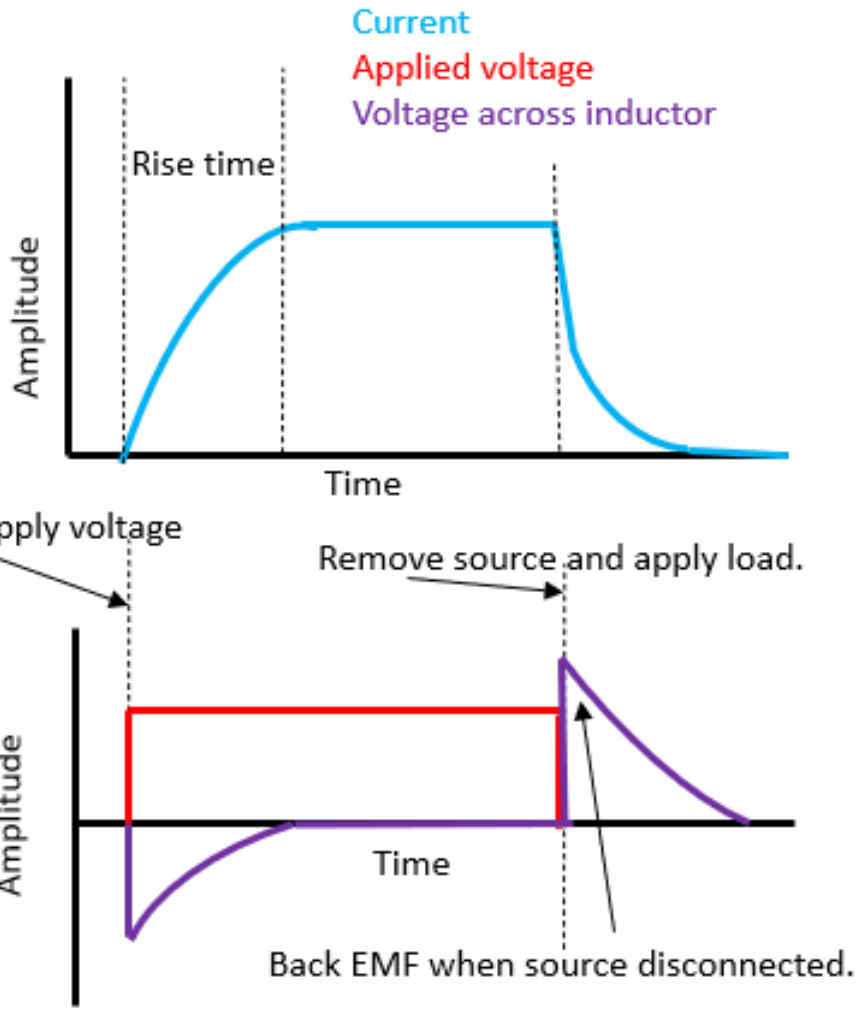
Q12 What is the total inductance of these inductors in parallel?

L1	L2	L3	L Total
16 mH	15 mH	21 mH	**5.6 mH**
16 pH	30 pH	0.1 pH	**0.099 pH**
60 nH	12 nH	100 nH	**9.09 nH**

Q13 What is the total inductance of these inductors in series?

L1	L2	L3	L Total
16 mH	15 mH	21 mH	**52 mH**
16 pH	30 pH	0.1 pH	**46.1 pH**
60 nH	12 nH	100 nH	**172 nH**

Q14 Explain in your own words and diagrams, the charging and discharging of an inductor focusing on the voltage and current.



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