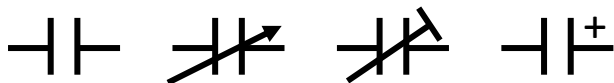


**Lesson 6 – ANSWERS**

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 Polarised 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	<b>1.07 mF</b>
6 pF	3 pF	1 pF	<b>1.5 pF</b>
6 nF	12 nF	1 nF	<b>0.8 nF</b>

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

C1	C2	C3	C Total
3 mF	10 mF	2 mF	<b>15 mF</b>
6 pF	3 pF	1 pF	<b>10 pF</b>
6 nF	12 nF	1 nF	<b>19 nF</b>

Q6 Complete the charge table for the following.

$$Q = CE$$

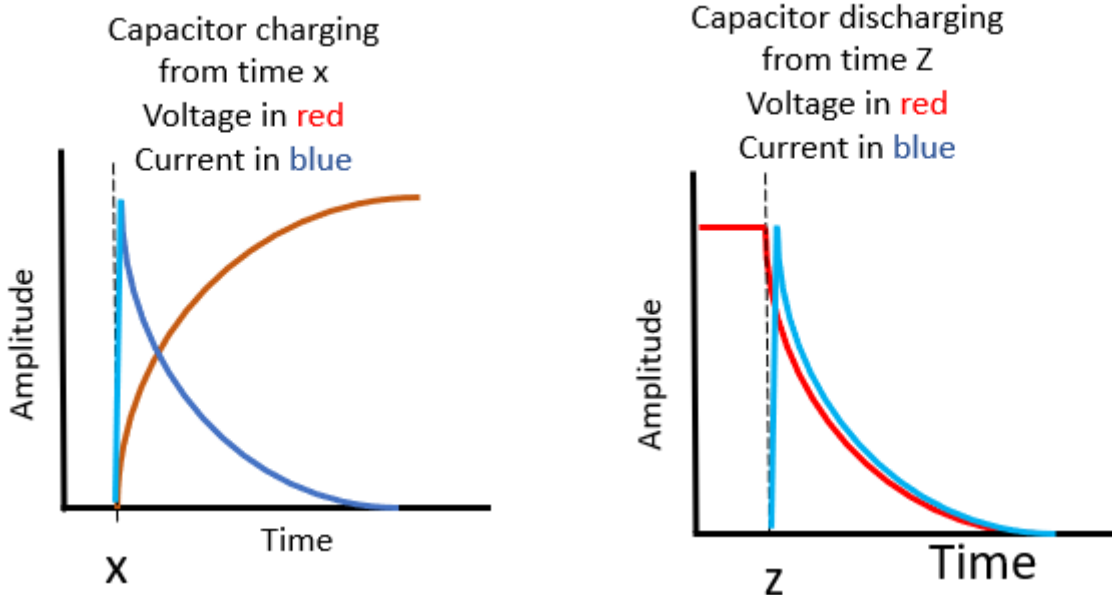
Q	C	E
6 Q	<b>0.5 F</b>	12 V
<b>15 nQ</b>	3 nF	5 V
2 Q	12 mF	<b>166 V</b>

Q7 Complete the energy table for the following.

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

W	C	E
2 J	<b>0.11 F</b>	6 V
<b>37.5 J</b>	3 F	5 V
5 J	11 F	<b>0.95 V</b>

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?

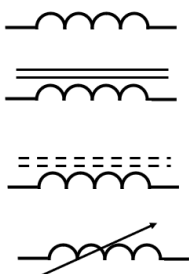
**An inductor, also called a coil, choke, or reactor, is a device that stores energy in a magnetic field.**

Q 10 Complete the energy table for the following.

$$W = \frac{I^2 \times L}{2}$$

W	L	I
2 J	<b>1 H</b>	2 A
<b>37.5 J</b>	3 mH	5 mA
5 J	11 H	<b>0.95 A</b>

Q11 Identify the following symbols.



- Air core inductor**
- Ferrous core inductor**
- Ferrite core inductor**
- Variable inductor**

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

L1	L2	L3	L Total
16 mH	15 mH	21 mH	<b>5.6 mH</b>
16 pH	30 pH	0.1 pH	<b>0.099 pH</b>
60 nH	12 nH	100 nH	<b>9.09 nH</b>

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

L1	L2	L3	L Total
16 mH	15 mH	21 mH	<b>52 mH</b>
16 pH	30 pH	0.1 pH	<b>46.1 pH</b>
60 nH	12 nH	100 nH	<b>172 nH</b>

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

