Post lab 9

1. $3600\ \text{rpm} = \frac{3600}{60}\ \text{rps} = 60\ \text{rps}$

$\Rightarrow$ Crankshaft frequency = **60 Hz**

$\Rightarrow$ Camshaft frequency = $\frac{1800}{60}\ \text{rps} =$ **30 Hz**

$\Rightarrow$ exhaust wave frequency = $4 \times 30\ \text{Hz} =$ **120 Hz**

2.

Cam shaft bandpass : 20 - 40 Hz. (Centered near 30 Hz)

Crankshaft bandpass : 50 - 70 Hz (centered near 60 Hz)

exhaust wave bandpass : 110 - 130 Hz (Centered near 120 Hz)

3. Take example of 60 Hz.

$f_{HPC} = 50\ \text{Hz}$ $f_{LPC} = 70\ \text{Hz}$ Also $f = \frac{1}{2\pi RC}$ Suppose $R = 33\ \text{k}\Omega$

$C_{HP} = \frac{1}{2\pi \cdot 50 \cdot 33\text{k}} = 0.96\ \mu\text{F}$ $C_{LP} = \frac{1}{2\pi \cdot 70 \cdot 33\text{k}} = 0.68\ \mu\text{F}$