



Benha University
Faculty of Engineering
Shoubra

Electronic circuits (B)

Electrical Eng. Dept.
3rd year communication
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Sheet (4) – supplementary - solution

Oscillators – part 1

1. What is an oscillator?

An oscillator is a circuit that produces a repetitive output waveform with only the dc supply voltage as an input.

2. What type of feedback does a feedback oscillator require?

Positive feedback

3. What is the purpose of feedback circuit?

The feedback circuit provides attenuation and phase shift.

4. Name the 2 types of oscillators?

Feedback and relaxation

5. What are the two conditions required for a circuit to oscillate?

Zero phase shift and unity voltage gain around the closed feedback

6. Define the positive feedback?

Positive feedback is when a portion of the output signal is fed back to the input of the amplifier such that it reinforces itself.

Dr. Rokaia Mounir

7. What is the voltage gain condition for oscillators start up?

Loop gain greater than 1

8. There are two feedback loops in Wein-bridge oscillators. What is the purpose of each?

The negative feedback loop sets the closed-loop gain; the positive feedback loop sets the frequency of oscillation.

9. A certain lead-lag circuit has $R_1=R_2$, $C_1=C_2$. An input voltage of $5V_{rms}$ is applied. The input frequency equals the resonant frequency of the circuit. What is the rms output voltage?

1.67 V

10. What type of input is required for an oscillator?

An oscillator requires no input other than the dc supply voltage.

11. What are the basic components of an oscillator circuit?

Amplifier and positive feedback circuit

Good Luck

Dr. Rokaia Mounir