Here are 60 questions in the current question bank for LC Oscillators

Q1. An oscillator converts

1. a.c. power into d.c. power
2. d.c. power into a.c. power
3. mechanical power into a.c. power
4. none of the above

Q2. In an LC transistor oscillator, the active device is

1. LC tank circuit
2. Biasing circuit
3. Transistor
4. None of the above

Q3. In an LC circuit, when the capacitor is maximum, the inductor energy is

1. Minimum
2. Maximum
3. Half-way between maximum and minimum
4. None of the above

Q4. In an LC oscillator, the frequency of oscillator is _____ Lor C.

1. Proportional to square of
2. Directly proportional to
3. Independent of the values of
4. Inversely proportional to square root of

Q5. An oscillator produces _____ oscillations

1. Damped
2. Undamped
3. Modulated
4. None of the above

Q6. An oscillator employs _____ feedback

1. Positive
2. Negative
3. Neither positive nor negative
4. Data insufficient

Q7. An LC oscillator cannot be used to produce _____ frequencies

1 High
2. Audio
3. Very low
4. Very high

Q8. Hartley oscillator is commonly used in the master reference oscillator of:

1. Radio receivers
2. Radio transmitters
3. TV receivers
4. None of the above

Q9. The piezoelectric effect in a crystal is
1. A voltage developed because of mechanical stress
2. A change in resistance because of temperature
3. A change in frequency because of temperature
4. None of the above

Q10. If the crystal frequency decreases with temperature, we say that crystal has temperature coefficient
1. Positive
2. Zero
3. Negative
4. None of the above

Q11. The crystal oscillator frequency is very stable due to _____ of the crystal

1. Rigidity
2. Vibrations
3. Low Q
4. High Q

Q12. The application where one would most likely find a crystal oscillator is

1. Radio receiver master oscillator
2. Radio transmitter
3. AF sweep generator
4. None of the above

Q13. An oscillator differs from an amplifier because it

1. Has more gain
2. Requires no input signal
3. Requires no d.c. supply
4. Always has the same input

Q14. One condition for oscillation is

1. A phase shift around the feedback loop of 180˚
2. A gain around the feedback loop of one-third
3. A phase shift around the feedback loop of O˚
4. A gain around the feedback loop of less than 1

Q15. A second condition for oscillations is

1. A gain of >1 around the feedback loop
2. No gain around the feedback loop
3. The attention of the feedback circuit must be one-third
4. The feedback circuit must be capacitive

Q16. In a certain oscillator Av = 50. The value of the feedback circuit must be

1. >1
2. 01
3. 10
4. 02

Q17. For an oscillator to properly start, the gain around the feedback loop must initially be

1. 1
2. Greater than 1
3. Less than 1
4. Equal to attenuation of feedback circuit

Q18. In Colpitt's oscillator, feedback is obtained

1. By magnetic induction
2. By a tickler coil
3. From the centre of split capacitors
4. None of the above

Q19. The Q of the crystal is of the order of

1. 100
2. 1000
3. 50
4. More than 10,000

Q20. Quartz crystal is most commonly used in crystal oscillators because

1. It has superior electrical properties
2. It is easily available
3. It is quite inexpensive
4. None of the above

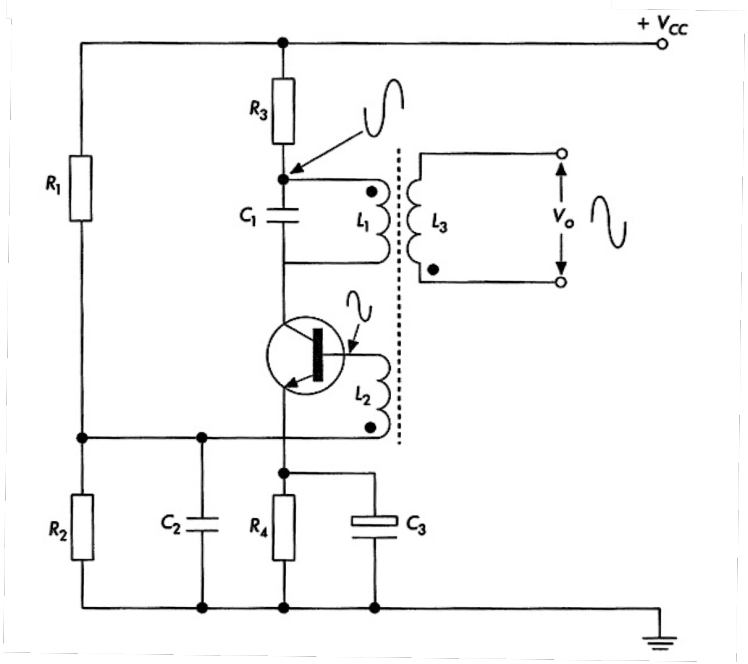
Q21. Below resonance a parallel tank circuit is

1. Higher impedance
2. Lower Impedance
3. Same impedance
4. Depends on the Q of the tank circuit

(The circuit shown is for Q22 to Q26)

Q22. The type of oscillator shown in the adjacent circuit diagram is

1. Hartley
2. Modified Pierce
3. Colpitts
4. Tuned collector



Q22. The common name associated with L2 is

Ans: _____

Q23. State what would happen if C2 becomes open circuit.

Ans: _____

Q24. Coil L2 is a resonant circuit Ans: True or False (circle correct)

Q25. State the purpose of R3 in the circuit on the previous page

Ans: _____

Q26. Coil L3 provides a

1. Balanced output
2. Unbalanced output
3. Higher frequency output
4. Lower frequency output

Q27.

_____ is a fixed frequency oscillator

1. Armstrong oscillator
2. Hartely-oscillator
3. Colpitt's oscillator
4. Crystal oscillator

Q28. In an LC oscillator, if the value of L is increased four times, the frequency of oscillations
is

1. Increased 2 times
2. Decreased 4 times
3. Increased 4 times
4. Decreased 2 times

Q29. In a Hartley oscillator, if LI =0.2 mH, L2=0.3 mH and c=0.003 pF. Calculate the frequency of its oscillations. Neatly draw the schematic diagram of a Hartley oscillator with the tank coil between the base and the emitter of a transistor. Show typical component values for a 15 Volt supply.

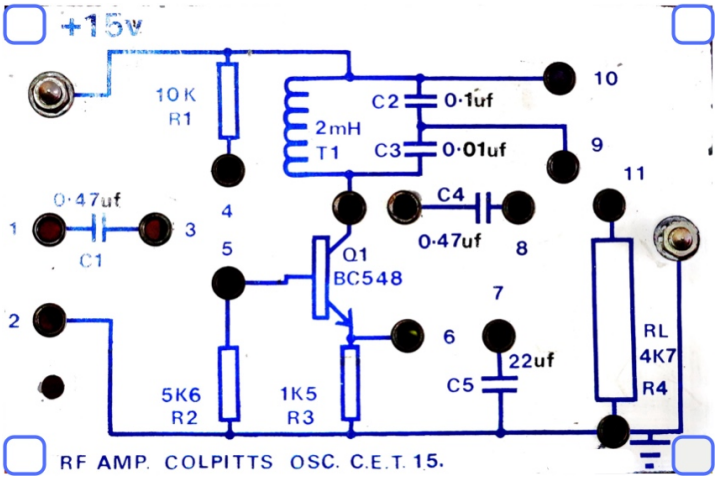
Q30. How are oscillators classified based on the frequency?
(i) Audio Frequency Oscillator (ii) Radio frequency oscillator.

Q31. Define piezo-electric effect.

Q32. State the Barkhausen criterion. answered for you :)
The essential conditions for maintaining oscillations are:
1. The magnitude of the loop gain must be greater than unity.
2. The total phase shift around the closed loop is zero or 360 degrees.
These conditions are commonly known as Barkhausen criterion.

Q33. Provide a the key disadvantage why the Armstrong oscillator is not often found with the tank circuit in it's base and the tickler in the collector.

Q34. Examine the following circuit diagram. Using a pen, draw the wire placements on this diagram to make it into a Keyed Oscillator. Employ maximum gain. Draw the shape of the input waveform and amplitude of the input waveform required to make it work.



Q35. Show and explain what changes you would make to lower the output frequency.

Q36. The two resonant frequencies and therefore the fundamental frequencies and maximum output will be achieved at what frequencies according to Q.34 & Q.35.

Frequency relative to question	Frequency expected
Q.34	
Q.35	

Q37. Configured as a keyed oscillator the transistor is biased in which class of operation?

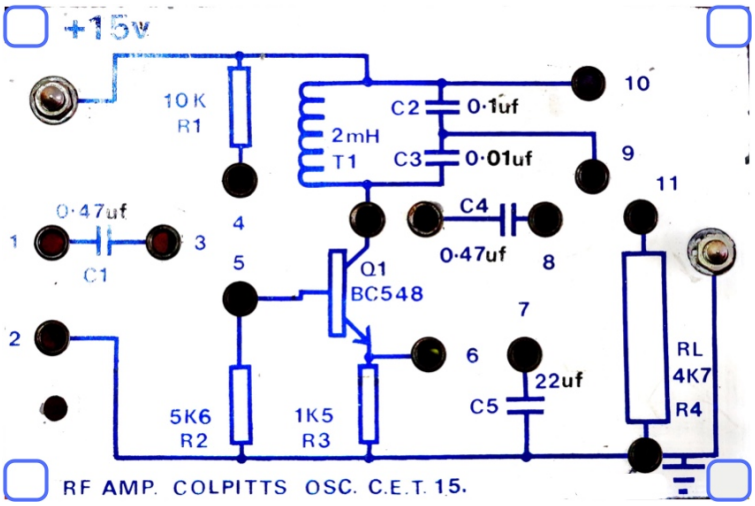
1. Class A
2. Class B
3. Class C
4. Class A or B

Q38. If pins 6 and 7 are connected together, what change in output amplitude will you see at the collector of Q1

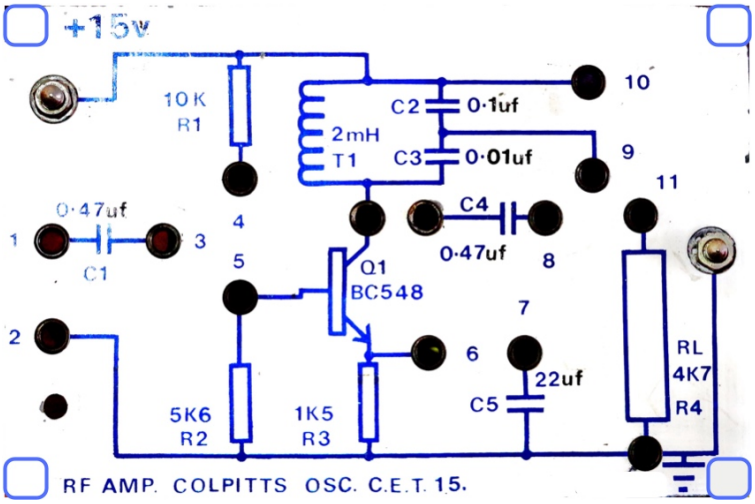
1. Increased 2 times
2. Decreased 2 times
3. No change
4. Increased slightly

Q39. If pins 6 and 7 are tied together, and you connect the oscilloscope to the emitter, what waveform will you see? Draw the waveform below and place approximate levels on it. Consider that pin 4 is connected to pin 5.

Q40. The circuit you were asked to connect up correctly in Q.34 is running. You have a nice waveform at the output. Now you connect pin 11 to pin 8, and the left hand side of C4 to the collector of Q1. What happens to the output waveform and voltage? Explain.



Q41. You now wish to make this board work as a Colpitts oscillator. Using a pen, draw how you will connect the board up to make this circuit free run (oscillate) at it's fundamental frequency.



Q42. The circuit when wired correctly is using which configuration to oscillate?

1. Common Collector
2. Common Emitter
3. Common Base
4. Modified Miller capacitance of Q1.

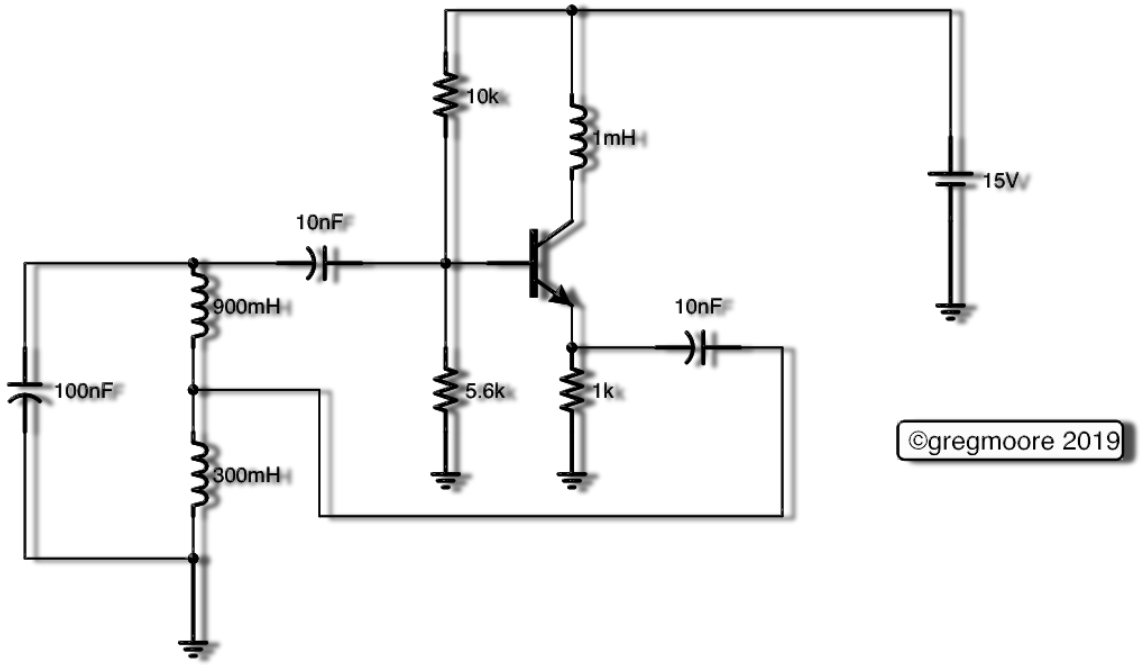
Q43. The circuit when wired correctly is using

1. In phase tapping 0 degrees
2. out of phase tapping 180 degrees
3. In phase tapping 90 degrees
4. out of phase tapping 90 degrees

Q44. The output frequency of the correctly wired Colpitts oscillator will be

Q45. Refer to the circuit diagram shown below. The two coils are L_m maximum coupling. What type of oscillator is shown? (Upper coil 900mH, Lower 300mH)

Answer:



Q46. Calculate the resonant frequency:

Ans: _____

Q47. State the purpose of the 1mH component in the collector circuit.

Ans: _____

Q48. The circuit is using which configuration to oscillate?

1. Common Collector
2. Common Emitter
3. Common Base
4. Modified Miller capacitance of Q1.

Q49. The DC voltage measured on the base will be approximately

1. 4.2V
2. 5.2V
3. 4.7V
4. 5.7V

Q50. Name an advantage of this circuit compared with other oscillator circuits we have studied.

Ans: _____

Q51. The 1kΩ resistor becomes short circuit.

1. Oscillator continues to function but with new DC level
2. Oscillator continues to function but with a lower frequency
3. Oscillator ceases to function
4. Oscillator will only function if more rail voltage is applied

The next questions refer to figure 2a (over page)
Q52. What type of circuit is shown in Figure 2a

Ans: _____

Q53. Is it shunt-fed or series-fed?

Ans: _____

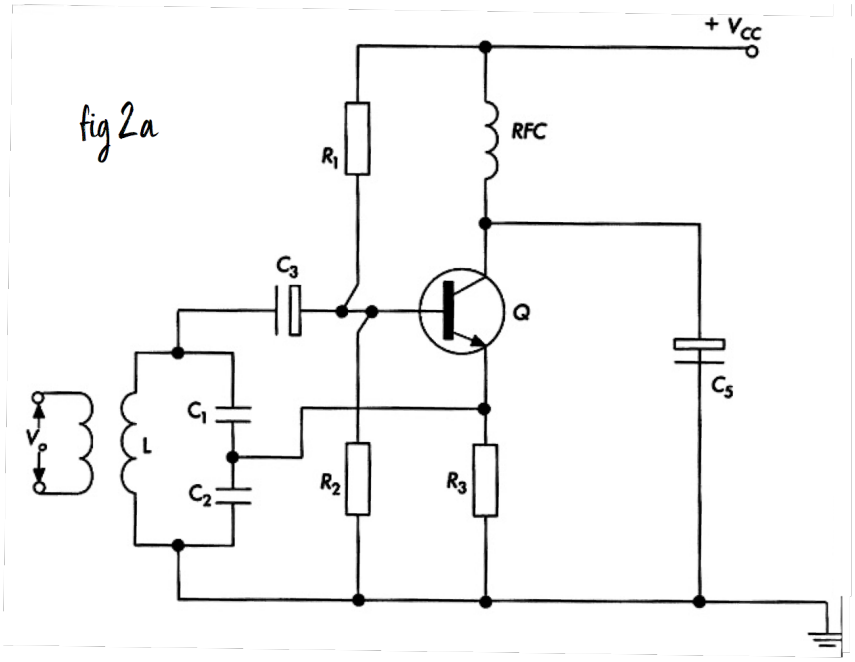
Q54. Which components determine the resonant frequency?

Ans: _____

Q55. Which component has the feedback voltage developed across it?

Ans:

_____



Q56. What is the purpose of: (i) C3 and (ii) Cs?

Ans:

_____

Q57. Which component is used to return energy to the tank circuit?

Ans: _____

Q58. What is the ratio that must remain constant in order to keep the feedback factor constant?

Ans: _____

Q59. How can this circuit be modified to improve the frequency stability?

Ans: _____

Q60. Is the output voltage (F0) rich in harmonic content? Explain.

Ans: _____

end of 2019 LC oscillator question bank.