Generated MCQs

Q1: The IC 555 timer operates on a supply voltage ranging from:

A) 1V to 5V

B) 5V to 18V

C) 18V to 25V

D) 25V to 30V

Correct Answer: B

Q2: Which pin on the 555 timer is used to reset the timer, overriding other instructions?

A) Pin 2

B) Pin 4

C) Pin 6

D) Pin 8

Correct Answer: B

Q3: The control voltage pin (pin 5) of the 555 timer can be used to:

A) Trigger the timer

B) Reset the timer

C) Vary the output pulse width

D) Provide the supply voltage

Correct Answer: C

Q4: What are the two main operating modes of the 555 timer?

A) Stable and Unstable

B) Monostable and Bistable

C) Astable and Monostable

D) Bistable and Astable

Correct Answer: C

Q5: What is the purpose of the three 5kΩ resistors within the 555 timer's internal structure?

A) To set the trigger voltage

B) To establish reference voltages for the comparators

C) To control the discharge rate of the capacitor

D) To regulate the supply voltage

Correct Answer: B

Q6: In a 555 timer configured as a monostable multivibrator, what happens when the trigger input falls below Vcc/3?

A) The output goes low.

B) The output goes high.

C) The capacitor begins to discharge.

D) The timer resets.

Correct Answer: B

Q7: The time period (T) of a 555 monostable multivibrator is given by:

A) T = 0.69 RC

B) T = 1.1 RC

C) T = 1.45 RC

D) T = 2.2 RC

Correct Answer: B

Q8: A monostable multivibrator using a 555 timer is designed for a pulse width of 22ms. If R = 10kΩ, what value of C should be used?

A) 0.5μF

B) 1μF

C) 2μF

D) 4μF

Correct Answer: C

Q9: In an astable multivibrator using a 555 timer, which resistor(s) are in the capacitor's discharge path?

A) Both RA and RB

B) Only RA

C) Only RB

D) Neither RA nor RB

Correct Answer: C

Q10: The duty cycle of a standard 555 astable multivibrator is typically:

A) Always 50%

B) Greater than 50%

C) Less than 50%

D) Exactly 75%

Correct Answer: B

Q11: How can a 50% duty cycle be achieved in a 555 astable multivibrator?

A) By making RA = RB

B) By connecting a diode across RB

C) By removing RB

D) By shorting pin 5 to ground

Correct Answer: B

Q12: The frequency of a 555 astable multivibrator with RA = 2kΩ, RB = 2kΩ and C = 1μF is approximately:

A) 145 Hz

B) 290 Hz

C) 435 Hz

D) 580 Hz

Correct Answer: A

Q13: What is the primary function of a Schmitt trigger?

A) To generate a sine wave

B) To convert a sine wave into a square wave

C) To amplify a square wave

D) To generate a triangular wave

Correct Answer: B

Q14: The output frequency of a VCO (like the IC 566) is:

A) Inversely proportional to the input voltage

B) Directly proportional to the input voltage

C) Independent of the input voltage

D) Logarithmically proportional to the input voltage

Correct Answer: B

Q15: A PLL (Phase Locked Loop) is used for:

A) Generating a square wave

B) Amplifying high-frequency signals

C) Locking output frequency and phase to an input signal

D) Converting analog signals to digital

Correct Answer: C

Q16: Which component in a PLL filters out high-frequency noise from the phase detector output?

A) VCO

B) Amplifier

C) Low-pass filter

D) Comparator

Correct Answer: C

Q17: What is the free-running frequency of a 565 PLL with R1 = 10kΩ and C1 = 0.1µF?

A) 1.2 kHz

B) 3 kHz

C) 12 kHz

D) 30 kHz

Correct Answer: B

Q18: The capture range of a PLL is the:

A) Range of input frequencies that the PLL can lock onto

B) Range of output frequencies the VCO can produce

C) Difference between the input and output frequencies

D) Range of frequencies the PLL can remain locked to

Correct Answer: A

Q19: An analog multiplier primarily performs which mathematical operation?

A) Addition

B) Subtraction

C) Multiplication

D) Division

Correct Answer: C

Q20: What is the output voltage of an analog multiplier with inputs Vx = 5V, Vy = 4V and Vref = 10V?

A) 1V

B) 2V

C) 4V

D) 5V

Correct Answer: B

Q21: The XR-2206 function generator IC can produce which waveforms?

A) Sine, square, triangle

B) Sine, square, sawtooth

C) Sine, triangle, sawtooth

D) Sine, square, triangle, ramp, pulse

Correct Answer: D

Q22: Which feature allows the XR-2206 to generate FSK signals?

A) The sine shaper

B) The unity gain amplifier

C) The current switches

D) The amplitude modulator

Correct Answer: C

Q23: If a 555 astable multivibrator has RA = 1kΩ, RB = 3kΩ, and C = 0.01µF, what will happen to the frequency if RB is increased to 6kΩ?

A) The frequency will increase.

B) The frequency will decrease.

C) The frequency will remain the same.

D) The duty cycle will become 50%.

Correct Answer: B

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