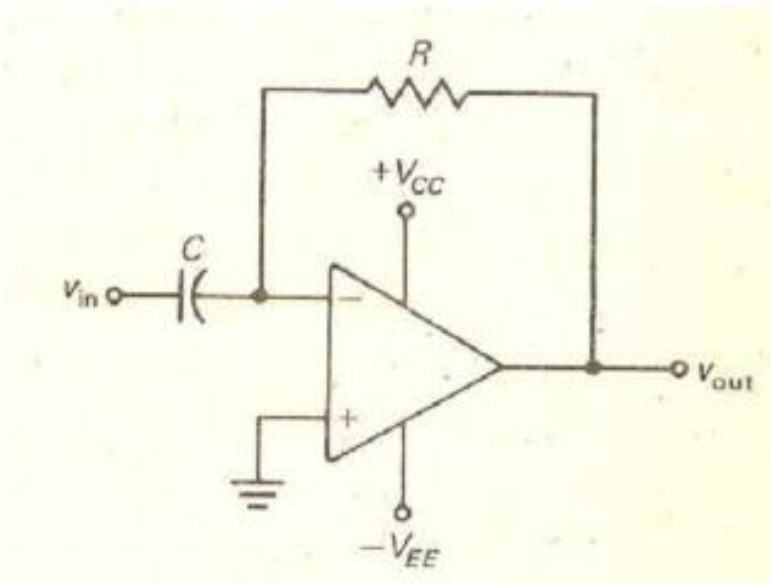
What type of mathematical operation does the following circuit do? 3/3

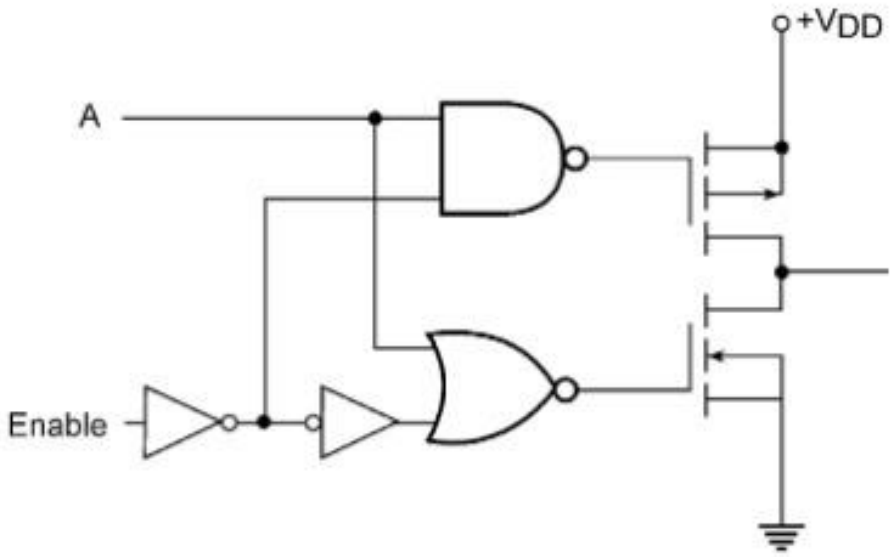


- ○ Integration
- ○ Summation
- ◉ Differentiation
- ○ Division

Feedback

Differentiation

The following circuit is a (an) ------- 3/3



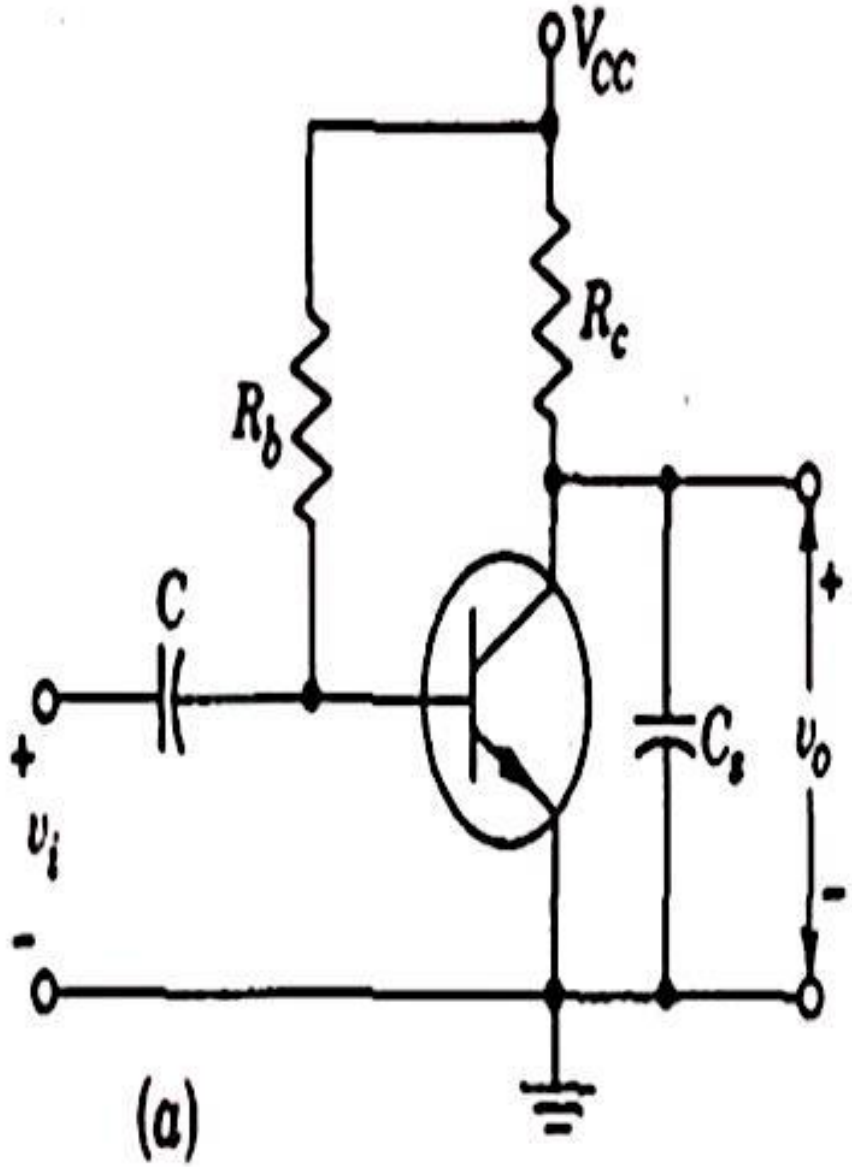
- ○ Inverter in CMOS
- ○ AND gate in CMOS
- ○ NOR gate in CMOS
- ◉ Tristate buffer in CMOS

◉ Tristate buffer in CMOS

Feedback

Tristate buffer in CMOS

If the input is a digital pulse train, Capacitor is 1000 microFarad, Collector load is 1 K Ohm, the output of the following circuit is —— 0/1



◯ Saw tooth wave

◉ Rectangular wave

◯ Sinusoidal wave

◯ exponential wave

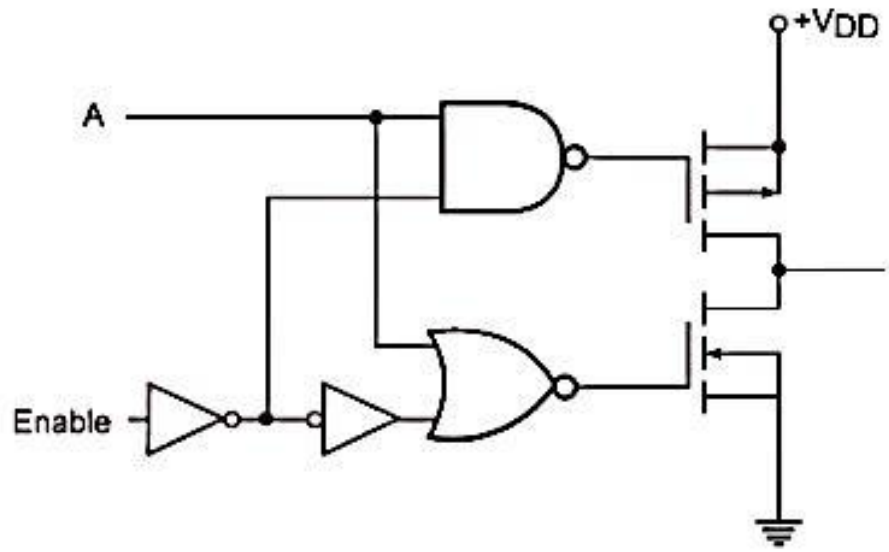
Correct answer

◉ Saw tooth wave

Correct answer

- (●) Saw tooth wave

With Enable input=1, the output of the circuit is ——— 2/2



- ( ) Inverted
- ( ) Same as input
- (●) Hi-Z (high impedance)

Feedback

Hi-Z (high impedance)

Which among the bipolar logic families is specifically adopted for high speed applications? 1/1

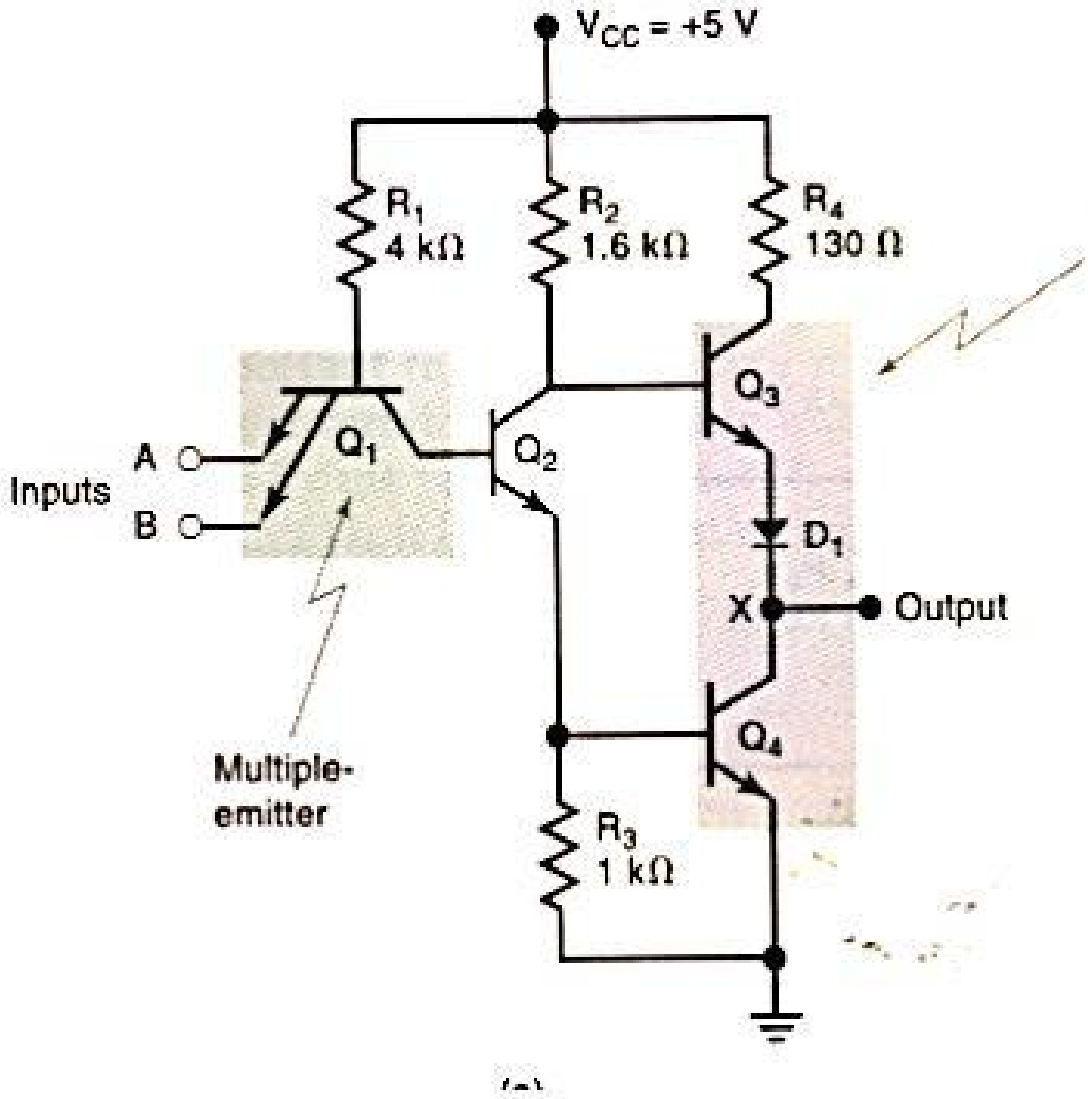
- ( ) a. Diode Transistor Logic (DTL)
- ( ) b. Transistor Transistor Logic (TTL)
- (●) c. Emitter Coupled Logic (ECL)
- ( ) d. Integrated Injection Logic (I^2L)

Feedback

c. Emitter Coupled Logic (ECL)

In the following TTL circuit, which conditions are true for the transistors Q2, Q3 and Q4 if both of the inputs A and B are set to logic zero or (A=1, B=0) or (A=0, B=1) 3/3

In the following TTL circuit, which conditions are true for the transistors Q2, Q3 and Q4 if both of the inputs A and B are set to logic zero or (A=1, B=0) or (A=0, B=1) 3/3



- ○ Q2 ON, Q3 OFF, Q4 OFF
- ○ Q2 OFF, Q3 OFF, Q4 ON
- ◉ Q2 OFF, Q3 ON, Q4 OFF
- ○ Q2 ON, Q3 OFF, Q4 ON

Feedback

Q2 OFF, Q3 ON, Q4 OFF

In the following TTL circuit, which conditions are true for the transistors Q2, Q3 and Q4 if both of the inputs A and B set to logic one. 2/2

Which type of unipolar logic family exhibits its usability for the applications requiring low power consumption? 1/1

- ○ PMOS
- ○ NMOS
- ◉ CMOS
- ○ All of the above

Feedback

CMOS

In the following Tri-state ligic circuit, which conditions are true for the transistors T3, T4, T5 if the control input is zero. 3/3

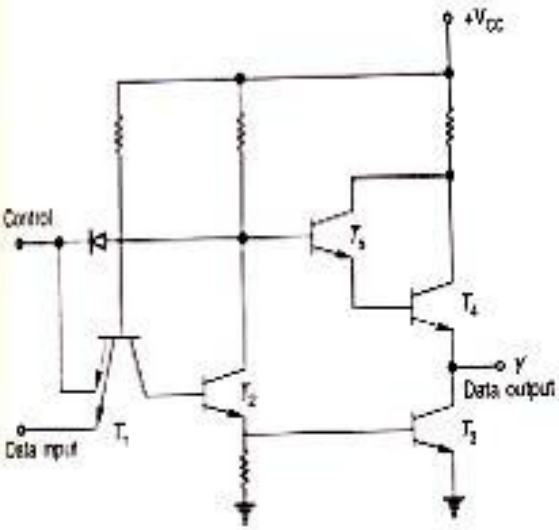


Fig. 4.34
A TSL inverter.

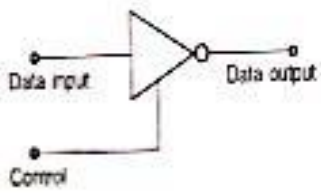


Fig. 4.35
Logic symbol of a TSL inverter.

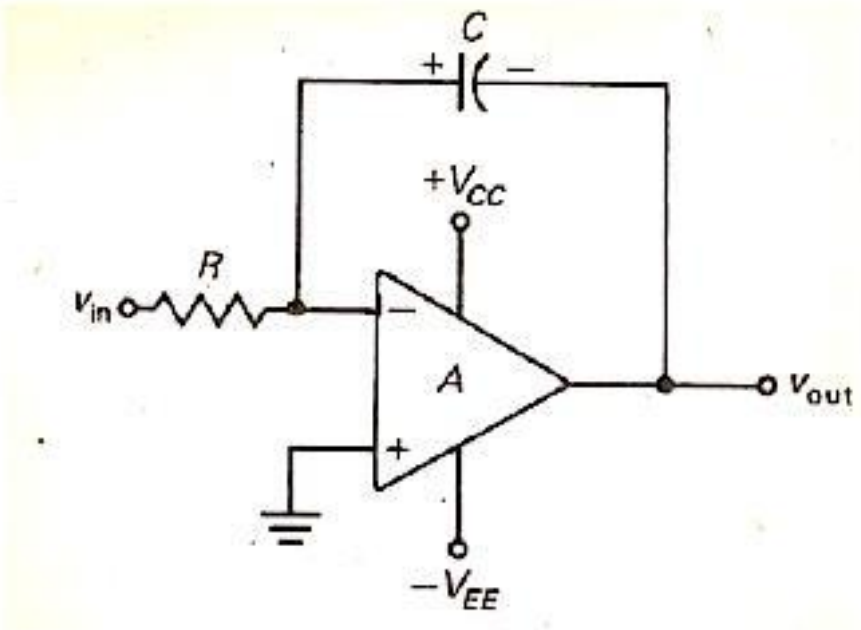
The output and input current specifications of TSL family are given in Table 4.11.

- ○ T3 and T4 are ON but T5 is OFF
- ◉ T3, T4, T5 are OFF
- ○ T3 is ON but T4, T5 are OFF
- ○ T3 is OFF but T4, T5 are ON

Feedback

T3, T4, T5 are OFF

The following circuit is a (an) ————. 2/2

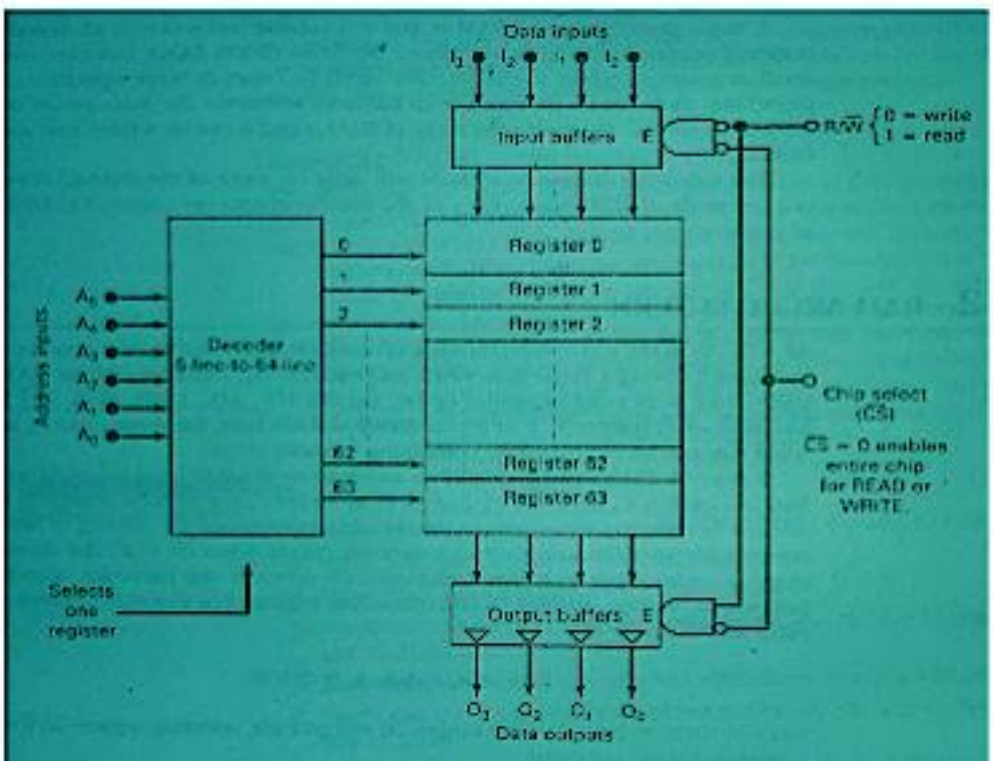


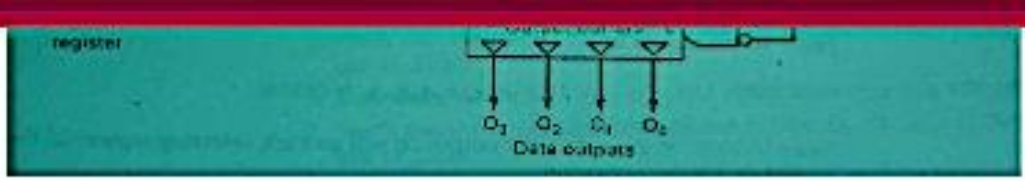
- ○ Comparator
- ◉ Integrator
- ○ Differentiator
- ○ Summing Amplifier

Feedback

Integrator

Which of the following information is true for the RAM diagram given below? 2/2



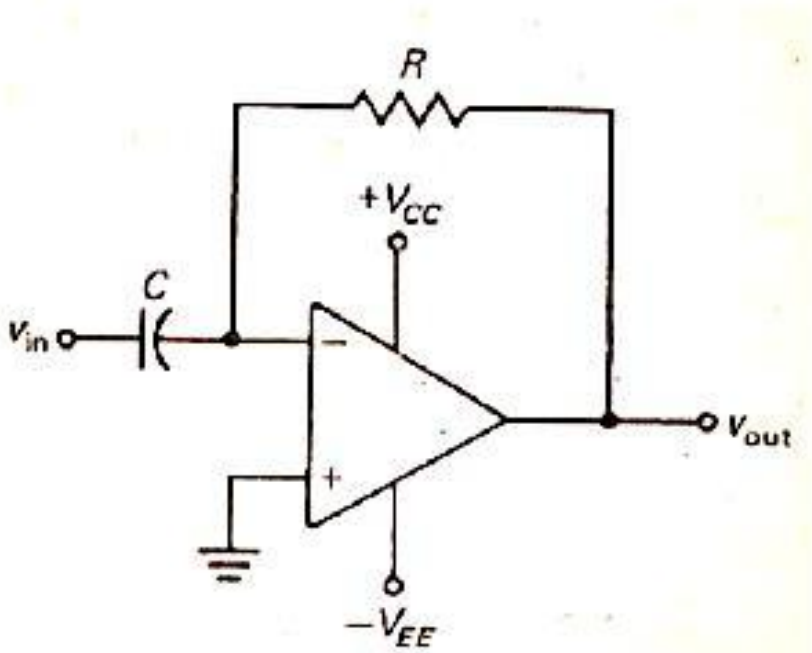


- ◯ Its capacity is 5*64*4 bits
- ◯ Its capacity is 6*64*4 bits
- ◉ Its capacity is 64*4 bits
- ◯ Its capacity is 64*8 bits
- ◯ Its capacity is 64*4 bytes

Feedback

*Its capacity is 64*4 bits*

For constant voltage, the output of the circuit is ——. 2/2

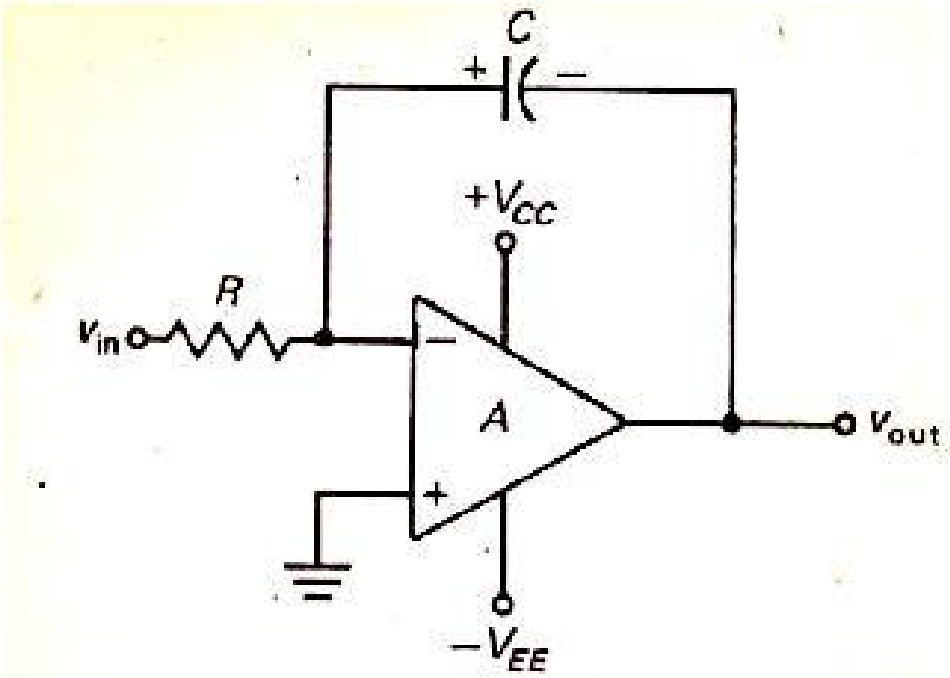


- ◯ Time varying voltage
- ◯ Negative voltage
- ◯ Positive voltage
- ◉ Zero voltage

Feedback

Zero voltage

If the input voltage is constant, the current through the capacitor of the circuit is 0/3 _____.



- ○ Exponential
- ◉ Linear
- ○ Zero
- ○ Constant

Correct answer

- ◉ Constant

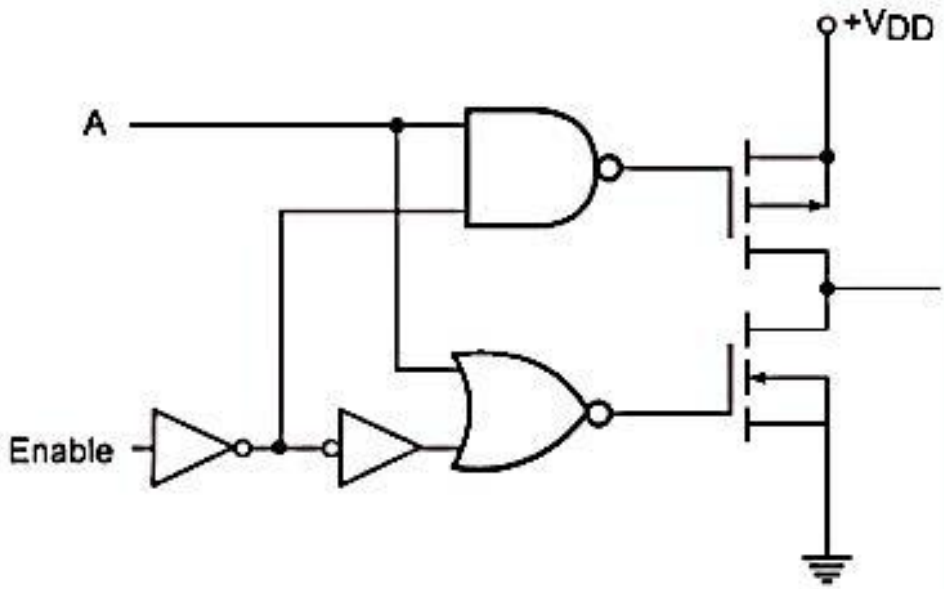
Suppose that the digital IC family has a fan out of 6. It implies that the gate can 1/1 supply the current to _____ of same family.

- ◉ 6 inputs
- ○ 6 outputs
- ○ 12 nodes
- ○ 12 branches

Feedback

6 inputs

With Enable input=0, the output of the circuit is ——— 3/3

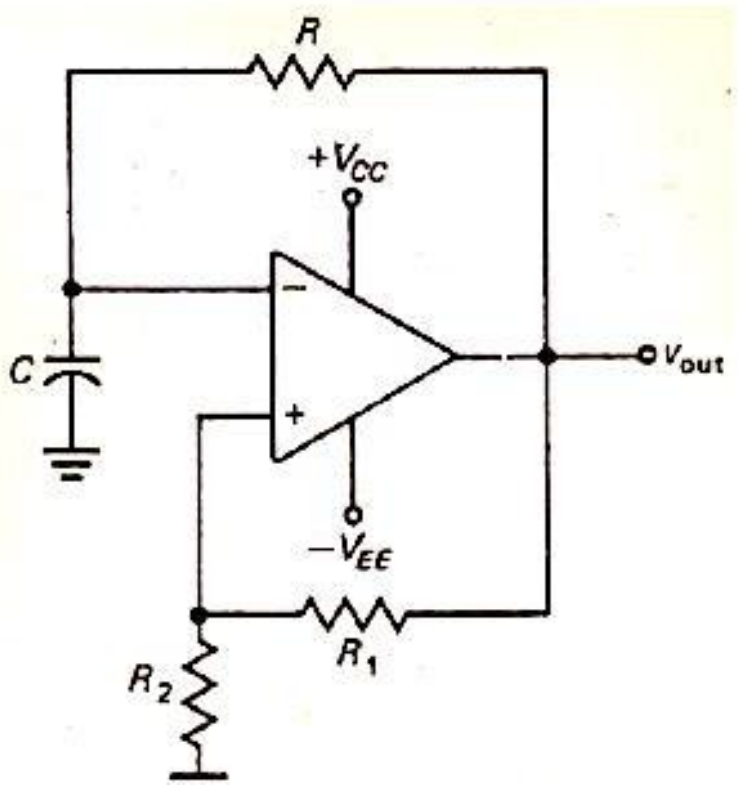


- ○ Inverted
- ◉ Same as input
- ○ Hi-Z (high impedance)

Feedback

Same as input

Find the frequency of the relaxation oscillator, if R=1 K, C= 0.1 micro Farad, R1= 2K and R2= 18 K. 3/3

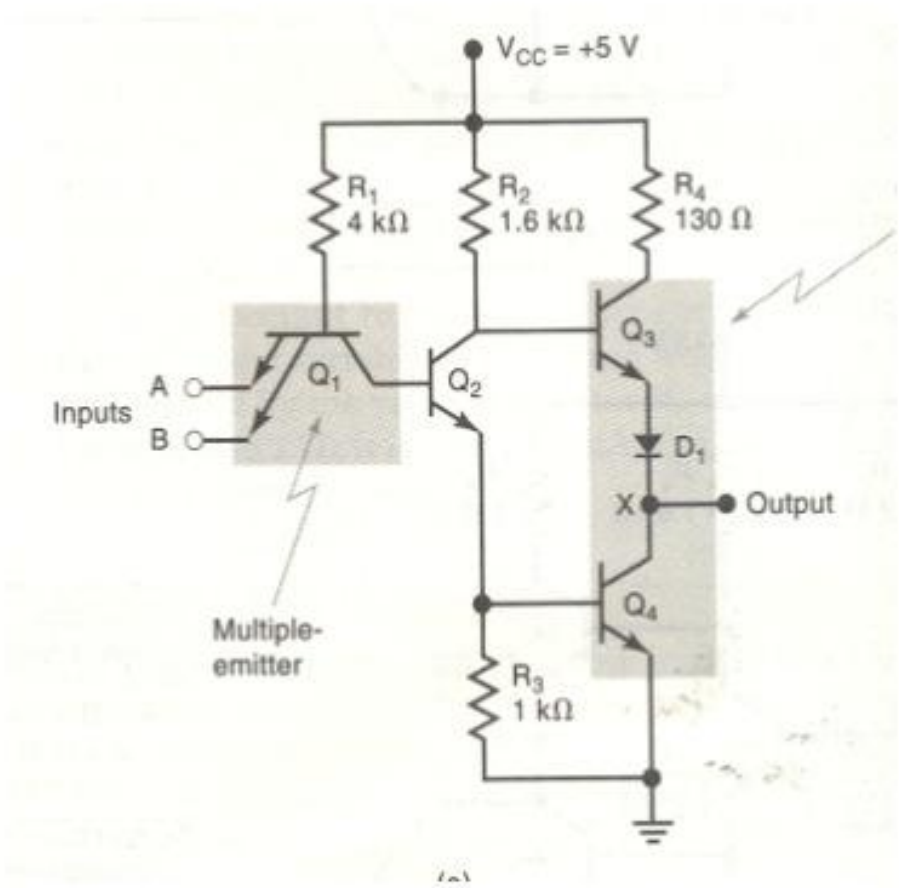


- ○ 10 Hz
- ○ 1 KHz
- ◉ 1.7 KHz
- ○ 100 KHz

Feedback

1.7 KHz

TTL totem pole outputs should never be tied together, because it can produce harmful current through the transistor ----------. 3/3



- ◉ Q4
- ○ Q3
- ○ Q1
- ○ Q2

Feedback

Q4

In the following Tri-state logic circuit, which conditions are true for the transistors T3, T4, T5 if both of the control input and data input are set to logic one. 2/2

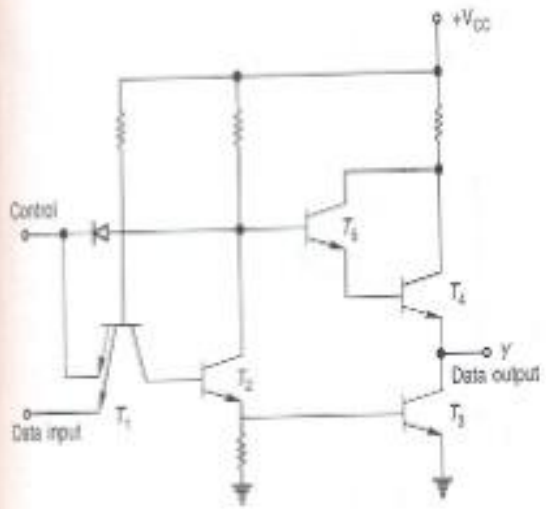


Fig. 4.34
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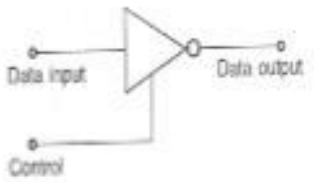

Fig. 4.35
Logic symbol of a TSL inverter.

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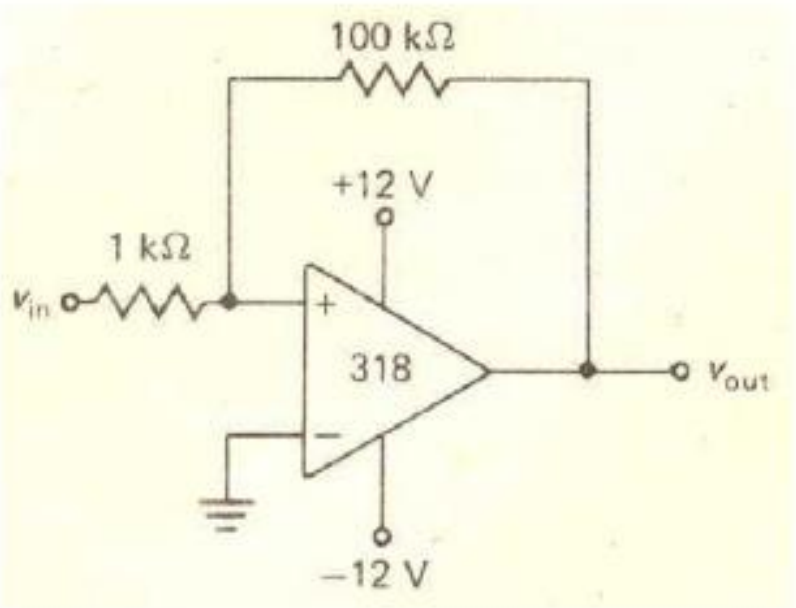
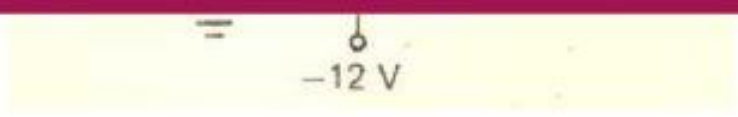
- ○ T3 and T4 are ON but T5 is OFF
- ○ T3 is OFF but T4 and T5 are ON
- ○ T3, T4, T5 are OFF
- ◉ T3 is ON but T4 and T5 are OFF

Feedback

T3 is ON but T4 and T5 are OFF

Find the voltage gain of the non-inverting amplifier. 0/2



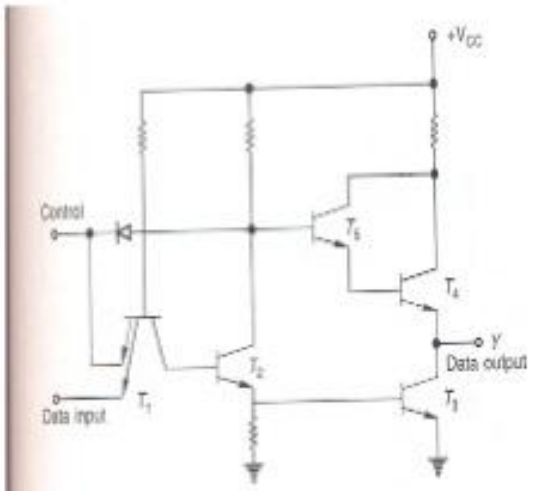


- ○ 10
- ○ 1
- ○ 100
- ◉ 0.01

Correct answer

- ◉ 100

In the following Tri-state ligic circuit, which conditions are true for the transistors T3, T4, T5 if the control input is logic one but data input is zero. 2/2



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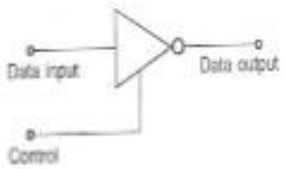

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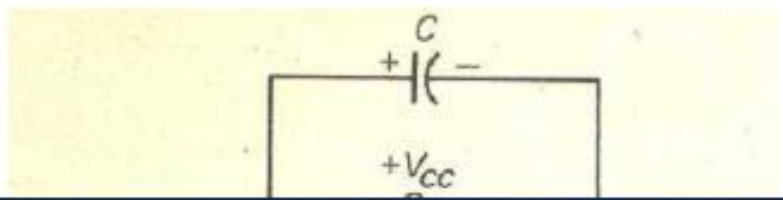
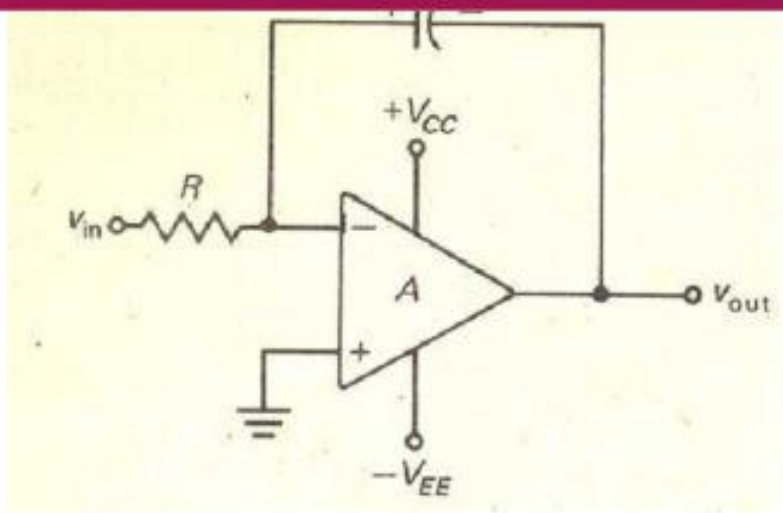
- ○ T3, T4, T5 are OFF
- ○ T3 is ON but T4, T5 are OFF
- ◉ T3 is OFF but T4 and T5 are ON

Feedback

T3 is OFF but T4 and T5 are ON

If the input voltage is constant, the output voltage (voltage across the capacitor) of the circuit is ----------. 2/2



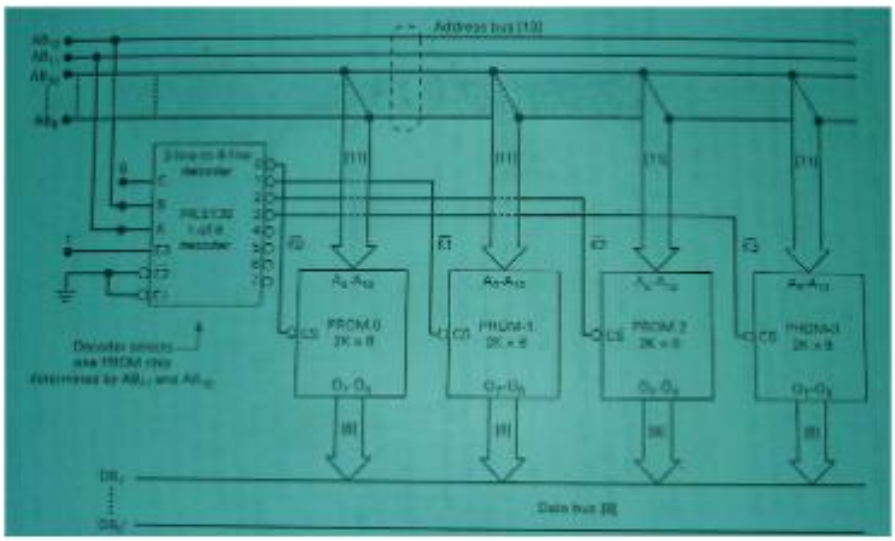


- ○ Exponential function of time
- ◉ Linear function of time
- ○ Zero
- ○ Constant

Feedback

Linear function of time

There are four PROM modules in the following ROM diagram. Determine by inspection the exact address range (in hexadecimal) for the PROM-0 module. 3/3



- ○ 0800 to 0FFF
- ○ 1000 to 17FF
- ○ 1800 to 1FFF
- ◉ 0000 to 07FF

Feedback

0000 to 07FF

Feedback

0000 to 07FF

Which type of output current flows towards or into the output terminal in a logic 1/1 circuit?

- ○ Sourcing current
- ◉ Sinking current
- ○ Both a and b
- ○ None of the above

Feedback

Sinking current