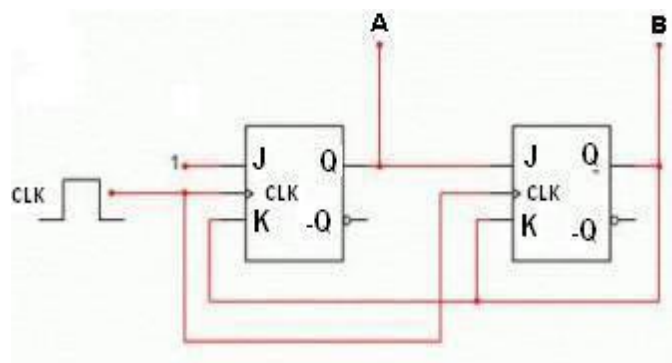


Sample Questions

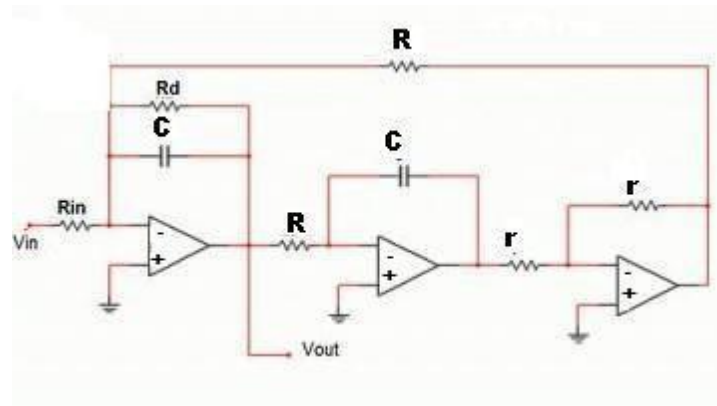
Instrumentation Engineering

1. On which of the following principles does pneumatic load cell work?
 - a. Force counter balance
 - b. Force balance principle
 - c. Magneto-elastic principle
 - d. Electromechanical principle
2. In which of the following registers does the microcontroller automatically set the TFX bit, when a timer overflows from its highest value back to 0?
 - a. TH0
 - b. TL0
 - c. TCON
 - d. TH1
3. The output transform of the first-order systems for unit-impulse response is
 - a. $Y(s) = 1/ \{s^2 (sT+1)\}$
 - b. $Y(s) = 1/ \{s (sT+1)\}$
 - c. $Y(s) = 1/(sT + 1)$
 - d. $Y(s) = 1/(sT)$
 - e.
4. Find out the duty cycle of output B in the given circuit.



- a. 25%
- b. 33.33%
- c. 50%
- d. 6.66%

5. What kind of filter does the given Op-amp-RC circuit realize?



- a. LPF
- b. BPF
- c. HPF
- d. Notch filter
- e. All pass filter

6. For the Assertion (A) and Reason (R) given below, choose the correct alternative from the following

- A. Both 'A' and 'R' are true and R is the correct explanation of A.
- B. Both 'A' and 'R' are true and 'R' is not the correct explanation of A.
- C. 'A' is true but 'R' is false.
- D. 'A' is false but 'R' is true.
- E. Both are false.

Assertion: Karl Fisher method is based on the reaction: $2\text{H}_2\text{O} + \text{SO}_2 + \text{I}_2 = \text{H}_2\text{SO}_4 + 2\text{HI}$

Reason: This reaction is used because there is a measurable change in color when water reacts with the added chemical agents.

- a. A
- b. B
- c. C
- d. D
- e. E

7. For the Assertion (A) and Reason (R) given below, choose the correct alternative from the following

- A. Both 'A' and 'R' are true and R is the correct explanation of A.
- B. Both 'A' and 'R' are true and 'R' is not the correct explanation of A.
- C. 'A' is true but 'R' is false.
- D. 'A' is false but 'R' is true.

E. Both are false.

Assertion: Piezoelectric transducers are well suited for static or dc applications.

Reason: The electrical charge produced in piezoelectric transducers decays with time due to the internal impedance of the transducer and the input impedance of the signal conditioning circuits.

- a. A
- b. B
- c. C
- d. D
- e. E

8. Butterworth filter falls in the category of _____.

- a. Infinite impulse response filters
- b. Finite impulse response filters
- c. Non-recursive digital filters
- d. None of these

9. Z parameters of a two port network are $Z_{11} = 10\Omega$, $Z_{22} = 20\Omega$ and $Z_{12} = Z_{21} = 5\Omega$. What are the corresponding ABCD parameters?

- a. $A=2$ $B=30\Omega$ $C=1.2\text{V}$ $D=4$
- b. $A=12$ $B=30\Omega$ $C=0.2\text{V}$ $D=5$
- c. $A=12$ $B=35\Omega$ $C=1.2\text{V}$ $D=5$
- d. $A=2$ $B=35\Omega$ $C=0.2\text{V}$ $D=4$