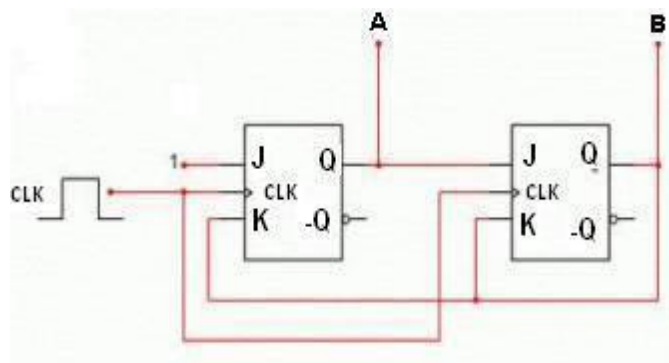


## Sample Questions

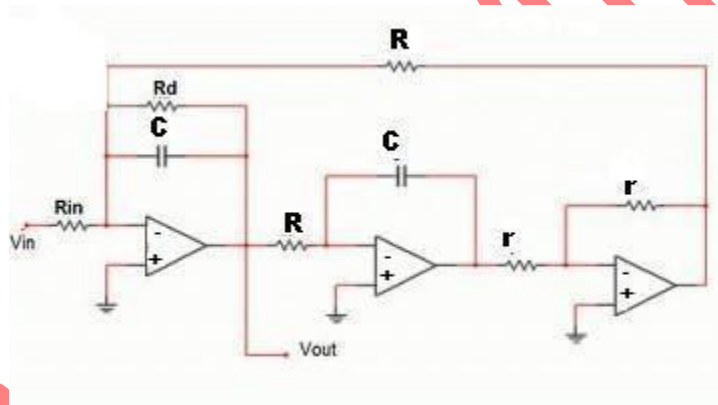
### Instrumentation Engineering

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.  $Y(s) = 1 / (sT)$
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.  $A=2$   $B=35\Omega$   $C=0.2\text{V}$   $D=4$

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