cixÿvi bs: 01

cixÿv‡Yi bvg: K¬KW R-S wd¬c-d¬c ˆZwi Kiv Ges Gi Uªy\_ †Uwej I Kvh©vewj †PK Kiv|

cixÿ‡Yi D‡Ïk¨:

(K) Clocked R-S flip-flop Gi Kvh©cÖwµqv m¤ú©‡K Rvbv|

(L) Gi AvDUcyU Ae¯’v wPwýZKiY|

cÖ‡qvRbxq hš¿cvwZ:

(K) NAND ‡MU AvB.wm (7400)-1wU

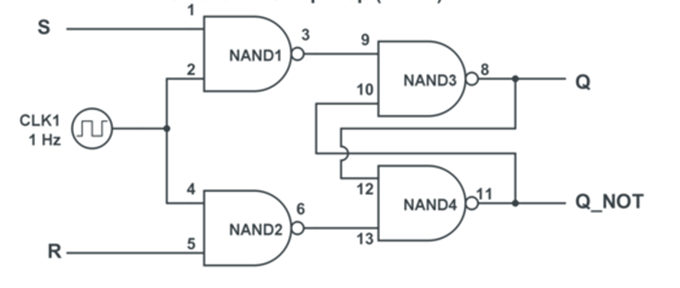
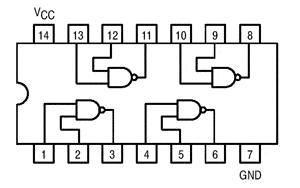
(L) GjBwW ( LED)- 2wU

(M) †UªBbvi †evW©-1wU

(N) cvIqvi mvcøvB

(O) ms‡hvM Zvi|

mvwK©U WvqvMÖvg:

wPÎ: Clocked R-S flip-flop mvwK©U WvqvMÖvg wPÎ: NAND ‡MU AvB.wm (7400)

Uªy\_ †Uwej:

|  |  |  |  |
| --- | --- | --- | --- |
| BbcyU | |  | AvDUcyU |
| Set (S) | | Reset(R) | Q |
| 0 | | 1 | Reset |
| 1 | | 0 | Set |
| 1 | | 1 | Invalid |
| 0 | 0 | | No change |

Kv‡Ri avc:

1| mvwK©U WvqvMÖv‡g cÖ`wk©Z wPÎvbyhvqx ms‡hvM cÖ`vb Ki‡Z n‡e|

2| mvwK©U ev eZ©bx‡Z ms‡hvMmg~n cixÿv Ki‡Z n‡e Ges f~j \_vK‡j Zv ms‡kvab Ki‡Z n‡e|

3| Gevi ms‡hvM wVK \_vK‡j mieivn cÖ`vb Ki‡Z n‡e|

4| myBP-Gi gva¨‡g mvwK©‡U BbcyU cÖ`vb Ki‡Z n‡e Ges cÖvß AvDUcyU cÖ`Ë Uªy\_ †Uwe‡ji gv‡\_ Zzjbv Ki‡Z n‡e|

mZK©Zv:

1| mvwK©Umg~n‡K wbf©~jfv‡e ms‡hvM w`‡Z n‡e|

2| cvIqvi mvcøvB cÖ`v‡bi c~‡e©I ms‡hvMmg~n cixÿv Ki‡Z n‡e|

3| hš¿cvwZ mg~n‡K mveabZvi mv‡\_ bvovPvov Ki‡Z n‡e|

gšÍe¨:

K¬vm wkÿK Avgv‡`i AwZ ¸iy‡Z¡i mvnv‡h¨ wK fv‡e K¬KW R-S wd¬c-d¬c ˆZwi Kiv Ges Gi Uªy\_ †Uwej I Kvh©vewj wK fv‡e †PK Ki‡Z nq Zv wkwL‡q w`‡q‡Qb Ges Avgiv Zv cÖwic~Y eyS‡Z mÿg n‡qwQ|

cixÿvi bs: 02

cixÿv‡Yi bvg: K¬KW D Ges T wd¬c-d¬c ˆZwi Kiv Ges Gi Uªy\_ †Uwej I Kvh©vewj †PK Kiv|

cixÿ‡Yi D‡Ïk¨:

(K) wWwRUvj jwRK †j‡fj wUªMviW D wd¬c-d¬c wPwýZKiY Ges Kvh©cÖwµqv m¤ú©‡K Rvb‡Z cviv |

(L) wWwRUvj jwRK T wd¬c-d¬c wPwýZKiY, Kvh©cÖwµqv m¤ú©‡K Rvbv Ges wWwRUvj jwRK Acv‡ikb m¤ú©‡K aviYv jvf Ki‡Z cviv|

cÖ‡qvRbxq hš¿cvwZ:

(K) Wzqvj D wd¬c-d¬c AvBwm (7474)-1wU

(L) Wzqvj T wd¬c-d¬c AvBwm (7476)-1wU

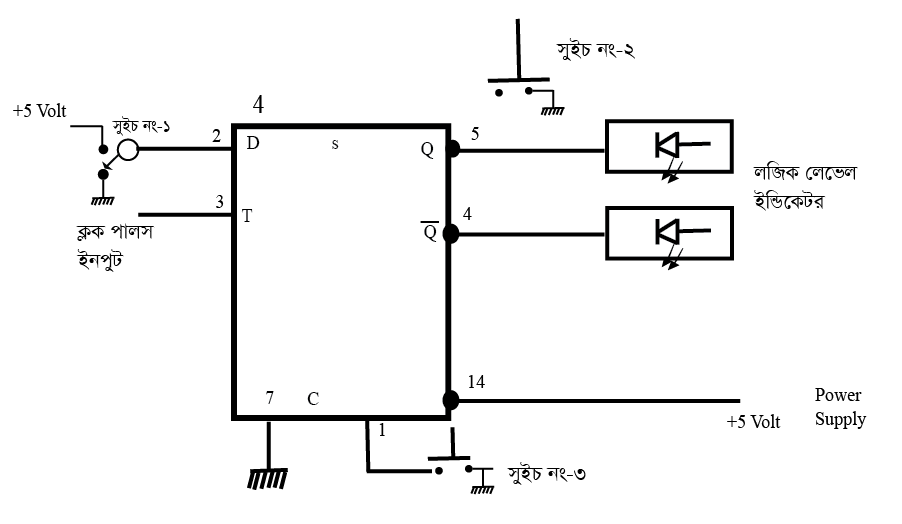
(M) GjBwW ( LED)- 4wU

(N) †UªBbvi †evW©-1wU

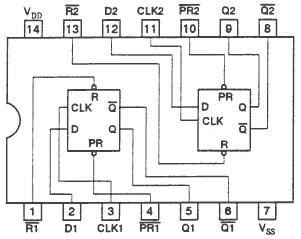
(O) cvIqvi mvcøvB

(P) ms‡hvM Zvi|

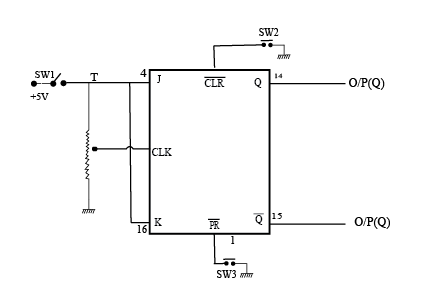
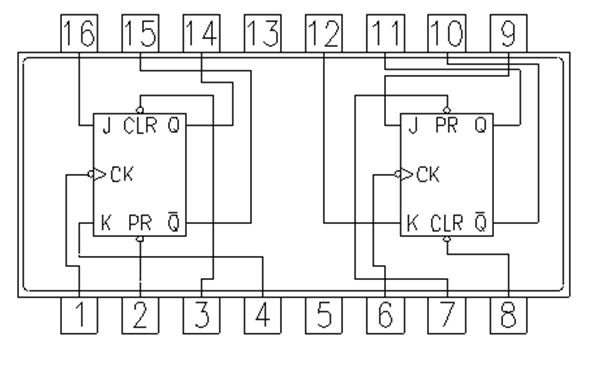
mvwK©U WvqvMÖvg:



wPÎ: D wd¬c-d¬c mvwK©U WvqvMÖvg



wPÎ: D wd¬c-d¬c AvBwm(7474) wcb WvqvMÖvg|

wPÎ: T wd¬c-d¬c mvwK©U WvqvMÖvg wPÎ: T wd¬c-d¬c AvBwm(7476) wcb WvqvMÖvg|

Truth table:

|  |  |  |
| --- | --- | --- |
| Initial Q | D | Q |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 0 |
| 1 | 0 | 1 |

|  |  |  |
| --- | --- | --- |
| Initial Q | T | Q |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

Truth table for D f-f Truth table for T f-f

Kv‡Ri aviv:

1| mvwK©U WvqvMÖv‡g cÖ`wk©Z wPÎvbyhvqx ms‡hvM cÖ`vb n‡e|

2| mvwK©U ev eZ©bx‡Z ms‡hvMmg~n cixÿv Ki‡Z n‡e Ges f~j \_vK‡j Zv ms‡kvab Ki‡Z n‡e|

3| Gevi ms‡hvM wVK \_vK‡j mieivn cÖ`vb Ki‡Z n‡e|

4| myBP-Gi gva¨‡g mvwK©‡U BbcyU cÖ`vb Ki‡Z n‡e Ges cÖvß AvDUcyU‡K cÖ`Ë Uªy\_ †Uwe‡ji mv‡\_ Zzjbv Ki‡Z n‡e|

mZK©Zv:

1| mvwK©Umg~n‡K wbf~©jfv‡e ms‡hvM w`‡Z n‡e|

2| cvIqvi mvcøvB cÖ`v‡bi c~‡e© ms‡hvMmg~n cixÿv Ki‡Z n‡e|

3| hš¿cvwZmg~n‡K mveavbZvi mv‡\_ bvovPov Ki‡Z n‡e|

gšÍe¨ : K¬vm wkÿK Avgv‡`i AwZ ¸iy‡Z¡i mvnv‡h¨ wK fv‡e K¬KW D Ges T wd¬c-d¬c ˆZix Kiv Ges Gi Uªy\_ †Uwej I Kvh©vewj †PK Ki‡Z nq Zv wkwL‡q w`‡q‡Qb Ges Avgiv Zv cÖwic~Y eyS‡Z mÿg n‡qwQ|

cixÿvi bs: 03

cixÿv‡Yi bvg: K¬KW JK Ges gv÷vi ‡¯øf wd¬c-d¬c ˆZwi Kiv Ges Gi Uªy\_ †Uwej I Kvh©vewj †PK Kiv|

cixÿ‡Yi D‡Ïk¨:

(K) wWwRUvj jwRK JK I gv÷vi ‡¯øf wd¬c-d¬c m¤ú©‡K Rvb‡Z cviv|

(L) wWwRUvj jwRK JK I gv÷vi ‡¯øf wd¬c-d¬c Gi Kvh©cÖwµqv m¤ú‡K© Rvb‡Z cviv|

cÖ‡qvRbxq hš¿cvwZ:

(K) J-K wd¬c-d¬c (7476)-1wU

(L) Wzqvj J-K wd¬c-d¬c AvBwm (74LS73)-1wU

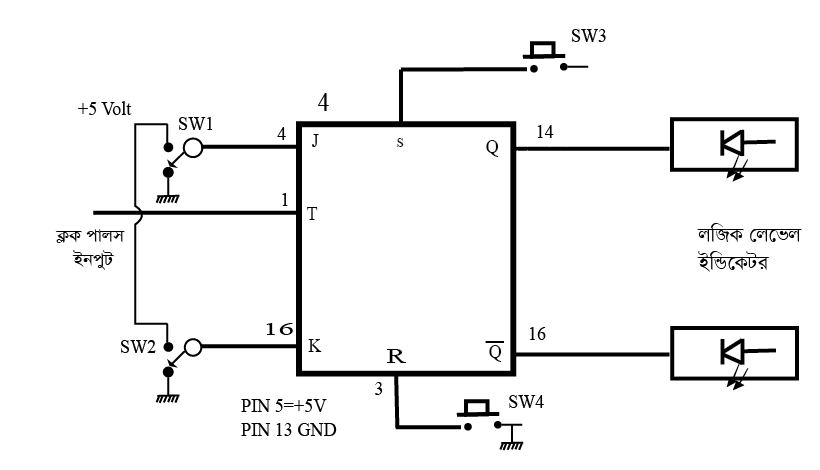
(M) Gj.B.wW ( LED)- 4wU

(N) †UªBbvi †evW©-1wU

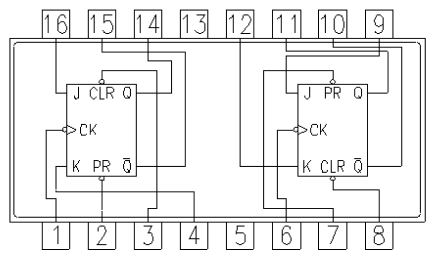
(O) cvIqvi mvcøvB

(P) ms‡hvM Zvi|

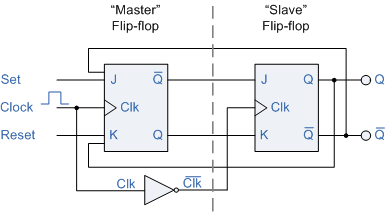
mvwK©U WvqvMÖvg:



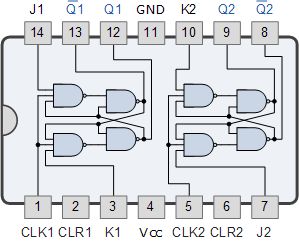
wPÎ: JK wd¬c-d¬c mvwK©U WvqvMÖvg



wPÎ: JK wd¬c-d¬c AvBwm(7476) wcb WvqvMÖvg|



wPÎ: gv÷vi †¯øf JK wd¬c-d¬c Gi Uªy\_ †Uwej|



wPÎ: Wzqvj J-K wd¬c-d¬c AvBwm (74LS73) wcb WvqvMÖvg

Uªy\_ †Uwej :

|  |  |  |
| --- | --- | --- |
| BbcyU | | AvDUcyU Gi cwieZ©b |
| J | K |
| 0 | 0 | No change |
| 0 | 1 | Reset |
| 1 | 0 | Set |
| 1 | 1 | Change state |

wPÎ: JK wd¬c-d¬c Gi Uªy\_ †Uwej|

Kv‡Ri avc:

1| mvwK©U WvqvMÖv‡g cÖ`wk©Z wPÎvbyhvqx ms‡hvM cÖ`vb Ki‡Z n‡e|

2| mvwK©©U ev eZ©bx‡Z ms‡hvMmg~n cixÿv Ki‡Z n‡e Ges fzj \_vK‡j Zv ms‡kvab Ki‡Z n‡e|

3| Gevi ms‡hvM wVK \_vK‡j mieivn cÖ`vb Ki‡Z n‡e|

4|myBP-Gi gva¨‡g mvwK©‡U BbcyU cÖ`vb Ki‡Z n‡e Ges cÖvß AvDUcyU‡K cÖ`Ë Uªy\_ †Uwe‡ji mv‡\_ Zzjbv Ki‡Z n‡e|

mZK©Zv :

1| mvwK©Umg~n‡K wbfy©jfv‡e ms‡hvM w`‡Z n‡e|

2| cvIqvi mvcøvB cÖ`v‡bi c~©‡e ms‡hvMmg~n cixÿv Ki‡Z n‡e|

3| hš¿cvwZm~n‡K mveavbZvi mv‡\_ bovPvov Ki‡Z n‡e|

gšÍe¨:

K¬vm wkÿK Avgv‡`i AwZ ¸iy‡Z¡i mvnv‡h¨ wK fv‡e K¬KW JK Ges gv÷vi ‡¯øf wd¬c-d¬c ˆZwi Kiv Ges Gi Uªy\_ †Uwej I Kvh©vewj †PK Kiv Ki‡Z nq Zv wkwL‡q w`‡q‡Qb Ges Avgiv Zv cÖwic~Y eyS‡Z mÿg n‡qwQ|

cixÿvi bs: 04

cixÿv‡Yi bvg: wmwiqvj/c¨vivjvj Bb wmwiqvj/c¨vivjvj AvDU wkdU †iwR÷vi ˆZwiKiY Ges G‡`i Kvh©cÖYvwj ch©‡eÿYKiY|

cixÿ‡Yi D‡Ïk¨:

(K) wmwiqvj-Bb wmwiqvj-AvDU wkdU †iwR÷v‡ii Kvh©cÖYvwj I ms‡hvM Abyaveb Ki‡Z cviv|

(L) wmwiqvj-Bb c¨vivjvj -AvDU wkdU †iwR÷v‡ii Kvh©cÖYvwj I ms‡hvM Abyaveb Ki‡Z cviv|

(M) c¨vivjvj-Bb wmwiqvj -AvDU wkdU †iwR÷v‡ii Kvh©cÖYvwj I ms‡hvM Abyaveb Ki‡Z cviv|

(N) c¨vivjvj-Bb c¨vivjvj -AvDU wkdU †iwR÷v‡ii Kvh©cÖYvwj I ms‡hvM Abyaveb Ki‡Z cviv|

(O) 7495 AvBwm e¨envi K‡i wkdU †iwR÷v‡ii Kvh©vewj ch©‡eÿY|

cÖ‡qvRbxq hš¿cvwZ :

(K) wkdU †iwR÷vi AvBwm (7495)-1 wU

(L) Gj.B.wW ( LED)- 4wU

(M) †UªBbvi †evW©-1wU

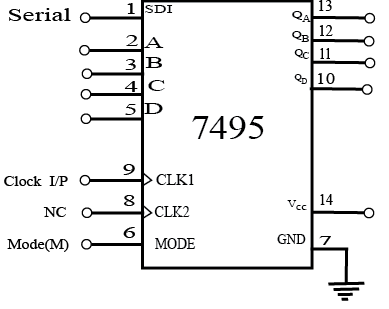
(N) cvIqvi mvcøvB

(O) ms‡hvM Zvi|

(K) wmwiqvj-Bb wmwiqvj-AvDU wkdU †iwR÷vi:

mvwK©U WvqvMÖvg:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Clock | Serial i/p | QA | QB | QC | QD |
| 1 | d0=0 | 0 | X | X | X |
| 2 | d1=1 | 1 | 0 | X | X |
| 3 | d2=1 | 1 | 1 | 0 | X |
| 4 | d0=1 | 1 | 1 | 1 | 0=d0 |
| 5 | X | X | 1 | 1 | 1=d1 |
| 6 | X | X | X | 1 | 1=d2 |
| 7 | x | X | X | x | 1=d3 |



wPÎ: wmwiqvj-Bb wmwiqvj-AvDU wkdU †iwR÷vi Uªy\_ †Uwej : SISO wkdU †iwR÷vi

Kv‡Ri avc:

1| cÖ\_‡g mvwK©U WvqvMÖvg Abyhvqx ms‡hvM¸‡jv ˆZwi Ki‡Z n‡e|

2| GKwU µgvbymv‡i 4 weU hvUv‡K wmwiqvwj †iwR÷v‡i †jvW Ki‡Z n‡e|

3| PZz\_© K¬K cvjm †k‡l cÖ\_g WvUv ‘d0’QD G cÖ`wk©Z n‡e|

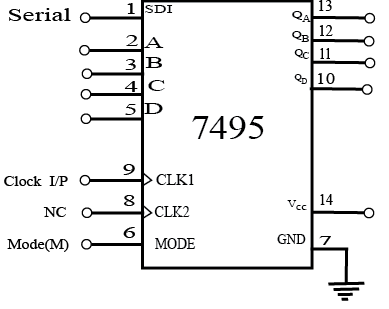
4| cieZ©x K¬K cvjm cÖ‡qvM Ki‡j‘d1’QD G Z…Zxq WvUv cÖ`wk©Z n‡e|

5| Aevi Av‡iKwU K¬K cvjm cÖ‡qvM Ki‡j QD G cÖ`wk©Z n‡e | Gfv‡e BbcyU Gi µgvbymv‡i cÖ‡qvM Kiv WvUv QD-G µgvbymv‡i cÖ`wk©Z n‡e|

(L) wmwiqvj-Bb c¨vivjvj -AvDU wkdU †iwR÷vi:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Clock | Serial i/p | QA | QB | QC | QD |
| 1 | 0 | 0 | X | X | X |
| 2 | 1 | 1 | 0 | X | X |
| 3 | 1 | 1 | 1 | 0 | X |
| 4 | 1 | 1 | 1 | 1 | 0 |

mvwK©U WvqvMÖvg:



wPÎ: wmwiqvj-Bb c¨vivjvj -AvDU wkdU †iwR÷vi Uªy\_ †Uwej : SIPO wkdU †iwR÷vi

Kv‡Ri avc:

1| cÖ\_‡g mvwK©U WvqvMÖvg Abyhvqx ms‡hvM¸‡jv ˆZwi Ki‡Z n‡e |

2| G av‡c wmwiqvj i/p G WvUv cÖ‡qvM Ki‡Z n‡e|

3| GLb K¬K 1 -G GKwU K¬K cvjm cÖ‡qvM Ki‡Z n‡e Ges QA †Z GB WvUv‡K ch©‡eÿY Ki‡Z n‡e|

4| wmwiqvj i/p-G cieZx© WvUv‡K cÖ‡qvM Ki‡Z n‡e|

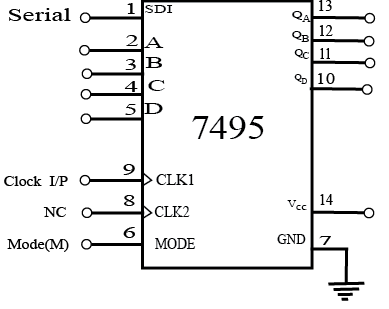
5| GB av‡c K¬K 2G GKwU K¬K cvjm cÖ‡qvM Ki‡Z n‡e, †`L‡Z n‡e ‡h QA- Gi WvUv QB- †Z ¯’vbvšÍwiZ nq wK bv Ges GKwU bZzb WvUv QA-G cÖ`vb Ki‡Z n‡e|

6| GLb 2 bs avc Ges 3 bs av‡ci cybive„wË Ki‡Z n‡e hZÿY bv 4 weU WvUv‡K G‡Ki ci GK wkdU †iwR÷v‡i cÖ‡qvM bv nq|

(M) c¨vivjvj-Bb wmwiqvj -AvDU wkdU †iwR÷vi:

mvwK©U WvqvMÖvg:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mode | Clock | Parallel i/p | | | | Parallel o/p | | | |
|  |  | A | B | C | D | QA | QB | QC | QD |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 0 | 2 | X | X | X | X | X | 1 | 0 | 1 |
| 0 | 3 | X | X | X | X | X | X | 1 | 0 |
| 0 | 4 | X | X | X | X | X | X | X | 1 |



wPÎ: c¨vivjvj-Bb wmwiqvj -AvDU wkdU †iwR÷vi Uªy\_ †Uwej : PISO wkdU †iwR÷vi

Kv‡Ri avc:

1| cÖ\_‡g mvwK©U WvqvMÖvg Abyhvqx ms‡hvM¸‡jv ‰Zwi Ki‡Z n‡e|

2| G av‡c cQ›`mB 4 we‡Ui WvUv‡K A B C D Bbcy‡U cÖ‡qvM Ki‡Z n‡e|

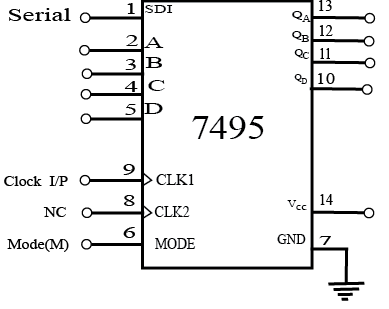
3| †gvW wbqš¿Y M=1 av‡i †i‡L GKwU K¬K cvjm cÖ‡qvM Ki‡Z n‡e| GLb A B C D Bbcy‡U cÖ‡qvMK…Z WvUv h\_vµ‡g QA, QB, QC Ges QD -G cÖ`wk©Z n‡e|

4| GLb †gvW wbqš¿Y M=0 ‡i‡L G‡K G‡K K¬K cvjm cÖ‡qvM K‡i QD †Z µgvbymv‡i WvUv Avm‡Q wK bv Zv ch©‡eÿY Ki‡Z n‡e|

(N) c¨vivjvj-Bb c¨vivjvj -AvDU wkdU †iwR÷vi:

mvwK©U WvqvMÖvg:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Clock | Parallel i/p | | | | Parallel o/p | | | |
|  | A | B | C | D | QA | QB | QC | QD |
| 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |



wPÎ: c¨vivjvj-Bb c¨vivjvj -AvDU wkdU †iwR÷vi Uªy\_ †Uwej : PIPO wkdU †iwR÷vi

Kv‡Ri avc:

1| cÖ\_‡g mvwK©U WvqvMÖvg Abyhvqx ms‡hvM¸‡jv ˆZwi Ki‡Z n‡e|

2| G av‡c cQ›`mB 4 we‡Ui WvUv‡K A B C D Bbcy‡U cÖ‡qvM Ki‡Z n‡e|

3| K¬K 2-G GKwU K¬K cvjm cÖ‡qvM Ki‡Z n‡e (`ªóe¨: †gvW K‡›Uªvj M=1 )

4| GLb GLb A B C Ges D G cÖ‡qvMK…Z 4 weU WvUv h\_vµ‡g QA, QB, QC Ges QD -G cÖ`wk©Z n‡e|

mZK©Zv:

1| mvwK©Umg~n‡K wbfz©jfv‡e ms‡hvM w`‡Z n‡e|

2| cvIqvi mvcøvB cÖ`v‡bi c~‡e© ms‡hvMmg~n cixÿv Ki‡Z n‡e|

3| hš¿cvwZmg~n‡K mveavbZvi mv‡\_ bovPvov Ki‡Z n‡e|

gšÍe¨:

K¬vm wkÿK Avgv‡`i AwZ ¸iy‡Z¡i mvnv‡h¨ wK fv‡e wmwiqvj/c¨vivjvj Bb wmwiqvj/c¨vivjvj AvDU wkdU †iwR÷vi ˆZwiKiY Ges G‡`i Kvh©cÖYvwj ch©‡eÿY †PK Kiv Ki‡Z nq Zv wkwL‡q w`‡q‡Qb Ges Avgiv Zv Avgiv ¸iæZ¡ mnKv‡i eyS‡Z mÿg n‡qwQ|

cixÿvi bs: 05

cixÿv‡Yi bvg: ‡jdU wkdU Ges ivBU wkdU †iwR÷vi ˆZwiKiY Ges G‡`i Kvh©cÖYvwj ch©‡eÿYKiY|

cixÿvi D‡Ïk¨:

(K) †jdU wkdU Ges ivBU wkdU †iwR÷v‡ii Kvh©cÖYvwj I ms‡hvM Abyaveb Ki‡Z n‡e|

(L) 7495 AvBwm e¨envi K‡i †jdU wkdU Ges ivBU wkdU †iwR÷v‡ii Kvh©cÖYvwj ch©‡eÿYKiY |

cÖ‡qvRbxq hš¿cvwZ:

(K) wkdU †iwR÷vi AvBwm (7495)- 1wU|

(L) Gj.B.wW ( LED)- 4wU

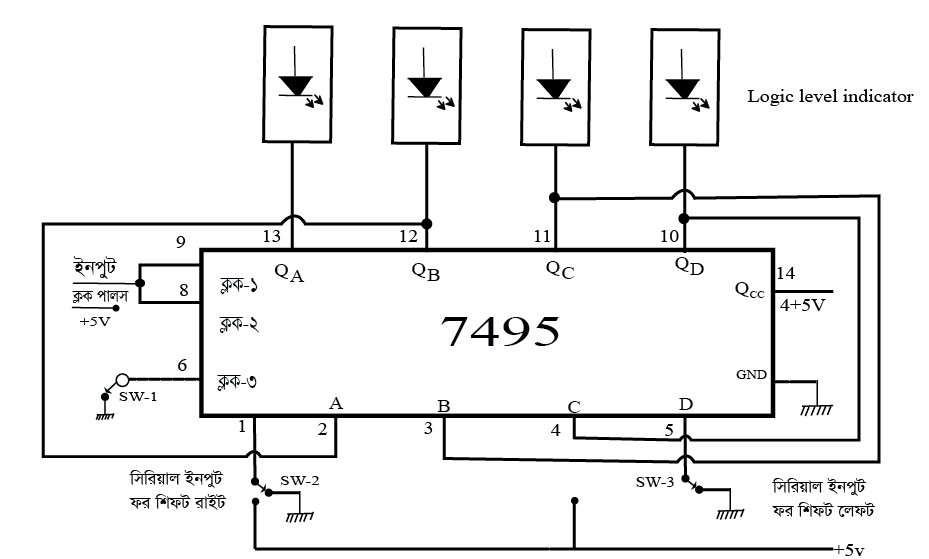
(M) †UªBbvi †evW©-1wU

(N) cvIqvi mvcøvB

(O) ms‡hvM Zvi|

‡jdU-ivBU wkdwUs: wkdU †iwR÷vi 7495 ivBU wkdU Acv‡ik‡bi Rb¨ Iq¨vwis Kiv \_v‡K| †jdU wkdU Acv‡ik‡bi Rb¨ c~e©eZx wd¬c-d¬‡ci Bbcy‡Ui m‡½ cÖ‡Z¨K wd¬c-d¬‡ci AvDUcyU jvMv‡Z n‡e evB‡i †\_‡K, †Kej wmwiR Gw›Uª n‡e D Bbcy‡U |

mvwK©U WvqvMÖvg:



Kv‡Ri avc:

1| †gvW K‡›Uªvj myBP SW-1 †K MÖvBÛ Ki‡Z n‡e, hv‡Z IC ivBU wkdU Acv‡ik‡b mÿg nq|

2| SW-2 I SW-3 ‡K MÖvDÛ Kiv n‡jv| PviwU K¬K cvjm w`‡q dvBbvj AvDUcyU †÷U wjwce× Ki‡Z n‡e| WvUv †Kvb w`‡K m‡i Wvq jÿ Ki‡Z n‡e|

3| SW-2 ‡Z +5v w`‡Z n‡e| Gev‡ii PviwU K¬K cvjm w`‡q dvBbvj AvDUcyU Hfv‡e wjwce× Ki‡Z n‡e| WvUv †Kvb w`‡K m‡i hvq jÿ Ki‡Z n‡e|

4| myBP SW-2 MÖvD›U Ki‡Z n‡e| Gev‡i PviwU K¬K cvjm w`‡ q †`L‡Z n‡e WvUv (evBbvwi gvb) †Kvb w`‡K m‡i hvq|

5| Gevi †gvW K‡›Uªvj myBP SW-1 †K +5v cÖv‡šÍ ¯’vcb Ki‡Z n‡e| SW-3 ‡K I +5v ivL‡Z n‡e| Gevi wkdU cvjm w`‡q †Kvb w`‡K Z\_¨wU m‡i hvq Zv †`Lv‡Z n‡e| Pvi‡U cvjm †`Iqvi ci †kl Ae¯’vwU wjwce× Ki‡Z n‡e|

6| Gevi SW-3 myBP‡K evBbvwi 0 A\_v©r MÖvDÛ Ki‡Z n‡e| `y‡Uv wkdU cvjm cÖ‡qvM K‡i †iwR÷vi evBbvwi gvbwU wjwce× Ki‡Z n‡e|

mZK©Zv:

1| mvwK©Umg~n wbf~©jfv‡e ms‡hvM w`‡Z n‡e|

2| cvIqvi mvcøvB cÖ`v‡bi c~‡e© ms‡hvMmg~n cixÿv n‡e|

3| hš¿cvwZmg~n‡K mveavbZvi mv‡\_ bvovPvov Ki‡Z n‡e|

gšÍe¨:

K¬vm wkÿK Avgv‡`i AwZ ¸iy‡Z¡i mvnv‡h¨ wK fv‡e ‡jdU wkdU Ges ivBU wkdU †iwR÷vi ˆZwiKiv Ges G‡`i Kvh©cÖYvwj ch©‡eÿY †PK Ki‡Z nq Zv wkwL‡q w`‡q‡Qb Ges Avgiv Zv Avgiv ¸iæZ¡ mnKv‡i eyS‡Z mÿg n‡qwQ|

cixÿvi bs: 06

cixÿv‡Yi bvg: Uªy\_ †Uwejmn Avc/WvDb KvD›Uv‡ii mvwK©U ˆZwiKiY I Kvh©vewj ch©‡eÿY|

cixÿvi D‡Ïk¨:

Avc/WvDb KvD›Uv‡ii Kvh©cÖYvwj I ms‡hvM Abyaveb Ki‡Z cviv|

cÖ‡qvRbxq hš¿cvwZ :

1| 7432, 7408, 7476 AvBwm-(cÖ‡qvRb g‡Zv)|

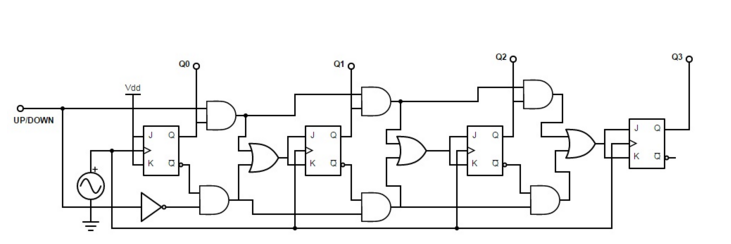
2| B‡jKUªwbK mvwK©U wWRvBbvi

3| jwRK †j‡fj BwÛ‡KUi -4wU

4| cvIqvi mvcøvB

5| ms‡hvM Zvi|

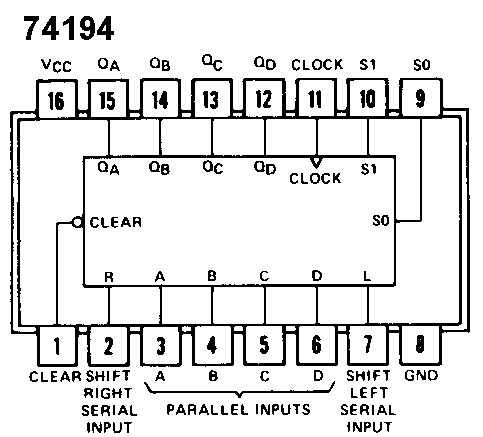
mvwK©U WvqvMÖvg:



wPÎ: Avc-WvDb KvD›Uvi

GLv‡b PviwU JK wd¬c-d¬c‡K AND OR ‡MU BZ¨vw` w`‡q mshy³ Kiv n‡q‡Q| diIqvW© I wifvm© KvDw›Us QvovI GB KvD›Uv‡i wKQy evowZ ˆewkó¨ i‡q‡Q: †mUv n‡jv wi‡mU Ges wcÖ‡mU | KvD›Uvi‡K wi‡mU Kivi A\_© me JK wd¬c-d¬‡ci AvDUcyU evBbvwi k~b¨‡Z w¯’i Kiv | Gfv‡e MYbv ïiæi mgq AvDUcyU k~b¨ †\_‡K ïiæ Kiv nq A‡bKUv ÷c Iqv‡Pi Gi g‡Zv | ÷c Iqv‡Pi wi‡mU Pvwe wUc‡j KvuUv Avevi k~‡b¨i N‡i wd‡i Av‡m|

KLbI KLbI Ggb cwiw¯’wZ nq †h, KvD›Uvi k~b¨ †\_‡K bv ïiæ K‡i GKUv wbw`©ó gvb †\_‡K ïiæ Ki‡Z nq| KvD›Uvi wcÖ‡mU Kivi A\_© †Kv‡bv evBbvwi msL¨v KvD›Uv‡i msiÿY K‡i ivLv A\_v©r 4 weU KvD›Uvi0000 †\_‡K ïiæi e`‡j g‡b Kwi 1010 w`‡q ïiæ n‡jv| Dc‡ii wP‡Îi KvD›Uvi k~b¨ nIqvi ci, GKUv abvZ¥K cvjm wcÖ‡mU wmMb¨vj wn‡m‡e †MU 11, 12, 13, 14 w`‡q KvD›Uv‡ii †mU wc‡b †Xv‡K Ges Avgiv †h wbw`©ó evBbvwi msL¨v w`‡q ïiæ Ki‡Z PvB †mLv‡b KvD›Uvi‡K w¯’i K‡i iv‡L | Dc‡ii wP‡Î evBbvwi wcÖ‡mU msL¨vwU n‡jv 1010| wbP‡i wP‡Î IC 74193 GKwU Bw›U‡MÖ‡UW mvwK©U, hv‡K †cÖvMÖvg K‡i wbw`©ó evBbvwi gvb †\_‡K Avc ev WvDb Dfq w`‡K MYbv Kiv hvq|



wPÎ: IC 74193

GB 4 weU KvD›Uv‡i me wd¬c-d¬c‡K GKm‡½ K¬K cvjm †`Iqv hvq| Gi d‡j GKm‡½ PviwU wd¬c-d¬‡c AvDUcyU cwieZ©b nq| G ai‡bi cÖ‡qvM AvDUcyU ¯úvBK (Zxÿè e„w×) ev wicj KvD›Uv‡I mvaviYfv‡e cvIqv hvq Zv cwiZ¨³ nq| IC 74193 Gi cÖwZwU KvD›Uvi‡K m¤ú~Y© fv‡e wcÖ‡mU Kiv hvq|

Kv‡Ri aviv :

1| cÖ\_‡g mvwK©U WvqvMÖvg Abyhvqx ms‡hvM¸‡jv ˆZwi Ki‡Z n‡e|

2| cvIqvi mvcøvB myBP Ab Ki‡Z n‡e|

3| K¬K cvjm cÖ‡qvM Ki‡Z n‡e Ges AvDUcyU ch©‡eÿY Ki‡Z n‡e|

mZK©Zv:

1| mvwK©Umg~n‡K wbf~©jfv‡e mvs‡hvM w`‡Z n‡e|

2| cvIqvi mvcøvB cÖ`v‡bi c~‡e© ms‡hvMmg~n cixÿv Ki‡Z n‡e|

3| hš¿cvwZmg~n‡K mveaAbZvi mv‡\_ bovPvov Ki‡Z n‡e|

gšÍe¨:

K¬vm wkÿK Avgv‡`i AwZ ¸iy‡Z¡i mvnv‡h¨ wK fv‡e Uªy\_ †Uwejmn Avc/WvDb KvD›Uv‡ii mvwK©U ˆZwiKiY I Kvh©vewj ch©‡eÿY †PK Ki‡Z nq Zv wkwL‡q w`‡q‡Qb Ges Avgiv Zv Avgiv ¸iæZ¡ mnKv‡i eyS‡Z mÿg n‡qwQ|

cixÿvi bs: 07

cixÿv‡Yi bvg: wW/G KbfvUvi Gi c×wZ †`Lv‡bv |

cixÿvi D‡Ïk¨:

1| †gŠwjK A/D Converter kbv³ I e¨vL¨v Ki‡Z n‡e|

2| Acv‡ikb e¨vL¨v Ges Gi mgvavb Awm‡jv‡¯‹v‡ci mvnv‡h¨ ch©‡eÿY Ki‡Z cviv|

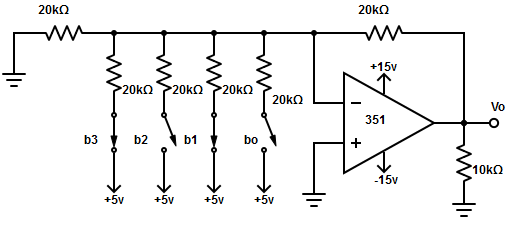
cÖ‡qvRbxq hš¿cvwZ:

1| †iwRw÷f j¨vWvi

2| Acv‡ikbvj A¨vgwcødvqvi

3| Awm‡jv‡¯‹vc|

mvwK©U WvqvMÖvg:



wPÎ: R-2R Ladder DAC

Kv‡Ri avc:

1| D0, D1, D2, D3 Gi I/O †fv‡ëR †ei Ki‡Z n‡e|

2| 4-bit, 2R j¨vWvi wWRvBb Ki‡Z n‡e, hvi †gvU AvDUcyU †fv‡ëR n‡e 10V|

3| 1010, 1110, 0001, 0101 Gi 1100 Gi evBbvwi msL¨v¸‡jvi AvDUcyU †ei Ki‡Z n‡e|

djvdj: wWwRUvj msL¨v¸‡jvi O/P Awm‡jv‡¯‹vc G Analog signal AvKv‡i cÖ`k©b n‡e|

gšÍe¨: K¬vm wkÿK Avgv‡`i AwZ ¸iy‡Z¡i mvnv‡h¨ wK fv‡e wW/G KbfvUvi Gi c×wZ †PK Ki‡Z nq Zv wkwL‡q w`‡q‡Qb Ges Avgiv Zv Avgiv ¸iæZ¡ mnKv‡i eyS‡Z mÿg n‡qwQ|

cixÿvi bs: 08

cixÿv‡Yi bvg: GKwU wWwRUvj Nwo ˆZwiKiY Ges AvDUcyU ch©‡eÿYKiY|

cixÿvi D‡Ïk¨:

1| GKwU wWwRUvj Mwo wWRvBb Ges Gi N›Uv, wgwbU, †m‡KÛ cÖ`k©b Ki‡Z cviv|

cÖ‡qvRbxq hš¿cvwZ:

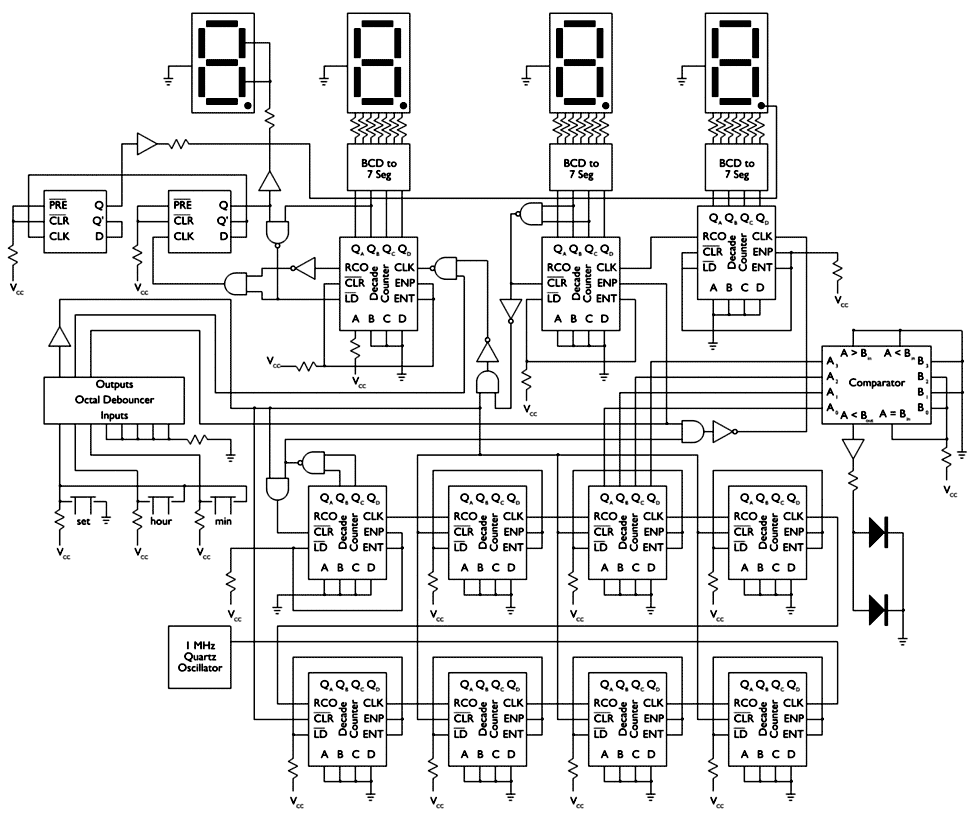
1| †mvm© : A¨v‡÷ej gvwëfvB‡eªUi

2| KvD›Uvi

3| BCD †\_‡K 7 ‡mM‡g›U wW‡KvWvi

4| 7 ‡mM‡g›U LED wWm‡cø|

mvwK©U WvqvMÖvg:



wPÎ: Block Diagram of a 24-hour digital clock

Kv‡Ri avc:

1| 1PPS wd«Kz‡qwÝ e¨envi K‡i A¨v‡÷ej gvwëfvB‡eªUvi wWRvBb Ki‡Z n‡e 555 UvBgvi IC Øviv|

2| `kK eydvi Rb¨ Dchy³ IC wbev©Pb Ki‡Z n‡e| 6 Øviv fvM Ki‡Z n‡e Ges 3wU KvD›Uvi Øviv fvM Ki‡Z n‡e|

3| BCD to 7 Segment Decoder Gi Rb¨ Dchy³ IC wbev©Pb Ki‡Z n‡e| IC Gi Operation hvPvB Ki‡Z n‡e|

4| cQ›`g‡Zv 7 Segment LED wm‡j± Ki‡Z n‡e|

5| m¤ú~Y© wWwRUvj Now GKwÎZ ev Assemble Ki‡Z n‡e| (wPÎvbymv‡i) Zvici mwVK mgq †mU K‡i w`‡Z n‡e|

gšÍe¨: K¬vm wkÿK Avgv‡`i AwZ ¸iy‡Z¡i mvnv‡h¨ wK fv‡e wW/G KbfvUvi Gi c×wZ †PK Ki‡Z nq Zv wkwL‡q w`‡q‡Qb Ges Avgiv Zv Avgiv ¸iæZ¡ mnKv‡i eyS‡Z mÿg n‡qwQ|