



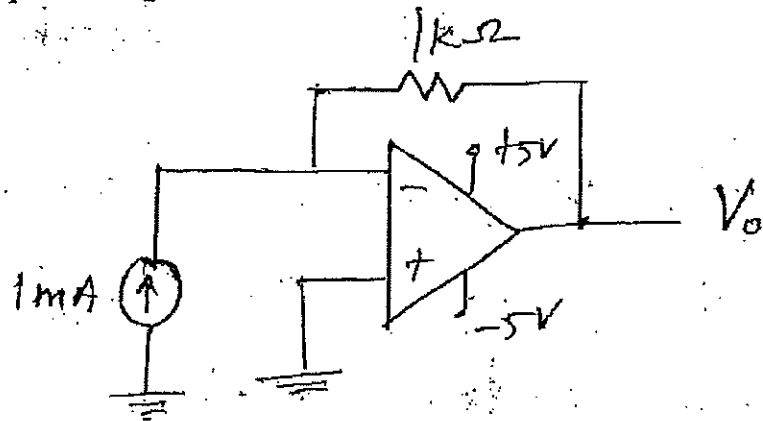
भारतीय नाभिकीय विद्युत निगम लिमिटेड
BHARATIYA NABHIKIYA VIDYUT NIGAM LIMITED
(भारत सरकार का उद्यम / A Government of India Enterprise)

कल्पाक्कम/ Kalpakkam - 603 102

काँचीपुरम जिला (तमिलनाडु)/ Kancheepuram Dt.(TN)

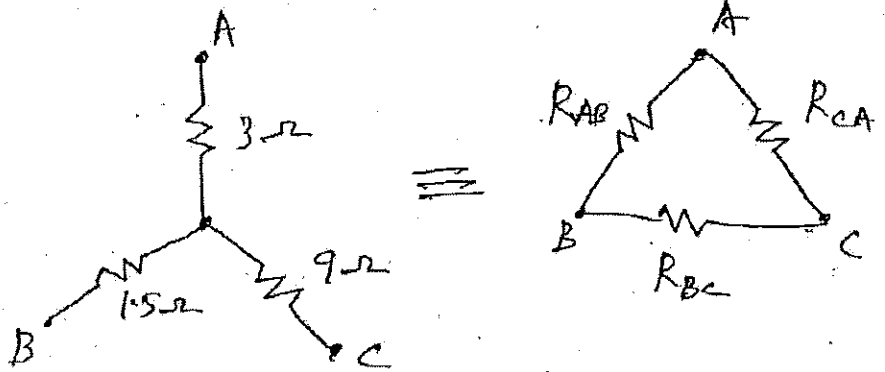
Sample Question for the Written Examination for the post of
Scientific Assistant/B (INSTRUMENTATION)

1. A 1 mA ammeter has a resistance of 100Ω . It is to be converted to a 1A ammeter. The value of shunt resistance is
 - a. 0.001Ω
 - b. 0.1001Ω
 - c. 100000Ω
 - d. 100Ω
2. The circuit shown in the figure uses an ideal op-amp working with +5V and -5V power supplies. The output voltage V_0 is

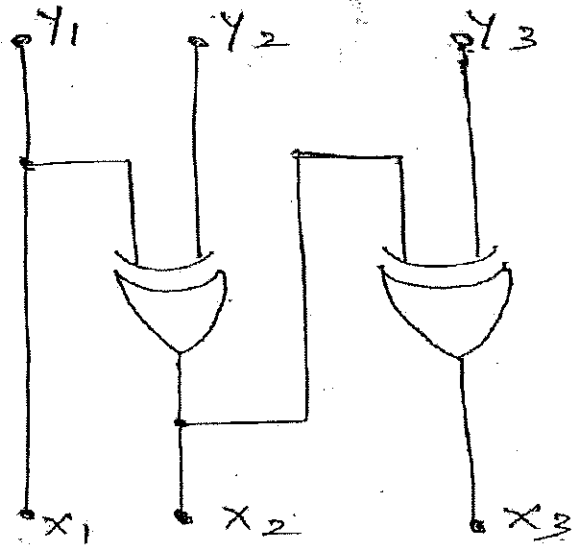


- a. +5V
- b. -5V
- c. +1V
- d. -1V

3. For the equivalent star-delta circuit shown in the given figure, the values of R_{AB} and R_{BC} are respectively

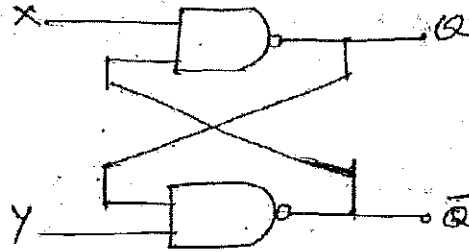


- a. 5Ω and 15Ω
 b. 15Ω and 30Ω
 c. 30Ω and 5Ω
 d. 20Ω and 35Ω
4. The logic circuit given below converts a binary code $Y_1 Y_2 Y_3$ in to



- a. Excess-3 code
 b. Gray code
 c. BCD code
 d. Hamming code

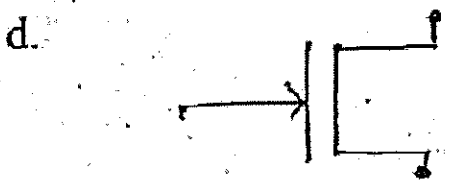
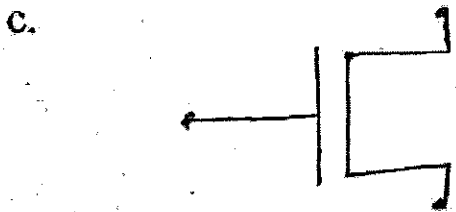
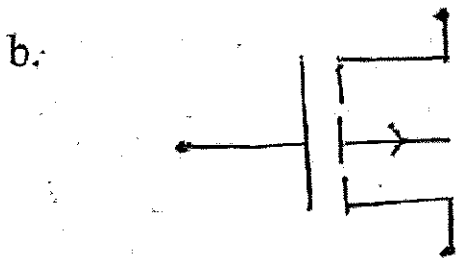
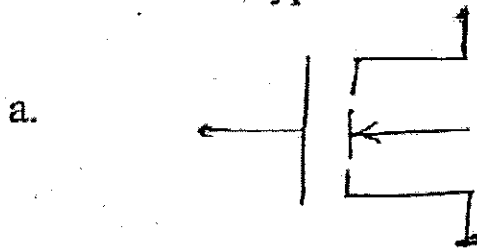
5. For a flip flop formed from two NAND gates as shown in the figure, the unusable state corresponds to



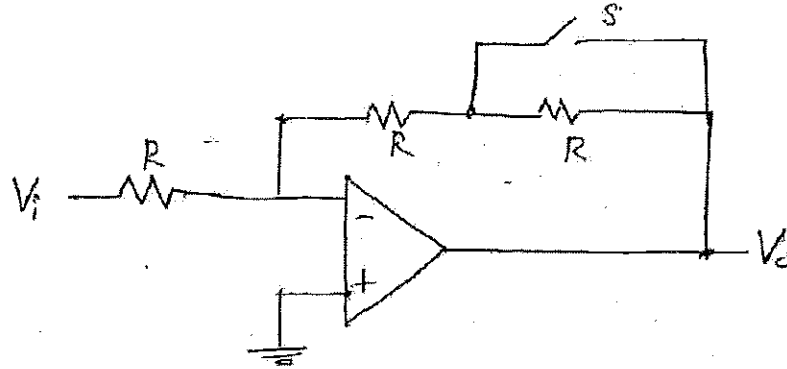
- a. $X=0, Y=0$
b. $X=0, Y=1$
c. $X=1, Y=0$
d. $X=1, Y=0$
6. Accuracy is specified as $\pm 0.5\%$ of true value. At 5% of full scale, error of the instrument will be
- a. $\pm 0.025\%$
b. $\pm 0.5\%$
c. $\pm 2.5\%$
d. $\pm 25\%$
7. An ideal OPAMP has a gain of -100. The input is connected to inverting end and the input resistance is $1\text{k}\Omega$. the feedback resistance is
- a. $100\text{k}\Omega$
b. 10Ω
c. 100Ω
d. $100\text{k}\Omega$
8. The Lissajous pattern on an oscilloscope has 5 horizontal tangencies and 2 vertical tangencies. The frequency of the horizontal input is 100Hz. The frequency of the vertical input will be
- a. 400Hz
b. 2500Hz
c. 4000Hz
d. 5000Hz

9. A thermo-couple ammeter gives full scale deflection of 10A. When it reads one fifth of the scale, the current will be
- 2A
 - 4A
 - 4.47A
 - 5.78A

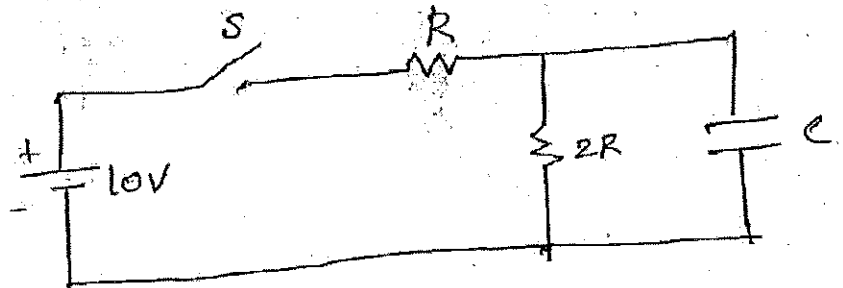
10. An enhancement type n-channel MOSFET is represented by the symbol



11. Magnitude of the gain in the inverting op-amp circuit shown in the figure be x with switch S_1 open. When switch S_1 is closed, then the magnitude of gain becomes



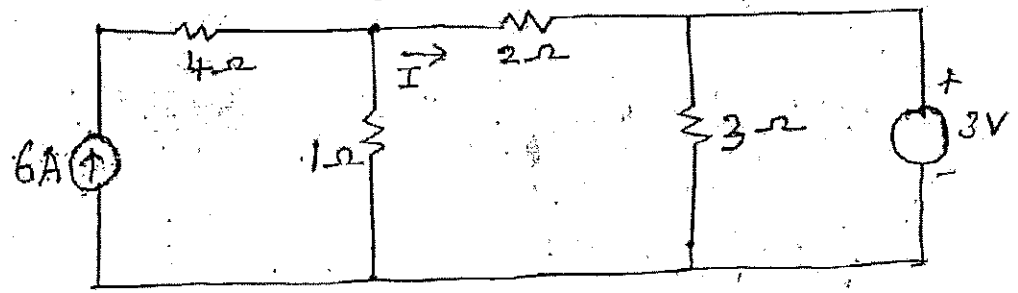
- a. $x/2$
 - b. $-x$
 - c. $2x$
 - d. $-2x$
12. A pressure gauge 0-100Pa has a guaranteed accuracy of 1% of full scale deflection. The limiting error while reading 25Pa will be
- a. 1%
 - b. 2%
 - c. 2.5%
 - d. 4%
13. The time constant of the network shown in figure is



- a. $2RC$
- b. $3RC$
- c. $RC/2$
- d. $2RC/3$

14. Two coils in different connection have self inductance of 2mH and 4mH and a mutual inductance of 0.15mH. the equivalent inductance of the combination is
- 5.7mH
 - 5.85mH
 - 6mH
 - 6.15mH

15. For the circuit shown the current I is given by



- 3A
- 2A
- 1A
- Zero