Raosaheb Wangde Master Charitable Trust's
DNYANSHREE
INSTITUTE OF ENGINEERING & TECHNOLOGY
Q : A/P. Sonvadi-Gajvadi, Sajjangad Road, Tal. & Dist.: Satara - 415 013. (Maharashtra) India
Founder & Chairman
Hon.Dnyaneshwar B. Wangde (Bhai)
B+ NAAC
1st Cycle

Written Exam for Diploma Interview

Date: 11/06/2024 Time:1 hr Marks:50
Note: All questions carries equal marks

1. Forbidden energy gap for silicon semiconductor is:

   A. 1.2 eV B. 0.7 eV C. 1.1 eV D. 0.4 eV

2. If silicon diode is operating in forward bias in a circuit with 12 V supply and 240 Ω series resistance, then what is the voltage drop across the diode.

   A. 1.5 V B. 0.4 V C. 1.1 V D. 0.7 V

3. Which of the following is the trivalent doping element?:

   A. Arsenic B. Boron C. Phosphorous D. Antimony

4. The ripple factor for the bridge rectifier is:

   A. 0.406 B. 1.21 C. 1.10 D. 2.22

5. According to barkhausen criteria the loop gain βv of the oscillator must be equal to ———.

   A. 0 B. 1 C. 0.8 D. -1

6. The BJT as a switch is is operated in one of the following: A. Only saturation region B. Active region C. Only cut off region D. Both saturation and cut off region

7. A DC power supply has no load voltage of 30 V and full load voltage of 25 V at full load current of 1 A. Its output resistance and load regulation respectively are.

   A. 5Ω and 20% B. 25Ω and 20% C. 5Ω and 16.7% D. 25Ω and 16.7%

8. When PN junction is forward biased:

   A. Deletion region decreases B. Minority carriers are not affected C. Holes and electrons moves away from each other D. All of above.

9. According to boolean algebraic theorem the expression $A(A+B)$ is equivalent to:

   A. $\boldsymbol{A+B}$ B. $\boldsymbol{B}$ C. $\boldsymbol{A}$ D. $\boldsymbol{AB}$

10. What will be the o/p of the given logic gate of Figure 1?

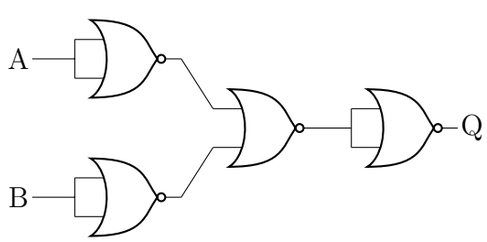

Figure 1: Q.No.10

   A. NOR B. NAND C. AND D. OR

11. The decimal number representation of the following number $(1\ 1\ 0\ 1\ 0\ 1)_2$ is:

    A. $(53)_{10}$ B. $(12)_{10}$ C. $(45)_{10}$ D. $(67)_{10}$

12. Which among the following is a current controlled device? A. MOSFET B. BJT C. IGBT D. JFET

13. The storage delay time can be reduced considerably by preventing transistor from going into saturation. This is achieved by connecting the schottky diode between ——— and ———:

    A. Base and Collector B. Base and Emitter C. Emitter and Collector D. In series with Base.

14. Gate to Source voltage must be ——- the threshold voltage for enhancement type MOSFET to be cut off.

    A. Greater than B. Equal to C. Less than D. All of the above

15. An equivalent base 2 number of $(13)_{10}$ is:

    A. $(0\ 1\ 0\ 1)_2$ B. $(1\ 1\ 0\ 1)_2$ C. $(1\ 1\ 1\ 1)_2$ D. $(1\ 0\ 0\ 1)_2$

16. The current I_y flowing through 660Ω resistance is (Refer Figure 2):

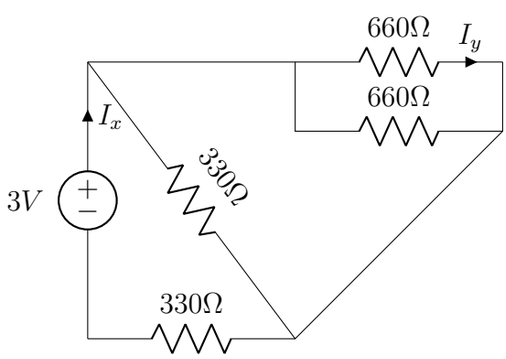

Figure 2: Q.No.16

    A. I_x B. $I_x/2$ C. $I_x/4$ D. $I_x/3$

17. The voltage across 660Ω resistance is (refer Figure 3):

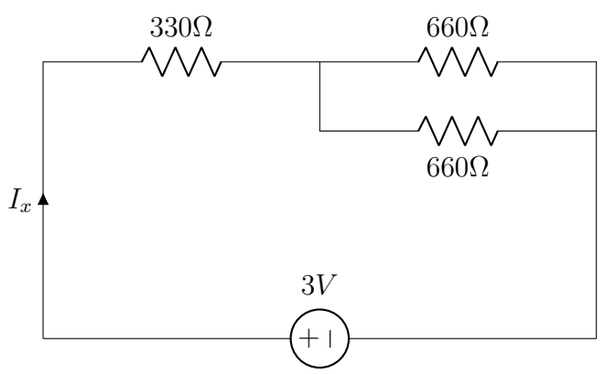

Figure 3: Q.No.17

    A. $0.65V$ B. $1.5V$ C. $0.72V$ D. $0.75V$

18. The current I_x and I_y are (refer Figure 4).

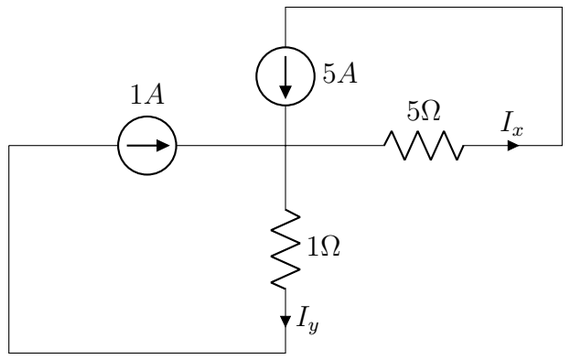

Figure 4: Q.No.18

A. $-1A, 5A$ B. $5A, 1A$ C. $1A, 5A$ D. $5A, -1A$

19. The current I_1 and I_2 of the circuit shown in Figure 5 are giving by:

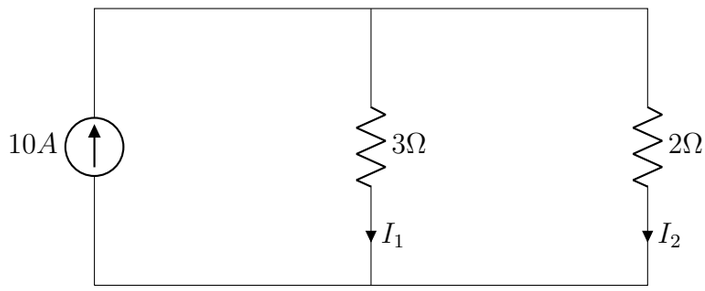

Figure 5: Q.No.19

A. $4A, 4A$ B. $6A, 6A$ C. $4A, 6A$ D. $6A, 4A$

20. Referring to the circuit of the Figure 6, a $35V$ source is connected to a series circuit of 600Ω and R. If a voltmeter of internal resistance $1.2\text{k}\Omega$ is connected across 600Ω, it reads $5V$. The value of R is

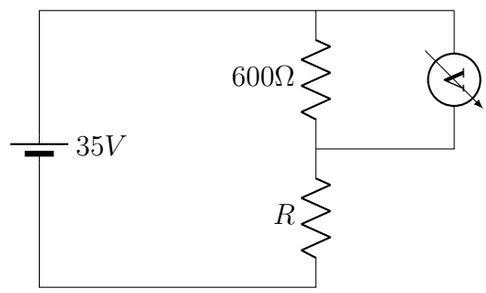

Figure 6: Q.No.20

A. $1.2\text{k}\Omega$ B. $2.4\text{k}\Omega$ C. $1.4\text{k}\Omega$ D. $3.4\text{k}\Omega$

21. The equivalent resistance of the circuit given in Figure 7 is given by

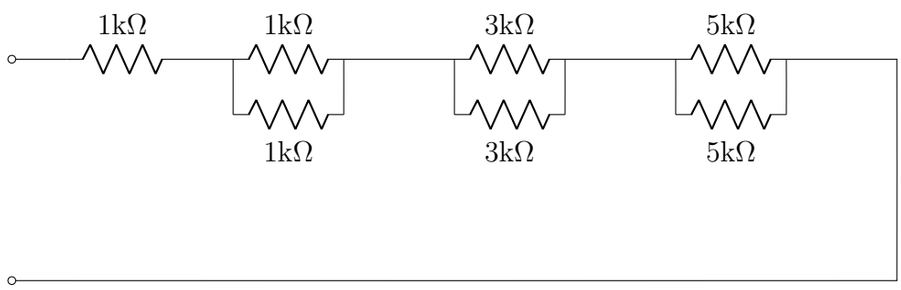

Figure 7: Q.No.21

A. $4\,\text{k}\Omega$ B. $10\,\text{k}\Omega$ C. $5.5\,\text{k}\Omega$ D. $5\,\text{k}\Omega$

22. Find current I, (refer Figure reffig:7).

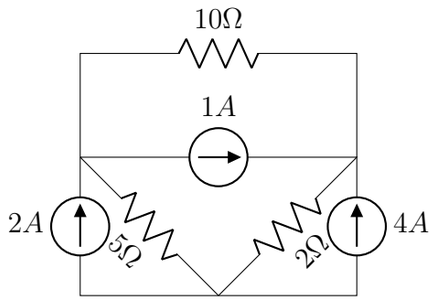

Figure 8: Q.No.22

A. $\frac{17}{12}$ B. $\frac{11}{17}$ C. $\frac{12}{17}$ D. $\frac{17}{11}$

23. Number of components in VLSI are ——:

A. less that 99 B. greater than $10,000$ C. $100-999$ D. $1,000-9,999$

24. A single flip flop is a modulo —— counter.

A. 0 B. 1 C. 2 D. 3

25. D flip flop can be made from $J-K$ flip flop by making:

A. $J=K$ B. $J=K=1$ C. $J=0, K=1$ D. $J=\bar{K}$