ELectronics **E**ngineering **S**tudents' **A**ssociation

(ELESA)

Presents

ELECTROVERT 2018

The Performers' creed

Name of the Event: Proignito
Candidate's Code:

Date: 8 SEPT,2018
Time:30 min

Instructions

- Use of mobile is not allowed.
- Use of scientific calculator is allowed.
- Every questions carry one mark with no negative marking.

1. What is the logic which controls a staircase light associated with two switches A and B located at the bottom and top of the staircase respectively?

A. OR
B. AND
C. X-OR
D. X-NOR

2. What are the values of R1 and R2 respectively in the expression
(235)R1 = (565)10-(1065)R2 ?

A. 8,16
B. 16,8
C. 6,16
D. 12,8

3. In 1-to 32 demultiplexer, how many select lines are required?

A. 2
B. 3
C. 4
D. 5

4. Which of the following is NOT available in terminal mode?

A. POWER
B. GROUND
C. INVERT
D. BIDIR

5. A latch is _____ sensitive

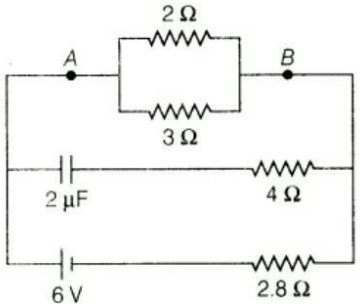
A. both level and edge
B. edge
C. level
D. None

6. The fast logic family is

A. ECL
B. DRL
C. TRL
D. TTL

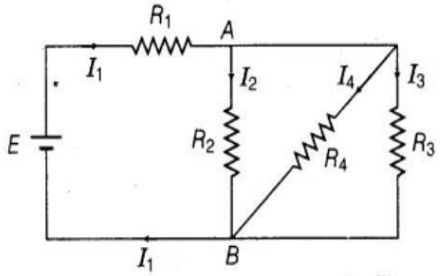
A. Weighted code
B. Self complementing code
C. Non weighted code
D. Alphanumeric code

8. Calculate the steady current through the 2 ohm resistor in the circuit shown below.



A. 0.75 A
B. 0.6 A
C. 1.5 A
D. 0.9 A

9. In the circuit shown, R1=4 ohm,R2=R3=15 ohm ,R4=30 ohm and E=10 V. What is the equivalent resistance of the circuit and also determine the relation between I1, I2 and I3,I4.



A.10 ohm, I1=(3/2)×I2, I3=(1/2)×I4
B.5 ohm, I1=(1/2)×I2, I3=(3/2)×I4
C.10 ohm,I1=(5/2)×I2, I4=(1/2)×I3
D.5 ohm, I1=(2/3)×I2, I4=(3/2)×I3

10. A battery of 10 V and negligible internal resistance is connected across the diagonally opposite corners of a cubical network consisting

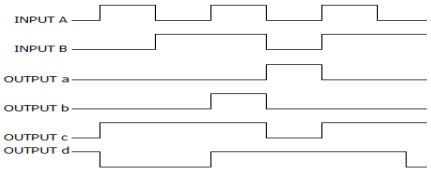
of 12 resistors each of 1 ohm resistance. Determine the equivalent resistance and the total current in the network.

A. R=1/6 ohm, I= 1 A
B. R=6/5 ohm, I=1.5 A
C. R=2/3 ohm, I= 1 A
D. R=5/6 ohm, I=2A

11. The simplified form of the Boolean expression (X + Y + XY)(X + Z) is

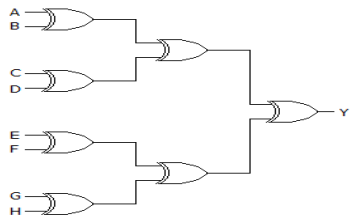
A.X + Y + Z
B.XY + YZ
C.X + YZ
D.XZ + Y
E. None of the above

12. For a two-input XNOR gate, with the input waveforms as shown below, which output waveform is correct?



A.a
B.b
C.c
D.d

13. The 8-input XOR circuit shown has an output of Y = 1. Which input combination below (ordered A – H) is correct?



A. 10111000
B. 11100111
C. 10111100
D. 00111011

14. 2's complement representation of a 16 bit number (one sign bit and 15 magnitude bit) is FFFF. Its magnitude in decimal representation is

A.0
B.1
C.32676
D.65, 535

15. Mod-6 and mod-12 counters are most commonly used in:

A. frequency counters
B. multiplexed displays
C. digital clocks
D. Power consumption meters

16.The signal voltage gain of an amplifier, Av, is defined as:

A. Av=Vin/Vout
B. Av = IC × RC
C. Av=Rc/Re.
D. Av=Rc/Rl

17.$I_c = \frac{\alpha}{1-\alpha} I_B +$--------

A.I_{CBO}
B.I_{CEO}
C.I_C
D.$(1-\alpha)I_B$

18. The ..... filter circuit results into best voltage regulation

A. Capacitor input
B. Resistor input
C. Choke input
D. None of these

19.What is the phase difference between input and output voltages of transistor connected in common collector arrangement?

A. 0˚
B. 90˚
C. 180˚
D. -90˚

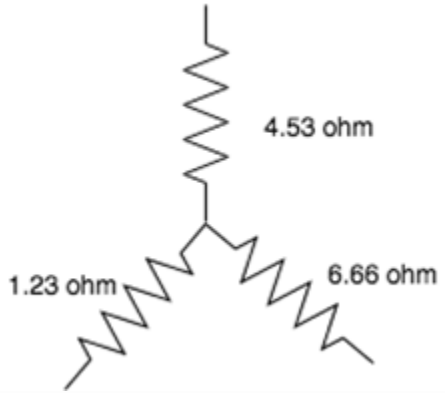
20. Which of the following IC is not used in AOI logic?

A. 7408
B. 7432
C. 7404
D. 7402

21.Which of the following is a false relation?

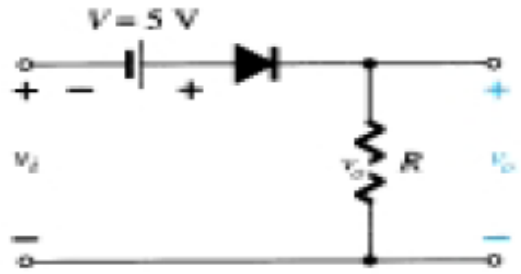
A. $AB+\bar{A}C = (A+C)(\bar{A}+B)$
B. $(A+B)' = \bar{A}.\bar{B}$
C. $AB+\bar{A}C+BC = A\bar{B}+A\bar{C}$
D. $[(\bar{A}+\bar{A}.\bar{B}).(\bar{B}+\bar{B}.\bar{C})]' = A+B$

22. Find the equivalent delta circuit.



A.3ohm, 10ohm, 5ohm
B.3ohm, 10ohm, 15ohm
C. 3ohm, 1ohm, 5ohm
D. 3ohm, 10ohm, 6ohm

23. For a sinusoidal input of 20 V_{peak} to the given circuit, what is the peak value of the output waveform?



A.20 V
B.25 V
C.0 V
D. -25 V

24. For a BJT, for common base configuration the input characteristics are represented by a plot between which of the following parameters?
A.V_{BE} and I_E
B.V_{BE} and I_B
C.V_{CE} and I_C
D. None of the mentioned

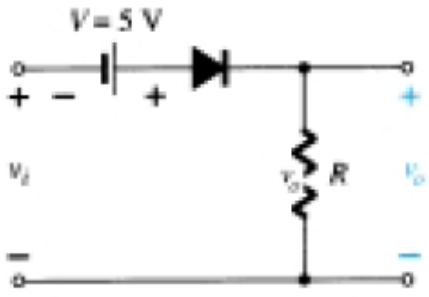
25. In a bridge full wave rectifier, the input sine wave is 250sin100 πt. The output ripple frequency of rectifier will be
A.50Hz
B. 200Hz
C. 100Hz
D. 25Hz

26.which of the following statement is false for series resonance RLC circuit?
A. power factor=1
B. Z_{min}=R
C. Q=L/RC
D. $F_r= \frac{1}{2\pi(LC)^{1/2}}$

27. which of the following quantity remains constant in transformer ?
A. power
B. frequency
C. both
D. none of these

28. In the toggle mode a JK flip-flop has
A. J=0,K=0
B. J=1,K=1
C. J=0,K=1
D. J=1,K=1

29. What is the circuit in the given diagram called?



A. Clipper
B. Clamper
C. Rectifier
D. None of the mentioned
Answer: a

30. In a Zener diode with high breakdown voltage
A. Both P and N are heavily doped.
B. Both P and N are lightly doped.
C. Either P or N are lightly doped.
D. None of the above.