



Name

Duration – 75 min

Mobile Number

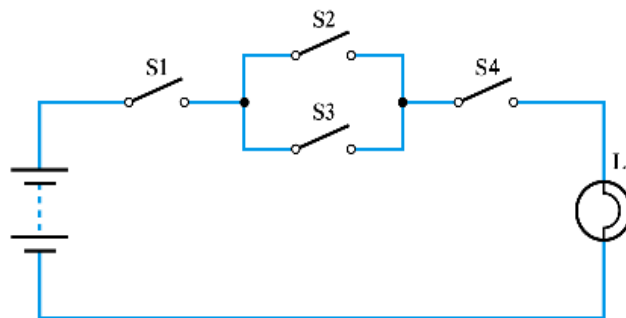
Question- 3 Marks each

College

Negative Marking -1

Objective

1. What logic function corresponds to the following arrangement?

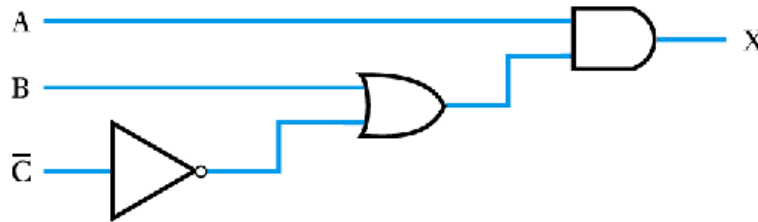


- A. $L = (S1 \text{ OR } S2) \text{ AND } (S3 \text{ OR } S4)$
 B. $L = S1 \text{ OR } (S2 \text{ AND } S3) \text{ OR } S4$
 C. $L = S1 \text{ AND } (S2 \text{ OR } S3) \text{ AND } S4$
 D. $L = (S1 \text{ AND } S2) \text{ OR } (S3 \text{ AND } S4)$.
2. What logic has the following Truth-table

A	B	C
0	0	0
0	1	1
1	0	1
1	1	1

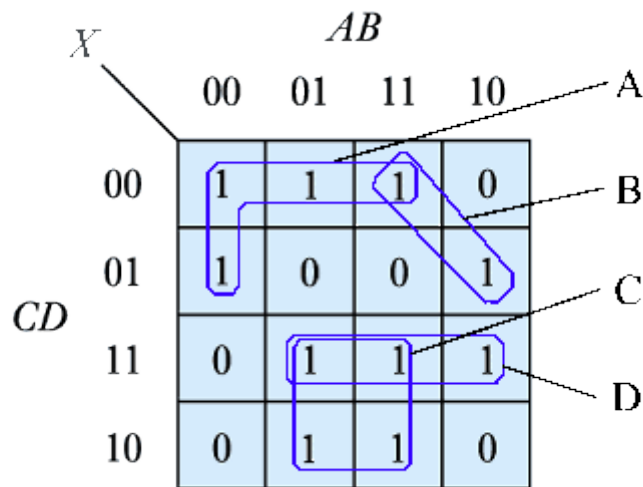
- A. Two input AND gate
 B. Two input XNOR gate
 C. Two input OR gate
 D. Two input XOR gate

3. What Boolean Expression describes the following circuit?



- A. $X = A.(B + C)$
- B. $X = A + B + C$
- C. $X = A + (B.C)$
- D. $X = (A.B) + C$

4. In the K-map shown below, which of the loops shown represents a legal grouping?



- A. A
- B. B
- C. C
- D. D

5. What is most widely used method for the automated simplification of Boolean expressions?

- A. Quine-McCluskey minimization
- B. K-Map
- C. Binary Reduction
- D. FFTs

6. Physical Logic gates take a finite time to respond to changes in their input signals. What name is given to this time?

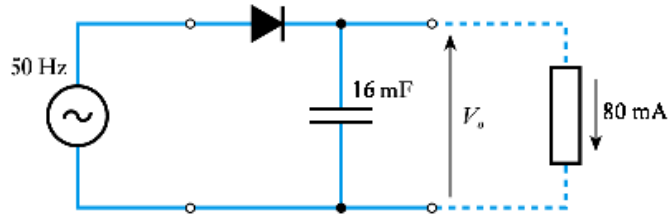
- A. Propagation delay time
- B. Set-up time
- C. Rise time
- D. Hold Time

7. Express the binary number 1001 in decimal.

- A. 9
- B. 11
- C. 13
- D. 15

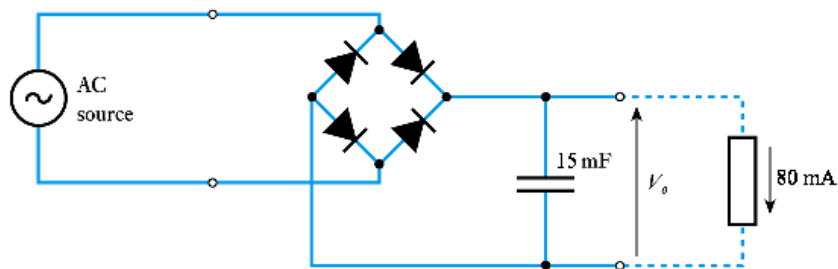
8. Express the decimal number 57 in binary
 - A. 111001
 - B. 110011
 - C. 111010
 - D. 111101
9. Convert the hexadecimal number 59 into binary.
 - A. 1001101
 - B. 1101101
 - C. 1010101
 - D. 1011001
10. Which of the following materials is not a semiconductor?
 - A. Silicone
 - B. Germanium
 - C. Gallium arsenide
 - D. Gallium nitride
11. Which of the following statements is incorrect?
 - A. The dominant charge carriers within a doped semiconductor are called majority charge carriers.
 - B. At room temp, pure semiconductors make excellent conductors
 - C. Conduction within pure semiconductors is termed intrinsic conduction.
 - D. Doping pure semiconductor material with small amounts of donor impurities produces an n-type semiconductor.
12. What is typical conduction voltage for a silicon diode?
 - A. 0.25 V
 - B. 0.5 V
 - C. 0.7 V
 - D. 1.1 V
13. What would be a typical magnitude for reverse current in a general-purpose silicon diode?
 - A. A few picoamps
 - B. A few nanoamps
 - C. A few microamps
 - D. A few milliamps
14. What type of special-purpose diode is formed by a junction between a layer of metal and a layer of semiconductor?
 - A. A varactor diode
 - B. A tunnel diode
 - C. A zener diode
 - D. A Schottky diode
15. Which type of special-purpose diode has the characteristics of a voltage-controlled capacitor?
 - A. A varactor diode
 - B. A zener diode
 - C. A Schottky diode
 - D. A tunnel diode

16. Estimate the peak ripple voltage in the following arrangement.



- A. 10 mV
- B. 25 mV
- C. 50 mV
- D. 100 mV

17. Estimate the peak ripple voltage in the following arrangement

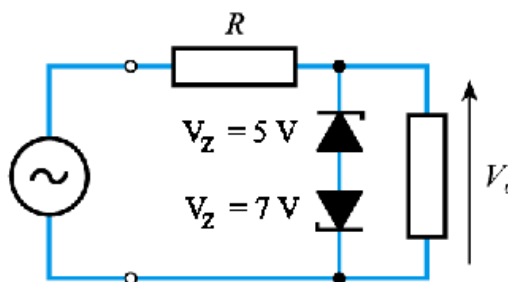


- A. 10 mV
- B. 25 mV
- C. 50 mV
- D. 100 mV

18. Envelope detectors based on diodes are used in most forms of AM radio, from crystal sets to superhetrodyne receivers

- A. True
- B. False

19. Estimate the maximum positive voltage in the following arrangement

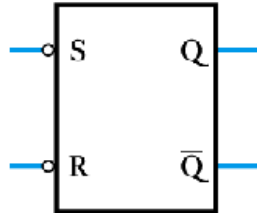


- A. 4.3 mV
- B. 5.7 mV
- C. 6.3 mV
- D. 7.7 mV

20. Which of the following is not a form of multivibrator?

- A. Astable
- B. Monostable
- C. Tristable
- D. Bistable

21. The S-R latch shown here has active high inputs



- A. True
- B. False

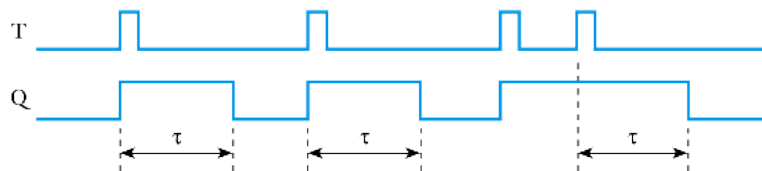
22. A J-K FF has two control inputs. What happens to the Q output on the active edge of the clock if both control inputs are asserted simultaneously?

- A. The Q output is reset to 0
- B. The Q output remains unchanged
- C. The Q outputs toggles to the other state
- D. The Q output is set to 1

23. A master/slave bistable is formed using two bistable connected in series.

- A. True
- B. False

24. What type of monostable produces waveforms of the form shown here?

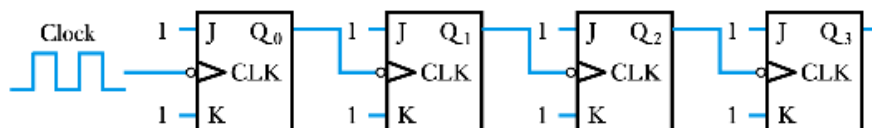


- A. A retriggerable monostable
- B. A non - retriggerable monostable

25. An astable has two metastable states and produces the function of a digital oscillator

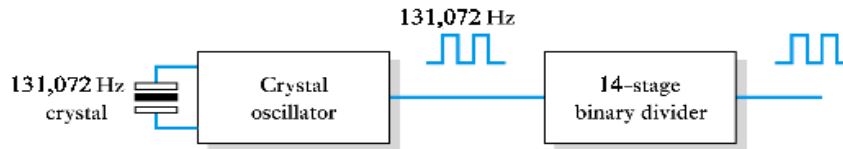
- A. True
- B. False

26. What is function of the following circuit?



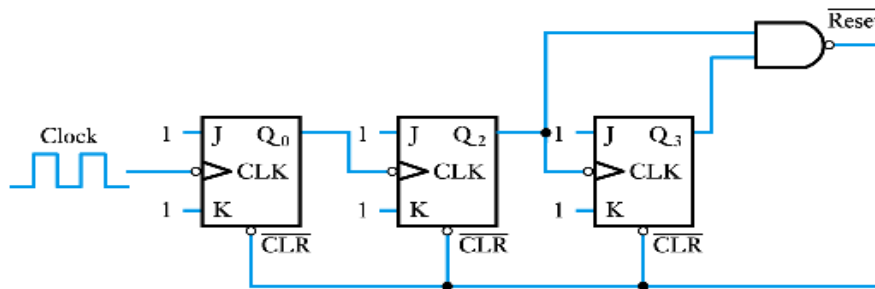
- A. A four-bit shift register
- B. A four-bit memory register
- C. A four bit ripple counter
- D. None of above

27. What is frequency of the output of the following circuit?



- A. 1 Hz
- B. 8 Hz
- C. 4 Hz
- D. 16 Hz

28. What is the function of the following circuit?



- A. Mod – 6 counter
- B. Mod - 8 counter
- C. Mod – 10 counter
- D. Mod – 12 counter

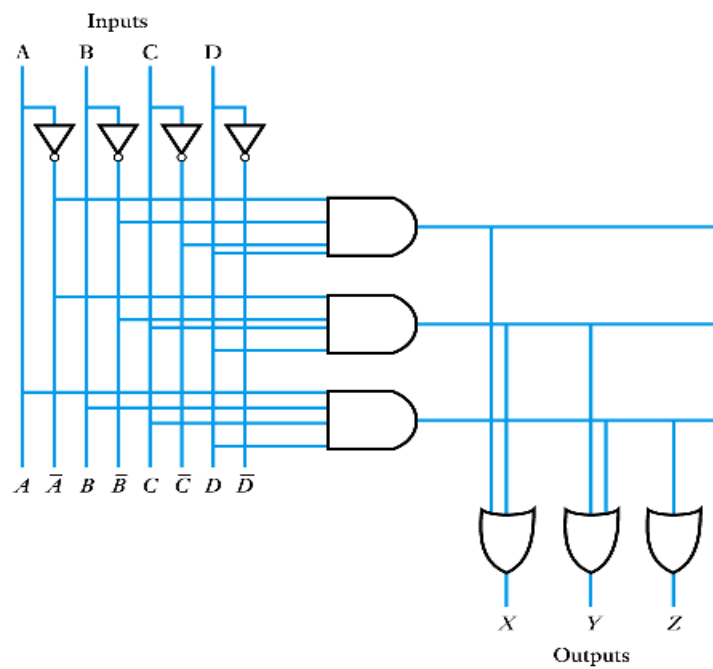
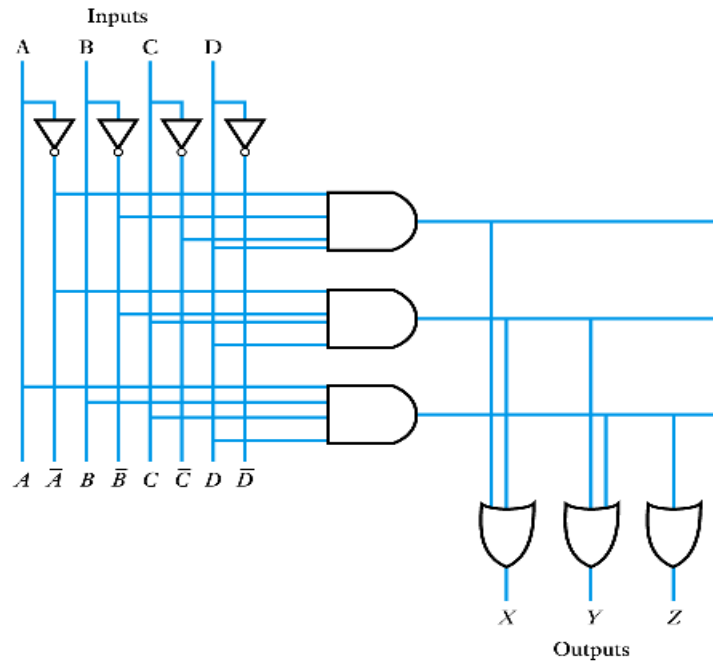
29. In synchronous counters the clock input of each of the bistables are connected together so that each changes state at the same time.

- A. True
- B. False

30. Which “law” describes the exponential growth of the integrated circuit complexity?

- A. Faraday’s law
- B. Lenz’s law
- C. Moore’s law
- D. Nyquist’s law

31. In the following PLA, which output implements the logic function ABCD?



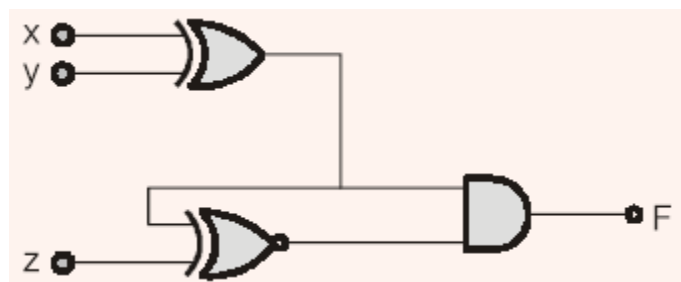
- A. X
- B. Y
- C. Z
- D. None of above

32. Which of the following statement is incorrect?

- A. Some PLDs are programmed using electrically operated switches.
- B. Some PLDs are programmed using fuses that are selectively blown.
- C. Some PLDs are programmed using mechanical switches.
- D. Some PLDs are programmed using anti-fuses that are selectively joined.

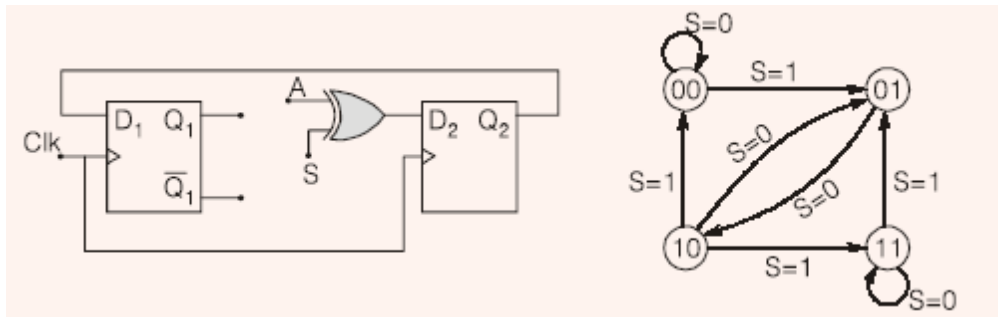
33. Communications within a microprocessor take place over a number of serial buses.
- A. True
 - B. False
34. What name is given to the common microprocessor architecture that uses a single block of memory to store both programs and data?
- A. Harvard Architecture
 - B. Von Neumann architecture
 - C. Contemporary architecture
 - D. RISC architecture
35. A microcomputer stack is a form of memory structure. What mnemonic describes the operation of this structure?
- A. LILO
 - B. LIFO
 - C. FILO
 - D. FIFO
36. Which of the following statement is incorrect?
- A. RAM is memory that can be written and read quickly.
 - B. SRAM stores information by energizing or de-energizing inductors
 - C. DRAM stores information by charging or discharging
 - D. RAM is volatile
37. Which of the following statement is incorrect?
- A. EPROMs can be erased using an UV light source
 - B. ROM devices must be programmed by the chip manufacturer.
 - C. ROM device are non-volatile
 - D. EEPROM can be written to (programmed) as well as read from
38. How many address lines would be found on a 128-kbyte memory device (assuming that this is arranged as an array of 8 bit registers)?
- A. 13
 - B. 15
 - C. 17
 - D. 19
39. A _____ circuit is not suitable in the synchronous circuit design because of its transparency nature.
- A. Latch
 - B. Parallel
 - C. Diagonal Circuit
 - D. None of above
40. The characteristic equation of any Flip flop describes the _____ of the next state in terms of the present state and inputs.
- A. Impact
 - B. Behavior
 - C. Path
 - D. None of the above

41. Which table indicates the input condition of the flip flops necessary to cause all possible next state transitions of a flip-flop?
- Characterises table
 - Truth Table
 - Excitation Table
 - Functional Table
42. When a circuit is self-correcting?
- If there are N-1 cycles among its unused states
 - If there are N-1 cycles among its used states
 - If there are no cycles among its used states
 - If there are no cycles among its unused states
43. In this type of counter, the complement of the output of the last stage of the shift register is fed back to the D input of the first state.
- Ring counter
 - Jhonson counter
 - Straight Counter
 - None of the above
44. Assuming 8 bits for data, 1 bit for parity, 1 start bit and 2 stop bits, the number of characters that 1200 BPS communication line can transmit is
- 10 CPS
 - 120 CPS
 - 12 CPS
 - None of the above
45. Consider the representation of six-bit numbers by two's complement, one's complement, or by sign and magnitude: In which representation is there overflow from the addition of the integers 011000 and 011000?
- 2's complement only
 - Sign and magnitude and 1's complement
 - 2's complement and 1's complement
 - All three representations
46. What is F



- $XY'Z + X'YZ$
 - $X'Y'Z + X'YZ'$
 - $X'Y'Z' + XYZ$
 - $XY'Z' + X'YZ'$
47. The following Boolean expression if $F(w,x,y,z) = w'x'z' + wx'z' + xz + xy + w'y + wy$. Then all the essential prime implicants of the expression
- $y, w'x'z', xy$
 - $xz, wy, wx'z'$
 - y, xz, xy
 - $y, x'z', xz$

48. In the given circuit, if A is connected to Q1, the operation of the circuit is according to the state diagram. If XOR is replaced with XNOR, then to get the same operation of the circuit which of the following changes has to be done.



- A. A should be connected to Q1'
 - B. A should be connected to Q2
 - C. A should be connected to Q1 and S is replaced by S'
 - D. A should be connected to Q1' and S is replaced by S'
49. The excess-3 code of decimal 7 is represented by
- A. 1100
 - B. 0111
 - C. 1010
 - D. 1011
50. The logic 0 level of a CMOS logic device family is approximately
- A. 1.2 V
 - B. 0.4 V
 - C. 5 V
 - D. 0 V

S. No	College	Board	Percentage/CGPA
	10 th		
	12 th		
	Diploma Final Year		
	B.Tech 1 st Year		
	B.Tech 2 nd Year		
	B.Tech 3 rd Year		
	B.Tech 4 th Year		
	M.Tech 1 st Year		
	M.Tech 2 nd Year		