

10. In case of conductor, the forbidden energy band is
- a. Large
 - b. Very large
 - c. Small
 - d. Negligible
11. According to KCL,
- a. $\sum I=1$
 - b. $\sum I=2$
 - c. $\sum I=0$
 - d. $I=0$
12. The electronic circuit that converts AC to DC is called
- a. Converter
 - b. Amplifier
 - c. Rectifier
 - d. Clipper
13. KVL can be applied to
- a. Closed path
 - b. Open path
 - c. Both (a) & (b)
 - d. None of these
14. In 4:1 MUX, the number of select line is
- a. 2
 - b. 3
 - c. 1
 - d. 4
15. DEMUX is also called
- a. Data selector
 - b. Data distributor
 - c. Data analyzer
 - d. All the above
16. Transistor is a
- a. Three junction device
 - b. Two junction device
 - c. Uni-junction device
 - d. All of these
17. CPU consists of
- a. ALU & Memory
 - b. ALU & Control Unit
 - c. Control Unit & Memory
 - d. All the above
18. How many NAND gates are required to construct an AND gate?
- a. 3
 - b. 2
 - c. 4
 - d. 1
19. Binary equivalent of the number $(25)_{10}$ is
- a. 10101
 - b. 11011
 - c. 11001
 - d. 01111
20. Voltage division rule is applicable to
- a. Series Circuit
 - b. Parallel Circuit
 - c. Both (a) & (b)
 - d. All the above

(Descriptive)

Time : 2 hrs. 30 min.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. Discuss the features, advantages and disadvantages of generation of computer. 10

2. Define Kirchhoff's laws. Two resistors of values 14Ω and 10Ω are connected across a voltage source of 6V. Another 10Ω resistor and 5V voltage source are connected across the previous combination. Find the values of current flowing in the two mesh formed. 10

3. a. Explain with the help of block diagram the architecture of computer. 5+5=10
b. Design a half-subtractor with the help of truth table.

4. a. Design a Full Adder circuit with the help of truth table. 7+3=10
b. Subtract $(15)_{10}$ from $(10)_{10}$ in 2's complement method.

5. What do you mean by Multiplexer? Design a 4:1 MUX with the help of truth table. 10

6. a. Explain with the help of diagram 1×2 DEMUX. 5+5=10
b. Differentiate between Semiconductor, Conductor and Insulator.

7. a. What is a transistor? What are the various configurations of transistors? Explain with the help of diagram. 6+4=10
b. In a circuit, if series opposing voltages are 12 V and 6 V and two resistors of values 4Ω & 8Ω are connected in series, then compute
 - (i) Circuit current
 - (ii) Power supplied by the two batteries
 - (iii) Power dissipated in two resistors

8. a. Find the binary equivalent of the decimal number $(13.25)_{10}$. $2.5+2.5$
b. Convert $(11011.1011)_2$ into decimal. $+5=10$
c. Write short notes on half wave rectifier.

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