

Write the following information in the first page of Answer Script before starting answer

ODD SEMESTER EXAMINATION: 2020-21

Exam ID Number _____

Course _____ Semester _____

Paper Code _____ Paper Title _____

Type of Exam: _____ (Regular/Back/Improvement)

Important Instruction for students:

1. Student should write objective and descriptive answer on plain white paper.
2. Give page number in each page starting from 1st page.
3. After completion of examination, Scan all pages, convert into a single PDF, rename the file with Class Roll No. (2019MBA15) and upload to the Google classroom as attachment.
4. Exam timing from 10am – 1pm (for morning shift).
5. Question Paper will be uploaded before 10 mins from the schedule time.
6. Additional 20 mins time will be given for scanning and uploading the single PDF file.
7. Student will be marked as ABSENT if failed to upload the PDF answer script due to any reason.

**MASTER of COMPUTER APPLICATION
THIRD SEMESTER
ELECTRONIC DEVICES & CIRCUITS
MSE – 306 MDC**

Duration : 3 hrs.

Full Marks : 70

Time : 20 min.

(PART-A: Objective)

Marks : 20

Choose the correct answer from the following:

1 × 20 = 20

1. The device which converts AC to DC is called
 - a. Rectifier
 - b. Inverter
 - c. Converter
 - d. None of the above
2. Semiconductors have
 - a. Metallic bond
 - b. Covalent bond
 - c. Ionic bond
 - d. All of the above
3. In N-type semiconductor, the minority carriers are
 - a. Electron
 - b. Ions
 - c. Holes
 - d. All of the above
4. Semiconductors are
 - a. Positive temperature coefficient of resistance
 - b. Negative temperature coefficient of resistance
 - c. Independent of temperature.
 - d. None of these
5. In Conductor, the forbidden energy band is
 - a. Large
 - b. Extremely large
 - c. Small
 - d. Negligible
6. Current division rule is applicable to resistors in a circuit which are in
 - a. Series
 - b. Parallel
 - c. Both (a) & (b)
 - d. None of these
7. In Inverting OP-AMP, the signal is applied to
 - a. Non-Inverting terminal
 - b. Inverting terminal
 - c. Both (a) & (b)
 - d. None of these
8. A transistor is a
 - a. Two terminal device
 - b. One terminal device
 - c. Three terminal device
 - d. None of these
9. A positive clipper removes
 - a. Positive half of the input signal
 - b. Negative half of the input signal
 - c. Both (A) & (B)
 - d. None of these

10. The arrow symbol in a transistor represents
 - a. Emitter
 - b. Base
 - c. Collector
 - d. None of these
11. The base of a transistor is
 - a. Moderately doped
 - b. Heavily doped
 - c. Lightly doped
 - d. None of these
12. Voltage division rule is applicable to resistors which are in
 - a. Parallel
 - b. Series
 - c. Both (A) & (B)
 - d. None of these
13. Resistivity of a wire depends on
 - a. Length of the wire
 - b. Cross section area
 - c. Nature of the Material
 - d. All of the above
14. In active region of operation of a transistor
 - a. both the junctions are forward biased
 - b. both the junctions are reversed biased
 - c. EB junction is forward biased while CB junction is reversed biased
 - d. EB junction is reversed biased while CB junction is forward biased
15. Operation amplifier can amplify signals having frequency of
 - a. 0 Hz
 - b. 1 MHz
 - c. Both (a)&(b)
 - d. None of these
16. A diode allows to flow of current in
 - a. One direction only
 - b. Both directions
 - c. Both (a)&(b)
 - d. None of these
17. A diode has
 - a. Two terminals
 - b. One terminal
 - c. Three terminals
 - d. None of these
18. The effect of decreasing junction width is called
 - a. Reverse bias
 - b. Forward bias
 - c. Both (a)&(b)
 - d. None of these
19. The material that does not allow the flow of current is called
 - a. Conductor
 - b. Insulator
 - c. Semiconductor
 - d. All of these
20. Donor type semiconductor is formed by adding impurity of valency
 - a. 3
 - b. 4
 - c. 5
 - d. 6

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(PART-B : Descriptive)

Time: 2hr. 40min

Marks: 50

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

1. Describe Insulator, Semiconductor and Conductor with the help of energy band diagram. **10**

2. **a.** Find the expression of current density in a conductor of length L. **5+5=10**
b. Explain with the help of diagram the formation of chemical bond in semiconductor

3. **a.** Explain with the help of diagram the operation of PNP transistor. **5+5=10**
b. Explain with the help of diagram the working principle of Positive clipper.

4. **a.** What do you mean by Rectifier? Explain with the help of diagram the working principle of half wave rectifier. **6+4=10**
b. Write short notes on Diode.

5. **a.** What is an OP-AMP? Draw the pin configuration of IC-741(OP-AMP). **6+4=10**
b. Define Ohm's law. What are the factors affecting resistance?

6. **a.** If three resistors of values $10\ \Omega$, $5\ \Omega$ & $15\ \Omega$ are connected in series across a voltage source of 60 V, then using voltage division rule find the voltages across each resistor. **6+4=10**
b. If two resistors of values $20\ \Omega$ & $10\ \Omega$ are connected in parallel, then find the equivalent resistance.

7. **a.** What is Transistor ? What are the various parts of transistor? Explain briefly. **6+4=10**
b. Discuss different modes of operation of transistor.

8. Write short notes on the followings: **4+6=10**
 - a.** Characteristics of an Ideal Op-Amp.
 - b.** Open -Loop configurations of Op-Amp.

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