Indian Maritime University

(A Central University, Govt of India)

Mar/Apr'26 SE

Programme Name: B Tech (ME)

Semester: II

Subject Code: UG11T4203

Subject Name: Basic Electronics

Date: 17.04.2026	Max Marks: 70
Duration: 03 Hrs	Pass Marks: 35

General Instructions

(i) All Sections (A, B & C) are to be attempted.
(ii) Options, if any, are specified in respective section.

Section A

Answer All Questions

(10 X 1=10 Marks)

1. Zener diode is used as _____.
   a) an amplifier
   b) an inverter
   c) a voltage regulator
   d) an integrator

2. A Bipolar transistor has a total of _____
   a) Two similarly doped regions
   b) Three alternatively doped regions
   c) Two alternatively doped regions
   d) Three similarly doped regions

3. _____ gate is also referred as universal logic gate.
   a) AND gate
   b) OR gate
   c) NOR gate
   d) NOT gate

4. In electronic circuits, SCR is nothing but _____.
   a) Silicon controlled rectifier
   b) Silicate controlled rectifier
   c) Silicon controlled rectification
   d) Silicon controlling rectification

5. The parallelogram symbol is used to represent _____ in flowchart.
   a) Start/Stop
   b) Decision
   c) Process
   d) Input/Output

6. The 8085 is a _____ microprocessor.
   a) 16 bit
   b) 32 bit
   c) 8 bit
   d) 64 bit

7. Typical output of "7812" voltage regulator is _____.
   a) +/-12 V
   b) -12 V
   c) +12 V
   d) None of the above

8. An op-amp has _____ input impedance and _____ output impedance.
   a) high; low
   b) high; high
   c) low; low
   d) low; high

9. An oscilloscope often depicts _____.
   a) current and time
   b) resistance and time
   c) voltage and time
   d) power and time

10. The gate pulse is removed once the SCR is fired. The current in the SCR at this point will _____.
   a) Immediately fall to zero
   b) Rise up
   c) Remain the same
   d) Rise a little and then fall to zero

Section B

Answer All Questions

(5 X 2=10 Marks)

11. Highlight the role and types of multi-vibrators in electronic circuits.
12. Comment of extrinsic semiconductors.
13. List out 4 characteristics of an ideal op-amp.
14. Which type of transistor configuration is generally preferred in amplifiers? Justify.
15. Define: Flow-chart.

Section C

Seven Questions of 10 Marks each of which any 05 questions to be answered.

(5 X 10=50 Marks)

16. a) Discuss the use of filters in rectifier circuits? Explain the Capacitor filter in detail. (5 Marks)
b) What is a clipper? Explain the operation of a positive diode clipper with a clear circuit layout and waveform. (5 Marks)

17. a) What is a summing amplifier? Draw the OPAMP based circuit diagram and deduce the expression for output of a summing amplifier with N inputs V1, V2, ... VN and output Vo. (5 Marks)

b) Explain working of 1 to 4 demultiplexer with truth table. (5 Marks)

18. a) What is transistor biasing? Explain the voltage divider bias approach. (5 Marks)

b) Explain the role of capacitors in the transistor amplifier. (5 Marks)

19. a) Explain the Automation Control and Monitoring System (IACMS) using a block diagram. (5 Marks)

b) Differentiate between relay logic system and PLC control system. (5 Marks)

20. a) Explain memory types such as RAM, ROM-PROM, EPROM, EEPROM, & UVPROM. (5 Marks)
b) Explain the design of the 2x4 decoder. What are the applications of decoders? (5 Marks)

21. a) Explain the modes of operation and characteristics of the SCR. (5 Marks)

b) Draw and describe an integrator circuit with an operational amplifier. (5 Marks)

22. a) Write a brief overview of the LED lighting system, including construction, operation, characteristics, benefits, and applications. (5 Marks)
b) Summarize the UJT relaxation oscillator in a brief note. (5 Marks)