Indian Maritime University

(A Central University, Govt of India)

Supplementary Examinations – March/April 2025

Programme Name: B Tech (ME)

Semester: II

Subject Code: UG11T4203

Subject Name: Basic Electronics

Date: 17.03.2025	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. Application of zener diode is _____
   a) an amplifier
   b) an inverter
   c) a voltage regulator
   d) an integrator

2. Application of transistor is _____
   a) an amplifier
   b) a switch
   c) both options a & b
   d) an rectifier

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

4. Application of Op – amp is _____
   a) rectifier
   b) filter
   c) comparator
   d) all above

5.The _____symbol is used to represent process in flowchart.

a) Diamond
b) Circle
c) Rectangle
d) Parallelogram

6. 8085 is _____ microprocessor

a) 16 bit
b) 32 bit
c) 8 bit
d) 64 bit

7. PLC stands for

a) Programmable Linear Controller
b) Power Line Controller
c) Programmable Logic Controller
d) None of the above

8. Output of 7812 voltage regulator is _____

a) +/-12 V
b) -12 V
c) +12 V
d) None of the above

9. _____ transistor configuration is most commonly used connection.

a) Common Base
b) Common Collector
c) Common Emitter
d) None of the above

10. After firing an SCR, the gate pulse is remove. The current in the SCR 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. What is multivibrator? What are the types of multivibrator?
12. What are the characteristics of ideal op-amp?
13. Define- flowchart.
14. What is Integrated Circuit (IC)? Describe advantages of IC.
15. Explain the need of voltage regulator

Section C

Answer any 5 questions (5 X 10 = 50 Marks)

16. a) What is filter circuit in rectifier?. Explain Capacitor filter in detail. (5 Marks)
    b) What is clipper? Explain working of positive diode clipper with neat circuit diagram and waveform. (5 Marks)

17. a) What is transistor biasing? Explain voltage divider bias method. (5 Marks)
    b) Explain Role of Capacitors in Transistor Amplifier. (5 Marks)

18. a) Explain Modes of operation and characteristics of SCR. (5 Marks)
    b) Draw and explain integrator circuit using operational amplifier. (5 Marks)

19. a) Explain Types of memories (RAM, ROM-PROM, EPROM, EEPROM, UVPROM). (5 Marks)
    b) Explain Design of 2X4 decoder. What are the applications of decoder? (5 Marks)

20. a) Explain the working principle of Cathode Ray Oscilloscope. (5 Marks)
    b) Write a program to subtract two 8-bit numbers with borrow where first number is at 2500 memory address and second number is at 2501 memory address and store the result into 2502 and borrow into 2503 memory address. (5 Marks)

21. a) Differentiate Relay logic system & PLC control system. (5 Marks)
    b) Design a monostable multivibrator for a pulse width of 10ms using IC 555. (Take capacitor value 0.1 μF for design) (5 Marks)

22. a) Write short note on LED on basis of construction, working, characteristics, advantages and application. (5 Marks)
    b) Write short note on UJT relaxation oscillator. (5 Marks)