Indian Maritime University

(A Central University, Govt of India)

Supplementary Examinations– September/October 2024
Programme Name: B Tech (ME)

Semester: II

Subject Code: UG11T4203

Subject Name: Basic Electronics

Date: 17.09.2024	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

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

1. The electrical resistance of the depletion region is large because
   a) It has no change carriers
   b) It has a large number of charge carriers
   c)It contains electrons as charge carriers
   d)It has holes as charge carriers

2. The doped region in a transistor is
   a) Emitter and Collector
   b) Emitter and Base
   c) Collector and Base
   d) Emitter, Collector and Base

3. What is the full form of AVR?
   a) Automatic voltage regulator
   b) Active voltage regulator
   c) Automatic volume regulator
   d) Automatic Voltage Controller

4. Which gate will a NAND gate be equivalent to when two inputs of NAND gates are shorted?
   a) AND gate

b) OR gate
c) NAND gate
d) NOT gate

5. 5. Which is the major functioning responsibility of the multiplexing combinational circuit?
a) Decoding the binary information
b) Generation of all min terms in an output function with OR-gate
c) Generation of selected path between multiple sources and a single destination
d) Encoding of binary information

6. Which of the following is correct for microprocessor Intel 8085?
a) 8 bit microprocessor
b) 16 bit microprocessor
c) 4 bit microprocessor
d) 32 bit microprocessor

7. In an ideal op-amp, which is not true?
a) Open loop voltage gain is infinite
b) Input resistance is infinite
c) Slew rate is infinite
d) CMRR is zero

8. Which of the following terminals does not belong to the MOSFET?
a) Drain
b) Gate
c) Base
d) Source

9. Actual instructions in flowcharting are represented in _____
a) Circles
b) Boxes
c) Arrows
d) Lines

10. Typically oscilloscope represents _____
a) current and time
b) resistance and time
c) voltage and time
d) power and time

Section B

Five Questions of 02 Marks each

11.Define intrinsic semiconductor.

12. Write one applications of counter, register.

13. Define slew rate in OP-AMP

14. Which configuration is commonly used in amplifiers why?

15. Explain the need of voltage regulator

Section C

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

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

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]

17.b) Explain working of 1 to 4 demultiplexer with truth table. [5]

18.a) Draw the circuit diagram and explain the working of IC 555 as Astable Multivibrator. [5]

b) Write a program to add two 8-bit number using 8085 microprocessor. [5]

19.a) Explain Automation Control and Monitoring System (IACMS)with block diagram [5]

b) Differentiate Relay logic system & PLC control system. [5]

20.a) Explain Single Stage Transistor Amplifier CE configuration [5]
b) Explain Design of 2X4 decoder. What are the applications of decoder? [5]

21. a) Explain Modes of operation and characteristics of SCR. [5]
b) Draw and explain integrator circuit using operational amplifier. [5]

22.a) Simplify the following using K map.
$f(A,B,C,D)=\Sigma m(7,8,9)+\Sigma d(10,11,12,13,14,15)$ [5]

22.b) Explain working of ADC with neat diagram. [5]