Indian Maritime University

(A Central University, Govt of India)

End Semester Examinations – December 2023

Programme Name: B.Sc. Nautical Science

Semester: I

Subject Code: UG21T5104

Subject Name: Electronics

Date: 26.12.2023	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 Barrier Voltage at a P-N Junction for Germanium is about
a) 3.5V b) 3V C) Zero d) 0.3 V

2. The input impedance of a transistor is .....
(a) high (b) low (c) very high (d) almost zero

3. The conduction angle of Class B amplifier is
a) 360^0 b) 180^0 c) 90^0 d) less than 90^0

4. The voltage divider biasing circuit is used in amplifiers quite often because it
(a) Limits the ac signal going to the base
(b) Makes the operating point almost independent of β
(c) Reduces the dc base current
(d) Reduces the cost of the circuit

5. Which of the following multivibrator is called one shot multivibrator?
a) Monostable b) Astable c) Bistable d) Metastable

6. In a phase shift oscillator the frequency determining elements are
(a) L and C (b) R and C (c) R, L and C (d) R and L

7. Which logic gate is known as Universal Gate?
a) NAND b) NOT C) AND d) EX-OR

8. A flip-flop can store
(a) one bit of data (b) two bits of data (c) three bits of data (d) any number of bits

9. 8085 Microprocessor has _____ data lines and _____ address lines.

a) 16, 8 b) 4, 4 c) 8, 8 d) 8, 16

10. Instructions in a microprocessor, are fetched from
(a) Memory (b) ALU (c) CPU (d) Control unit

Section B

Five Questions of 02 Marks each

11. Define threshold voltage of PN junction diode.
12. In a transistor, I_B = 68 μA, I_E = 30 mA and β = 440. Find the value of α. Hence determine the value of I_C .
13. State the Barkhausen's criteria for oscillation.
14. Define apogee and perigee.
15. What are the various addressing modes of 8085 microprocessor?

Section C

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

16. a) Compare half-wave and full-wave rectifier. (5)
b) A power supply A delivers 10V dc with a ripple of 0.5V r.m.s. while the power supply B delivers 25V dc with a ripple of 1mV r.m.s. Which is better power supply ? (5)

17.(a) What is transistor biasing. Explain base resistor method? (5)
(b) What is operating point. Explain the importance of load line in transistor circuit analysis ? (5)

18 (a) Draw the practical circuit of CE amplifier. (3)
(b) Explain the operation of RC coupled amplifier with its circuit diagram. (7)

19.(a) Explain the working of full adder circuit with truth table and circuit diagram (5)
(b) Simplify the Boolean function F = A' (A+B) + (B+AA) (A+B') (5)

20. Derive the voltage equation of FM wave and list the advantages of FM over AM (10)
21. (a)Explain the function of each stage of superhetrodyne receiver with the help of a block diagram. (5)
(b) Draw the diode detector circuit and explain its action (5)

22. Explain address and data bus, control and status signal and applications of microprocessors. (10)