

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – June 2023
Programme Name: B Tech (ME)
Semester: II
Subject Code: UG11T4203
Subject Name: BASIC ELECTRONICS

Date: 31.05.2023

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.

QP setters to specify the following as applicable:-

- (iii) Tables (Steam/Log/Nautical Almanac etc) that can be used.
- (iv) Chart Work Booklets to be used.
- (v) Any other tables/charts to be used.

Section A

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable. **(1x10=10)**

1. When a Pentavalent impurity is added to a pure semiconductor it creates
 - (A) Holes
 - B) Free Electrons
 - C) Valance Electrons
 - D) Bound Electrons

2. In a rectifier circuit the primary function of a filter is
 - (A) Minimize AC Output and DC input variation
 - (B) Suppress the odd harmonics
 - (C) To maximize the AC input variations
 - (D) Remove the ripples out of the rectified output

3. The collector base junction in a transistor has
- A) Forward bias all the times
 - B) Low resistance
 - C) Reverse bias all the times
 - D) All the above
4. The phase difference between the output and input voltage of CE amplifier is
- (A) 180°
 - (B) 0°
 - (C) 90°
 - (D) 270°
5. Decimal number 15 equivalent binary number is
- (A) 1110
 - (B) 1010
 - (C) 1111
 - (D) 1101
6. OP- AMP can amplify both
- (A) Both AC & DC signal
 - (B) AC signal only
 - (C) DC signal only
 - (D) Neither DC nor AC signal
7. Which of the following STACK is used in 8085
- (A) LIFO
 - (B) FIFO
 - (C) LILO
 - (D) FILO
8. A CRO can be used to measure
- (A) A.C voltages only
 - (B) D.C Voltages only
 - (C) Frequency
 - (D) All the above
9. 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
10. A mono - stable multivibrator has
- (A) No stable state

- (B) One stable state
- (C) Two stable state
- (D) None of the above

Section B

Five Questions of 02 Marks each **(2x5=10)**

11. What is multivibrator? What are the types of multivibrator?
12. Draw the Symbol and truth table of EX- OR gate.
13. What are the characteristics of ideal op-amp?
14. Define the role of capacitor in transistor amplifiers?
15. What do you mean by Parity Flag?

Section C

Seven Questions of 10 Marks each of which any 05 questions to be answered.
(5x10=50)

16. a) Explain the effect of temperature on semiconductor. (5)
b) Describe essentials of a transistor biasing circuit and stability factor. (5)
17. a) Explain the working principle of Cathode Ray Oscilloscope. (5)
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)
18. Draw the symbol of n - channel JFET and explain the working of n- channel JFET with neat diagram (10)
19. a) Explain a half adder circuit with truth table (5)
b) Define multiplexer and explain the application of multiplexer (5)
20. Explain pin diagram of 8085 microprocessor. (10)
21. a) Explain circuit configuration of operational amplifier as inverting amplifier (5)
b) Define flip flop and explain JK flip flop with truth table. (5)
22. a) Differentiate Relay logic system & PLC control system. (5)
b) Design a monostable multivibrator for a pulse width of 10ms using IC 555. (Take capacitor value 0.1 μ F for design) (5)

