

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – June 2024
Programme Name: - B Tech(ME)

Semester: II
Subject Code: UG11T4203

Subject Name: BASIC ELECTRONICS

Date: 03.06.2024	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. How many valance electrons are present in a pentavalent impurity used for doping semiconductor?

- (A) 3
- (B) 4
- (C) 5
- (D) 6

2. Identify the wrong statement

- (A) BJT has 2 junctions
- (B) BJT is a current operated device
- (C) Collector current in a BJT is always less than emitter current
- (D) Common Base configuration is commonly used in a BJT amplifier

3. Application of a transistor is _____

- (a) an amplifier
- (b) a switch
- (c) both options a & b
- (d) Schottky barrier

4. The majority charge carriers in a p-type semiconductor is _____

- (a) Holes
- (b) Electrons
- (c) Both a and b
- (d) None of the above

5. Which terminal does not belong to the SCR?

- (A) Gate
- (B) Base
- (C) Cathode
- (D) Anode

6. Which of the following terminals does not belong to the MOSFET?

- (a) Drain
- (b) Gate
- (c) Base
- (d) Source

7. Number of data bus in microprocessor 8085 is

- a) 8 bit
- b) 4 bit
- c) 16 bit
- d) 2 bit

8. Which of the following are the components of 555 timer?

- a). R-S Flip Flop
- b). Operational amplifier
- c). Transistor
- d). All of the above

9. Half adder has _____ inputs and _____ outputs respectively

- (A) 2 , 3
- (B) 3 , 2
- (C) 2 , 2
- (D) 3 , 1

10. Which symbol is used for decision making block in a flowchart?

- (A) Rectangle

- (B) Parallelogram
- (C) Diamond
- (D) Oval

Section B

Five Questions of 02 Marks each

- 11. List the various types of filters used for smoothening rectifier output
- 12. What are the ideal characteristics of Op-Amp?
- 13. Add two BCD number 61+32
- 14. What is a Clamping Circuit?
- 15. What is DVM?

Section C

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

- 16. (a) Explain the working of Full-wave bridge rectifier with circuit diagram (6)
- (b) Compare BJTs and FETs (4)
- 17. (a) Explain DC Load Line of a transistor (5)
- (b) Explain various modes of working of a SCR (5)
- 18. (a) Draw and explain the V-I characteristics of PN Junction Diode. (5)
- (b) Draw and explain the circuit diagram and the frequency response of a RC coupled amplifier. (5)
- 19. (a) Explain line regulation and load regulation of voltage regulator (4)
- (b) Minimize the following logic in POS form K-map. (6)
- 'w' denotes Maxterms and 'd' denotes don't cares
- $F(A, B, C, D) = M(6, 7, 8, 9) + d(12, 13, 14, 15)$
- 20. (a) Explain half adder with truth table, equation and circuit diagram (5)
- (b) Construct a 8X1 multiplexer using 4X1 and 2X1 multiplexers (5)

- 21. (a) Explain working of Dual slope ADC with a block diagram (5)
- (b) Explain the working of Cathode Ray Oscilloscope with a diagram (5)

- 22. (a) Write a 8085 assembly program for adding two 8-bit numbers located at address 4020H and 4021H and storing the result at address 4050H (5)
- (b) Compare relay based system and PLC (5).

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