

**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)
- 'M' 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)

\*\*\*\* END \*\*\*\*

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