

**Section A**

*Answer all questions. Each question has Marks of 3*

1. What are TTL gates and CMOS gates ?
2. What is a 4 variable K-map ?
3. State and Explain De-Morgan's theorems
4. What is a parity checker ?
5. What are flip-flops ? What are forbidden conditions ?
6. What is Data flip-flop ? What are its advantages over RS latch ?
7. What is meant by A/D conversion ? What are its needs ?
8. What is stack ? Explain stack operation in 8085. Differentiate between memory stack and cascade stack
9. Write a short note on 8255 IC
10. What are stack pointer and program counter ?

**Section B**

*Answer any 5 questions. Each question has Marks of 6*

11. Explain the construction and working of a 4 to 1 multiplexer
12. Do the following
  - (a) Add  $1100011_2$  to  $11011_2$
  - (b) Prove  $(A + B)(A + C) = A + BC$
13. Write a short note on shift registers
14. Explain the construction and working of a JK flip-flop ?
15. Explain the working of R-2R ladder
16. Write an 8085 assembly language program to find the difference of 2 decimal numbers
17. Explain the register system of 8085 microprocessor
18. Discuss the bus structure of 8085

**Section C**

*Answer any 4 questions. Each question has Marks of 10*

19. (a) Write a short note on decoders and encoders  
(b) Simplify  $F = \sum m(3, 4, 6)$
20. Explain the construction and working of half and full adders
21. Explain the construction and working of NE 555 timer as astable multivibrator.

22. What is meant by D/A conversion ? Explain the working of resistive divider and binary ladder
23. (a) Write a short note on addressing modes of 8085  
(b) Write a short note on instruction set of 8085
24. What are machine language and assembly language ? Why are they called low-level languages ?  
What are mnemonics ? Explain the assembly language programming of Intel 8085 with example

PHYSICS