



- 3 (a) Describe the organization of a semiconductor memory used in microcomputers. Describe the memory modules and memory packages used in microcomputer. **10**  
 (b) Explain in brief RAM, ROM, NVRAM. **6**

**OR**

- 3 (a) Describe the PCI and the ISA bus standards. **8**  
 (b) Explain the high speed serial bus standards. **6**
- 4 (a) Do as directed : **10**  
 (1) Convert  $(264)_{10} = \underline{\hspace{2cm}}$   
 (2)  $(010010100)_2 + (11001011)_2 = \underline{\hspace{2cm}}$   
 (3) Subtract using 2's complement  $(0110)_2 - (0011)_2$   
 $= \underline{\hspace{2cm}}$   
 (4)  $(23AC)_{16} + (1100)_2 = \underline{\hspace{2cm}}$   
 (5)  $(12.25)_{10}$  represent as floating point number.  
 (b) Prove the De Morgan's Theorem. **6**

**OR**

- 4 (a) What do you mean by input output device? **8**  
 Discuss the impact and non impact printers  
 (b) What are video displays? Discuss the CRT technology in brief. **6**
- 5 Write short notes : (any two) **14**  
 (1) Basic Logic Gates  
 (2) Reading and writing on an optical device  
 (3) Pointing device and their types  
 (4) Hamming code.

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