

- Q. 1. (a) Explain AND, OR and NOT gate using diodes and transistor circuit.  
(b) Find the 16' complement of AF3B  
(c) Convert AF3B to binary.  
(d) What is the largest binary number that can be expressed with 12 bits? What is the equivalent decimal and hexadecimal?  
(e) What is the exact number 6-bytes in a system that contain.  
(i) 32K Bytes  
(ii) 64 M Bytes  
(iii) 6.4 G Bytes
- Q. 2. (a) Simplify the following Boolean function using five variable mps.  
 $F(A, B, C, D, E) = M(0, 1, 4, 5, 16, 17, 21, 25, 29)$   
(b) Simplify the following Boolean function in the product of sums :-  
 $F(W, X, Y, Z) = M(0, 2, 5, 6, 8, 10)$
- Q. 3. (a) Design a 4-bit gray code to binary code converter.  
(b) Design a 4-bit circuit incrementer using four half adder.
- Q. 4. (a) Construct a 4-to-16-line decoder with five 2-to-4-line decoder with enable.  
(b) Design a BCD adder subtractor circuit.
- Q. 5. (a) Design a 3-bit synchronous counter using D flip-flop.  
(b) Design a serial 2's complementer with a shift register and a flip-flop. The binary number is shifter out from one side and its 2's complement shifted into the other side of the shift register.
- Q. 6. (a) Explain internal diagram of OP-Amp.  
(b) Draw the architecture of 8085 microprocessor.
- Q. 7. (a) Explain R-2R DAC.  
(b) Explain successive approximation ADC.
- Q. 8. Write short note (any two) :-  
(a) PLD  
(b) PAI  
(c) CAM