

B. Sc. DEGREE END SEMESTER EXAMINATION - OCT 2020 : FEBRUARY 2021**SEMESTER 1 : COMPUTER APPLICATION****COURSE : 19U1CRCAP1 : DIGITAL ELECTRONICS AND MICRO PROCESSOR***(For Regular - 2020 Admission and Supplementary/Improvement - 2019 Admission)*

Time : Three Hours

Max. Marks: 75

PART A**Answer All (1 mark each)**

1. Define Non-Positional number system.
2. Find the BCD of $(25)_{10}$
3. State absorption law.
4. Define enable inputs.
5. What you mean by adder?
6. Define bistable device.
7. What you mean by BCD counter.
8. Define counters.
9. What is the use of program counter?
10. What is a bus structure?

(1 x 10 = 10)**PART B****Answer any 8 (2 marks each)**

11. Perform the subtraction $110011-1111$ using 2's compliment
12. Perform the subtraction $10010011-1001$ using 1's compliment
13. Prove the equation $(x+y)(x+z) = x+yz$.
14. What you mean by controlled inverter ?
15. Explain about encoders.
16. Explain about JK flip-flops
17. Differentiate synchronous and asynchronous counters.
18. What are the use of registers?
19. What is the function of execution unit?
20. How many types of flag registers are in 8086 microprocessor?

(2 x 8 = 16)**PART C****Answer any 5 (5 marks each)**

21. Write the steps to subtract a smaller number from a larger number using 1's compliment with example.
22. Explain BCD with its advantage and disadvantage and also Perform $243 - 412$ and $599 + 984$ using BCD
23. Draw the circuit diagram of even parity bit generator and checker.
24. Explain about decoders and draw 3×8 decoder with enable inputs.
25. Compare RS and JK flip-flops.
26. Differentiate SISO and PIPO shift registers.
27. How many operating modes does 8086 have?

(5 x 5 = 25)

PART D

Answer any 2 (12 marks each)

28. Explain the steps to convert SOP and POS to its standard normal form and convert the expressions given below. a) $F(A,B,C) = (A+B).(B+C).(A+C)$ b) $F(A,B,C) = AC+AB+BC$
29. Define K-MAP and don't care condition. Simplify using k-map a) $F(N,X,Y,Z)=\sum(0,1,2,3,4,6,7,11,15)$ b) $F(X,Y,Z,W)=\sum M(1,3,7,11,15)$ and $dc(X,Y,Z,W)=\sum M(0,2,5)$ c) $F(a,b,c,d)=\sum(2,3,6,7,8,10,11,13,14)$
30. Discuss about multiplexers and demultiplexers.
31. Explain the functional units of 8086 microprocessor

(12 x 2 = 24)