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" IT'S HARD TO BEAT A PERSON
WHO NEVER GIVES UP.

Babe Ruth, American professional baseball player "

B.E. (Computer Science & Engineering (New)) Third Semester (C.B.S.)
Digital Circuits & Fundamentals of Microprocessor

P. Pages : 2

Time : Three Hours

1738

NIR/KW/18/3324

Max. Marks : 80

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Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.
11. Use of non programmable calculator is permitted.

1. a) Convert the following. **8**
1) $(110110)_G = (?)_2$
2) $(ABCD)_H = (?)_8$
3) $(756)_8 = (?)_2$
4) $(65.265)_D = (?)_2$

b) Reduce the following boolean expression **6**
1) $F(A,B,C,D) = \Sigma m(4,5,6,10,11,12,13,14)$
2) $F(W,X,Y,Z) = \Pi M(0,1,2,4,7,9,11)$

OR

2. a) Why NAND and NOR are called universal gate. Realize all basic gates using this. **7**

b) State and prove De'Morgans Theorem. **7**

3. a) Implement the following using 8:1 MUX $F(A,B,C,D) = \Sigma m(1,4,6,7,9,11,13)$ **7**

b) What is mean by weighted and non-weighted code. **6**

OR

4. a) Design 3-bit priority encoder. **7**

b) Implement full adder using two half adder. **6**

5. a) What is mean by race around condition Explain how to overcome. **6**

b) Explain J-K F/F using NAND gate with its working. **7**

OR

6. a) Convert the following F/F. **8**
   1) J-K F/F to T F/F
   2) D F/F to S-R F/F

   b) Explain different types of triggering methods. **5**

7. a) Explain 4-bit ripple counter with waveform. **7**

   b) Differentiate between synchronous and asynchronous counter. **6**

OR

8. a) Design mod-6 synchronous counter using J-K F/F. **7**

   b) Explain bi-directional shift register. **6**

9. a) Explain the architecture of 8085 in detail. **10**

   b) Explain difference between PAL & PLA. **4**

OR

10. a) Explain different addressing modes of 8085 microprocessor. **5**

   b) What is flag register? Explain in detail. **5**

   c) Explain the following. **4**
   1) ROM   2) EEPROM

11. a) Draw and explain memory write machine cycle in details. **7**

   b) Explain JUMP instructions of 8085. **6**

OR

12. a) Write a program for counting number of 1's in an 8 bit data. **6**

   b) Explain different interrupts in 8085 μP. **7**

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The secret of getting ahead is getting started.

~ Mark Twain

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