

DEPT. OF COMPUTER SCIENCE & ENGG.  
KONGU ENGINEERING COLLEGE,  
THOPPIPALAYAM (PO)  
PERUNDURAI (TK), ERODE - 638 060

SSK 8/8/19  
Name and signature of Hall Supdt. with Date



# KONGU ENGINEERING COLLEGE

PERUNDURAI ERODE - 638 060.  
(Autonomous)



Name of the Student	S.SAKTHI PRASANNA	Register No.	18CSR166
Programme	BE	Branch & Semester	Computer Science III
Course Code and Name	18CST32 Computer Organization	Date	19.08.2019
		No. of Pages Used	7.

## MARKS TO BE FILLED IN BY THE EXAMINER

PART - A		PART - B		Grand Total
Question No.	Max Marks : 2	Question No.	Max Marks : 10	Max. Marks : 50
1	0	11	i) 2	31/11
2	0		ii) 0	
3	0	12	i)	
4	0		ii)	
5	1	13	i) 0	
6	2		ii) 0	
7	0	14	i) 0	
8	0		ii)	
9	0	14	i)	
10	0		ii)	
TOTAL	2	TOTAL	2	31/11
Total marks in words : 20				31/11

### INSTRUCTION TO THE CANDIDATE

1. Check the Question Paper, Programme, Course Code, Branch Name etc., before answering the questions.
2. Use both sides of the paper for answering questions.
3. POSSESSION OF ANY INCRIMINATING MATERIAL AND MALPRACTICE OF ANY NATURE IS PUNISHABLE AS PER RULES.

Mallappa  
Name of the Examiner

Signature of the Examiner  
with Date



# PART-A

Row 8  
8421  
0100

1) 2,4

$$\begin{array}{r} 0010 \quad 0100 \\ \quad \quad \quad 1 \quad \quad \quad 1 \\ \hline 0110 \quad 0101 \end{array}$$

-2, -4

$$-2 = 0110 \quad 0101$$

2, 2

$$\begin{array}{r} 0 \quad 0 \quad 0 \\ 0 \quad 1 \quad -1 \\ 1 \quad 0 \quad + \\ 1 \quad 1 \quad \times \end{array}$$

$$\begin{array}{r} 2 \\ 2 \\ \hline 0 \quad 0 \quad 1 \quad 0 \end{array}$$

2) 4, 3

$$\begin{array}{r} 0100 \\ \quad \quad \quad 1 \\ \hline 1110 \end{array}$$

$$\begin{array}{r} 0011 \\ \quad \quad \quad 1 \\ \hline 0001 \end{array}$$

$$\begin{array}{l} +4 = 1110 \\ 43 = 0101 \end{array}$$

$$3 = 0001$$

4

$$\begin{array}{r} 8421 \\ 0100 \end{array}$$

3

$$\begin{array}{r} 8421 \\ 0011 \end{array}$$

3) The 8 bit that the representation of 2 would require

$$\begin{array}{r} 0100 \\ \quad \quad \quad 1 \\ \hline 0110 \end{array}$$

4) Array  
Loops  
pointers  
can store

$$\begin{array}{r} 0100 \\ 0011 \\ \hline \end{array}$$

$$\begin{array}{r} 0100 \\ 0011 \\ \hline 0100 \end{array}$$

$$\begin{array}{r} 010 \\ \hline 010 \end{array}$$



5)  $C_n \oplus C_{n-1}$   
 ~~$= 0010$~~   
 $= (0010)$

$$\begin{array}{r} 111111110+1 \\ 0+11 \\ \hline 2 \end{array}$$

6)  $A = 11111010$

$B = 00001010$

$$\begin{array}{r} 11111010 \\ 00001010 \\ \hline \end{array}$$

$$\begin{array}{r} 11111010 \\ 01000000 \\ \hline \end{array}$$

$$\begin{array}{r} 01111010 \\ 00111100 \\ \hline \end{array}$$

$$\begin{array}{r} 00001010 \\ 11110000 \\ \hline \end{array}$$

$$\begin{array}{r} 00101010 \\ 00001010 \\ \hline \end{array}$$

$$\begin{array}{r} 01101010 \\ 00101010 \\ \hline \end{array}$$

$$\begin{array}{r} 00101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 01101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 00101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 01101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 00101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 01101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 00101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 01101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 00101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 01101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 00101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 01101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 00101010 \\ 10101010 \\ \hline \end{array}$$

$$\begin{array}{r} 01101010 \\ 10101010 \\ \hline \end{array}$$

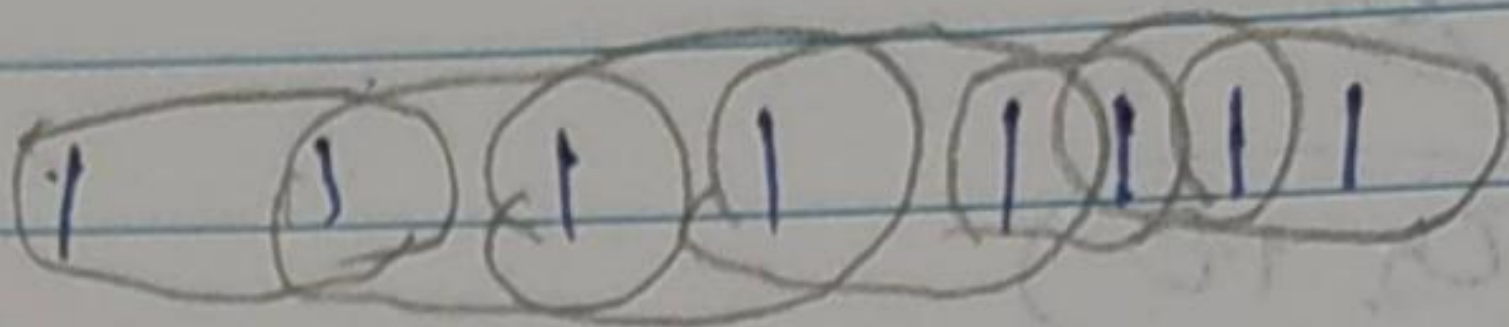
7)  $b(n-1)-1$   
 $= 0110(b-1)-1$   
 $= 0110(5)-1$   
 $= 00111001$

$$\begin{array}{r} n \times n \\ 8421 \end{array}$$

$$0110(5)-1$$



8) 11111111



Booth algorithm - 7.

9) There 3 (3-2) reductions are needed to reduce 16 Summands 2

$$\begin{array}{r} 001\phi \\ 0010 \\ \hline 0011 \end{array}$$

$$\begin{array}{r} 0011 \\ 0011 \\ \hline 0011 \\ 0010 \end{array}$$

$$\begin{array}{r} 0010 \\ 0010 \\ \hline 0000 \\ 0000 \end{array}$$

$$\begin{array}{r} 0011 \\ 0011 \\ \hline 0000 \end{array}$$

$$\begin{array}{r} 0100 \\ 0100 \\ \hline 0100 \end{array}$$

$$\begin{array}{r} 0100 \\ 0100 \\ \hline 0100 \end{array}$$

$$\begin{array}{r} 0101 \\ 0101 \\ \hline 0101 \end{array}$$



10

1 1 0 1      1 0 1 1  
0 0 1 0      0 0 1 0

0 1 1 0 1      1 0 1 1  
0 1 1 0 0      1 0 1 0

0 0 0 0 1      1 0 1 1  
0 1 0 0 1      1 0 1 0

~~0 0 0 0 1~~      1 0 1 1

PART-B

(i)

memory

Functional unit

ALU

R<sub>4</sub>

R<sub>3</sub>

R<sub>2</sub>

R<sub>1</sub>

Control unit



(ii)

a) 7 and 9

$$\begin{array}{r} 0111 \\ 1001 \\ \hline 0111 \\ 0101 \\ \hline 0110 \\ 0001 \\ \hline 0111 \\ 0000 \\ \hline 1111 \\ 0001 \\ \hline 0000 \end{array} \quad \begin{array}{r} 1001 \\ 1010 \\ \hline 0111 \\ 0100 \\ \hline 1010 \\ 0010 \\ \hline 0001 \\ 1001 \\ \hline 1000 \end{array}$$

13)

(i) 4 bit carry

$$\begin{array}{r} 0100 \\ 0000 \\ 0001 \\ \hline 0001 \\ 0000 \\ \hline 0001 \\ 0100 \\ 0101 \\ \hline 0100 \\ 0001 \\ \hline 0101 \end{array} \quad \begin{array}{r} 0100 \\ 1001 \\ \hline 1001 \\ 0000 \\ \hline 1101 \\ 0001 \\ \hline 1001 \end{array}$$



$\frac{20}{n-1}$

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ii) 4 5

0 1 0 0

1 1 1 0 1 0 1 1  
0 0 1 0 0 1 1 1  
1

0 1 1 1

0 1 0 1

1 0 1 0

1 0 0 0

0 1 1 1

0 1 0 1

1 0 1 0

1 0 0 1

1 1 1 0

1 1 0 1



4)

A = 0 1 0 1 1 1

B = 1 1 0 1 1 0

0 1 1 0 1 1 1  
1 0 1 0 1 1 0

1 1 0 1 1 1

1 0 1 1 1 0  
1 0 1 1 1 0

1 0 1 1 0 1  
0 1 1 1 0 1  
0 1 1 0 1 1

2