Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER M.C.A. DEGREE EXAMINATION, DECEMBER 2018
Course Code: RLMCA109
Course Name: DIGITAL FUNDAMENTALS

Max. Marks: 60   Duration: 3 Hours

PART A
Answer all questions, each carries 3 marks.   Marks

1	Convert $(3287.6875)_{10}$ to Octal and Binary	(3)
2	Convert B + CD +ABCD into standard SOP	(3)
3	Prove that (A+B)(A+C)=A+BC	(3)
4	Design a full subtractor using NAND gate.	(3)
5	Differentiate between multiplexer and demultiplexer.	(3)
6	How can you convert SR flip flop to D flip flop	(3)
7	Asynchronous counters are also known as Ripple Counters. Justify the statement	(3)
8	What is a synchronous counter?	(3)

PART B

Answer six questions, one full question from each module and carries 6 marks.

Module I

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9	a	Convert $3.5164 *10^4$ into single precision binary floating point representation	(3)
	b	Write the sign magnitude, 1's complement , 2's complement representations of 49, -49	(3)

OR

10	a	A=111100,B=101; Perform the operations A/B,A-B	(3)
	b	Add 49 + -23 in 2's complement form	(3)

Module II

11	What is K-Map? Minimize the function $f(A,B,C,D) = \sum(1,3,5,7,11,13) +d(2,14,15)$ using K-Map	(6)

OR

12   In a seven segment display, each of the seven segments is activated for various   (6)
      digits. Derive a minimal SOP for segment c
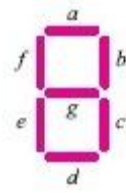
Module III

13   What is a Decoder? Implement a full Adder using decoder   (6)

OR

14   Implement the function f(A,B,C,D)=∑(3,5,8,12,14) using a 8:1 MUX   (6)

Module IV

15   What is a flipflop? Explain the working of a edge triggered J-K flipflop in   (6)
      detail.

OR

16   Differentiate Combinational and Sequential Circuits. Realize a master slave J-K   (6)
      flipflop using NAND gate and explain its working.

Module V

17   Draw a synchronous decade counter using JK flip flop and explain its working.   (6)

OR

18   Draw a 4 bit Asynchronous Binary Counter and explain its working. Develop a   (6)
      timing diagram showing Q output of each flip flop.

Module VI

19   With a block diagram, explain the basic components of a computer.   (6)

OR

20   Explain the components in an Arduino board   (6)

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