

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (S,FE) / S1 (PT) (S,FE) Examination June 2024 (2015 Scheme)

**Course Code: CS203****Course Name: SWITCHING THEORY AND LOGIC DESIGN**

Max. Marks: 100

Duration: 3 Hours

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

		Marks
1	Convert the following a). $(12.0625)_{10} = (\quad)_2$ b). $(3A7)_{16} = (\quad)_8$	3
2	Perform the following operations a). $(547)_8 + (356)_8$ b). $(10010)_2 \times 1010$	3
3	State and prove De-Morgan's theorem	3
4	Draw a 3 input Exclusive-OR gate with truth table	3

PART B*Answer any two full questions, each carries 9 marks.*

5	a) Explain the format of single precision floating point number with example	4
	b) Simplify the boolean function by tabulation method.	5
	$F(w,x,y,z) = \sum m(0,1,2,8,10,11,14,15)$	
6	a) Convert the hexadecimal number F3A7C2 to binary and octal	4
	b) P.T $AB + (AC)' + AB'C(AB+C) = 1$	3
	c) P.T $AB + A'C + BC = AB + A'C$	2
7	a) Simplify the Boolean function $F(P,Q,R,S) = \sum(0,1,2,6,8,9,10)$	4
	b) What are the steps needed to obtain the canonical SOP form. Give an example	3
	c) Write a short notes on ASCII	2

PART C*Answer all questions, each carries 3 marks.*

8	Differentiate combinational circuit and sequential circuit	3
9	Give the excitation table of J K Flip Flop	3
10	How many 2X1 MUX are needed to construct a 4X1 MUX. Draw the logic diagram	3
11	Explain race around condition	3

PART D

Answer any two full questions, each carries 9 marks.

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|----|---|---|
| 12 | a) Design a full adder circuit | 5 |
| | b) Explain the working of Parallel adder | 4 |
| 13 | a) What is Edge triggering | 3 |
| | b) Explain BCD Adder with diagram | 6 |
| 14 | a) Design a 4 bit binary to Gray code converter | 7 |
| | b) Define state diagram | 2 |

PART E

Answer any four full questions, each carries 10 marks.

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|----|---|----|
| 15 | Describe the working of Programmable Logic Array (PLA) with a block diagram | 10 |
| 16 | Explain the different types of shift registers with diagram | 10 |
| 17 | a) Compare Static RAM and Dynamic RAM. | 5 |
| | b) Write a note on registers | 5 |
| 18 | a) What is meant by Hardware Description Languages? Give examples. | 5 |
| | b) Compare synchronous and asynchronous counters | 5 |
| 19 | a) Explain the different types of ROMs | 3 |
| | b) Draw and explain 4 bit Johnson counter. | 7 |
| 20 | Explain the algorithm for floating point addition. | 10 |
