Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech Degree (S,FE) Examination June 2022 (2015 scheme)

Course Code: EE204

Course Name: DIGITAL ELECTRONICS AND LOGIC DESIGN (EE)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks Marks

1 Do the following conversions, 5

i) $A5FD_{16}$ to Octal, ii) 257.56_{10} to binary, iii) 100101101_2 to Gray

2 State De Morgan's theorem and prove with truth table 5

3 Realise a full adder with two half adders with relevant equations and logic diagram. 5

4 Draw the logic circuit of a JK FF and explain its working with a truth table 5

5 Design a sequence generator with D-flip flop to generate a sequence of 8,4,2,1,8,4,2,1,……. 5

6 Differentiate between Mealy and Moore machines 5

7 Design a 3-bit flash type ADC and explain the working with logic circuit. 5

8 Write VHDL program of AND gate. 5

PART B

Answer any two full questions, each carries 10 marks

9 What is the use of parity bit? Describe any one type of parity to generate and check a parity bit while sending a 4-bit binary number 10

10 Minimize the Boolean expression f(A,B,C,D)=$\prod M(0,2,4,8,10,12) + d(5,6,14)$ and implement using NAND- NAND logic 10

11 a) Draw and explain the working of a TTL NAND circuit 6

b) Do the following operation by 2's complement method 4

-36 + 25

PART C

Answer any two full questions, each carries 10 marks

12 What is the need of carry look ahead adder? Explain with a two bit adder how carry look ahead adder achieves its objective 10

13		Draw a decade ripple up counter, Explain the logic diagram and time diagram.	10
14	a)	Realise the function, F= ∑(0,2,5,6)by 4x1 MUX.	5
	b)	Illustrate the working of PISO shift register.	5

PART D

Answer any two full questions, each carries 10 marks

15		Design a synchronous counter to countfrom 0 to 4 and realise by using JK flip flop.	10
16		Explain with circuits diagrams i) Weighted resistor DAC, ii) PLA	10
17	a)	Describe the state diagram and state table of a Mealy model with an example.	5
	b)	Differentiate between ROM and EPROM	5

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