Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S4 (S,FE) (FT/WP/S2PT) Examinations May 2026 (2019 Scheme)

Course Code: EET206
Course Name: DIGITAL ELECTRONICS

Max. Marks: 100 Duration: 3 Hours

PART A
(Answer all questions; each question carries 3 marks)

		Marks
1	Convert hexadecimal $8A9D_{16}$ to binary and decimal	3
2	Convert -46 and 25 to binary and add using the 2's complement form.	3
3	Using boolean algebra techniques, simplify the expression $A\bar{B}C+\bar{A}BC+\bar{A}\bar{B}C$	3
4	Use a K-Map to simplify the expression $DE\bar{F}+\bar{D}E\bar{F}+\bar{D}\bar{E}\bar{F}$ to a minimum SOP form.	3
5	Draw and explain the combinational circuit for a half subtractor circuit.	3
6	Implement the function $F(A,B,C,D)= \sum(0,2,4,5,8,9)$ with a multiplexer.	3
7	What are the functions of preset and clear inputs for a flip flop	3
8	What is a Parallel IN- Serial Out register.	3
9	Compare PAL, PLA and ROM .	3
10	Draw the schematic diagram of R-2R ladder type DAC	3

PART B
(Answer one full question from each module, each question carries 14 marks)

Module -1

11		Explain an Error detection and correction code using a suitable example.	14
12	a)	Draw and Explain the schematic diagram of TTL NAND gate.	7
	b)	Convert 45600_8 to binary and 7765_8 to decimal.	7

Module -2

13		Using K-Map map method obtain the minimum sum of the products and minimal product of sums expression for the function $F(A,B,C,D)= \sum(0,2,3,6,7)+d(8,10,11,15)$	14

14	a	*	Design a full adder circuit and implement it using two half adders.	14
	b		What are the advantages of carry look ahead adder over parallel adder? explain	

Module -3

15	a)		Construct a 4 to 16 lines decoder using 3 to 8 lines decoder.	7
	b)		Explain the architecture of Arithmetic Logic Unit.	7
16			Explain the steps to design a BCD to seven segment decoder with multiplexers.	14

Module -4

17	a)		Design a MOD-10 ripple counter using T flip flop and draw the timing diagram	10
	b)		Draw the logic circuit of D flip flop using T flip-flop	4
18	a)		Design a synchronous counter using J-K Flip flop to count the sequence 0,1,3,5,7,0,1,3……..	14

Module -5

19	a)		What are the important specifications of a D/A converter	7
	b)		Explain flash type A/D converter with diagram.	7
20	a)		Explain the characteristics of a Mealy machine.	7
	b)		Implement the basic AND and OR gates using Verilog	7

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