






This document is a part of Main Course File		Document No.: CFM – 8	
		SARDAR VALLABHBHAI PATEL EDUCATION SOCIETY MANAGED	
		N. G. PATEL POLYTECHNIC	
ELECTRICAL ENGINEERING DEPARTMENT			
ASSIGNMENT			
Course Name (With Code): Digital Electronics & Digital Instruments (4340904)			
Semester / Year: Fourth / Second			
Assignment Number: 1			
Assignment CO Number: 4340904.1			
Sr. No.	Questions related to Course Outcomes		
Part – A Questions carrying 3 Marks			
1	State different types of codes and explain Excess-3 code.		
2	What is Redix/base for any number systems? Write Redix for binary, Octal, Decimal and Hexa-decimal number system.		
3	Explain Alphanumeric code.		
4	Perform the following operation. 1) $(1001001.01)_2 + (101.01)_2$ 2) Convert $(110010010)_2$ to gray code. 3) Write the Ex-3 code for $(456)_{10}$		
5	Perform binary subtraction using 2's complement method $(110011001)_2 - (111100001)_2$		
Part – B Questions carrying 4 Marks			
1	Perform following operations (i) Convert $(2907.38)_{10}$ into octal number (ii) Multiply $(101.11)_2$ with $(11.11)_2$		
2	Perform following operations (i) Using 2's complement method subtract $(1101101)_2$ from $(1111101)_2$ (ii) Divide $(101010.111)_2$ by $(11.1)_2$		
3	1) Convert $(234.567)_8$ to Binary and Hexadecimal. 2) Convert $(247.68)_{10}$ to Octal.		
4	1) Convert $(24F.DCB)_{16}$ to Binary and Octal. 2) Convert $(398.88)_{10}$ to Hexadecimal.		
5	With example explain BCD code in detail.		
Part – C Questions carrying 7 Marks			
1	State different types of Codes. Explain weighted and non-weighted codes with examples.		
2	Give classification of alphanumeric codes & explain.		
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Mr. Nirav C. Pandya			
Prepared By: (Name of Faculty (ies)) with signature		Signature of Head of Department	

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Course Name (With Code): Digital Electronics & Digital Instruments (4340904)			
Semester / Year: Fourth / Second			
Assignment Number: 2			
Assignment CO Number: 4340904.2			
Sr. No.	Questions related to Course Outcomes		
Part – A Questions carrying 3 Marks			
1	Explain NMOS NAND gate with necessary diagram and truth table.		
2	Explain PMOS NAND gate with necessary figure and truth table.		
3	Draw the symbol and write the truth table and Boolean expression for NOR and Ex-OR gate.		
4	Give full form of MSI, LSI & VLSI.		
5	Give definition of (i) Fan In (ii) Fan Out (iii) Figure of merit		
Part – B Questions carrying 4 Marks			
1	Give definition symbol and truth table of Ex-Nor and NAND gates.		
2	With symbol & truth table explain OR, AND, NOT & EX-NOR gates.		
3	Explain NOR gate as a Universal gate.		
4	Draw and Explain Resistor Transistor Logic (RTL).		
5	With symbol & truth table explain NOR, NAND, NOT & EX-OR gates.		
Part – C Questions carrying 7 Marks			
1	Explain positive and negative logic system with suitable diagram. Give definition of (i) Fan In (ii) Fan Out (iii) Figure of merit (iv) Power dissipation (v) Propagation delay.		
2	Prove that NAND gate is a universal gate with all necessary diagrams, equations and truth tables.		
3	Draw and Explain the circuit of CMOS NOR gate. Write the advantages of CMOS ICs over TTL ICs.		
4	Draw the circuit for three – input TTL NAND gate for totem pole output connection and write its advantages & disadvantages.		
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Course Name (With Code): Digital Electronics & Digital Instruments (4340904)		
Semester / Year: Fourth / Second		
Assignment Number: 3		
Assignment CO Number: 4340904.3		
Sr. No.	Questions related to Course Outcomes	
Part – A	Questions carrying 3 Marks	
1	Explain 4:1 Multiplexer.	
2	Explain Half adder and draw its logic circuit using A-O-I gates.	
3	Write application of Counters.	
4	Prove that $A+BC = (A+B).(A+C)$	
5	Explain Race around condition in JK flip flop.	
Part – B	Questions carrying 4 Marks	
1	Explain De Morgan's theorem with the help of logic circuit and truth table.	
2	List various types of Shift register and explain 4 bit shift left register using JK flip flop.	
3	(i) Prove that $A'B'C+A'BC+AB'$ = $A'C+AB'$ (ii) Prove that $(P + Q) (P + R) = P + QR$	
4	Explain 3 to 8 line decoder.	
5	Explain decade counter with circuit and necessary waveforms.	
Part – C	Questions carrying 7 Marks	
1	Explain full-adder with block diagram, logic diagram, truth table and working.	
2	Explain full-subtractor with block diagram, logic diagram, truth table and working.	
3	(i) Prove that $A + B + A = A + B$ (ii) Prove that $(AB+BC+AC)' = A'B'+B'C'+A'C'$ (iii) Draw logic diagram for the Boolean expression $AB'+A'B+C$ using NOR gate only.	
4	Draw and explain block diagrams of combinational circuit and sequential circuit. Compare combinational circuit and sequential circuit.	
5	What is flip-flop? Explain (i) R-S flip-flop using NAND gate (ii) D flip flop. Draw block diagram, logic circuit and truth table for each.	
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Course Name (With Code): Digital Electronics & Digital Instruments (4340904)			
Semester / Year: Fourth / Second			
Assignment Number: 4			
Assignment CO Number: 4340904.4			
Sr. No.	Questions related to Course Outcomes		
Part – A Questions carrying 3 Marks			
1	Why A to D and D to A converters are necessary in digital electronics? Explain resolution for D to A converter.		
2	Give types of A to D converter and explain settling time for D to A converter.		
3	Write the advantages & disadvantages of weighted resistor network type D/A converter.		
4	Describe the term linearity and settling time with reference to D/A converter.		
5	Define accuracy, resolution and linearity regarding to D/A converter.		
Part – B Questions carrying 4 Marks			
1	Draw block diagram of digital voltmeter using ramp type A to D converter and explain in short.		
2	Explain weighted resistor network type D to A converter.		
3	Explain successive approximation type A to D converter.		
4	Explain Binary Ladder Network type D to A converter.		
5	Explain Counter OR Staircase type A to D converter.		
Part – C Questions carrying 7 Marks			
1	State types of A/D converters. Explain successive approximation A/D converter		
2	List and explain different specifications related to D / A converter.		
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Course Name (With Code): Digital Electronics & Digital Instruments (4340904)			
Semester / Year: Fourth / Second			
Assignment Number: 5			
Assignment CO Number: 4340904.5			
Sr. No.	Questions related to Course Outcomes		
Part – A	Questions carrying 3 Marks		
1	Compare digital instruments with analog instruments.		
2	Explain basic building blocks of digital instruments.		
3	List different applications of Digital Multimeter.		
4	Explain working of Digital watt meter		
5	State disadvantages of analog instruments.		
Part – B	Questions carrying 4 Marks		
1	Draw block diagram of digital voltmeter using ramp type A to D converter and explain in short.		
2	Draw block diagram of digital multi-meter and explain in short.		
3	Write the advantages of digital instrument over analog instrument.		
4	Draw the block diagram of digital energy meter and explain.		
5	Draw the block diagram of digital instruments and explain each block.		
Part – C	Questions carrying 7 Marks		
1	State types of digital voltmeter & explain ramp type digital voltmeter.		
2	Draw the block diagram of digital energy meter and explain each functional blocks of it.		
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<p style="text-align: center;">Mr. Nirav C. Pandya</p>			
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