Course	B.E-Marine Engineering
Batch	B.E- ME-16
Semester	III
Subject Code	UBEE307
Subject Name	Integrated Circuits
	Part-A
	Unit-1
1	Define De-Morgan's theorem.
2	Convert the following hexadecimal number to decimal number (a) $F28_{12}$ (b) $BC2_{12}$
3	Convert the following decimal number to beyadecimal number: (a) $1251_6$ (b) $5262_{16}$
4	Convert (a) $1001001110101101$ (b) $1001000101100101110$ to hexadecimal
5	Convert (a) $1001001110101101_2$ (b) $10010001011100101110_2$ to nexadecimal.
5	Convert $5576_8$ to nexadecimia.
0	Give the gray code for the binary number $(111)_2$ .
/	What is a Logic gate?
8	Define Decoder?
9	Define Encoder?
10	Define multiplexer?
11	Which gates are called as the universal gates?
12	What are the basic digital logic gates?
13	Why is MUX called as data selector?
14	Give the truth table of full adder.
15	Give the truth table of full subtractor.
16	Draw the logic diagram of 4:1 MUX.
17	Draw the logic diagram of Half adder.
18	Explain the operation of Ex-OR gate with truth table.
19	Explain the operation of half subtractor with truth table.
20	Define Code convertor.
	Unit-2
1	Define Flip flops.
2	Define Register.
3	Define D-Flip flop.
4	Define T-Flip flop.
5	Define RS-Flip flop.
6	Define JK-Flip flop.
7	Define Counter.
8	Define Sequential Circuits.
9	What are the classifications of Sequential Circuits,
10	Define Memory.
11	Define PLA.
12	Define PAL.
13	Define PROM.
14	Define EPROM.
15	What is a programmable logic array?
16	Give the classification of PLD's
17	Define CMOS.
18	Define Shift Register.
19	Define bit and byte.
20	Define Combinational Circuit.
	Unit-3
1	Define Opamp.
2	Draw the pin configuration of IC741.
3	What are the advantages of ICs over discrete circuits.?
4	Define summer.
5	Define Differentiator
6	Define Instrumentation amplifier.
7	Define Feedback amplifier
8	List the basic processes used in IC fabrication.
9	What is the purpose of oxidation process in IC fabrication?
10	What is meant by ion implantation?
11	What are the advantages and limitations of ion implantation?

12	What is Photolithography?
13	What are the major categories of ICs?
14	What are the various generation of IC?
15	Give the difference between monolithic and hybrid IC's.
16	What is compensating resistor? Why do we use?
17	What is an inverting amplifier?
18	What is a non-inverting amplifier?
19	What is an amplifier?
20	Define Integrator.
	Unit-4
1	Define V/I Convertor
2	Define I/V convertor
3	What is a comparator?
4	What are multivibrators?
5	List various types of multivibrators.
6	Define Clipper.
7	Define Clamper.
8	What is a peak detector?
9	Define S/H Circuit.
10	Define D/A Converter.
11	Define A/D Converter.
12	Define slew rate.
13	What causes slew rate?
14	Define UMRK of an op-amp.
15	Define supply voltage rejection ratio (SVRR)
16	Mention some of the linear applications of opamp.
1/	Define input offset voltage.
18	Define differential amplifier.
19	Define thermal drift.
20	Define input offset current.
1	Unit-5 Define IC 555 timer
1	What is voltage controlled essiliator
2	What is voltage controlled oscillator
3	
4	List the applications of 555 timer in monostable mode of operation.
5	List the applications of 555 timer in astable mode of operation.
0	List the applications of analog multipliers. Why the VCO is called voltage to frequency converter?
/	why the VCO is called voltage to frequency converter?
8	What is the function of VCO in DLL?
9	What is the function of VCO in PLL?
10	Give the classification of voltage regulators
11	What is a linear voltage regulator?
12	What is a switching regulator?
13	What are the advantages of IC voltage regulators?
15	Give some examples of monolithic IC voltage regulators
15	What is an opto-coupler IC? Give examples.
10	Mention the advantages of opto-couplers.
18	What is an isolation amplifier?
10	Define Power amplifier.
20	List the applications of PLL.
	Part-B
	Unit-1
-	Delefter engleigtscheut full adden mit der trabbe
	Driefly explain about AND and OP gates with truth table
2	Write short notes on Encoder and Decoder
3	Write short notes on Mux and Demux
4 	Write short notes on Code convertor
З к	Briefly explain about full subtractor with truth table
0 ר	Briefly explain about 1411 Subtractor with thut table.
0	Briefly explain about 4x1 MUX with truth table
0	Convert (1011 1110) to decimal octal and havadecimal forms
9	Convert $(1011 1110)_2$ to decimal, octal and nexadecimal forms.

10	Briefly explain the properties of Boolean algebra.
11	Briefly explain about Ex-OR and XNOR gates with truth table.
12	Convert (3426), to binary octal and hexadecimal forms
13	Briefly explain about OR and AND gates with truth table
14	Convert (2343), to binary decimal and hexadecimal forms
15	Write short notes on 3x8 Decoder
	Unit-2
1	Write short notes on 4bit ripple counter.
2	Explain the difference between synchronous and asynchronous sequential Circuits.
3	Compare Combinational Circuits with Sequential Circuits
4	Write short notes on parallel in serial out shift register.
5	Compare PLA and PAL.
6	Write short notes on FPGA.
	Implement the following function using PLA.
7	$A(x, y, z) = \sum m(1, 2, 4, 6)$
	Implement the following function using PAL.
8	a. W (A, B, C, D) = $\sum m (2, 12, 13)$
9	Write short notes on Flip flops.
10	Write short notes on RS Flip flop with truth table
11	Write short notes on JK Flip flop with truth table
11	Write short notes on T Flip flop with truth table
13	Write short notes on D Flip flop with truth table
14	Write short notes on updown counter.
15	Write short notes on Ripple counter.
	Unit-3
1	Briefly explain about ideal characteristics of op-amp.
2	Write short notes on IC fabrication process.
3	List out the general application of Opamp
4	Write about the frequency response of Opamp.
5	Write short notes on Instrumentation amplifier.
6	Write short notes on Feedback amplifier.
7	Briefly explain about input and output characteristrics of op-amp.
8	Briefly explain about differentiator and integrator.
9	What is ion implantation? Why it is preferred over diffusion process?
10	Write about the process involved in photolithography.
11	Draw the circuit diagram of inverting amplifier using op-amp.
12	Draw the circuit diagram of non-inverting amplifier using op-amp.
13	List out the steps used in the preparation of Si - wafers.
14	What are the advantages and limitations of ion implantation?
15	Compare monolithic and hybrid IC's.
	Unit-4
1	Explain the operation of voltage - current (V/I) converter.
2	Explain the operation of current - voltage (I/V) converter.
3	Explain in detail about the methods of frequency compensation used in operational amplifiers.
4	Explain the operation of peak detector.
5	Explain the operation of clipper circuit.
6	Explain the operation of clamper circuit.
7	Draw the block diagram of the successive approximation type ADC.
8	Explain the operation of flash type ADC.
9	Explain the operation of fundamental log amplifier.
10	Explain the operation of sample and hold circuit.
	Draw the circuit diagram of the weighted resistor DAC.
12	Draw the circuit diagram of the R-2R ladder network DAC.
13	Draw the circuit diagram of the inverted R-2R ladder network DAC.
14	Write short notes on estable multivibrators.
15	write short notes on astable multivibrators.
1	Write short notes on DLL IC 565
	white short holes off FLL IC 303.
2	Briefly explain the operation of isolation amplifier.
3	Differry explain the operation of switching regulator.
4	with near diagram, explain the working of step down switching regulator.
5	with near functional diagram, exprain the operation of LWI 380 power amplifier.

6	Briefly explain the operation of LM317 IC
7	Explain the working of a voltage controlled oscillator
8	Explain how frequency multiplication is done using PLI
9	Explain now frequency multiplication is done using the.
10	What is the principle of switch mode power supplies? Discuss its advantages and disadvantages.
11	With a neat diagram explain the operation of LM 380 power amplifier
12	Write short notes on MA7840 IC
13	Write short notes on analog multiplier ICs
14	Draw the block diagram of IC 8038 function generator IC
15	Write short notes on various ontoelectronic ICs
15	Part-C
	Init-1
1	Write in detail about Encoder and Decoder with truth table.
	Simplify the following Boolean functions by using K'Map in SOP & POS F
2	$(w, x, y, z) = \sum m(1, 3, 4, 6, 9, 11, 12, 14)$
3	Explain the operation of 4 to 10 Decoder in detail.
	Simplify the following Boolean function by using Tabulation method
4	$F(w, x, y, z) = \sum m(0, 1, 2, 8, 10, 11, 14, 15)$
5	Explain in detail about 8X1 Mux and 1X8 Demux.
6	Explain in detail about various logic gates with truth tables.
	Unit-2
1	Explain in detail about the functions of RS,D,JK and T Flipflop with truth table.
2	Explain in detail about the various types of memory in digital circuit
3	Explain about various types of counters with neat diagram.
4	What is shift register? Explain about various types of shift registers.
5	Describe the concept working and applications of the following memories: (a)PLD(b)FPGA(c)EPROM
6	Write briefly about various types of sequential circuits in digital electronics
	Unit-3
1	Draw and explain in detail about the operation of instrumentation amplifier.
2	Explain in datail about the process involved in monolithic IC technology
2	Explain in detail about the process involved in mononline ic technology.
3	write in detail about the following (1).Differentiator (1)Integrator
4	Draw the circuit of differential amplifier and derive the expression for output voltage in it.
5	write in detail about the following (1)Feedback amplifier (1)Differential amplifier
0	what is inverting and non-inverting amplifier (Derive the gain of inverting and non-inverting of the amplifier.
1	Unit-4
1	Explain in detail about v/1 and 1/v Converters.
2	Explain in detail about various types of multivibrators.
3	With neat diagram explain the operation of S/H Circuit.
4	Explain with heat diagram about the operations of clippers and clampers.
5	Explain about A/D and D/A converters in detail.
6	Explain the operation of waveform generator with a block diagram.
1	Sketch the functional block diagram of IC 555 Timer and explain its functions.
2	Explain with block diagram about 565-phase lock loops in detail.
3	With neat sketch explain about LM380 power amplifier.
4	Explain in detail about various types of Special ICs and their applications.
5	Explain in detail about the functional block diagram of a 723 voltage regulator.
6	Explain with functional block diagram the operation of 566 Voltage Controlled Oscillator.