INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

ELECTRICAL AND ELECTRONICS ENGINEERING

DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Name	:	**DIGITAL ELECTRONICS**
Course Code	:	**AECB03**
Program	:	**B.Tech**
Semester	:	**III**
Branch	:	**Electrical and Electronics Engineering**
Section	:	**A, B**
Academic Year	:	**2019 – 2020**
Course Faculty	:	**Ms. V Bindusree, Assistant Professor** **Ms. J Sravana, Assistant Professor**

OBJECTIVES:

I	Familiarize the basic concept of number systems, Boolean algebra principles and minimization techniques for Boolean algebra.
II	Analyze Combination logic circuit and sequential logic circuits such as multiplexers, adders, decoders flip-flops and latches
III	Understand about synchronous and asynchronous sequential logic circuits.
IV	Impart the basic understanding of memory organization, ROM, RAM, PLA and PAL.

DEFINITIONS AND TERMINOLOGY QUESTION BANK

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
MODULE-I						
1	What is binary?	Binary (or base-2) a numeric system that only uses two digits — 0 and 1. Computers operate in binary, meaning they store data and perform Calculations using only zeros and ones.	Remember	CO 1	CLO 1	AECB03.01
2	Define number system.	A number system is a collection of various symbols which are called digits. Different types of Number System.	Remember	CO 1	CLO 1	AECB03.01
3	Define Gray code.	A Gray code is an encoding of numbers so that adjacent numbers have a single digit differing by 1. The term Gray code is often used to refer to a "reflected" code, or more specifically still, the binary reflected Gray code.	Remember	CO 1	CLO 1	AECB03.01
4	Define Excess-3 code.	Excess-3, also called XS3, is a non-weighted code. is a self complementary Binary-coded decimal (BCD) code and numeral system. It is a self- complementing code.	Remember	CO 1	CLO 1	AECB03.01
5	What is self	Self-Complementing Codes (Excess	Remember	CO 1	CLO 2	AECB03.02

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	complementing code?	3, 84-2-1, 2*421) Such codes have the property that the 9's complement of a decimal number is obtained directly by changing 1's to 0's and 0's to 1's				
6	Define codes.	In the coding, when numbers or letters are represented by a specific group of symbols, it is said to be that number or letter is being encoded. The group of symbols is called as code. The digital data is represented, stored and transmitted as group of bits. This group of bits is also called as binary code.	Understand	CO 1	CLO 1	AECB03.01
7	Define signed numbers.	Signed numbers contain both sign and magnitude of the number. Generally, the sign is placed in front of number. So, we have to consider the positive sign for positive numbers and negative sign for negative numbers.	Understand	CO 1	CLO 1	AECB03.01
8	What is unsigned number system?	Unsigned numbers contain only magnitude of the number. They don't have any sign. That means all unsigned binary numbers are positive. As in decimal number system, the placing of positive sign in front of the number is optional for representing positive numbers. Therefore, all positive numbers including zero can be treated as unsigned numbers if positive sign is not assigned in front of the number.	Remember	CO 1	CLO 1	AECB03.01
9	Define sign magnitude form.	The Most significant bit (MSB) is used for representing sign of the number and the remaining bits represent the magnitude of the number. So, just include sign bit at the left most side of unsigned binary number. This representation is similar to the signed decimal numbers representation.	Remember	CO 1	CLO 1	AECB03.01
10	What is hamming code?	Hamming code is useful for both detection and correction of error present in the received data. This code uses multiple parity bits and we have to place these parity bits in the positions of powers of 2.The minimum value of 'k' for which the following relation is correct (valid) is nothing but the required number of parity bits.	Remember	CO 1	CLO 1	AECB03.01
11	What is Duality theorem?	This theorem states that the dual of the Boolean function is obtained by interchanging the logical AND operator with logical OR operator and zeros with ones. For every	Remember	CO 1	CLO 1	AECB03.01

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		Boolean function, there will be a corresponding Dual function				
12	What is 8421 code?	The weights of this code are 8, 4, 2 and 1. This code has all positive weights. So, it is a positively weighted code. This code is also called as natural BCD (Binary Coded Decimal) code.	Understand	CO 1	CLO 1	AECB03.01
13	What is 2421 code?	This code has all positive weights. So, it is a positively weighted code. It is an unnatural BCD code. Sum of weights of unnatural BCD codes is equal to 9.It is a self-complementing code. Self-complementing codes provide the 9's complement of a decimal number, just by interchanging 1's and 0's in its equivalent 2421 representation.	Understand	CO 1	CLO 1	AECB03.01
14	Define Binary Number.	The binary number system is a numbering system that represents numeric values using two unique digits (0 and 1). Most computing devices use binary numbering to represent electronic circuit voltage state, (i.e., on/offswitch), is the base-2 number system.	Understand	CO 1	CLO 1	AECB03.02
15	Define Decimal number system.	A number is expressed in base 10 by using one of the first nine integers or 0 in each place and letting each place value be a power of 10.	Remember	CO 1	CLO 1	AECB03.02
16	Define sign magnitude form.	The Most significant bit (MSB) is used for representing sign of the number and the remaining bits represent the magnitude of the number. So, just include sign bit at the left most side of unsigned binary number. This representation is similar to the signed decimal numbers representation.	Understand	CO 1	CLO 2	AECB03.02
18	Define Hexa decimal number system.	The hexadecimal numeral system, also known as just hex, is a numeral system made up of 16 symbols (base 16). The standard numeral system is called decimal (base 10) and uses ten symbols: 0,1,2,3,4,5,6,7,8,9. Hexadecimal uses the decimal numbers and includes six extra symbols.	Remember	CO 1	CLO 1	AECB03.01
19	What is one's compliment?	The ones' complement of a binary number is defined as the value obtained by inverting all the bits in the binary representation of the number.	Remember	CO 1	CLO 2	AECB03.02
20	What is Two's compliment?	The 2's complement of a binary number is obtained by adding one to the 1's complement of signed binary number. So, 2's complement of	Remember	CO 1	CLO 2	AECB03.02

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		positive number gives a negative number. Similarly, 2's complement of negative number gives a positive number.				
21	What is binary coded decimal?	Binary coded decimal (BCD) is a system of writing numerals that assigns a four-digit binary code to each digit 0 through 9 in a decimal (base-10) numeral. The four-bit BCD code for any particular single base-10 digit is it representation in binary notation.	Remember	CO 1	CLO 1	AECB03.01
22	Define Unit distance code.	An un weighted code that changes at only one digit position when going from one number to the next in a consecutive sequence of numbers. Use of one of the many unit-distance codes can minimize errors at symboltransition points when converting analog quantities into digital quantities..	Remember	CO 1	CLO 1	AECB03.01
23	Define parity bit.	It is easy to include one parity bit either to the left of Most significant bit (MSB) or to the right of Least significant bit (LSB) of original bit stream. There are two types of parity codes, namely even parity code and odd parity code based on the type of parity being chosen.	Remember	CO 1	CLO 3	AECB03.03
24	What is error Detection?	It is used to detect the error(s) present in the received data (bit stream). These codes contain some bits, which are included to the original bit stream. These codes detect the error, if it is occurred during transmission of the original data (bit stream).Example − Parity code, Hamming code.	Remember	CO 1	CLO 3	AECB03.03
27	Define logic levels of CMOS.	CMOS gate operating at a power supply voltage of 5 volts, the acceptable input signal voltages range from 0 volts to 1.5 volts for a "low" logic state, and 3.5 volts to 5 volts for a "high" logic state.	Remember	CO 1	CLO 4	AECB03.04
28	Define totem Pole Output.	Totem-pole output, also known as a push-pull output, is a type of electronic circuit and usually realized as a complementary pair of transistors.	Remember	CO 1	CLO 4	AECB03.04
29	Define fan in?	Fan in is the number of inputs connected to the gate without any degradation in thev oltage level.	Remember	CO 1	CLO 4	AECB03.04
MODULE-II						
1	Define sop form.	Canonical Sop form means Canonical Sum of Products form. In this form, each product term contains all literals. So, these product terms are nothing but the min terms. Hence, canonical Sop	Remember	CO 2	CLO 7	AECB03.07

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		form is also called as sum of minterms form.				
2	Define 5-variable k-map.	The number of cells in 5 variable K-map is thirty-two, since the number of variables is 5. The following figure shows 5 variable K-Map. here is only one possibility of grouping 32 adjacent min terms. There are two possibilities of grouping 16 adjacent min terms. i.e., grouping of min terms from m0 to m15 and m16 to m31.	Remember	CO 2	CLO 5	AECB03.05
3	Define 4-variable k-map.	The number of cells in 4 variables K-map is sixteen, since the number of variables is four. There is only one possibility of grouping 16 adjacent min terms.	Remember	CO 2	CLO 5	AECB03.05
4	Define 3-variable k-map.	The number of cells in 3 variable K-map is eight, since the number of variables is three. The following figure shows 3 variable K-Map. There is only one possibility of grouping 8 adjacent min terms.	Remember	CO 2	CLO 5	AECB03.05
5	What is select line?	A multiplexer (or mux) is a device that selects one of several analog or digital input signals and forwards the selected input into a single line. Amultiplexer of 2 n inputs has n select lines, which are used to select which input line to send to the output.	Understand	CO 2	CLO 8	AECB03.08
6	Define data selector.	Data Selector take one data input and a number of selection inputs, and they have several outputs. They forward the data input to one of the outputs depending on the values of the selection inputs.	Remember	CO 2	CLO 8	AECB03.08
7	Define decoder.	A decoder is a circuit that changes a code into a set of signals. It is called adecoder because it does the reverse of encoding, but we will begin our study of encoders and decoders with decoders because they are simpler to design.	Remember	CO 2	CLO 8	AECB03.08
8	Define an encoder.	The n output lines generate the binary code for the possible 2n input lines. Let us take an example of an octal-to-binary encoder.	Remember	CO 2	CLO 8	AECB03.08
9	Define priority encoder.	Binary Encoders generally have a number of inputs that must be mutually exclusive, i.e. only one of the inputs can be active at any one time. The encoder then produces a binary code on the output pins, which changes in response to the input that has been activated.	Remember	CO 2	CLO 8	AECB03.08

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
10	What is Enable?	Enable pin in multiplexers, de multiplexer, decoder and encoder ensures the functioning of the hardware i.e. “enables” the function of the logic circuit.	Remember	CO 2	CLO 8	AECB03.08
11	Define k-map.	Karnaugh introduced a method for simplification of Boolean functions in an easy way. This method is known as Karnaugh map method or K-map method. It is a graphical method, which consists of 2n cells for ‘n’ variables. The adjacent cells are differed only in single bit position.	Remember	CO 2	CLO 6	AECB03.06
12	Define Prime implicant and Essential prime implicant.	Each grouping will give either a literal or one product term. It is known as prime implicant. The prime implicant is said to be essential prime implicant, if at least single ‘1’ is not covered with any other groupings but only that grouping covers.	Remember	CO 2	CLO 6	AECB03.06
13	What is don’t care condition?	If outputs are not defined for some combination of inputs, then those output values will be represented with don’t care symbol ‘x’. That means, we can consider them as either ‘0’ or ‘1’.	Understand	CO 2	CLO 6	AECB03.06
14	Define tabular method.	Quine-McClukey tabular method is a tabular method based on the concept of prime implicants. We know that prime implicant is a product (or sum) term, which can’t be further reduced by combining with any other product (or sum) terms of the given Boolean function.	Remember	CO 2	CLO 6	AECB03.06
15	What is universal gate?	NAND & NOR gates are called as universal gates. Because we can implement any Boolean function, which is in sum of products form by using NAND gates alone. Similarly, we can implement any Boolean function,which is in product of sums form by using NOR gates alone.	Understand	CO 2	CLO 6	AECB03.06
16	Define logic gates?	The basic digital electronic circuit that has one or more inputs and single output is known as Logic gate. Hence, the Logic gates are the building blocks of any digital system. We can classify these Logic gates into the following three categories.	Remember	CO 2	CLO 6	AECB03.06
17	Define combinational circuit.	Combinational circuits consist of Logic gates. These circuits operate with binary values. The output(s) of combinational circuit depends on the combination of present inputs.	Remember	CO 2	CLO6	AECB03.04

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
18	Define half adder.	Half adder is a combinational circuit, which performs the addition of two binary numbers A and B are of single bit. It produces two outputs sum, S &carry, C.	Remember	CO 2	CLO 5	AECB03.05
19	What is binary adder?	The most basic arithmetic operation is addition. The circuit, which performs the addition of two binary numbers, is known as Binary adder.	Understand	CO 2	CLO 7	AECB03.07
20	Define full adder.	Full adder is a combinational circuit, which performs the addition of three bits A, B and Cin. Where, A & B are the two parallel significant bits and Cin is the carry bit, which is generated from previous stage.	Understand	CO 2	CLO 7	AECB03.07
21	Define multiplexer.	Multiplexer is a combinational circuit that has maximum of 2n data inputs, 'n' selection lines and single output line. One of these data inputs will be connected to the output based on the values of selection lines.	Remember	CO 2	CLO 8	AECB03.08
22	Define Demultiplexer	De-Multiplexer is a combinational circuit that performs the reverse operation of Multiplexer. It has single input, 'n' selection lines and maximum of 2n outputs. The input will be connected to one of these outputs based on the values of selection lines.	Remember	CO 2	CLO 8	AECB03.08
23	Define comparator.	Digital Comparator. A magnitude digital comparator is combinational circuit that compares two digital or binary numbers (consider A and B) and determines their relative magnitudes in order to find out whether one number is equal, less than or greater than the other digital number.	Remember	CO 2	CLO 8	AECB03.08
24	What is code converter?	Codes and code converters Coding is the process of translating the input information which can be understandable by the machine or a particular device. Coding can be used for security purpose to protect the information from steeling or interrupting.	Understand	CO 2	CLO 8	AECB03.08
		MODULE-III				
1	What is a counter?	Counts those pulses which are driven by a clock.	Understand	CO 3	CLO 12	AECB03.12
2	What are the categories Counters?	(i) Asynchronous and Synchronous counters. (ii) Single and multi mode counters. (iii) Modulus counters.	Understand	CO 3	CLO 6	AECB03.06
3	What is a multimode counter?	If the same counter circuit can be operated in both the UP and DOWN modes, it is called a multimode counters.	Understand	CO 3	CLO 12	AECB03.12

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
4	What is a asynchronous Counters?	Each flip flop is triggered by the previous flip flop.	Understand	CO 3	CLO 14	AECB03.14
5	What is ripple Counter?	A ripple counter is an asynchronous counter where only the first flip-flop is clocked by an external clock	Understand	CO 3	CLO 12	AECB03.12
6	Where the ripple counter is used explain?	It can also be used for Frequency divider, time measurement, frequency Measurement, distance measurement and also for generating square waveforms.	Remember	CO 3	CLO 12	AECB03.12
7	What is the difference between ripple counter and Synchronous counter?	In a synchronous counter however, the external event is used to produce a pulse that is synchronized with the internal clock.	Remember	CO 3	CLO 14	AECB03.14
8	What is the major Disadvantage of asynchronous counters?	Disadvantages of Asynchronous Counters: An extra "re-synchronizing" output flip-flop may be required.	Remember	CO 3	CLO 14	AECB03.14
9	What is a Johnson counter?	A Johnson counter is a modified ring counter, where the inverted output from the last flip flop is connected to the input to the first. The register cycles through a sequence of bit-patterns.	Understand	CO 3	CLO 13	AECB03.13
10	What is a ring counter?	A ring counter is a type of counter composed of flip-flops connected into a shift register, with the output of the last flip-flop fed to the input of the first,making a "circular" or "ring" structure.	Remember	CO 3	CLO 13	AECB03.13
11	What is the purpose of a shift register?	When a bit is input on the right, all the bits move one place to the left, and the leftmost bit disappears. Shift registers are commonly used in converters that translate parallel data to serial data, or vice-versa. Shift registers can also function as delay circuits and digital pulse extenders.	Remember	CO 3	CLO 11	AECB03.11
12	What are universal shift registers?	A Universal shift register is a register which has both the right shift and left shift with parallel load capabilities. Universal shift registers are used as memory elements in computers.	Understand	CO 3	CLO 11	AECB03.11
14	What is the difference between register and shift register?	Both shift registers and counters are made of flip-flops. A shift register is simply a chain of FFs where the Q output of one FF connects to the D input of the next. A shift register will transfer data from one FF to the next on each clock event	Remember	CO 3	CLO 11	AECB03.11
15	What is bidirectional	A bidirectional shift register is one in which the data can be shifted	Understand	CO 3	CLO 11	AECB03.11

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	shift register?	either left or right. It can be implemented by using gate logic that enables the				
16	What is adynamic shift register?	A dynamic shift register circuit comprises an input terminal and an output terminal. The logic circuit is made operative by an output signal of the signal follower circuit and produces an inverter function at the output terminal, in response to an output signal of the second transfer gate circuit.	Remember	CO 3	CLO 11	AECB03.11
17	Define Sequential circuits.	Sequential circuit has memory so output can vary based on input. This type of circuits uses previous input, output, clock and a memory element.	Remember	CO 3	CLO 11	AECB03.11
18	Define flip-flop.	A flip-flop is a circuit that has two stable states and can be used to store state information. The circuit can be made to change state by signals applied to one or more control inputs and will have one or two outputs. It is the basic storage element in sequential logic. flip flop has a clock signal,	Remember	CO 3	CLO 10	AECB03.10
19	Define latch.	The output of the latch depends on its input. It continuously checks its inputs and changes its output correspondingly. It is not depending on clock.	Remember	CO 3	CLO 10	AECB03.10
20	What is jk flip-flop?	The JK Flip Flop is basically a gated RS flip flop with the addition of the clock input circuitry. When both the inputs S and R are equal to logic "1", the invalid condition takes place. Thus to prevent this invalid condition, a clock circuit is introduced	Understand	CO 3	CLO 10	AECB03.10
21	What is master slave jk flip-flop?	Master slave JK FF is a cascade of two S-R FF with feedback from the output of second to input of first. Master is a positive level triggered. But due to the presence of the inverter in the clock line, the slave will respond to the negative level. Master-slave flip flop is designed using two separate flip flops.	Understand	CO 3	CLO 10	AECB03.10
MODULE-IV						
1	How many types of Data converters are there what are they?	There are two types of data converters Analog to Digital Converter Digital to Analog Converter	Remember	CO 4	CLO 15	AECB03.15
2	Define Analog converter?	To connect the output of an analog circuit as an input of a digital circuit, then we have to place an interfacing circuit between them.	Remember	CO 4	CLO 15	AECB03.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
3	Define Digital converter?	To connect the output of a digital circuit as an input of an analog circuit, then we have to place an interfacing circuit between them.	Understand	CO 4	CLO 15	AECB03.15
4	Define Resolution?	Resolution is the minimum amount of change needed in an analog input voltage for it to be represented in binary (digital) output.	Understand	CO 4	CLO 15	AECB03.15
5	Define Conversion time?	The amount of time required for a data converter in order to convert the data (information) of one form into its equivalent data in other form is called as conversion time	Remember	CO 4	CLO 15	AECB03.5
6	What do you mean by analog to digital conversation time?	The amount of time required for an Analog to Digital Converter (ADC) to convert the analog input voltage into its equivalent binary (digital) output is called as Analog to Digital conversion time. It depends on the number of bits that are used in the digital output.	Understand	CO 4	CLO 18	AECB03.18
7	What do you mean by digital to analog conversation time?	The amount of time required for a Digital to Analog Converter (DAC) to convert the binary (digital) input into its equivalent analog output voltage is called as Digital to Analog conversion time.	Remember	CO 4	CLO18	AECB03.18
8	How many types of DACs are available?	There are two types of DACs Weighted Resistor DAC R-2R Ladder DAC	Understand	CO 4	CLO 15	AECB03.15
9	What is weighted resistor DAC?	A weighted resistor DAC produces an analog output, which is almost equal to the digital (binary) input by using binary weighted resistors in the inverting adder circuit. In short, a binary weighted resistor DAC is called as weighted resistor DAC.	Remember	CO 4	CLO 16	AECB03.16
10	What do you mean by virtual short concept?	The voltage at the inverting input terminal of opamp is same as that of the voltage present at its non-inverting input terminal. So, the voltage at the inverting input terminal's node will be zero volts.	Understand	CO 4	CLO 10	AECB03.10
11	What is R-2R ladder?	The R-2R Ladder DAC overcomes the disadvantages of a binary weighted resistor DAC. As the name suggests, R-2R Ladder DAC produces an analog output, which is almost equal to the digital (binary) input by using a R-2R ladder network in the inverting adder circuit.	Remember	CO 4	CLO 16	AECB03.16
12	How many types of ADC are there what are they?	There are two types of ADCs: Direct type ADCs Indirect type ADC	Understand	CO 4	CLO 15	AECB03.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
13	Define Direct type ADC?	If the ADC performs the analog to digital conversion directly by utilizing the internally generated equivalent digital (binary) code for comparing with the analog input, then it is called as Direct type ADC.	Understand	CO 4	CLO 15	AECB03.15
14	What are the examples of Direct type ADC	Counter type ADC Successive Approximation ADC Flash type ADC	Remember	CO 4	CLO 15	AECB03.15
15	What is counter type ADC	A counter type ADC produces a digital output, which is approximately equal to the analog input by using counter operation internally.	Remember	CO 4	CLO 16	AECB03.16
16	What is successive approximation ADC	A successive approximation type ADC produces a digital output, which is approximately equal to the analog input by using successive approximation technique internally.	Understand	CO 4	CLO 17	AECB03.17
18	What is voltage divider network	A reference voltage VR is applied across that entire network with respect to the ground. The voltage drop across each resistor from bottom to top with respect to ground will be the integer multiples (from 1 to 8) of VR/8.	Understand	CO 4	CLO 18	AECB03.18
19	What is Indirect type ADC	If an ADC performs the analog to digital conversion by an indirect method, then it is called an Indirect type ADC. In general, first it converts the analog input into a linear function of time (or frequency) and then it will produce the digital (binary) output.	Remember	CO 4	CLO 15	AECB03.15
20	What is dual slope ADC	A dual slope ADC produces an equivalent digital output for a corresponding analog input by using two (dual) slope technique.	Remember	CO 4	CLO 17	AECB03.17
21	What the linearity of A/D or D/A?	The linearity of an A/D or D/A converter is a important measure of its accuracy and tells us how close the converter output is its ideal transfer characteristics.	Remember	CO 4	CLO 15	AECB03.15
22	Define differential non linearity?	An ADC and DAC Differential Non-Linearity (DNL) ... When that happens, the ADC's linearity is severely impacted. Therefore, DNL is defined as the maximum deviation from one LSB between two consecutive levels, over the entire transfer function	Understand	CO 4	CLO 15	AECB03.15
23	Define accuracy?	Accuracy can be defined as the amount of uncertainty in a measurement with respect to an absolute standard. Accuracy specifications usually contain the effect of errors due to gain and offset parameters.	Remember	CO 4	CLO 15	AECB03.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
24	Define monotonicity?	Monotonicity is a property of certain types of digital-to-analog converter (DAC) circuits. In a monotonic DAC, the analog output always increases or remains constant as the digital input increases.	Remember	CO 4	CLO 15	AECB03.15
25	Define settling time?	Settling Time is a very important parameter for every DAC and is defined as the time until the output voltage reaches and don't leaves again a defined voltage tolerance band.	Remember	CO 4	CLO 15	AECB03.15
26	Define Stability?	The ability of a DAC to produce a stable output all the time is called as Stability. The performance of a converter changes with drift in temperature, aging and power supply variations.	Remember	CO 4	CLO 15	AECB03.15
27	Name essential parts of DAC?	Audio Signal Processing. Basic Digital to Analog Converter. Binary Weighted Resistors DAC. R-2R Ladder Digital to Analog Converter (DAC) Motor Control Application.	Understand	CO 4	CLO 16	AECB03.16
28	Which is the fastest ADC and why	The most common types of ADCs are flash, successive approximation, and sigma-delta. The flash ADC is the fastest type available. A flash ADC uses comparators, one per voltage step, and a string of resistors. A 4-bit ADC will have 16 comparators, an 8-bit ADC will have 256 comparators.	Understand	CO 4	CLO 17	AECB03.17
29	Define the formula of resolution in the value of LSB?	resolution = VFS /2n-1 = 1LSB increment	Understand	CO 4	CLO 15	AECB03.15
30	Write the formula for calculating time period (T1) in ADC	T1 =t2-t1 =2n counts/clock rate	Understand	CO 4	CLO 15	AECB03.15
31	What do mean by staircase signal	The excitation signals include a DC bias potential increasing cyclically by a potential step to form a potential staircase signal sweeping across a potential domain, and a number of pulse trains either of opposite polarity or shifted in potential per potential step.	Understand	CO 4	CLO 17	AECB03.17
32	What do you mean by smoothing signal	In smoothing, the data points of a signal are modified so individual points (presumably because of noise) are reduced, and points that are lower than the adjacent points are increased leading to a smoother signal.	Understand	CO 4	CLO 16	AECB03.16

33	What is the output equation of DAC?	Vo=KVFS(d12-1+ d22-2+.....+ dn2-n)	Remember	CO 4	CLO 17	AECB03.17
34	List out some integrated type converters.	Charge balanced ADC Dual slope ADC	Remember	CO 4	CLO 17	AECB03.17
35	What is integrating type converter?	An ADC converter that perform conversion in an indirect manner by first changing the analg I/P signal to a linear function of time or frequency and then to a digital code is known as integrating type A/D converter.	Remember	CO 4	CLO 17	AECB03.17
36	Where the successive approximation type ADC used?	The successive approximation ADCs are used in applications such as data loggers & instrumentation where conversion speed is important.	Remember	CO 4	CLO 16	AECB03.16
37	What is multiplying DAC?	A digital to analog converter which uses a varying reference voltage VR is called a multiplying DAC(MDAC). If the reference voltage of a DAC, VR is a sine wave give by V(t)=VinCos 2f t Then, Vo(t)=VomCos(2 ft + 180)	Remember	CO 4	CLO 16	AECB03.16
38	State the advantage of dual slope ADC?	It provides excellent noise reject of ac signal whose periods are integral multiples of the integration time	Remember	CO 4	CLO 17	AECB03.17
39	Define relative accuracy?	It is the maximum deviation after gain & offset errors have been removed. The accuracy of a converter is also specified in form of LSB increments or % of full scale voltage	Understand	CO 4	CLO 15	AECB03.15
40	Define resolution of a data converter.	It is defined as the total time required converting an analog signal into its digital output. It depends on the conversion technique used & the propagation delay of circuit components. The conversion time of a successive approximation type ADC is given byT(n+1) where T---clock period; Tc---conversion time; n----no. of bits	Understand	CO 4	CLO 18	AECB03.18
MODULE-V						
1	What Is Memory?	A memory is used to store data and instruction. Computer memory is the storage space in computer where data is to be processed and instructions required for processing are stored.	Understand	CO 5	CLO19	AECB03.19
2	Define ROM?	Read-only memory (ROM) is a type of non-volatile memory used in computers and other electronic devices. Data stored in ROM cannot be electronically modified after the manufacture of the memory device.	Remember	CO 5	CLO19	AECB03.19

3	Define RAM?	Random access memory (RAM) is a type of data storage. This type of memory is volatile and all information that was stored in RAM is lost when the computer is turned off.	Remember	CO 5	CLO19	AECB03.19
4	What is PLA?	A programmable logic array is a kind of programmable logic device used to implement combinational logic circuits. The PLA has a set of programmable AND gate planes, which link to a set of programmable OR gate planes, which can then be conditionally complemented to produce an output.	Understand	CO 5	CLO20	AECB03.20
5	What is PAL?	Programmable Array Logic is a type of Programmable Logic Device (PLD) used to realize a particular logical function. PALs comprise of an AND gate array followed by an OR gate array.	Understand	CO 5	CLO20	AECB03.20
6	Define FPGA?	Field Programmable Gate Arrays (FPGAs) are semiconductor devices that are based around a matrix of configurable logic blocks (CLBs) connected via programmable interconnects. FPGAs can be reprogrammed to desired application or functionality requirements after manufacturing.	Remember	CO 5	CLO21	AECB03.21
7	Define CAM?	Computer-aided manufacturing (CAM) is an application technology that uses computer software and machinery to facilitate and automate manufacturing processes.	Understand	CO 5	CLO21	AECB03.21
8	Define CPLD?	A complex programmable logic device is a programmable logic device with complexity between that of PALs and FPGAs, and architectural features of both. The main building block of the CPLD is a macrocell.	Remember	CO 5	CLO20	AECB03.20
9	What Is PLD?	A programmable logic device is an electronic component used to build reconfigurable digital circuits. Unlike integrated circuits (IC) which consist of logic gates and have a fixed function, a PLD has an undefined function at the time of manufacture.	Understand	CO 5	CLO20	AECB03.20
10	What Is PROM?	Programmable read-only memory (PROM) is read-only memory that can be modified once by a user. PROM is a way of allowing a user to tailor a microcode program using a special machine called a PROM programmer	Understand	CO 5	CLO19	AECB03.19

Signature of the Faculty **Signature of HOD**