	Digital Electronics and Digital Instruments (EE 4th Semester) **Unit 1: Number Systems**
1	Any signed negative binary number is recognised by its _____ a) **MSB** b) LSB c) Byte d) Nibble
2	The representation of octal number (532.2)8 in decimal is _____ a) **(346.25)10** b) (532.864)10 c) (340.67)10 d) (531.668)10
3	The decimal equivalent of the binary number (1011.011)2 is _____ a) **(11.375)10** b) (10.123)10 c) (11.175)10 d) (9.23)10
4	An important drawback of binary system is _____ a) **It requires very large string of 1's and 0's to represent a decimal number** b) It requires sparingly small string of 1's and 0's to represent a decimal number c) It requires large string of 1's and small string of 0's to represent a decimal number d) It requires small string of 1's and large string of 0's to represent a decimal number
5	The decimal equivalent of the octal number (645)8 is _____ a) (450)10 b) (451)10 c) **(421)10** d) (501)10
6	The largest two digit hexadecimal number is _____ a) (FE)16 b) (FD)16 c) **(FF)16** d) (EF)16
7	Representation of hexadecimal number (6DE)H in decimal: a) **$6 * 16^2 + 13 * 16^1 + 14 * 16^0$** b) $6 * 16^2 + 12 * 16^1 + 13 * 16^0$ c) $6 * 16^2 + 11 * 16^1 + 14 * 16^0$ d) $6 * 16^2 + 14 * 16^1 + 15 * 16^0$
8	The given hexadecimal number (1E.53)16 is equivalent to _____ a) (35.684)8 b) **(36.246)8** c) (34.340)8 d) (35.599)8
9	The octal number (651.124)8 is equivalent to _____ a) **(1A9.2A)16** b) (1B0.10)16

	c) (1A8.A3)16 d) (1B0.B0)16
10	The octal equivalent of the decimal number (417)10 is _____ a) **(641)8** b) (619)8 c) (640)8 d) (598)8
11	Convert the hexadecimal number (1E2)16 to decimal: a) 480 b) 483 c) **482** d) 484
12	(170)10 is equivalent to a) (FD)16 b) (DF)16 c) **(AA)16** d) (AF)16
13	Convert (214)8 into decimal: a) **(140)10** b) (141)10 c) (142)10 d) (130)10
14	Convert (0.345)10 into an octal number: a) (0.16050)8 b) **(0.26050)8** c) (0.19450)8 d) (0.24040)8
15	Convert the binary number (01011.1011)2 into decimal: a) **(11.6875)10** b) (11.5874)10 c) (10.9876)10 d) (10.7893)10
16	Octal to binary conversion: (24)8 =? a) (111101)2 b) **(010100)2** c) (111100)2 d) (101010)2
17	Convert binary to octal: (110110001010)2 =? a) (5512)8 b) **(6612)8** c) (4532)8 d) (6745)8
18	What is the addition of the binary numbers 11011011010 and 010100101? a) 0111001000 b) 1100110110 c) **11101111111** d) 10011010011
19	Perform binary addition: 101101 + 011011 = ? a) 011010 b) 1010100

	c) 101110 d) **1001000**
20	Perform binary subtraction: 101111 – 010101 = ? a) 100100 b) 010101 **c) 011010** d) 011001
21	Binary subtraction of 100101 – 011110 is a) **000111** b) 111000 c) 010101 d) 101010
22	Perform multiplication of the binary numbers: 01001 × 01011 = ? a) **001100011** b) 110011100 c) 010100110 d) 101010111
23	100101 × 0110 = ? a) 1011001111 b) 0100110011 **c) 101111110** d) 0110100101
24	On multiplication of (10.10) and (01.01), we get a) 101.0010 b) 0010.101 c) **011.0010** d) 110.0011
25	Divide the binary numbers: 111101 ÷ 1001 and find the remainder a) 0010 b) 1010 c) 1100 **d) 0011**
26	Divide the binary number (011010000) by (0101) and find the quotient a) 100011 b) **101001** c) 110010 d) 010001
27	Binary subtraction of 101101 – 001011 = ? **a) 100010** b) 010110 c) 110101 d) 101100
28	1’s complement of 1011101 is _____ a) 0101110 b) 1001101 **c) 0100010** d) 1100101
29	2’s complement of 11001011 is _____ a) 01010111 b) 11010100

	c) 00110101 d) 11100010
30	If the number of bits in the sum exceeds the number of bits in each added numbers, it results in _____ a) Successor b) **Overflow** c) Underflow d) Predecessor
31	1's complement can be easily obtained by using _____ a) Comparator b) **Inverter** c) Adder d) Subtractor
32	The advantage of 2's complement system is that _____ a) **Only one arithmetic operation is required** b) Two arithmetic operations are required c) No arithmetic operations are required d) Different Arithmetic operations are required
33	The 1's complements requires _____ a**) One operation** b) Two operations c) Three operations d) Combined Operations
34	Which one is used for logical manipulations? a) 2's complement b) 9's complement c) **1's complement** d) 10's complement
35	For arithmetic operations only _____ a) 1's complement is used b) **2's complement** c) 10's complement d) 9's complement
36	Binary coded decimal is a combination of _____ a) Two binary digits b) Three binary digits c) **Four binary digits** d) Five binary digits
37	The decimal number 10 is represented in its BCD form as _____ a) 10100000 b) 01010111 c) **00010000** d) 00101011
38	Add the two BCD numbers: 1001 + 0100 = ? a) 10101111 b) 01010000 c) **00010011** d) 00101011
39	Code is a symbolic representation of _____ information. a) Continuous

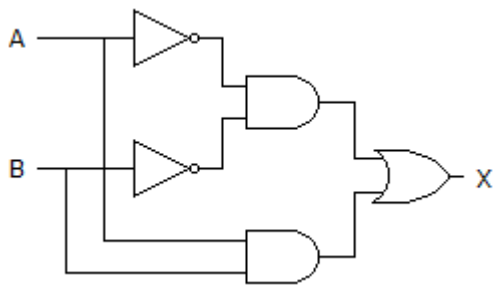
	b) **Discrete** c) Analog d) Both continuous and discrete
40	When numbers, letters or words are represented by a special group of symbols, this process is called _____ a) Decoding b) **Encoding** c) Digitizing d) Inverting
41	The excess-3 code for 597 is given by _____ a) **100011001010** b) 100010100111 c) 010110010111 d) 010110101101
42	The decimal equivalent of the excess-3 number 110010100011.01110101 is _____ **a) 970.42** b) 1253.75 c) 861.75 d) 1132.87
43	Positive integers can be represented as A. Signed numbers **B. Unsigned numbers** C. Negative integers D. both A and B
44	Representation of -9 with signed magnitude equals to **A. 10001001** B. 11110110 C. 11110111 D. 11110011
45	The more convenient system for representing the negative numbers is **A. Signed-complement system** B. Unsigned-complement system C. Negative integer system D. Positive integer system
46	1's complement as a logical operation is equivalent to A. Logical design

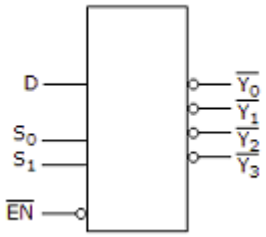
	B. Illogical design **C. Logical complement** D. Illogical complement
47	The most commonly used system for representing signed binary numbers is the: **A. 2's-complement system.** **B.** 1's-complement system. **C.** 10's-complement system. **D.** sign-magnitude system.
48	The decimal value for E_{16} is: **A.** 12_{10} **B.** 13_{10} **C.** **14_{10}** **D.** 15_{10}
49	The binary subtraction 0 – 0 = **A.** **difference = 0** **borrow = 0** **B.** difference = 1 borrow = 0 **C.** difference = 1 borrow = 1 **D.** difference = 0 borrow = 1
50	Adding in binary, a decimal 26 + 27 will produce a sum of: **A.** 111010 **B.** 110110 **C.** **110101** **D.** 101011

	Unit 3: Boolean Algebra and Combinational Circuits
1	A full adder logic circuit will have _____ a) Two inputs and one output b) Three inputs and three outputs

	c) Two inputs and two outputs **d) Three inputs and two outputs**
2	The gates required to build a half adder are _____ a) EX-OR gate and NOR gate b) EX-OR gate and OR gate **c) EX-OR gate and AND gate** d) EX-NOR gate and AND gate
3	Don't care conditions can be used for simplifying Boolean expressions in _____ a) Registers b) Terms **c) K-maps** d) Latches
4	There are _____ cells in a 4-variable K-map. a) 12 **b) 16** c) 18 d) 8
5	The involution of A is equal to _____ a) **A** b) A' c) 1 d) 0
6	A (A + B) = ? a) AB b) 1 c) (1 + AB) **d) A**
7	The basic building blocks of the arithmetic unit in a digital computers are _____ a) Subtractors **b) Adders** c) Multiplexer d) Comparator
8	A digital system consists of _____ types of circuits. **a) 2** b) 3 c) 4 d) 5
9	DeMorgan's theorem states that _____ **a) (AB)' = A' + B'** b) (A + B)' = A' * B c) A' + B' = A'B' d) (AB)' = A' + B
10	All logic operations can be obtained by means of _____ a) AND and NAND operations b) OR and NOR operations c) OR and NOT operations **d) NAND and NOR operations**

11	The design of an ALU is based on _____ a) Sequential logic **b) Combinational logic** c) Multiplexing d) De-Multiplexing
12	(A + B)(A' * B') = ? a) 1 **b) 0** c) AB d) AB'
13	Complement of the expression A'B + CD' is _____ a) (A' + B)(C' + D) **b) (A + B')(C' + D)** c) (A' + B)(C' + D) d) (A + B')(C + D')
14	Total number of inputs in a half adder is _____ **a) 2** b) 3 c) 4 d) 1
15	In which operation carry is obtained? a) Subtraction **b) Addition** c) Multiplication d) Both addition and subtraction
16	If A and B are the inputs of a half adder, the sum is given by _____ a) A AND B b) A OR B **c) A XOR B** d) A EX-NOR B
17	If A and B are the inputs of a half adder, the carry is given by _____ **a) A AND B** b) A OR B c) A XOR B d) A EX-NOR B
18	In boolean algebra, the OR operation is performed by which properties? a) Associative properties b) Commutative properties c) **Distributive properties** d) All of the Mentioned
19	The expression for Absorption law is given by _____ a) **A + AB = A** b) A + AB = B c) AB + AA' = A d) A + B = B + A
20	According to boolean law: A + 1 =? a) **1** b) A c) 0 d) A'

21	Half subtractor is used to perform subtraction of _____ **a) 2 bits** b) 3 bits c) 4 bits d) 5 bits
22	For subtracting 1 from 0, we use to take a _____ from neighbouring bits. a) Carry **b) Borrow** c) Input d) Output
23	How many outputs are required for the implementation of a subtractor? a) 1 **b) 2** c) 3 d) 4
24	Let the input of a subtractor is A and B then what the output will be if A = B? **a) 0** b) 1 c) A d) B
25	Let A and B is the input of a subtractor then the output will be _____ **a) A XOR B** b) A AND B c) A OR B d) A EXNOR B
26	Full subtractor is used to perform subtraction of _____ a) 2 bits **b) 3 bits** c) 4 bits d) 8 bits
27	The output of a subtractor is given by (if A, B and X are the inputs). a) A AND B XOR X **b) A XOR B XOR X** c) A OR B NOR X d) A NOR B XOR X
28	The output of a full subtractor is same as _____ a) Half adder **b) Full adder** c) Half subtractor d) Decoder
29	Which of the following logic expressions represents the logic diagram shown? 

	a) X=AB'+A'B b) X=(AB)'+AB c) X=(AB)'+A'B' **d) X=A'B'+AB**
30	The device shown here is most likely a _____  a) Comparator b) Multiplexer c) Inverter **d) Demultiplexer**
31	3 bits full adder contains _____ a) 3 combinational inputs b) 4 combinational inputs c) 6 combinational inputs **d) 8 combinational inputs**
32	What is a multiplexer? a) It is a type of decoder which decodes several inputs and gives one output b) **A multiplexer is a device which converts many signals into one** c) It takes one input and results into many output d) It is a type of encoder which decodes several inputs and gives one output
33	What is the function of an enable input on a multiplexer chip? a) To apply Vcc b) To connect ground **c) To active the entire chip** d) To active one half of the chip
34	In a multiplexer, the selection of a particular input line is controlled by _____ a) Data controller **b) Selected lines** c) Logic gates d) Both data controller and selected lines
35	If the number of n selected input lines is equal to 2^m then it requires _____ select lines. a) 2 **b) m** c) n d) 2^n
36	How many select lines would be required for an 8-line-to-1-line multiplexer? a) 2 b) 4 c) 8 **d) 3**
37	How many NOT gates are required for the construction of a 4-to-1 multiplexer? a) 3

	b) 4 **c) 2** d) 5
38	In 1-to-4 demultiplexer, how many select lines are required? **a) 2** b) 3 c) 4 d) 5
39	How many AND gates are required for a 1-to-8 multiplexer? a) 2 b) 6 **c) 8** d) 5
40	How many OR gates are required for an octal-to-binary encoder? **a) 3** b) 2 c) 8 d) 10
41	Can an encoder be called as multiplexer? a) No **b) Yes** c) Sometimes d) Never
42	How many inputs are required for a 1-of-10 BCD decoder? **a) 4** b) 8 c) 10 d) 2
43	How many inputs are required for a 1-of-16 decoder? a) 2 b) 16 c) 8 **d) 4**
44	Reflected binary code is also known as _____ a) BCD code b) Binary code c) ASCII code **d) Gray Code**
45	Why do we use gray codes? a) To count the no of bits changes b) To rotate a shaft **c) Error correction** d) Error Detetction
46	Convert binary number into gray code: 100101. a) 101101 b) 001110 **c) 110111** d) 111001
47	One that is not the outcome of magnitude comparator is _____ a) a > b

	b) a – b c) a < b d) a = b
48	If two numbers are not equal then binary variable will be _____ **a) 0** b) 1 c) A d) B
49	In a comparator, if we get input as A>B then the output will be _____ **a) 1** b) 0 c) A d) B
50	Which one is a basic comparator? **a) XOR** b) XNOR c) AND d) NAND

	Unit 5: Digital to Analog and Analog to Digital and Converters and Display Devices
1	A system that converts a digital signal into analog signal is called a)ADC b)DAC c)AAC d)DDC ANS:B
2	Pulse width modulator is type of 1) ADC b)DAC c)AAC d)DDC ANS:B
3	A measurement of the maximum speed at which the DACs circuitry can operate and still produce correct output called a)maximum sampling rate b)minimum sampling rate c)maximum summation rate d)minimum summation rate
4	An ideal DAC converts the abstract numbers into a conceptual sequence of a)impulses b)signals c)quantization's d)summations
5	A measurement of the difference between the largest and smallest signals the DAC is referred as a)dynamic range b)static range c)determinate range

	d)stable range ans:A
6	The equivalent weight of LSB in a four bit variable resistive divider D/A converter is a)1/4 b)1/16 c)1/15 d)8/15 ans:1/15
7	For a 5-bit resistive divider network the weight assigned to MSB is A)1/31 b)1/32 c)8/31 d)16/31 ans: 16/31
8	The number of resistors required for a five bit resistor divider, D/A converter are a)10 b)5 c)8 d)31 ans:5
9	The error in the D/A converter output may be due to a)Errors in the values of resistors used b)monotonicity c)small resolution d)It's a higher D/A speed
10	The fastest A/D converter is a)single slope ramp comparator A/D converter b)dual slope integrator A/D convertor c)successive approximation A/D converter d)counter type A/D converter ans:c
11	Which system converts analog to digital signal? a)analog to digital converter b)digital to analog converter c)a and b both d)none of above ans:a
12	which is example of ADC. a)sound from microphone b)mike c)button d)all of above ans:a
13	how many state digital signal have? a)one b)two c)three d)four

	Ans:b
14	Why is ADC needed? a)microprocessor can only perform complex processing b)Adc provide link between analog to digital world c)When signals are in digital form they are less susceptible to the deleterious effect of noise d)all of above ans:d
15	Which are the following types of ADC? a)ramp type ADC b)Dual slope type ADC c)Integrating type ADC d)all of above ans:d
16	This type of ADC also known as voltage to time conversion. a)ramp type ADC b)Dual slope type ADC c)Integrating type ADC d)all of above ans:a
17	Which of the following are advantages of ramp type ADC? a)It is easy to design b)low cast c)ADC output can be send over long distance d)all of above ans:d
18	Which of the following are disadvantages of ramp type ADC? a)larger error possible due to noise b)filters are required c)excellent ramp linearity requirement d)all of above ans:d
19	Which of the following are advantages of dual slope type ADC? a)The conversation result is intensive b)fewer adverse effect from noise c)High accuracy d) all of above ans:d
20	Which of the following are disadvantages of dual slope type ADC? a)slow b)costly c)accuracy is depend on use of precision external component d)all of above ans:d
21	Which of the following ADC better in seed than among all other ADC? a)ramp b)dual slope c)successive approximation d)flash ans:d

22	Which of the following ADC better in resolution than among all other ADC? a)ramp b)dual slope c)successive approximation d)flash ans:a
23	Which of the following ADC's cost is high than among all other ADC? a)ramp b)dual slope c)successive approximation d)flash ans:d
24	Which of the following type output is provided by ADC? a) Serial type b) Parallel type c) **Both serial and parallel type** d) None of the mentioned
25	Which of the following method is employed for ADC? a) Ladder network b) **Successive approximation type** c) PWM type d) None of the mentioned
26	Dynamic range of ADC is depended on _____ a) Resolution b) Linearity c) Accuracy d) **All of the mentioned**
27	ADC input is sampled by **A. Nyquist rate** B. Newton rate C. Ohms rate D. Lens rate
28	The full form of LCD is _____ a) **Liquid Crystal Display** b) Liquid Crystalline Display c) Logical Crystal Display d) Logical Crystalline Display
29	By which properties, the orientation of molecules in a layer of liquid crystals can be changed? a) Magnetic field b) **Electric field** c) Electromagnetic field d) Gallois field
30	The direction of electric field in an LCD is determined by _____ a) the **molecule's chemical structure** b) Crystalline surface structure

	c) Molecular Orbital Theory d) Quantum Cellular Automata
31	LCDs operate from a voltage ranges from _____ a) 3 **to 15V** b) 10 to 15V c) 10V d) 5V
32	In 7 segment display, how many LEDs are used? a) 8 **b) 7** c) 10 d) 9
33	A light emitting diode is _____ a) **Heavily doped** b) Lightly doped c) Intrinsic semiconductor d) Zener diode
34	What should be the biasing of the LED? a) **Forward bias** b) Reverse bias c) Forward bias than Reverse bias d) No biasing required
35	Which process of the Electron-hole pair is responsible for emitting of light? a) Generation b) Movement c) **Recombination** d) Diffusion
36	Which of the following is not a characteristic of LED? a) Fast action b) High **Warm-up time** c) Low operational voltage d) Long life
37	Which of the following are used in DAC? a) Ladder n**etwork** b) Successive approximation technique c) Both Ladder and successive approximation technique d) None of the mentioned
38	Which of the following is an indication by settling time? a) Accuracy of conversion b) **Speed of conversion** c) Precision in conversion d) All of the mentioned
39	Filling data between impulses in DAC is known as _____ a) Reconstruction b) Sampling c) Interpola**tion** d) None of the mentioned
40	Which of the following is a binary weighted DAC? a) R-2**R ladder DAC** b) PWM DAC

	c) Switched resistor DAC d) Sampling DAC
41	In binary resistor DAC, which terminal of the opamp is grounded? a. Negative terminal b. **Positive terminal** c. Both terminals d. None
42	In binary resistor DAC, Ri and Ro are related as a. Ri is independent of Ro b. Ri is Ro times 2 raised to the power i c. Ri is Ro times 2 raised to **the power (-i)** d. Ri is equal to Ro
43	In binary resistor DAC, the scale factor K is a. -(**Rf/Ro)** b. (Rf/Ro) c. (Rf*Ro) d. -(Rf*Ro)
44	Which ADC does not use clock signal? a. **Flash ADC** b. Counter comparator ADC c. Double ramp ADC d. Successive approximation AD
45	Digital to analog conversion can be done by a. Weighted resistor method b. R-2R ladder c. Inverted R-2R-ladder method d. All of **the above**
46	Which ADC has a fixed conversion time? a. Counter comparator ADC b. Wilkinson ADC c. Double ramp ADC d. Successive ap**proxima**tion ADC
47	Only two values of resistor are required for the DAC a. Weighted resistor method b. R-**2R ladder** c. Binary weighted method d. None of the above
48	The R-2R ladder DAC has the drawback a. Higher values of resistance are required b. Lesser word length c. Non-**linearity due to power dissipation** d. none of the above
49	The advantage of ADC of dual slope type is a. Excellent **noise rejection** b. Long conversion time c. Fastest in operation d. Slow varying in nature
50	In Counter Comparator ADC using DAC, the counter gets disabled when a. out**put Va exceeds input Vi** b. output Va becomes zero

	c. output Va becomes smaller than input Vi d. None of the above