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BRAINWARE UNIVERSITY

Term End Examination 2024-2025 Programme – B.Tech.(EE)]-2021/B.Tech.(EE)-2023 Course Name - Digital Electronics Course Code - PCC-EE402 (Semester IV)

Full Marks: 60 Time: 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following: (i) Identify at what condition error occurs in the servo tracking A/D Converter a) Slow change input b) Rapid change in input c) No change in input d) All of the mentioned (ii) Choose 1's complement of 1011001 a) 100111 b) 101100 c) 0100110 d) 110110 (iii) Select which of the given logic family provide minimum power dissipation a) JFET b) ECL c) CMOS d) TTL

(iv) Select the following logic unit is the fastest of all the logic families

a) DTL

b) TTL

c) ECL

d) CMOS

(v) A register can be defined as

a) The group of transistors for storing n- a bit of information

b) The group of transistors for storing two bits of information

c) The group of flip-flops for storing n bit of information

d) The group of flip-flops for storing binary information.

(vi) The primary contrast between a counter and a register is named as

a) A counter has the capability to store n bit of information whereas a register has one bit.

b) A register counts data.

c) A register has no specific sequence of

d) A counter has no particular sequence of

(vii) The radix of the octal number system is recognized as

a) 2

b) 10

c) 8

d) 16

(viii) Write the main function of the filter in a rectifier circuit

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	a) Maximize AC input variations	b) To suppress odd harmonics.	
	c) Remove ripples from the rectified output.	d) Minimize DC input and AC output	
		variations.	
(ix)	Determine in a 100 kHz clock frequency, 16 bits register.	s can be serially entered into a shift	
- A - 1	a) 150 micro-sec	b) 160 micro-sec	
	c) 170 micro-sec	d) 180 micro-sec	
(x)	Select which type of counter easily produced a	series of equal space time pulses :	
	a) Johnson shift	b) Clock shift	
	c) Binary shift	d) Ring counter	
(xi)	Recall the three output conditions of 3- state b	uffer are:	
	a) High Impedance, 0, float	b) Negative, positive, 0	
	c) Low Impedance, float	d) High, Low, float	
(xii)	Identify which of the following gates has the expossible input combinations:		
	a) AND	b) NOT	
	c) NOR	d) NAND	
(xiii)	Full adder is used to determine		
	a) 2 bit addition	b) 3 bit addition	
	c) 4 bit addition	d) 6 bit addition	
(xiv)	Identify when input signal 1 is applied to a NO	T gate, the output is	
	a) 0	b) 1	
	c) 1 or 0	d) none of these	
(xv)	Recall which number system has a base 8		
(///	a) Hexadecimal	b) Octal	
	c) Binary	d) Decimal	
	C) Billary		
	Gro	up-B	x 5=15
	(Short Answer	Type Questions)	, X 2-12
			(2)
2 6	tete and ovalain De-Morgan's Law.		(3)
2. 51	tate and explain De-Morgan's Law.		
			(3)
3 F	xplain POS with example.	usels and logical symbol. Show how it	
4. D	xplain POS with example. escribe NOR gate with its Boolean expression, an be realized by using basic gates.	truth table and logical symbol characteristics	
			(2)
	hasis gates only		(3)
5. C	onstruct EXNOR gate using basic gates only.		
		The state of the s	(3)
6. E	xplain D flip-flop with its truth table, circuit dia	gram and working principle.	
		OR	(3)
_	xplain the different applications of EPROM.		
E			
	Gr	oup-C	5 x 6=30
	(Long Answer	Type Questions)	
			(5)
	- Procesions by using NOR	gate (i) AB+CD (ii) (A+B)(C+D)	r. (5)
7. 1	Design the Boolean expressions by using NOR list out the result after converting binary num	ber 10110 to the octal equivalent number	(5)
8. I	ist out the result after converting and ,		
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OR Discriminate between latch & flip flop.		(5)	
11. Discuss about different types of ROMs.12. Explain the construction of S-R flip flop using D flip flop.		(5) (5)	
10. Construct 4-bit ring counter using J-K flip-flops. Draw the state table.		(5)	
9. Construct 4:1 Multiplexer using 2:1 Multiplexer and one OR gate.		(5)	