



BRAINWARE UNIVERSITY

Programme – M.Tech.-RA-2023

Course Name – Electronics in Robotic Technology Rainward Robotic Technology Rainward Robotic Technology (Semester I)

b) purely resistive

d) None of these

b) Same

d) capacitive and inductive

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 Choose the correct alternative from the following: (i) Name the circuit in which current has a complete path to flow is called _____ circuit. a) short b) open c) closed d) open loop (ii) Explain bulb in street lighting are connected in a) parallel. b) series. c) series parallel d) end of end. (iii) If source impedance is complex, then determine maximum power transfer occurs when the load impedance a) equal to b) negative of c) complex conjugate of d) negative of complex conjugate of (iv) Thevenin's voltage is equal to the _____ voltage across the _____ terminals. Pradict a) short circuit, input b) open circuit, output c) short circuit, output d) open circuit, input (v) Norton's current is equal to the current passing through the _____ circuited _____ terminals. Pradict a) open, output b) short, input c) open, input d) short, output (vi) As XL = XC in a series resonance circuit, determine the impedance

(vii) Norton's equivalent resistance is theas Thevenin's equivalent resistance.

a) purely capacitive

c) purely inductive

c) Both not same and same

Explain

a) Not same

(viii)	Thevenin's voltage is recorded as the terminals.	voltage across the		
	a) short circuit, input	b) open circuit, output		
i	c) short circuit, input c) short circuit, output	d) open circuit, input		
(ix)	Norton's current is calculated, as the current	passing through the		
(1/2)	circuited terminals.			
a) open, output	b) short, input		
-	V open input	d) short, output		
(x) F	Predict that what happens to the inductance	of an inductor when the number of turns		
br.	ncreases?	11.5		
ers ersia	Increases Remains constant	b) Decreases		
OF C	Remains constant	d) Becomes zero		
	Waster slave configuration is selected for usi	ng in hip-hops to		
a)	increase its clocking rate	b) reduce power dissipation		
c)	eliminate race-round condition	d) improve its reliability		
(xii) C	choose the desired logic circuits which accept roduces two binary digital, a sum bit and car	ry bit on its outputs?		
a)	full adder	b) half-adder		
c)	serial adder	d) parallel adder		
	he self bias arrangement provides a better (ual meanings)	Q point stability if [Notations carry their		
	R _E is small	b) R _E is large		
	β is small and R _E is large	d) both β and R _E are large		
-	he common mode rejection ratio of an OP A	•		
• •		b) Much larger than unity		
•	Much smaller than unity	d) none of these		
	unity	dy hone of these		
	rite, An ideal OP AMP has	13. 7 subsub immedance		
	nfinite input impedance	b) Zero output impedance		
c) 1	nfinite voltage gain	d) All of the these		
		ир-В	2 5 45	
	(Short Answer	Type Questions)	3 x 5=15	
	the Master sleve IV flip flor		(3)	
	short note on the Master slave JK flip flop		(3)	
3. Define	e Gray code		(3)	
	4. Write down the Boolean expression of output Y of EX-OR gate and show how it can be			
	realized by using AND, OR and NOT gates. Present the logic symbol of EX-OR gate			
5. Explain the construction of 4:1 Multiplexer using basic gates				
	s slew rate? An operational amplifier had ime will it take to change the output vo		(3)	
	O	R		
۵٠ - ۵۰	57 A	Z n . Z n . z =	(3)	
Sımpli	fy the following expression: $Y = A + A$	$A \cdot B + A \cdot B \cdot C + A \cdot B \cdot C \cdot D$		

	(Long Answer Type Questions)	5 x 6=30	
7.	Comparison between FET and BJT	(5)	
9.	Explain the use of an OPAMP as summing amplifier. Explain the use of an OPAMP as summing amplifier. Differentiate between Latch And Flip-flop	(5) (5) (5)	
11.	Explain operation of triac	(5)	
12.	Explain the construction of J-K flip flop using S-R flip flop	(5)	
	Differentiate LED and LCD	(5)	
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