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DEPARTMENT OF SCIENCES, I SEMESTER M.Sc. (PHYSICS) END SEMESTER EXAMINATIONS, NOVEMBER 2019 SUBJECT: Fundamentals of Electronics [PHY 4107] (REVISED CREDIT SYSTEM-2017)

Time:	3 Hours	Date: Dec-2019	MAX. MARKS: 50			
Note:	(i) Answer ALL questions					
	(ii) Draw diagrams, and wr	rite equations wherever nece	ssary			
1.	(a) Sketch the logic system for a clocked SR flip flop and give its truth table.					
	 (b) Use a Karnaugh map to mining A B C D + A B C D + A (c) What is an encoder? Draw this. 	The following standard SOP end $\overline{A} \ \overline{B} C D + \overline{A} \ B\overline{C} D + \overline{A} B C \overline{D}$ w the logic diagram of a decimal	xpression + \overline{A} B C D+A \overline{B} \overline{C} \overline{D} +A \overline{B} \overline{C} D (3M) to BCD encoder. Give one application of (4M)			
2	(a) Draw the circuit diagram comparator outputs for v	of three bit A/D converter (Flash arious input voltage ranges and v	Converter). Give the table showing write logic equations for 2^0 , 2^1 and 2^2 bits. (6M)			
	(b) Find the output voltage from $1=10V$.	om a four-bit ladder that has a di	gital input of 1101.Assume that 0=0V and			
	1 10 11		(2M)			
	(c) Mention four charecteristi	c of an ideal op amp	(2M)			
3	(a) Draw the circuit diagram amp obtain an expression	of an inverting amplifier using o for its gain.	op amp .Using the equivalent circuit of op			
			(4M)			
	(b) What do you understand b	by a comparator.Discuss the princ	ciple of basic inverting comparator. (4M)			
	(c) Draw circuit diagram for a	an integrator using op amp	(2M)			

4.	(a) Explin how 555 timer can be used for monostastable operation and find the formula for its frequ				
		(5M)			
	(b) Discuss the operation of the Wein Bridge oscillator using op amp.	(5M)			
5.	(a) Draw voltage divider biasing for BJT in common emitter configuration. Using Thevenin's equivalent				
	network obtain an expression for IB and VCE.	(5M)			
	(b) Discuss the constuction of junction field effect transistor.Draw its I-V charecteristics and explain the term pinch off				
		(3M)			
	(c) Explain how diode can be used as positive clipper.				
		(2NI)			

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