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DEPARTMENT OF SCIENCES I SEMESTER M.Sc. (PHYSICS) END SEMESTER MAKE UP EXAMINATIONS, DECEMBER 2023 FUNDAMENTALS OF ELECTROCNICS -PHY 5154 (CHOICE BASED CREDIT SYSTEM - 2020)

Time: 3 Hours

Date: DD MM YYYY

MAX. MARKS: 50

Note (i) Answer ALL questions

(ii) Draw diagrams, and write equations wherever necessary

		Marks	CO	BL
1A	Draw the samll signal equivalent circuit of transistor using h parameters and	5	1	1
	arrive at the expressions for voltage gain and out resistance.			
1B	$I_{DSS} = 30 \text{mA}$ and $V_{GS(off)} = -6V$ for a particular JFET	3	1	3
	a. What is I_D when $V_{GS} = 0V$			
	b. If V_{GS} increased from -4V to -1V, does I_D increase or decrease?			
10		0	4	•
	Mention the difference between series and parallel positive clipper?	2	1	3
ŻA	a. What are ideal characteristics of an op amp?	2	1	1
	b. Mention different configurations of feedback connections in an opamp?	2		-
2B	Explain the working and graph of low pass active filter using proper digaram.	4	1	3
2C	For a stable multivibrator $R_A = 4.7k\Omega$, $R_B = 1k\Omega$ and $C = 1\mu F$. Determine the	2	1	2
	positive and negative pulse width and the free running frequency. What is the			
	duty cycle of the O/P waveform?			
ЗA	Explain the working of bubbled NOT gate with proper diagram and truth table	3	2	3
3B	Draw the K-map for the following equation:	3	2	3
	Y = ABC + A BC + ABC + A BC			
		•		
	(b) Convert decimal 1534_{10} to a octal number.	2		
	- Convert the following hexadecimal numbers to binary numbers: i. Ab ii.			
	12C			
30	Write a short note registers used in 8085 microprocessor	2	2	2
10	Explain the working of RS-Elin Elon with proper block diagram and truth table	2	2	<u> </u>
4R	Design and explain desimal to binary encoder (10.4 line)logical circuit diagram	5	2	- 6
40	and truth table	5	2	0
4C	Explain data transfer and arithmatic operations used in 8085 microprocessor with	2	2	6
	one example each.	_	_	Ŭ
5A	a. Reg B contains 32H. Copy the contents of B into memory location	3	2	1
	8000H using indirect addressing (Use both MOV & STAX)			-
	b. Define counter and time delays used in microprocessor.	2		
5B	Assume accumulator contents are AAH and CY=0. Illustrate the contents of	3	2	5
	accumulator after the execution of RLC instruction twice	-	_	-

5C	Write an instruction to load the accumulator with the data byte 64H and verify	2	2	6
	whether the data byte in memory location 2050H is equal to the accumulator			
	contents. If both data bytes are equal jump to memory location Buffer			