LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

U.G.DEGREE EXAMINATION – **ALLIED**

THIRD SEMESTER – **NOVEMBER 2024**

UPH 3403 – APPLIED ELECTRONICS

Date: 15-11-2024 Dept. No. Max. : 100 Marks

Time: 09:00 am-12:00 pm

	SECTION A - K1 (CO1)	
	Answer ALL the Questions -	**(10 x 1 = 10)**
1.	**MCQ**	
a)	In an extrinsic semiconductor, the electron and hole concentration are (i) unequal (ii) equal (iii) infinite (iv) zero	
b)	Which of the diode converts electric energy in to light energy? (i) LED (ii) PN junction (iii) Zener (iv) photo	
c)	In IC741, the pin 6 serves as a (i) discharge (ii) output (iii) ground (iv) trigger	
d)	When an input voltage at the inverting terminal of the threshold comparator is less than $\frac{2v_{CC}}{3}$, then the output of the same comparator is (i) low (ii) zero (iii) infinite (iv) high	
e)	Which of the following is a permanent memory in the computer? (i) floppy disc (ii) hard disc (iii) pen drive (iv) CD ROM	
2.	**Definition**	
a)	Forbidden energy gap	
b)	Voltage gain	
c)	CMRR	
d)	Pulse width	
e)	RAM	
	SECTION A - K2 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
3.	**True or False**	
a)	An absence of electron in the valance band is called hole.	
b)	Zener break down occurs in forward bias only.	
c)	The phase difference between input and output voltage of an inverting amplifier is 180°.	
d)	In IC 555 timer, the pin no 2 serves as trigger.	
e)	Magnetic disk stores the data using LASER light.	
4.	**Match the following**	

a)	P- type	-	simultaneous equations
b)	PN-junction diode	-	trigger comparator
c)	IC741	-	avalanche breakdown
d)	IC 555 timer	-	memory device
e)	Magnetic tape	-	trivalent impurity

SECTION B - K3 (CO2)

Answer any TWO of the following **(2 x 10 = 20)**

5.	(i)What is a LED? With relevant diagram explain its working (6) (ii) Give the advantages of LEDs over conventional incandescent lamps. (4)
6.	Explain the internal architecture of 555 timer.
7.	Write a short note on (i) Magnetic tape and (ii) Optical memory (5 + 5)
8.	Construct a neat circuit of monostable multivibrator using 555 timer and derive the equation for pulse width.

SECTION C – K4 (CO3)

Answer any TWO of the following **(2 x 10 = 20)**

9.	Explain the working of a junction diode when it is in (i) forward bias and (ii) reverse bias
10.	Using IC 741 explain the working of a non-inverting amplifier.
11.	Explain the working of 555 timer connected as a trigger.
12.	Explain with relevant circuit, the working of an Op amp subtractor.

SECTION D – K5 (CO4)

Answer any ONE of the following **(1 x 20 = 20)**

13.	(i) With the help of suitable circuit diagrams, explain how will you sketch the I/V characteristic curves of a junction diode. (14) (ii) Distinguish between N-type and P-type semiconductors. (6)
14.	(i) Distinguish between intrinsic and extrinsic semiconductors. (6) (ii) Write a short note on (a) magnetic recording and (b) hard disk. (7 + 7)

SECTION E – K6 (CO5)

Answer any ONE of the following **(1 x 20 = 20)**

15.	(i)What is a Zener diode? Draw its symbol and compare zener diode with PN junction diode. (6) (ii) Draw the circuit of an astable multivibrator using 555 timer and explain its working. (14)
16.	With neat circuit diagrams, explain the working of (i) inverting and (ii) summing amplifiers.

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