# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**U.G.** DEGREE EXAMINATION – **ALLIED**

THIRD SEMESTER – **NOVEMBER 2023**

**UPH 3403 – APPLIED ELECTRONICS**

Date: 08-11-2023 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

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| | **SECTION A - K1 (CO1)** | |
| | **Answer ALL the Questions** | **(10 x 1 = 10)** |
| 1. | **Answer the following** | |
| a) | What is a semiconductor? | |
| b) | Draw the symbol of a diode. | |
| c) | Write any one application of 555 timer. | |
| d) | Define RAM. | |
| e) | Draw the pin configuration of IC 741. | |
| 2. | **Fill in the blanks** | |
| a) | The most commonly used semiconductor is ----------. | |
| b) | LEDs operates at ---------- bias. | |
| c) | The depletion region in a semiconductor pn junction diode has ----------. | |
| d) | Op amp has ---------- gain. | |
| e) | The function of pin 3 in IC 555 timer is ----------. | |
| | **SECTION A - K2 (CO1)** | |
| | **Answer ALL the Questions** | **(10 x 1 = 10)** |
| 3. | **True or False** | |
| a) | The reverse breakdown voltage of LED is very low. | |
| b) | Schmitt trigger is an application of IC 555 timer. | |
| c) | CMRR stands for common mode reverse ratio. | |
| d) | Data and instructions are stored in RAM. | |
| e) | Zener breakdown occurs in thick region. | |
| 4. | **MCQ** | |
| a) | Op-Amp is a ---------- type of amplifier.<br>(a) Current (b) voltage (c) power (d) resistance | |
| b) | The memory in which the stored data is lost, when power is switched off is -----<br>(a) RAM (b) ROM (c) PROM (d) EPROM | |
| c) | 555 timer consists of ----------comparators.<br>(a) Three (b) two (c) five (d) one | |
| d) | How many resistors are used in inverting amplifier?<br>(a) three (b) two (c) one (d) five | |
| e) | A Semiconductor PN Junction device which converts light energy into _____ energy.<br>(a)mechanical (b) electrical (c)heat (d) sound | |

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| | **SECTION B - K3 (CO2)** |
| | **Answer any TWO of the following (2 x 10 = 20)** |
| 5. | What is extrinsic semiconductor? Distinguish between n-type and p-type semiconductors. Draw relevant energy level diagram. |
| 6. | Explain with a neat diagram, the working of an inverting amplifier. |
| 7. | Write a note on magnetic memory. |
| 8. | With a neat diagram, explain the working of a Schmitt trigger using IC-555. |
| | **SECTION C – K4 (CO3)** |
| | **Answer any TWO of the following (2 x 10 = 20)** |
| 9. | Explain the I-V characteristics of Zener diode. Mention its uses. |
| 10. | With a neat diagram, explain the working of an Astable multivibrator using IC 555 timer. |
| 11. | What is meant by semiconductor memory? Explain its types. |
| 12. | Elucidate on the working of a non – inverting amplifier. |
| | **SECTION D – K5 (CO4)** |
| | **Answer any ONE of the following (1 x 20 = 20)** |
| 13. | Explain in detail, the principle, operation and applications of a Photo diode. |
| 14. | Explain how an op-amp can be used as, i) a summing and ii) difference amplifier. |
| | **SECTION E – K6 (CO5)** |
| | **Answer any ONE of the following (1 x 20 = 20)** |
| 15. | (a) Draw the internal block diagram and pin configuration of IC 555 timer and explain its working.<br>(b) Write down the characteristics of an ideal op amp. (12+8 marks) |
| 16. | What is a p-n junction? Explain the formation of the depletion region in a p-n junction. How does the width of this region change when the junction is (i) forward biased (ii) reverse biased? |

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