



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

U.G. DEGREE EXAMINATION – ALLIED

FOURTH SEMESTER – APRIL 2023

UPH 4401 – APPLIED PHYSICS

Date: 04-05-2023

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

(10 x 2 = 20 Marks)

Q. No. Answer ALL questions

- 1 What is meant by forbidden gap?
- 2 Why does the conductivity of a semiconductor increases with increase in temperature?
- 3 What is an LDR?
- 4 What is a coupler?
- 5 Sketch the AND gate and give its truth table.
- 6 State De Morgan's law.
- 7 List the characteristics of an ideal Op-amp.
- 8 What is an unity follower?
- 9 Write down the characteristics of LASER.
- 10 What is the frequency of a wave with wavelength 1\AA .

PART – B

(4 x 7.5 = 30 Marks)

Answer any FOUR questions

- 11 Differentiate between intrinsic and extrinsic semiconductors.
- 12 What is a photo voltaic cell? Explain its construction and working principle with neat sketch.
- 13 Convert the following hexadecimal numbers to binary
(a)(25)_H (b) (3A.7)_H (c) (CD.E8)_H (d) (3FC.8)_H (1+1+2.5+3)
- 14 With neat diagram explain the working of an inverting amplifier using OPAMP.
- 15 a) Define LASER.
b) Discuss the spontaneous and stimulated emissions of radiation. (2+5.5)
- 16 With neat sketch explain the working principle of Zener diode.

PART – C

(4 x 12.5 = 50 Marks)

Answer any FOUR questions

- 17 a) What is a PN junction diode? (2.5)
b) Discuss the biasing of a PN junction diode and explain its V-I characteristics. (10)
- 18 Write short notes on i) LED ii) LCD. (6+6.5)
- 19 Explain how an operational amplifier can be used as summing and difference amplifiers. (6+6.5)
- 20 With neat diagrams and truth tables, show that NAND & NOR are universal gates.
- 21 Analyse the construction, working principle of a CO₂ laser with energy level diagrams.
- 22 With neat diagrams explain the construction and working of OPAMP as a) integrator
b) differentiator. (6+6.5)
