VIGNAN'S INSTITUTE OF MANAGEMENT AND TECHNOLOGY FOR WOMEN
(An Autonomous Institution)
I-B.Tech.–I-Semester Regular Examinations, February-2025
APPLIED PHYSICS
(Common to ECE & CSE[AI & ML]))

Time: 3 Hours   **Max. Marks: 60**

(Answer All Questions)

Note: Question paper consists of Part-A & Part-B.
- **Part-A** for 10M, ii) **Part-B** for 50marks
- **Part A** is compulsory, consists of 10 sub questions from all units carrying equal marks.
- **Part-B** consists of **10 questions** (numbered from 2 to 11) carrying **10marks** each. From each unit there are 2 questions and the students should answer one of them. Hence the student should answer **5 questions** from **Part-B**.

PART-A   (10Marks)

1.a	State and explain photoelectric effect?	1M
1.b	What are the findings of Kronig-Penney model?	1M
1.c	Explain the direct and indirect band gap in semiconductors?	1M
1.d	What is the working principle of solar cells?	1M
1.e	Explain the principle of piezoelectric effect?	1M
1.f	What is Superionic conduction?	1M
1.g	Which principle is responsible for quantum confinement?	1M
1.h	Write the working principle of TEM?	1M
1.i	Explain the principle of lasing action?	1M
1.j	What is pumping in Lasers?	1M

PART-B   (50Marks)

2.a)	Sate and explain Rayleigh-Jean's law.	3M
b)	Explain the working principle of Davisson and Germer's experiment	7M

OR

3.a)	State and derive Fermi-Dirac distribution function for Fermions.	5M
b)	Explain Bloch's theorem in detail and the concept of Bloch function	5M

4.a)	State Hall effect? Derive Hall coefficient and Carrier concentration	5M
b)	Explain bipolar junction transistor with neat circuit diagram	5M

| 5.a) | Discuss forward and reverse bias conditions of Zener diode | 5M |
| b) | Explain the working of PIN diode and write its applications. | 5M |

| 6.a) | Discuss Conductivity in liquid and solid electrolytes | 2M |
| b) | Explain the hysteresis curve | 8M |

OR

| 7.a) | Distinguish between Soft and hard magnetic materials | 5M |
| b) | Discuss the magnetoresistance and its applications | 5M |

| 8.a) | Explain bottom-up fabrication of nanoparticles with neat diagrams | 5M |
| b) | Discuss the Physical vapor deposition method | 5M |

OR

| 9.a) | Explain the XRD characterization technique for finding crystal structure | 5M |
| b) | Write the applications of Nano materials | 5M |

| 10.a) | Explain the construction and working of Ruby laser with neat diagram | 5M |
| b) | What are Einstein coefficients and derive their relations | 5M |

OR

| 11.a) | What is Total Internal Reflection? Explain the construction and working of Optical Fiber. | 5M |
| b) | Discuss the Optical Fiber and its applications | 5M |

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