

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year II Semester Regular & Supplementary Examinations May/June-2026
ENGINEERING PHYSICS

(Common to CE, ME, CAD, CCC, CIC, CAI, CIA)

Time: 3 Hours

Max. Marks: 70

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

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|---|---|--|-----|----|----|
| 1 | a | Define Polarisation. | CO1 | L1 | 2M |
| | b | Define Resolving Power of Grating. | CO1 | L1 | 2M |
| | c | Define lattice parameter. | CO2 | L1 | 2M |
| | d | Define Bragg's condition for X-Ray diffraction. | CO2 | L1 | 2M |
| | e | Define dielectric polarisability. | CO3 | L1 | 2M |
| | f | What is hysteresis? | CO4 | L1 | 2M |
| | g | What are matter waves ? | CO5 | L1 | 2M |
| | h | Define mean free path. | CO5 | L1 | 2M |
| | i | Write any two difference between Intrinsic and Extrinsic semiconductors. | CO6 | L2 | 2M |
| | j | What is Drift and Diffusion in semiconductors? | CO6 | L1 | 2M |

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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|---|---|---|-----|----|----|
| 2 | a | Describe the formation of Newton's ring with necessary theory with relevant diagrams. | CO1 | L3 | 6M |
| | b | Explain how the wavelength of light sources is determined using Newton's rings. | CO1 | L2 | 4M |

OR

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|---|---|---|-----|----|----|
| 3 | a | Explain the production of plane polarized light using Nicol Prism. | CO1 | L2 | 6M |
| | b | Describe the propagation of polarized light in Quarter -Wave plate. | CO1 | L3 | 4M |

UNIT-II

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|---|--|--|-----|----|-----|
| 4 | | Show that Face centered cubic crystal structure has more closely packed structure than SC and BCC. | CO2 | L3 | 10M |
|---|--|--|-----|----|-----|

OR

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|---|---|--|-----|----|----|
| 5 | a | Explain how crystal structure determined by Laue X-Ray diffraction method. | CO2 | L2 | 7M |
| | b | What are the advantages of Laue X-Ray diffraction method? | CO2 | L1 | 3M |

UNIT-III

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|---|--|---|-----|----|-----|
| 6 | | Deduce an expression for Lorentz field relating to Dielectric material. | CO3 | L4 | 10M |
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|---|--|---|-----|----|-----|
| 7 | | Describe the classification of magnetic materials based magnetic moments. | CO4 | L1 | 10M |
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UNIT-IV

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|---|---|--|-----|----|----|
| 8 | a | Derive Schrödinger's time independent wave equation. | CO5 | L3 | 7M |
| | b | Explain the physical significance of wave function. | CO5 | L2 | 3M |

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|---|---|---|-----|----|----|
| 9 | a | Write brief note on Fermi Dirac distribution. What is the effect of temperature on Fermi Dirac distribution function? | CO5 | L1 | 7M |
| | b | Find the probability at which there is 1% probability that a state with energy 0.5 eV is above Fermi energy. | CO5 | L3 | 3M |

UNIT-V

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|----|---|--|-----|----|----|
| 10 | a | What is Fermi level? | CO6 | L1 | 2M |
| | b | Prove that the Fermi level is lies exactly in between conduction band and valance band of intrinsic semiconductor. | CO6 | L4 | 8M |

OR

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|----|---|---|-----|----|----|
| 11 | a | Describe the Hall Effect in semiconductors. | CO6 | L1 | 8M |
| | b | What are the applications of Hall Effect? | CO6 | L1 | 2M |

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