

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

B.Tech I Year I Semester Regular Examinations July-2021

ENGINEERING PHYSICS

(Common to CE and AGE)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

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|---|---|---|----|----|
| 1 | a | Describe the formation of Newton's rings with necessary theory with relevant diagram and derive the expressions for dark and bright fringes. | L3 | 8M |
| | b | In a Newton's rings experiment, the diameter of the 8 th ring was 0.35cm and the diameter of the 18 th ring was 0.65cm. If the wavelength of the light used is 6000Å then, find the radius of curvature of the plano-convex lens. | L4 | 4M |

OR

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|---|---|---|----|----|
| 2 | a | Explain the Grating Spectrum. | L4 | 6M |
| | b | Derive the expression for wavelength of light by diffraction. | L4 | 6M |

UNIT-II

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|---|---|--|----|----|
| 3 | a | Define coordination number and atomic packing factor. | L1 | 4M |
| | b | Show that FCC is mostly closed packed structure than BCC and SC. | L4 | 8M |

OR

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|---|---|---|----|----|
| 4 | a | Explain the principle, procedure and advantage of Powder method of X-ray diffraction. | L4 | 9M |
| | b | Find the angle at which the third order reflection of X-ray of 0.79Å wavelength can occur in a calcite crystal of 3.04×10^{-10} spacing? | L1 | 3M |

UNIT-III

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|---|---|--|----|----|
| 5 | a | Define Reverberation and Reverberation time. | L1 | 6M |
| | b | What are the basic requirements of acoustically good hall? | L1 | 6M |

OR

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|---|---|--|----|----|
| 6 | a | How ultrasonics are produced by using piezoelectric generator? | L3 | 8M |
| | b | Discuss the important applications of ultrasonic waves. | L1 | 4M |

UNIT-IV

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|---|---|--|----|----|
| 7 | a | Define i) Young's modulus ii) Bulk modulus iii) Rigidity modulus | L1 | 3M |
| | b | Derive the relation between different elastic moduli. | L4 | 9M |

OR

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|---|---|--|----|----|
| 8 | a | Deduce an expression for energy stored per unit volume in stretched wire. | L4 | 8M |
| | b | Estimate the work done in stretching a wire of cross section 1.25 mm^2 and length 1.9 m through 0.14 mm. The Young's modulus of wire is $45 \times 10^9 \text{ N/m}^2$. | L4 | 4M |

UNIT-V

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|---|---|---|----|----|
| 9 | a | What is Meissner effect? | L1 | 4M |
| | b | Explain the Type-I and Type-II superconductors. | L4 | 8M |

OR

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|----|---|--|----|----|
| 10 | a | What are nanomaterials and write any three applications. | L1 | 4M |
| | b | Explain Sol-Gel technique for synthesis of nanomaterial. | L4 | 8M |

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