

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-19) Regular Examinations December - 2019**ENGINEERING PHYSICS****[Electrical and Electronics Engineering, Electronics and Communication Engineering,
Electronics and Instrumentation Engineering]****Time: 3 hours****Max. Marks: 60****Answer One Question from each Unit****All questions carry equal marks****UNIT-I**

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|----|----|--|---------|----|-----|-----|
| 1. | a) | Derive the expression for maxima and minima of interference in thin films. | 8 Marks | L3 | CO1 | PO1 |
| | b) | Write short note on Double refraction. | 4 Marks | L1 | CO1 | PO2 |

(OR)

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|----|----|--|---------|----|-----|-----|
| 2. | a) | Explain the theory of a plane transmission diffraction grating. | 9 Marks | L2 | CO1 | PO1 |
| | b) | A half wave plate is fabricated for a wave length of 3800\AA , for what wave length does it work as a quarter wave plate. | 3 Marks | L4 | CO1 | PO1 |

UNIT-II

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|----|----|--|---------|----|-----|-----|
| 3. | a) | Write Maxwell's equations in differential form. | 4 Marks | L1 | CO2 | PO2 |
| | b) | Show that the velocity of EM waves is same as the velocity of light. | 8 Marks | L4 | CO2 | PO1 |

(OR)

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|----|----|--|---------|----|-----|-----|
| 4. | a) | Derive the expression for the Numerical Aperture (NA) of an optical fibre. | 6 Marks | L3 | CO2 | PO2 |
| | b) | Differentiate between the step index and graded index optical fibres. | 6 Marks | L4 | CO2 | PO2 |

UNIT-III

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|----|----|---|---------|----|-----|------------|
| 5. | a) | Derive an expression for electron concentration in an intrinsic semiconductors. | 6 Marks | L3 | CO3 | PO1 |
| | b) | Define Hall Effect. Obtain an expression for Hall coefficient. | 6 Marks | L2 | CO3 | PO1
PO2 |

(OR)

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|----|----|--|---------|----|-----|-----|
| 6. | a) | Explain the construction and working of semiconductor laser. | 8 Marks | L2 | CO3 | PO1 |
| | b) | Explain how solids are classified on the basis of energy band gap. | 4 Marks | L1 | CO3 | PO1 |

UNIT-IV

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|----|----|---|---------|----|-----|-----|
| 7. | a) | Explain the frequency dependence of polarization. | 6 Marks | L1 | CO4 | PO1 |
| | b) | Derive the Clausius-Mosotti relation in dielectrics subjected to a static electric field. | 6 Marks | L2 | CO4 | PO2 |

(OR)

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|----|----|--|---------|----|-----|-----|
| 8. | a) | Derive an expression for orbital magnetic moment of an electron. | 6 Marks | L3 | CO4 | PO2 |
| | b) | Differentiate between soft and hard magnetic material based on hysteresis curve. | 6 Marks | L4 | CO4 | PO1 |

UNIT-V

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|-----|----|---|---------|----|-----|------------|
| 9. | a) | What are the critical parameters? Explain BCS theory. | 8 Marks | L2 | CO5 | PO1
PO2 |
| | b) | Write short notes on high T_c super conductors. | 4 Marks | L1 | CO5 | PO1 |
| | | (OR) | | | | |
| 10. | a) | Define Nano materials. Give the classification of Nano materials. | 4 Marks | L1 | CO5 | PO1
PO2 |
| | b) | Explain the synthesis of Nano materials by PLD method. | 8 Marks | L2 | CO5 | PO1 |

