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

B.Tech I Year I Semester Supplementary Examinations December-2021

PHYSICS

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

PART-A

(Answer all the Questions 5 x 2 = 10 Marks)

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|---|---|--|----|
| 1 | a | What is the relation between B,H and M? | 2M |
| | b | Write any two uses of electromagnetic wave (spectrum). | 2M |
| | c | A classroom of volume 200 m^3 has a reverberation time 1.6 seconds. Calculate the total sound absorption coefficient of the classroom. | 2M |
| | d | What are the various techniques of pumping? | 2M |
| | e | Define top down and bottom up process. | 2M |

PART-B

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

UNIT-I

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|---|---|--|----|
| 2 | a | Derive and explain gauss's law in electrostatics. Write any two applications. | 6M |
| | b | If a point charge q is placed at the center of a cube, what is the flux linked with the cube and with the each face of the cube? | 4M |

OR

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|---|---|---|----|
| 3 | a | Describe the classification of magnetic materials based on spin magnetic moments. | 7M |
| | b | Discuss the applications of soft magnetic materials. | 3M |

UNIT-II

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| 4 | | Define the equation of electromagnetic wave and hence evaluate the velocity of light in free space. | 10M |
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| 5 | a | Write brief note on harmful effects of electromagnetic radiation. | 5M |
| | b | How we protect our self from harmful effects of electromagnetic radiation? | 5M |

UNIT-III

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|---|---|---|----|
| 6 | a | Distinguish between interference and diffraction. | 5M |
| | b | How we get different colors on thin films? | 5M |

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| 7 | a | Define Reverberation and Reverberation time. | 4M |
| | b | What is the basic requirement of acoustically good hall? | 6M |

UNIT-IV

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|---|---|--|----|
| 8 | a | Explain the construction and working principle of He-Ne laser with neat diagram. | 8M |
| | b | Write few advantages of He-Ne laser. | 2M |

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| 9 | | Derive the relation between the various Einstein's coefficients of absorption and emission of radiation. | 10M |
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UNIT-V

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| 10 | a | What are the techniques available for synthesizing nanomaterials? | 3M |
| | b | Explain ball-milling technique for synthesis of nanomaterial. | 7M |

OR

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| 11 | a | What are carbon nanotubes? Mention its structures. | 5M |
| | b | Write brief note on applications of carbon nanotubes. | 5M |

END