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

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

PHYSICS

(Common to CE and AGE)

Time: 3 hours

Max. Marks: 60

PART-A

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

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|---|---|---|----|
| 1 | a | Define Newton's third law of motion. | 2M |
| | b | Define the term centrifugal force. | 2M |
| | c | What is resonance? | 2M |
| | d | Define stress and strain. | 2M |
| | e | What is nanoscience and nanotechnology? | 2M |

PART-B

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

UNIT-I

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|---|---|--|----|
| 2 | a | Define vector and scalar and give two examples. | 5M |
| | b | Define force, explain about the basic forces in nature | 5M |

OR

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|---|---|--|----|
| 3 | a | Formulate Newton's second law for a variable mass system | 7M |
| | b | Explain the principle of working of a rocket. | 3M |

UNIT-II

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|---|---|--|----|
| 4 | a | Derive the expression for acceleration of particle in rotating co ordinate system. | 7M |
| | b | Develop the concepts of centrifugal force and coriolis force. | 3M |

OR

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|---|---|---|----|
| 5 | a | Write the differences between centrifugal and centripetal forces. | 5M |
| | b | What is coriolis force? Under what conditions it equals to zero and maximum | 5M |

UNIT-III

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|---|---|---|----|
| 6 | a | Define the terms (i) Frequency (ii) Phase (iii) Epoch, of simple harmonic motion. | 6M |
| | b | A particle executes S.H.M. with a period of 0.002 sec and the amplitude 10 cm. Find its acceleration when it is 4 cm away from its mean position? | 4M |

OR

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| 7 | a | Establish the equation of motion of simple harmonic oscillator. | 5M |
| | b | Write the examples of resonance in daily life. | 5M |

UNIT-IV

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|---|---|---|----|
| 8 | a | What is Hook's law? Describe the behavior of wire under an increasing load. | 6M |
| | b | Find the work done in stretching a wire of cross-section 1.25 mm ² and length 0.14 mm. the Young's modulus of wire is 45 GN/m ² . | 4M |

OR

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| 9 | a | Define three elastic modules and write the equations. | 7M |
| | b | Classify the different types of supports | 3M |

UNIT-V

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|----|---|---|----|
| 10 | a | What is nanomaterial? Write the classification of nanomaterials. | 4M |
| | b | Explain why surface to volume ratio very large for nanomaterials. | 6M |

OR

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|----|---|---|----|
| 11 | a | Explain ball-milling technique for synthesis of nanomaterial. | 5M |
| | b | Write the applications of nanomaterials. | 5M |

END