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

M.Tech I Year II Semester Regular Examinations November-2021

MODELING OF IC ENGINES

(Thermal Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

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|---|--|----|----|
| 1 | a Explain the combustion phenomena of petrol engines | L2 | 4M |
| | b Mention p- θ diagram for combustion phenomena of petrol engines | L2 | 4M |
| | c How do you classify the diesel engine based on ports geometry? | L3 | 4M |

OR

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|---|---|----|----|
| 2 | a Differentiate CI and SI engines. | L4 | 6M |
| | b What are the various governing equations? | L1 | 6M |

UNIT-II

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|---|---|----|----|
| 3 | a Write a brief note on internal energy estimation. | L2 | 6M |
| | b Explain wall heat transfer correlations | L2 | 6M |

OR

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|---|---|----|----|
| 4 | a Distinguish pre mixed and diffusive combustion models. | L4 | 4M |
| | b Differentiate single vs two zone model and its applications of heat release analysis? | L4 | 8M |

UNIT-III

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|---|--|----|----|
| 5 | a How do you create turbulence in engine? | L3 | 6M |
| | b Which type of spray structure will improve engine performance and explain. | L2 | 6M |

OR

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|---|---|----|----|
| 6 | a What are the various types of fuel injectors and explain any one in detail with a neat sketch | L1 | 6M |
| | b Name various fuel injection systems and explain any one in detail with neat sketch | L1 | 6M |

UNIT-IV

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|---|---|----|----|
| 7 | a What is turbo charging and how it affects engine performance? | L1 | 6M |
| | b Classify the turbo chargers and explain any one with neat sketch. | L4 | 6M |

OR

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|---|---|----|----|
| 8 | a Name various components of turbo charging system with its functions and sketches. | L1 | 6M |
| | b For the charging system, what are the implications from compressor and turbine maps | L1 | 6M |

UNIT-V

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|---|---|----|----|
| 9 | a Draw otto-cycle, p-v diagram and derive a mathematical model for its performance. | L5 | 6M |
| | b What is single zone modelling and applications? | L1 | 6M |

OR

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|----|--|----|----|
| 10 | a With sketches show the simulation of otto cycle at full throttle | L5 | 6M |
| | b With sketches show the simulation of otto cycle at part throttle and super charged conditions. | L5 | 6M |

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