SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY::PUTTUR
(AUTONOMOUS)
M.Tech I year II Semester Regular Examinations June 2019
MODELLING OF IC ENGINES
(Thermal Engineering)

Time: 3 hours   Max. Marks:60

(Answer all Five Units 5×12=60 Marks)

UNIT I

1	**a**	Classify the diesel engine based on ports geometry? Justify the classification.	**6M**
	b	Explain the combustion phenomena of diesel engines and mention the P-θ diagram	**6M**

OR

2	**a**	Explain the advantages and disadvantages of CI Engines over SI engines.	**6M**
	b	Describe briefly the model building and integration methods of IC engines.	**6M**

UNIT II

3	**a**	Enlist and summarize the various factors that influence heat release in combustion process	**6M**
	b	Give how wall heat transfer affects engine performance.	**6M**

OR

4	**a**	Discuss briefly different factors that affect combustion with pre mixed charge	**6M**
	b	Enlist the factors that affect the ignition delay of an IC engine. Discuss any two of them.	**6M**

UNIT III

5	**a**	Explain the occurrence of turbulence in engine.	**6M**
	b	Which type of spray structure will improve engine performance and explain.	**6M**

OR

6	**a**	Outline briefly how the fuel droplet will affect the knocking in petrol engines.	**6M**
	b	Smaller fuel droplet will improve the engine performance- justify	**6M**

UNIT IV

7	**a**	What is turbo charging and how it affects engine performance	**6M**
	b	Explain the working principle of turbo charger with a neat sketch	**6M**

OR

8	**a**	Identify the importance of compressor in the engine performance	**6M**
	b	Explain the implications of compressor and turbine maps for the charging system of the engine.	**6M**

UNIT V

9	**a**	Enumerate the methodology of assistance of auto ignition modelling for IC engines	**6M**
	b	What is single zone modelling? Give its applications.	**6M**

OR

10	**a**	What is mass burning rate estimation? Explain the phenomenon briefly.	**6M**
	b	Explain briefly SI engine with stratified charge and applications	**6M**

END