SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY- PUTTUR

(AUTONOMOUS)

QUESTION BANK (DESCRIPTIVE)

Subject with Code : Modelling of I.C Engines(20ME3122)

Course & Branch: **M.Tech – (TE)**

Year & Sem: I- & II-Sem **Regulations:** R20

UNIT –I

1		What are the various factors affecting the combustion of diesel engines?	L1,CO1	12M
2		What are the various factors affecting the combustion of petrol engines?	L1 CO1	12M
3	a)	Explain the combustion phenomena of petrol engines and mention p-θdiagram.	L2 CO1	06M
	b)	What are the various governing equations?	L1 CO1	06M
4	a)	How do you classify the diesel engine based on ports geometry?	L3 CO1	06M
	b)	Explain the combustion phenomena of diesel engines and mention the P-θdiagram	L2 CO1	06M
5	a)	Write in detail about engine and its classifications	L2 CO1	06M
	b)	How do you classify reciprocating engines by applications?	L3 CO1	06M
6		Differentiate CI and SI engines.	L3 CO1	12M
7		What approaches are to be consider for modelling?	L1 CO1	06M
		What is model building and integration methods?	L1 CO1	06M
8	a)	What parameters are used in an engine performance?	L1 CO1	06M
	b)	What are the specific advantages of exhaust gas recirculation and explain?	L1 CO1	06M
9		Classify the petrol engine with engine geometry?	L4 CO1	12M
10		Explain with sketches the valve lift curves.	L2 CO1	12M

UNIT –II

1		Differentiate single vs two zone model and its applications of heat releaseanalysis?	L4,C02	12M
2		Distinguish pre mixed and diffusive combustion models.	L4,C02	12M
3		Explain WIEBE functions of combustion heat release.	L2,C02	12M
4		Explain wall heat transfer correlations	L2,C02	12M
5	a)	Narrate the ignition delay.	L4,C02	6M
	b)	More ignition delay, will it improve the performance of an engine- justify.	L6,C02	6M
6		Write a brief note on internal energy estimation .	L2,C02	12M
7		What are the different factors that affect combustion with pre mixed charge	L1,C02	12M
8		Name various factors that influence heat release in combustion process	L1,C02	12M
9		How wall heat transfer that affects engine performance?	L3,C02	12M
10		What factors affect the ignition delay of an IC engine?	L1,C02	12M

UNIT –III

1	a)	How the turbulence affects the engine performance?	L3,CO3	6M
	b)	How fuel atomization affects the engine performance?	L3,CO3	6M
2	a)	How do you create turbulence in engine?	L3,CO3	6M
	b)	Which type of spray structure will improve engine performance andexplain.	L2,CO3	6M
3		How the fuel droplet will affect the knocking in petrol engines?	L3,CO3	12M
4		Smaller fuel droplet will improve the engine performance- justify .	L6,CO3	12M
5		What are the various types of fuel injectors and explain any one in detailwith a neat sketch	L1,CO3	12M
6		Name various fuel injection systems and explain any one in detail with neatsketch	L1,CO3	12M
7		What are the types and uses of spray structures?	L1,CO3	12M
8		Explain fuel atomization with sketches	L2,CO3	12M
9		What are the effects of droplet turbulence interactions -explain.	L1,CO3	12M
10		Write the effects of droplet in impingement on walls	L2,CO3	12M

UNIT –IV

1	What is turbo charging and how it affects engine performance?	L1,CO5	12M
2	Explain the working principle of turbo charger with a neat sketch.	L2,CO5	12 M
3	Classify the turbo chargers and explain any one with neat sketch.	L4,CO5	12M
4	Distinguish and differentiate between constant pressure and pulse turbo charging.	L4,CO5	12M
5	For the charging system, what are the implications from compressor andturbine maps.	L1,CO5	12M
6	Name various components of turbo charging system with its functions andsketches.	L1,CO5	12M
7	Identify the importance of compressor in the engine performance.	L2,CO5	12M
8	Explain the importance of charge air cooler.	L2,CO5	12M
9	Explain the components of turbo charging system with its functions indetail.	L2,CO5	12M
10	Elaborate the components and its functions of pulse turbo charging.	L4,CO5	12M

UNIT –V

1	Draw otto-cycle, p-v diagram and derive a mathematical model for itsperformance.	L5,CO4	12M
2	With sketches show the simulation of otto cycle at full throttle, part throttleand super charged conditions.	L5,CO4	12M
3	Explain progressive combustion and its advantages.	L2,CO4	12M
4	How auto ignition modelling helps?	L3,CO4	12M
5	What is single zone modelling and applications?	L1,CO4	12M
6	What is mass burning rate estimation and explain?	L1,CO4	12M
7	Elaborate SI engine with stratified charge and applications.	L6,CO4	12M
8	What are the effects of friction in pumping, piston assembly, bearings andvalve train etc.	L1,CO4	12M
9	Differentiate with brief note on friction estimation for warm and warmupengines.	L4,CO4	12M
10	How auto ignition modelling helps in cold counties?	L3,CO4	12M

Prepared by: Mr. P. Jaya Prakash