



B.E DEGREE EXAMINATIONS: May/ June 2023

(Regulation 2018)

Fourth Semester

AUTOMOBILE ENGINEERING

U18AUI4201 & Automotive Engines and systems

COURSE OUTCOMES

- CO1:** Outline the various components of the engine and its functions
- CO2:** Examine the combustion process in SI and CI Engine for understanding the performance and emission characteristics
- CO3:** Summarize various fuel supply and injection system used in IC engines.
- CO4:** Identify the suitable lubrication and cooling system to be used in IC Engines.
- CO5:** Explain the concepts of Supercharging and Turbocharging
- CO6:** Analyze the various properties of fuels and lubricants used in I.C engines.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|---|-----|-------------------|
| 1. Compare Two stroke and Four stroke engines | CO1 | [K ₄] |
| 2. Recall the term Equivalence ratio | CO1 | [K ₂] |
| 3. Infer the effect of compression ratio on flame speed in S.I engines. | CO2 | [K ₃] |
| 4. Plot the transportation rate at various stages of combustion in S.I Engines. | CO2 | [K ₂] |
| 5. Infer the effect of Engine load on ignition delay in C.I Engine. | CO3 | [K ₂] |
| 6. List down the types of Nozzles available in Diesel injection systems | CO3 | [K ₂] |
| 7. Indicate the main functions of lubrication system in automobile | CO4 | [K ₂] |
| 8. Identify the method to control oxidation ability of engines oils | CO4 | [K ₂] |
| 9. Mention the techniques used in I.C engines for Engine downsizing | CO5 | [K ₂] |
| 10. In S.I engines effect of supercharging cannot be increased above certain limit justify. | CO6 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|--|----|-----|-------------------|
| 11. a) Explain the construction details of an I.C engine with a neat sketch. | 10 | CO1 | [K ₂] |
|--|----|-----|-------------------|

	b)	Categorize the types of mufflers and explain it	6	CO1	[K ₂]
12.	a)	Summarize the effect of engine variables on knocking in S.I Engine.	8	CO3	[K ₂]
	b)	Briefly explain the Stages of combustion in CI Engine? List down various factors which effects ignition delay.	8	CO3	[K ₂]
13.	a)	Explain the operation of GDI system used in S.I Engines and list down its merits	8	CO2	[K ₂]
	b)	With a neat sketch explain the types of the indirect combustion chamber for C.I engine.	8	CO2	[K ₂]
14.	a)	List down and explain various types of lubrication system used in automobiles with a neat sketch	8	CO4	[K ₂]
	b)	Explain about the types of Cooling system used in I.C engine with a neat sketch	8	CO4	[K ₂]
15.	a)	Illustrate the operation and types of a Turbocharger with a neat sketch	8	CO5	[K ₂]
	b)	List down and explain the types of supercharger with a neat sketch	8	CO5	[K ₂]
16.	a)	Explain about various properties of lubricants used in I.C engines.	8	CO6	[K ₂]
	b)	With a schematic layout explain the working of a Common Rail Direct Injection System.	8	CO3	[K ₂]
