Register Number:……..

KUMARAGURU
college of technology
character is life

B.E DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Seventh Semester

AUTOMOBILE ENGINEERING

U18AUT7002: Automotive Emissions

COURSE OUTCOMES

CO1: Outline the impact of pollutants on global environment and its climatic change
CO2: Examine the emission formation mechanisms and techniques to minimize emissions
CO3: Describe automotive emission control technologies.
CO4: Familiarize about emission standard, measurement, test procedure and regulations
CO5: Identify the wastes produced from automobiles
CO6: Explain the available disposal methods of waste.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Indicate the major sources of air pollution	CO1	[K_2]
2.	Recall the term greenhouse effect	CO1	[K_2]
3.	Infer the effect of load on HC and NOx formation in C.I Engines	CO2	[K_2]
4.	Engine running with 100 cc emits lesser emission than 350 cc justify.	CO2	[K3]
5.	VVT engine will emit lesser emissions while compared to non VVT engines Justify.	CO3	[K_3]
6.	Summarize the methods to reduce cold start emissions from I.C Engines.	CO3	[K_3]
7.	Identify the techniques to measure evaporative emissions coming from S.I engines.	CO4	[K_2]
8.	Outline the constant Volume Sampling technique to measure emissions.	CO4	[K_2]
9.	List down the liquid wastes from automobiles.	CO5	[K_2]
10.	Explain the term Devulcanization	CO6	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Explain the negative effects of regulated emissions on human health and the environment?	10	CO1	[K_2]
	b)	List down the types of air pollutants and how it contributes towards photochemical smog formation in I.C Engines	6	CO1	[K_2]

12.	a)	List down the reasons for HC emissions formation in S.I engines and suggest optimum solutions to reduce it.	8	CO2	[K_3]
	b)	Explain the effect of design variables on emission formation in C.I engines	8	CO2	[K_2]
13.	a)	Explain the construction and working of catalytic converter with a neat sketch	8	CO3	[K_2]
	b)	Explain the selective catalytic reduction technique to control nitrous oxide emissions.	8	CO3	[K_3]
14.	a)	Illustrate a technique to measure Hydrocarbon and Nitrous oxide emission from diesel engines	8	CO4	[K_2]
	b)	Demonstrate the procedure followed in US Federal test cycle with necessary graphs.	8	CO4	[K_2]
15.	a)	Illustrate the procedures followed in vehicle recycling process	8	CO5	[K_2]
	b)	Summarize any four processes of recycling the used tires from automobiles	8	CO5	[K_2]
16.	a)	Explain the various process followed in recycling lead acid batteries	8	CO6	[K_2]
	b)	List down and explain any one technique for recycling lithium-ion batteries	8	CO6	[K_2]

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