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(2063)

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**B. Tech 6th Semester Examination**  
**Automotive Propulsion & Control System**  
**AV-6001**

**Time : 3 Hours**

**Max. Marks : 100**

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.*

**Note :** Attempt five questions, selecting one question each from section A, B, C and D. Section E is compulsory and attempt all subparts of it.

**SECTION - A**

1. (a) What is effect of transient operation of engine on emissions? (7½)  
(b) Explain particulate emission from SI and CI engines. (7½)
2. (a) Explain effects of operating variables on emission formation. (8)  
(b) Explain in detail the mechanism of HC & CO formation in Fourstroke and two Stroke SI engines. (7)

**SECTION - B**

3. (a) Explain the mechanism of soot and particulates in CI engines. (8)  
(b) Explain the nature and mechanism of combustion in CI engines. (7)

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4. (a) What are Diesel trap oxidizers? (10)  
(b) Explain in detail NO<sub>x</sub> treatment in Diesel engines. (5)

**SECTION - C**

5. Explain with neat sketch working of a catalytic converter. (15)  
6. Explain the working principles, constructional details and function of NDIR analyser. (15)

**SECTION - D**

7. Explain the Indian Emission Standards and procedure in detail. (15)  
8. Explain in detail European emission test procedure. (15)

**SECTION - E**

9. (i) Explain kinetics of NO<sub>x</sub> formation in SI engines.  
(ii) What are thermal reactors and two they work?  
(iii) Explain working principles of flameionization detectors.  
(iv) Explain the Fumigation.  
(v) Explain why air injection is done in the exhaust? System Explain any one mechanism with neat sketch.  
(vi) Explain working of Orsat apparatus.  
(vii) Explain PCV system of emission control.  
(viii) What is meant by term spot sampling.  
(ix) What is soot, how it is formed?  
(x) What is influence of vehicle maintenance on emissions. (4×10=40)