

Roll No. ....

Total No. of Pages : 2

Total No. of Questions : 09

**B.Tech (AE) (Sem.-4)**  
**AUTOMOTIVE POLLUTION AND CONTROL SYSTEMS**  
**Subject Code : AE-208**  
**Paper ID : [A0712]**

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. **SECTION-A is COMPULSORY.**
2. **Attempt any FOUR questions from SECTION-B.**
3. **Attempt any TWO questions from SECTION-C.**

**SECTION-A**

**(10 × 2 = 20 Marks)**

1. (a) What is a smoke emission in S.I engine?  
(b) Draw with neat sketch Pressure-Time Diagram of combustion for two strokes S.I Engine.  
(c) Write any one reason for Low CO in S.I. Engine.  
(d) What is meant by pollution from an automobile?  
(e) How unburned hydrocarbons are formed in SI engines?  
(f) What is the basic principle of air injection PCV system?  
(g) What is catalytic converter?  
(h) Draw a neat sketch of smoke sampler.  
(i) What is the reason behind the black smoke formation in direct injection diesel engine?  
(j) What is chromatography?

**SECTION-B**

**(4 × 5 = 20 Marks)**

2. Explain in detail about the effect of combustion time and spark timing on Nitric oxide formation in spark ignition engine.

3. Explain in detail about the effect of engine load and spark timing on UBHC formation in SI engines.
4. Explain with the help of neat diagram of exhaust treatment in C.I engine.
5. How the temperature of cylinder gases and flame speed are affected by A/F ratio in C.I engine?
6. Explain color and aldehyde emissions from diesel engines.

**SECTION-C**

**(2 × 10 = 20 Marks)**

7. Explain in detail about a three way catalytic converter with a neat sketch. Also explain the mechanism behind the carbon monoxide and UBHC oxidation and nitric oxide reduction
8. Describe the phenomenon of detonation or knocking in S.I engines. How can it be controlled?
9. Write short notes on following :
  - (i) NDIR Analyzer
  - (ii) Indian emission standard