

# CRASH COURSE

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10AU74

## Seventh Semester B.E. Degree Examination, May 2017 Automotive Air Pollution and Control

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

### PART – A

- 1 a. Define the driving cycle. Explain the ECE used for the regulatory test with the help of a neat graph of speed versus time. (10 Marks)  
b. Explain the trap technique and SHED technique, used for analyzing the evaporative losses. (10 Marks)
- 2 a. Explain the nitric oxide (NO) formation in SI engines. Also explain the following factors governing NO formation : i) Fuel – air ratio ii) Effect of burned gas function iii) Effect of ignition timing. (12 Marks)  
b. Explain the various sources of UBHC. (08 Marks)
- 3 a. Briefly explain the following : i) Exhaust gas recirculation ii) Lean burn strategy. (10 Marks)  
b. With neat sketch, explain the significance and working of positive crankcase ventilation. (10 Marks)
- 4 a. Discuss the effect of the following gasoline fuel properties on emissions : (12 Marks)  
i) Olefins and aromatics ii) Volatility iii) Octane number iv) Additives.  
b. Discuss the effect of following on emissions : (08 Marks)  
i) Alternative fuels ii) Lubricants.

### PART – B

- 5 a. With neat sketch, explain 3 – way catalytic converter. (10 Marks)  
b. Explain the thermal reactor used to treat exhaust gases with a neat sketch. (06 Marks)  
c. Briefly explain particulate traps. (04 Marks)
- 6 a. Explain the effect of air pollution on : i) Animals ii) Plants. (12 Marks)  
b. Explain global warming and its effects. (08 Marks)
- 7 a. Briefly explain the following sampling methods : (12 Marks)  
i) Electrostatic precipitation ii) Thermal precipitation iii) Sedimentation  
iv) Filtration.  
b. Explain the following sampling methods : (08 Marks)  
i) Volumetric method ii) Gravimetric method.
- 8 a. With neat sketch, explain gas chromatograph. (10 Marks)  
b. Explain the following with neat sketch : (10 Marks)  
i) FID ii) Thermal conductivity gas analyser.

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