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10AU74

**Seventh Semester B.E. Degree Examination, Dec.2015/Jan.2016**

**Automotive Air Pollution and Control**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

- 1 a. Discuss the influence of actual traffic conditions and vehicle maintenance on emissions. (10 Marks)
- b. Briefly explain the driving cycles followed in Europe for light and medium duty vehicles. (10 Marks)
- 2 a. What are the sources of HC formation in petrol engine? Explain the different factors which affects the HC formation. (10 Marks)
- b. Explain the mechanism of oxides of nitrogen formation in engines. (10 Marks)
- 3 a. Explain with a neat sketch the significance and working of positive crankcase ventilation. (10 Marks)
- b. Explain the different engine design modifications to control emission in SI engine. (10 Marks)
- 4 a. Discuss the effect of following gasoline properties on emissions:  
i) volatility ii) Octane number iii) Additives iv) Sulphur content (10 Marks)
- b. Explain the effect of following diesel fuel properties on emissions:  
i) Viscosity and density ii) Aromatic content iii) Cetane number iv) Sulphur content. (10 Marks)

**PART – B**

- 5 a. Discuss the Thermal reactors used for exhaust gas treatment. (08 Marks)
- b. Explain the following with a neat sketches :  
i) Dual catalyst system ii) 3 – way catalytic converters. (12 Marks)
- 6 a. What is global warming? What are the effects on environment? (08 Marks)
- b. What are effects of automobile engine pollutants on human health? (12 Marks)
- 7 a. Explain the particulate sampling method using sedimentation and filtration type. (10 Marks)
- b. Briefly discuss the following sampling methods:  
i) Electro static precipitation  
ii) Thermal precipitation.  
iii) Centrifugal methods. (10 Marks)
- 8 a. Sketch and explain Hartridge smoke meter. (10 Marks)
- b. With a neat sketch explain the orsat apparatus used for exhaust gas analysis. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.