

Code No: H2101/R13

M. Tech. II Semester Regular/ Supplementary Examinations, July-2016

**FUELS, COMBUSTION AND ENVIRONMENT**

(Thermal Engineering)

Time: 3 Hours

Max. Marks: 60

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*Answer any FIVE Questions*  
*All Questions Carry Equal Marks*

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| 1. a | Briefly explain any two solid fuels and what is its effect on calorific value?   | 6  |
| b    | Analyze different types of coal tests.   | 6  |
| 2. a | Explain fractional distillation and reforming process.   | 6  |
| b    | Explain coal gasification process.   | 6  |
| 3. a | What do you understand by higher heating value and lower heating value of a fuel?  | 6  |
| b    | Explain 2 <sup>nd</sup> order of kinetic reactions with examples.  | 6  |
| 4.   | Determine the adiabatic flame temperature when liquid Octane [C <sub>8</sub> H <sub>18</sub> ] at 25°C is burned with 300% theoretical air at 25°C in a steady flow process. | 12 |
| 5. a | What do you understand by flame stability?   | 6  |
| b    | Draw a neat characteristic stability diagram and explain its salient points.   | 6  |
| 6. a | Explain the structure of turbulent flame propagation.  | 6  |
| b    | What are the factors affecting on turbulent flame propagation?   | 6  |
| 7.   | What do you understand by air pollution? Briefly discuss the major sources for emissions and their means for control.  | 12 |
| 8.   | Write short notes on the following:  |    |
| a    | Bio gas  | 4  |
| b    | Adiabatic flame temperature  | 4  |
| c    | Fluidized bed system   | 4  |

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