

III B. Tech I Semester Supplementary Examinations, May - 2019
FUELS AND COMBUSTION
 (Automobile Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**

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**PART-A**

1. a) Explain Hydrogenation of coal. [2M]
- b) List out types of classification of petroleum. [2M]
- c) Write the chemical reactions related to combustion of gaseous fuels. [2M]
- d) Define HCV. [3M]
- e) What is the essential condition for flame stability? [3M]
- f) What are the basic features of burners? [2M]

**PART-B**

2. a) Describe the properties of coal obtained by ultimate analysis. [7M]
- b) What are the various gasification processes of solid fuels? [7M]
3. a) Explain various Rebuilding processes involved in refining of petroleum. [7M]
- b) Explain the method of producing LPG. [7M]
4. a) Mention different types of combustion processes and explain any two of them. [7M]
- b) Explain kinetics of solid fuel combustion. [7M]
5. a) What are different thermodynamic functions of combustion process? Explain enthalpy of combustion. [7M]
- b) Explain Goutal formula. [7M]
6. a) Explain burning velocity. What are the factors affecting burning velocity? [7M]
- b) Define flame temperature. Explain [7M]
  - i) Actual flame temperature
  - ii) Maximum flame temperature.
7. a) Explain the operation characteristics of an aerated gas burner. [7M]
- b) What are different types of PF furnaces based on the method of firing? Explain. [7M]