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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: ADE
Subject (Course): Fuel and Combustion
Course Code : ADEG-333
No. of page/s:01

Semester – Vth
Max. Marks : 100
Duration : 3 Hrs

Instructions:

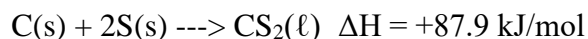
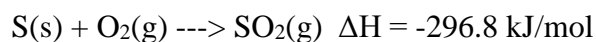
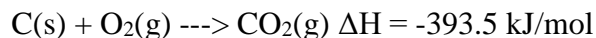
Attempt all questions. **Section A** (each carrying 5 marks); **Section B** (each carrying 10 marks).
Section C (each question carrying 20 marks).

Section A (Attempt all)

- | | | | |
|---|--|-----|-----|
| 1 | Distinguish between Gross and lower calorific value of fuel? | [5] | CO1 |
| 2 | Listed down the objectives for evaluating the crude oil? | [5] | CO2 |
| 3 | State, why Wobbe Index is calculated for gaseous fuel? | [5] | CO3 |
| 4 | Calculate the enthalpy of the following chemical reaction: | | |



[5] CO4



Section B (Attempt All)

- | | | | |
|---|---|------|-----|
| 5 | With desirable properties of a boundary lubricant, explain mechanism of boundary lubrication. | [10] | CO5 |
| 6 | Why additives are needed in lubricants? Explain additives stating different practical problems generally encountered, | [10] | CO5 |
| 7 | By writing equations for diameter of oil tube and nozzle, explain Swirl oil burner. | [10] | CO4 |
| 8 | Calculate the air fuel ratio for fuel E-45 (Ethanol 45% and Gasoline-55%). | [10] | CO4 |

SECTION C (Attempt All)

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|----|--|------|-----|
| 9 | Classify the lubricants with their respective strength, merits and applicability. | [20] | CO5 |
| 10 | Draw and Explain working of Blast furnace. Also mention the reactions occurring in the furnace with temperature range. | [20] | CO4 |