

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Fifth semester B.Tech degree examinations (S) September 2020

**Course Code: AU303****Course Name: FUELS AND COMBUSTION**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer any three full questions, each carries 10 marks.*

Marks

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|---|--|------|
| 1 | Give an account on the qualities and requirements for a good SI engine fuel.             | (10) |
| 2 | Illustrate and explain the refining process of crude oil and the products obtained.      | (10) |
| 3 | Explain on the various stages of combustion in a SI engine using a p- $\theta$ diagram.  | (10) |
| 4 | List and explain the principles in designing a good combustion chamber for an SI engine. | (10) |

**PART B***Answer any three full questions, each carries 10 marks.*

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|---|--|------|
| 5 | Expound on the phenomenon of knock in CI engines and compare it with SI engine knock.            | (10) |
| 6 | a) Why supercharging is not widely used in SI engines?   | (2)  |
|   | b) Draw and describe any two types of Super chargers.  | (8)  |
| 7 | a) What are the challenges in using vegetable oils as a fuel in IC engines?                      | (2)  |
|   | b) Compare the Exhaust Emission characteristics of vegetable oils with that of Diesel.           | (8)  |
| 8 | Compare the performance characteristics of CI engines using Vegetable oils and petroleum Diesel. | (10) |

**PART C***Answer any four full questions, each carries 10 marks.*

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|----|--|------|
| 9  | a) What is the concept of FFV?   | (2)  |
|    | b) Explain any two production methods for Ethanol.                               | (8)  |
| 10 | Compare the performance characteristics of SI engines using Alcohols and petrol. | (10) |
| 11 | Explain various methods of using alcohols as fuel in IC engines.                 | (10) |

- 12 a) What are the main constituents of LPG? (2)  
b) Explain the production methods of LPG. (8)
- 13 Give an account on methods of producing Hydrogen economically. (10)
- 14 What are the safety aspects concerned with the storage and Transportation of Hydrogen? (10)

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