

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 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

- |   |   |      |
|---|---|------|
| 1 | a) How fuels are classified? Explain.   | (4)  |
|   | b) What are the different types of rating of fuels?   | (3)  |
|   | c) What is the importance of Octane rating on the combustion of fuel?                       | (3)  |
| 2 | a) What are the desirable properties of an SI engine fuel?                                  | (10) |
| 3 | a) What are the various stages of combustion in SI engines? Explain the importance of each. | (6)  |
|   | b) What are the various engine variables affecting the combustion?                          | (4)  |
| 4 | What are the various factors affecting knock and surface ignition?                          | (10) |

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

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|---|---|------|
| 5 | What is diesel knock? What is the effect of direct and indirect combustion on diesel knock?                   | (10) |
| 6 | a) What is the importance of intercooling in turbocharging?   | (2)  |
|   | b) How turbocharging system works in diesel engine? Explain with the help of a sketch.                        | (8)  |
| 7 | a) What are the limitations of using vegetable oil in diesel engines? Explain.                                | (5)  |
|   | b) What is B20? How it can be obtained? Explain.  | (5)  |
| 8 | What is the effect of bio diesel on Combustion? What are the methods to reduce the emissions from bio diesel? | (10) |

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

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|----|---|------|
| 9  | What are the methods of production of ethanol? Why ethanol is added to gasoline? Explain. | (10) |
| 10 | What are the essential systems needed in FFV? Why it is needed? Explain.                  | (10) |

- 11 What are aldehyde emissions? What are the effects of it? (10)  
What modifications needed in catalytic converters used for FFV?
- 12 What is the method of production of bio gas? What are their imitations to be (10)  
used in IC engines as fuel?
- 13 What are the difficulties faced in storage of hydrogen? How it can be (10)  
addressed?
- 14 What are the methods of using hydrogen as fuel in SI engines? Explain. (10)

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