

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FOURTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019**

**Course Code: AU204**

**Course Name: CI ENGINES AND COMBUSTION (AU)**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any three full questions, each carries 10 marks*

Marks

- |   |  |   |
|---|--|---|
| 1 | a) Explain the properties of C.I. Engine fuels   | 4 |
|   | b) Define the Cetane number?   | 2 |
|   | c) Differentiate knocking phenomena in petrol and diesel engine?                               | 4 |
| 2 | a) Discuss the stages of combustion in C.I. Engine with P-θ diagram                            | 5 |
|   | b) Mention the different types of combustion chambers in C.I Engines                           | 5 |
| 3 | a) What are the basic requirements of diesel injection systems?                                | 5 |
|   | b) Describe different types of diesel injection system?  | 5 |
| 4 | a) With neat sketch explain various types of fuel nozzles used in diesel fuel injection system | 6 |
|   | b) Explain the different types of Air filters in C I engines                                   | 4 |

**PART B**

*Answer any three full questions, each carries 10 marks*

- |   |  |    |
|---|--|----|
| 5 | a) Draw a basic layout of EDC and briefly explain each sub systems   | 10 |
| 6 | a) Briefly explain the working of Electronic Unit Injector (EUI).  | 10 |
| 7 | a) How is flue gas analysis carried out by Orsat's apparatus?  | 6  |
|   | b) What is the significance of valve timing diagram?   | 4  |
| 8 | a) What is a heat balance sheet for an engine?   | 4  |
|   | b) Explain the procedure for conducting the morse test on the I.C engines. Show the method of calculation of frictional power. | 6  |

**PART C**

*Answer any four full questions, each carries 10 marks*

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|----|--|----|
| 9  | a) Explain the standard methods used for HC, CO. And CO <sub>2</sub> measurement                         | 10 |
| 10 | a) What are catalytic converters? How are they helpful in reducing HC, CO and NO <sub>x</sub> emissions. | 10 |

- |    |    |   |    |
|----|----|---|----|
| 11 | a) | Explain the different pollutants from C I Engines and its Effects                       | 5  |
|    | b) | Explain the different types of cold starting devices used in C I Engines                | 5  |
| 12 | a) | Write short notes on Supercharging  | 3  |
|    | b) | What are the objectives of super –charging  | 3  |
|    | c) | Differentiate between super-charging and turbo charging                                 | 4  |
| 13 | a) | Explains the term turbo-charging and show the arrangements through a schematic diagram. | 5  |
|    | b) | Explain any two method of turbo charging  | 5  |
| 14 | a) | Explain any two types of governors used in C I Engines?                                 | 10 |

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