

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: AU201

Course Name: S.I. ENGINES 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 | Derive expressions to find out the air standard efficiency and mean effective pressure for ideal Otto cycle | (10) |
| 2 | a) Explain the effect of variation in specific heat for fuel-air cycle during the power stroke for an SI engine with the help of PV diagram and what will happen to the curve if you consider the effect of dissociation along with that | (5) |
| | b) Define the terms- Indicated power, Indicated thermal efficiency, Brake thermal efficiency, Mechanical efficiency and Volumetric efficiency for SI engine | (5) |
| 3 | Explain the different types of surface ignition in SI engines | (10) |
| 4 | Explain the stages of combustion in SI engine with P-θ diagram along with the different engine variables affecting them | (10) |

PART B

Answer any three full questions, each carries 10 marks.

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| 5 | Explain the different types of sensors used in the MPFI system along with their functions with advantages of MPFI system | (10) |
| 6 | Explain the detailed construction and working of battery ignition system | (10) |
| 7 | What do you mean by valve timing? What is the significance of valve timing? Explain it briefly with the help of actual valve timing diagram and compare it with theoretical valve timing diagram? | (10) |
| 8 | Explain briefly the theoretical scavenging processes with neat figures | (10) |

PART C

Answer any four full questions, each carries 10 marks.

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| 9 | Explain the different drives used for operating the valve mechanism with neat figures | (10) |
| 10 | Explain the different components of valve mechanisms for a side camshaft engine and compare it with a SOHC engine with the help of neat figure | (10) |
| 11 | Explain in detail the different types of mufflers used in SI engines | (10) |

- 12 a) Differentiate between forced and thermo-siphon cooling system (5)
b) What are the disadvantages of overcooling? (5)
- 13 Explain the necessity of engine cooling with the effect different operating parameters leading to effective cooling of engine (10)
- 14 a) What are the desirable properties of engine lubricating oil? (5)
b) Explain the basic principle of lubrication? How will you determine the viscosity index of lubricating oil (5)
