

Roll No. ....

**22603**

**M. Tech. 1st Semester (ME) CBCS  
Scheme Examination – January, 2023  
IC ENGINE COMBUSTION & POLLUTION**

**Paper : MTME2103**

**Time : Three Hours ]**

**[ Maximum Marks : 100**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt five questions in all, selecting one question from each Unit. Question No. 1 is **compulsory**.

- 1.** Explain the following : **4 × 5 = 20**
- (a) Rating of fuels
  - (b) Adiabatic flame temperature
  - (c) Burning of carbon
  - (d) Orsat apparatus

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**UNIT – I**

2. Differentiate between actual cycles and air-standard cycles. Why the actual cycle much lower than the air-standard cycle efficiency? 20
3. Discuss hydrocarbons in IC engine fuels and also explain various properties of SI and CI engine fuels. 20

**UNIT – II**

4. Explain the following :
- (a) Laws of thermodynamics 10
- (b) Chemical equilibrium and product of combustion 10

5. What is premixed laminar and turbulent flame ? Also explain flammability limits and quenching of laminar flame. 20

**UNIT – III**

6. What is detonation ? Explain detonation velocity and structure of detonation waves. 20

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7. Discuss the following :

- (a) Coal combustion and its products 10
- (b) Effect of pollutant emissions from premixed and non-premixed combustion of fuel 10

**UNIT – IV**

8. Discuss the following in detail :
- (a) Determination of air fuel ratios 10
- (b) Air pollution made by IC engines 10
9. Explain the use and working of Orsat apparatus and infrared analyser. 20

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