Reg. No. : | E | N | G | G | T | R | E | E | . | C | O | M |

Question Paper Code : 40805

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2024.

Fifth/Sixth/Seventh Semester

Mechanical Engineering

CME 394 — ADVANCED INTERNAL COMBUSTION ENGINEERING

(Common to Mechanical Engineering (Sandwich))

(Regulations 2021)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Stoichiometric mixture.

2. How multipoint injection system differ from direct fuel injection system in SI engine?

3. What is knocking?

4. What do you mean by turbo charging?

5. How emissions are classified and list out the pollutants present in the engine exhaust gas.

6. How oxides of nitrogen in the engine exhaust is measured?

7. How CNG is differ from LPG?

8. List out the demerits of hydrogen as a substitute fuel in engine?

9. What are the advantages of HCCI?

10. Classify fuel cells based on temperature.

PART B — (5 × 13 = 65 marks)

11. (a) With a neat sketch, explain in detail about the stages of combustion in SI engines.

Or

(b) With a neat sketch, explain in detail about the air-fuel mixture requirements at different loads and speed of SI engine.

12. (a) With a neat sketch, explain in detail about the stages of combustion in CI engines.

Or

(b) With a neat sketch, write short notes on combustion chambers of CI engines.

13. (a) With a neat sketch, explain about construction and working principle of three-way catalytic converter.

Or

(b) With a neat sketch, explain about the technique, how carbon monoxide pollutant from engine exhaust is measured.

14. (a) List out the various alternative fuels and compare its properties with petrol and diesel.

Or

(b) Explain about alcohols and CNG as alternate fuels for IC engines and provide their merits and demerits.

15. (a) With a neat sketch, explain about the low temperature combusation of homogeneous charge compression ignition.

Or

(b) With a neat sketch, write short notes on hybrid electric vehicles and electric vehicles.

PART C — (1 × 15 = 15 marks)

16. (a) With a neat sketch, explain in detail about working principle of a carburetor.

Or

(b) With a neat sketch, explain in detail about CRDI systems.

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