

F 3083

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, DECEMBER 2012

Fifth Semester

Branch : Mechanical Engineering/Automobile Engineering

AU 010 505 } I.C. ENGINES AND COMBUSTION (AU, ME)
ME 010 505 }

(Regular—New Scheme)

Time : Three Hours

Maximum : 100 Marks

Necessary charts are permitted.

Answer all questions.

Part A

Each question carries 3 marks.

1. What is the significance of valve timing diagram ?
2. What is CRDI technology ?
3. Write a note on variation of specific heat due to dissociation.
4. Distinguish between Petrol knock and Diesel knock.
5. How will you find frictional power of I.C. engines ?

(5 × 3 = 15 marks)

Part B

Each question carries 5 marks.

6. Write a note on various alternative fuels.
7. What are the desirable properties of lubricants ?
8. Discuss a method to measure exhaust gas composition.
9. How does the flame propagation affect performance of a C.I. engine ?
10. Compare the effect of pollutants in S.I. and C.I. engines.

(5 × 5 = 25 marks)

Part C

*Answer any one full question from each module.
Each full question carries 12 marks.*

11. Explain the working of a (i) Stratified charge engine; and (ii) Free piston engine.

Or

12. With neat sketches, explain the ignition systems used in I.C. engines.

Turn over

13. Explain the need of fuel injection. Discuss the mechanism of fuel injection in S.I. and C.I. engines.

Or

14. Discuss :

(i) Solex carburettor.

(4 marks)

(ii) GDI engines.

(4 marks)

(iii) Stoichiometric F/A ratio.

(4 marks)

15. Explain the thermodynamic aspects and energy interactions during the combustion reaction of (i) gasoline and (ii) diesel.

Or

16. Discuss the variation in engine cooling requirements at various parts of an I.C. engine. Differentiate between air cooling and water cooling systems. Draw neat sketches.

17. With a 'P-Q' diagram, explain all the stages of combustion in a C.I. engine.

Or

18. What is ignition delay ? Discuss various types of air motion and their effect on combustion.

19. Explain :

(i) Exhaust gas treatment.

(4 marks)

(ii) Catalytic converter.

(4 marks)

(iii) Particulate trap.

(4 marks)

Or

20. Discuss the procedure for conducting heat balance test on an I.C. engine. Draw a typical heat balance chart and explain its relevance.

[5 × 12 = 60 marks]