

F 3656

(Pages : 2)

Reg. No.....

Name.....



**B.TECH. DEGREE EXAMINATION, NOVEMBER 2014**

**Fifth Semester**

Branch : Mechanical Engineering / Automobile Engineering

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

(New Scheme – 2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. Discuss the significance of firing order in S.I. engines.
2. What are the additives commonly used in Lubricants?
3. List the factors influencing flame propagation during combustion.
4. Define Ignition Lag in S.I. engines.
5. What are after treatment devices? Why they are used in modern I.C. engines?

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. Briefly describe any *five* types of Alternative fuels used in engines.
7. With a neat sketch, explain the methods used for Ignition advance.
8. Write the combustion equation for a general fuel of  $C_x H_y$  type. What are the requirements for complete combustion?
9. What are the different types of air motions in the engine cylinder? What is the significance of each?
10. How will you calculate the frictional power in S.I. engine and C.I. engine? Explain the methods used.

(5 × 5 = 25 marks)

**Turn over**

**Part C**

*Answer all questions.*

*Each question carries 12 marks.*

11. (a) With a neat sketch, explain the working of a Wankel engine.  
(b) Explain the working of a Stratified charge engine.

*Or*

12. With a neat sketch, explain the working of a conventional ignition system in an S.I. engine. What are its disadvantages? What is the advantage of electronic ignition system over other systems?
13. (a) With a neat sketch, explain the working of a Constant Venturi carburetor.  
(b) Write short notes on : MPFI, CRDI and GDI systems.

*Or*

14. (a) What are the methods used for lubricating an engine?  
(b) With a neat sketch, explain the working of a fuel injector unit.
15. (a) Explain normal combustion and abnormal combustion in engines.  
(b) Explain pre-ignition and effects of pre-ignition.

*Or*

16. (a) Explain Supercharging and Turbo-charging in engines.  
(b) With a neat sketch, explain the pressurized cooling system with its advantages.
17. (a) Explain combustion phenomenon in C.I. engines and factors affecting combustion.  
(b) Mention the types of combustion chambers used to achieve swirl, squish and tumble motions inside the cylinder.

*Or*

18. (a) Explain the stages of combustion in S.I. engine with Pressure-crank angle diagram.  
(b) What are the different types of combustion chamber design for S.I. engines?
19. (a) What are the effects of pollutants from C.I. engines on environment and human life? How can these be controlled?  
(b) What are regenerative trap? Why they are used in engines?

*Or*

20. (a) Explain in detail the method used to measure the indicated power in S.I. and C.I. engines.  
(b) What are the major causes for the formation of CO in the exhaust of I.C. engines?

(5 × 12 = 60 marks)