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Total Number of Pages : 01

M.TECH

M.TECH 1ST SEMESTER REGULAR EXAMINATIONS, DECEMBER 2017

INTERNAL COMBUSTION ENGINES

Branch: TE, Subject Code:MTEPE1041

Time: 3 Hours

Max Marks : 70

The figures in the right hand margin indicate marks.

PART-A**(2X10=20 MARKS)****1. Answer the following questions .**

- On the basis of same maximum pressure and temperature, compare the Otto, Diesel and dual cycle.
- Why a rich mixture is required for maximum power.
- What is octane number?
- Name the various type of liquid cooling system.
- Write down the firing orders for a four cylinder and six cylinder IC engine.
- Sketch the heat balance curves for CI engines.
- What is vapor lock?
- What are the basic requirements of a good SI engine combustion chamber?
- Write down different types of nozzles used. ?
- What are the basic requirements of an injection system?

PART-B**(5 X 10=50 MARKS)****Answer any five questions from the following.**

- Discuss variable compression ratio engine. **5**
 - Which engine is more suitable for supercharging SI or CI engine? Why? **5**
- Compare the Otto, Diesel and Dual cycle for the same compression ratio? **5**
 - With neat sketch describe the magneto ignition systems? **5**
- Explain the phenomenon of pre-ignition? How pre-ignition leads to detonation and vice-versa. **5**
 - With neat sketch describe the stages of combustion in CI engine? **5**
- A four stroke MARUTI engine has a capacity of 1500 cc. it develops maximum power at 4200 rpm. The volumetric efficiency at this speed is 70% and the A/F ratio is 13:1. At peak power the theoretical air speed at choke is 90m/s. the coefficient of discharge for the venture is 0.85 and that of main petrol jet is 0.66. An allowance should be made for the emulsion tube, the diameter of which can be taken as 1/ 2.5 of the choke diameter. The petrol surface is 6 mm below the choke at this engine condition. Calculate the size of suitable choke and main jet. The specific gravity of the petrol is 0.74. Atmospheric pressure and temperature are 1 bar and 20⁰C respectively. **8**
 - Define detonation in automobile engines. **2**
- What is rating of an IC engine fuel? Explain the rating of a SI engine fuel. **5**
 - What is charge stratification? Explain how it is advantageous in case of SI engine. **5**
- Discuss the different types of lubrication systems used for IC engines. **5**
 - Discuss Fault diagnosis of S.I. Engines. **5**
- Write short notes on:** **5**
 - MPFI system **5**
 - Catalytic Converters **5**