

SUBJECT CODE NO:- P-8049
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Mechanical) Examination May/June 2017
Advanced I.C. Engines
(Revised)

[Time:ThreeHours]

[Max Marks :80]

Please check whether you have got the right question paper.

- N.B
- i) Attempt any three questions from each Section.
 - ii) Use of data/ property tables, non-programmable calculator is allowed.
 - iii) Neat diagrams must be drawn wherever necessary.
 - iv) Figure to the right indicate full marks
 - v) Assume suitable data. If necessary.

Section A

- Q.1A Explain the mixture requirements at different loads and speeds. 06
B Explain normal and abnormal combustion in SI engine with neat sketch. 07
- Q.2A A four cylinder petrol engine with 70mm bore and 100 mm stroke length working on four stroke principle develops torque of 140 N-m at 4000 RPM. The clearance volume per cylinder is 0.065 liters. Fuel consumption is 14 kg/hr. 07
Calculate: (i) BP (ii) bmep (iii) Brake thermal efficiency
Take C.V. of fuel=43400 kJ/kg, $\gamma = 1.4$ for air.
- B Explain the effect of fuel spray behavior on emissions. 06
- Q.3A What is the effect of premixed combustion phase on NO_x emission? Explain. 06
B What do we mean by supercharging? Differentiate supercharged and non-supercharged engines. 07
- Q.4 Write explanatory notes on any two: 14
- a. Scavenging
 - b. Combustion chambers
 - c. Penetration evaporation.

Section B

- Q.5A What are the causes of soot formation? Explain with the help of fuel spray. 06
B Explain the modern methods to control emissions of IC engine. 07
- Q.6A Explain stratified charge engine with neat sketch. 07
B How the lean burn engine functions. Explain in detail. 06
- Q.7A Explain the simulation of IC engine with adiabatic combustion. 07
B Discuss the properties of hydrogen fuel and its suitability for SI engine as a fuel. 06
- Q.8 Write explanatory notes on any two: 14
- a. Exhaust gas recirculation
 - b. Crankcase blow by
 - c. Methods of turbo charging.