

FACULTY OF ENGINEERING**B.E. 2/4 (AE) II – Semester (Main) Examination, May 2013****Subject: Automotive Petrol Engines****Time: 3 Hours****Max.Marks: 75****Note: Answer all questions from Part A. Answer any five questions from Part B.****PART – A (25 Marks)**

1. Draw the otto cycle on p-V and T-s diagrams and mark the various processes. (3)
2. Why fins are required in an air-cooled engine? (2)
3. What is the interrelation between ignition and combustion? (2)
4. Explain the details of firing order. (3)
5. What is meant by abnormal combustion? (3)
6. Define (a) flash and (b) fire points. (2)
7. What are the advantages of air cooling system? (3)
8. What are the components to be lubricated in an engine? (3)
9. What are homogeneous and heterogeneous mixtures? (2)
10. What is the function of spark plug? (2)

PART – B (50 Marks)

- 11.(a) In an SI engine working on the ideal otto cycle, the compression ratio is 5.5. the pressure and temperature at the beginning of compression are 1 bar and 27°C respectively. The peak pressure is 30 bar. Determine the pressure and temperatures at the salient points, the air standard efficiency and the mean effective pressure. Assume ratio of specific heats to be 1.4 for air. (5)
- (b) Obtain an expression for thermal efficiency of an otto cycle. (5)
- 12.(a) Explain the following: (5)
 - i) Rich mixture
 - (ii) Stoichiometric mixture
 - (iii) Lean mixture
- (b) Explain the principle of carburetion with a neat sketch. (5)
- 13.(a) What is meant by ignition? (2)
- (b) Explain various types of ignition systems with neat sketches. (8)
14. Explain the effect of various engine variables on SI engine knock. (10)
- 15.(a) Explain the following: (6)
 - i) Thermosyphon cooling system
 - ii) Forced circulation cooling system
 - iii) Evaporative cooling system.
- (b) Explain the reasons for cooling an engine. (4)

16. Explain the following:
- a) Crank case ventilation (5)
 - b) Any five properties of lubricants. (5)
- 17.(a) With neat sketches, explain the working principle of a 4-stroke SI engine. (5)
- (b) Write any 5 differences between a 4-stroke and a 2-stroke SI engine. (5)
