

Reg. No. :

Question Paper Code : 20145

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Automobile Engineering

AT 6301 — AUTOMOTIVE ENGINES

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the differences between SI and CI engines.
2. Compare two stroke and four stroke engines.
3. List the reasons for cold start conditions.
4. What are the major classification of governors utilized in compression ignition engines?
5. Compare and contrast between swirl and squish type flow in a combustion chamber.
6. How detonation is caused in a compression ignition engine?
7. Mention the function of intercooler in turbocharger.
8. Differentiate between indicated power and brake power of an engine.
9. State the need of engine cooling system in a vehicle.
10. Elucidate about 15W-40 grade lubricant.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the construction and working of four stroke diesel engine with diagram.

Or

- (b) The minimum pressure and temperature in an Otto cycle are 100 kPa and 27°C. The amount of heat added to the air per cycle is 1500 kJ/kg. Determine :
 - (i) The pressures and temperatures at all points of the air standard Otto cycle. (8)
 - (ii) Specific work. (3)
 - (iii) Thermal efficiency of the cycle for a compression ratio of 8:1. (2)

12. (a) With a neat sketch, describe the working of a constant vacuum carburetor. (13)

Or

- (b) Describe the working of a Common Rail Diesel Injection system with a neat sketch. (13)

13. (a) Describe the stages of combustion in a CI engine with suitable property diagrams. (13)

Or

- (b) Explain the various factors affecting the combustion in spark ignition engines.

14. (a) Explain the working of turbocharger with neat sketch. (13)

Or

- (b) List down the various types of dynamometers used in engine testing and describe the working of hydraulic dynamometer. (13)

15. (a) (i) Brief the principle of air cooling system used in motorcycles. (5)

- (ii) With an indicative sketch, explain pump circulation cooling system used in a vehicle. (8)

Or

- (b) (i) Enumerate any five ideal properties of a lubricant oil. (5)

- (ii) Explain the working of pressure lubricating system with neat sketch. (8)

PART C — (1 × 15 = 15 marks)

16. (a) Critically analyze the design considerations to be adopted in utilizing a dual fueled IC engine. (15)

Or

- (b) Explain the importance of various performance maps used in evaluation of diesel engine characteristics. (15)