Reg. No. : | | | | | | | | | | |

Question Paper Code: 31789

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Elective

Mechanical Engineering

01UME920 - ADVANCED IC ENGINES

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. List down the air fuel ratio requirements of a SI engines.
2. What are the factors that influence the flame speed?
3. How the thermodynamic analysis of a CI engine is different from SI engine?
4. What do you understand by indirect injection systems?
5. What is the difference between smoke and particulate emissions?
6. What is green house effect?
7. List down the major constituents of natural gas and LPG.
8. List any four advantages of bio diesel over petroleum based fuel.
9. What is the working principle of Stratified charge engine?
10. Mention the principle of a surface ignition engine.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the various stages of combustion in a SI engine with a P-θ diagram. (16)

Or

(b) Describe in detail about the phenomenon of knocking in SI engines. (16)

12. (a) Explain the principle of operation of a turbocharger with a neat sketch and indicate the objectives of turbo charging. (16)

Or

(b) List the factors affecting knocking and explain their influence in detail. (16)

13. (a) Explain the methods of controlling emissions. (16)

Or

(b) Explain the various types of instruments used for measurement of emissions from IC engines. (16)

14. (a) Explain the properties of liquefied petroleum gas in detail. (16)

Or

(b) Discuss the performance combustion and emission characteristics of using Hydrogen in SI engines. (16)

15. (a) Explain the characteristics of a homogeneous charge compression ignition engine. (16)

Or

(b) Explain about common rail direct injection diesel engine. (16)

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