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Question Paper Code: 39720

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Mechanical Engineering

01UME920 - ADVANCED IC ENGINES

(Regulation 2013)

Duration: Threehours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define knocking.
2. What are the factors affecting carburetion?
3. What are the features which influence the rate of burning of a fuel drop in CI engine?
4. What are the different types of combustion chambers used in diesel engine?
5. What are common SI engine pollutants?
6. What is three way catalyst?
7. List the advantages and disadvantages of natural gas.
8. Compare the octane number and the calorific value of alcohol with petrol.
9. What are the factors that influence the operation of the plasma jet plug?
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) Discuss why a modern carburetor is being replaced by an injection system in SI engine. (16)

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

Or

(b) What are the requirements of diesel fuel injection system? Explain air injection system with neat sketch. (16)

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

Or

(b) What are the interpretations drawn from percentage of HC, CO, CO₂ and O₂ from engine exhaust. (16)

14. (a) Explain the reasons looking for alternate fuels for IC engines. (16)

Or

(b) Give a brief account of LPG being used as an alternate fuel in SI engine. (16)

15. (a) What is lean burn engine and explain briefly with neat sketch. (16)

Or

(b) Discuss the operation of gasoline direct injection system with a block diagram showing clearly all the sensors. (16)
