

‘I’ Scheme

Sample Question Paper

Program Name : Diploma in Automobile Engineering
Program Code : AE
Semester : Fourth
Course Title : Advanced Automobile Engines
Marks : 70

22440

Time: 3 Hrs.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following.

10 Marks

- a) State four types of combustion chambers used in S.I. engine.
- b) State the air fuel ratio in diesel engine under idle and full load conditions.
- c) State the function and location of Coolant temperature sensor and Manifold absolute pressure sensor in Multi-port fuel injection engine.
- d) List four actuators used in Multi-port fuel injection engine.
- e) State four properties of petrol
- f) State four methods of improving fuel economy
- g) List four pollutants emitted from C.I. engine.

Q.2) Attempt any THREE of the following.

12 Marks

- a) Describe stages of combustion in S.I. engine with help of Pressure versus crank angle diagram.
- b) Select a combustion chamber for truck engine with justification.
- c) Explain the working of fuel pressure regulator of Multi-port fuel injection engine with help of sketch.
- d) Describe procedure to diagnose fault in a sensor of Common rail direct injection engine.

Q.3) Attempt any THREE of the following. 12 Marks

- a) Sketch and describe Compressed Natural Gas fuel supply system layout.
- b) Select fuel for rickshaw engine to be used in a metro city with justification.
- c) Describe features of Variable Geometric Turbocharger for a car engine.
- d) Describe relevant properties of four constituents in petrol engine exhaust gas.

Q.4) Attempt any THREE of the following. 12 Marks

- a) Describe the steps to diagnose Multi-port fuel injection engine using a scan tool.
- b) Describe the procedure to locate the leakage in Liquefied Petroleum Gas fuel supply system of a car. State relevant precautions.
- c) Sketch and describe the layout of an electric car.
- d) Prepare a chart of Bharat stage norms for a petrol engine of car.
- e) Describe Exhaust Gas Recirculation control system with help of block diagram.

Q.5) Attempt any TWO of the following. 12 Marks

- a) Compare S.I. and C.I. engines with justification for the following parameters.
 - i) Power to weight ratio
 - ii) Compression ratio
 - iii) Ease of starting
- b) Describe Idle speed control function of Multi-port fuel injection engine with help of sketch.
- c) Explain working of CRDI system with help of sketch.

Q.6) Attempt any TWO of the following. 12 Marks

- a) Compare MPFI and TBI system of fuel supply with justification, for the following parameter.
 - i) Injection pressure
 - ii) Emission
 - iii) Throttle response
- b) Describe fuel injection control of Multi-port fuel injection engine with the help of sketch.
- c) Explain causes of diesel smoke emission. State control measures for the same.

Scheme - I

Sample Test Paper - I

Program Name : Diploma in Automobile Engineering
Program Code : AE
Semester : Fourth
Course Title : Advanced Automobile Engines
Marks : 20

22440

Time: 1 Hour.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

08 Marks

- a) Sketch Pressure versus crank angle diagram for stages of C.I. engine combustion.
- b) Compare S.I. and C.I. engines with justification for power per unit displacement.
- c) State four effects of detonation.
- d) Sketch sequential and group injection.
- e) State location and function of Detonation sensor.
- f) List four actuators used in Multi-port fuel injection engine.

Q.2 Attempt any THREE.

12 Marks

- a) Describe the procedure to use scan tool for Multi-port fuel injection engine diagnosis.
- b) Explain working of electronic fuel injector with help of sketch.
- c) Select combustion chamber for passenger transport-car engine with justification.
- d) Sketch hemispherical combustion chamber. Justify its use in two-wheeler engine.

Scheme - I

Sample Test Paper - II

Program Name : Diploma in Automobile Engineering
Program Code : AE
Semester : Fourth
Course Title : Advanced Automobile Engines
Marks : 20

22440

Time: 1 Hour.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

08 Marks

- a) List four major components of Common rail direct injection system
- b) State two merits and two demerits of using Compressed natural gas as a fuel
- c) List two merits of Gasoline Direct Injection system. List two merits of using variable valve timing arrangement.
- d) Sketch evaporative emission control system.
- e) Explain engine design modification for emission control.
- f) State four features of Common rail direct injection system

Q.2 Attempt any THREE.

12 Marks

- a) Describe glow plug operation with help of circuit
- b) Select fuel suitable for public transport bus in a city- with justification.
- c) Explain limitations of using turbocharger with waste-gate boost control.
- d) Describe positive crankcase ventilation system with help of sketch.