Scheme - G

Sample Test Paper-I

Course Name : Diploma in Automobile Engineering

Course Code : AE

Semester : Fifth

17523

Subject Title : Advanced Automobile Engines

Marks : 25 **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

Q1. Attempt any THREE **09 Marks**

a) State three engine variables affecting ignition lag.

b) Describe the effect of air fuel- ratio on flame speed.

c) Draw 'I' head combustion chamber used in S.I. engine and label it.

d) State the function and location of MAP sensor.

Q2. Attempt any TWO **08 Marks**

a) What is delay period? State two variables affecting delay period.

b) Describe the working of fuel pump used in MPFI system.

c) Give two advantages and two drawbacks of DI combustion chamber.

Q3. Attempt any ONE **08 Marks**

a) Describe with neat sketch idle speed control as an output control function of ECM.

b) State four methods of fuel injection. Describe any two.

Scheme - G

Sample Test Paper-II

Course Name : Diploma in Automobile Engineering

Course Code : AE

Semester : Fifth

17523

Subject Title : Advanced Automobile Engines

Marks : 25 **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

Q1. Attempt any THREE **09 Marks**

a) State three features of CRDI sytem.

b) List three major components of CRDI system and write one function of each.

c) Draw a neat labeled block diagram of Electronic control system in CRDI system.

d) Describe concept of VVT.

Q2. Attempt any TWO **08 Marks**

a) Compare LPG and CNG as I.C. engine fuels on the basis of – i) Fuel tank size ii) Storage pressure iii) Cost iv) Safety.

b) State EURO III norms for a car using petrol as a fuel.

c) Describe the working of Evaporative Emission Control system.

Q3. Attempt any ONE **08 Marks**

a) With a neat sketch describe working of EGR system. State two advantages of EGR system.

b) Draw a neat labeled block diagram of CRDI system. Describe its working.

Scheme – G

Sample Question Paper

Course Name : Diploma in Automobile Engineering

Course Code : AE

Semester : Fifth

17523

Subject Title : Advanced Automobile Engines

Marks : 100 **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

Q1. (A) Attempt any THREE of the following **12 Marks**

a) What is meant by ignition limits? Give the ignition limits for S.I. engine.
b) List four drawbacks of carbureted SI engine.
c) State four advantages of using CRDI system.
d) Write four properties of gasoline as a fuel for IC engine.

(B) Attempt any ONE of the following **06 Marks**

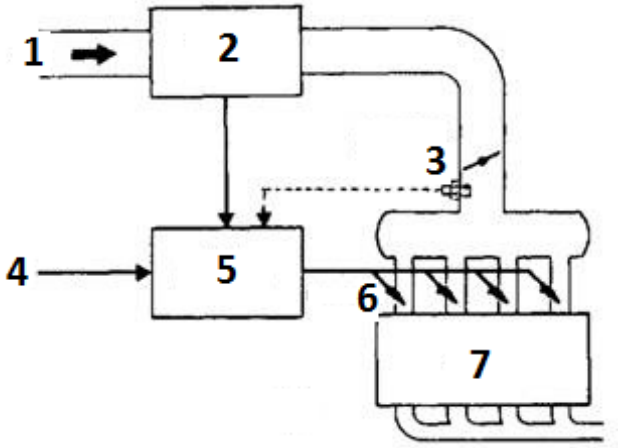
a) With the help of suitable sketch describe the working of fuel injector.
b) Draw a neat labeled P-Q diagram showing the stages of combustion in S.I. engines. List the Stage.

Q2. Attempt any FOUR of the following **16 Marks**

a) Define Pre-ignition and surface ignition.
b) Distinguish between TBI and PFI system (four points).
c) Draw a labeled block diagram showing EDC unit of CRDI system.
d) Compare SI and CI engine on the basis of i) Thermodynamic Cycle ii) Compression Ration ii) Power Output per unit weight iv) Fuel Consumption
e) List four types of combustion chambers used in CI engines, explain any one in detail with a neat sketch.
f) Draw a neat graph to indicate effect of compression ratio on delay period.

Q3. Attempt any FOUR of the following **16 Marks**

a) Identify and state the given block diagram. Also mention the names of components indicated by the numbers.



b) List three methods of fuel injection. Describe any one.
c) Illustrate with example fuel injection as an output control function of ECM.
d) What is Glow Plug? Why and where it is used?
e) Draw a neat labeled circuit diagram of Glow Plug.
f) Describe the working of high pressure accumulator.

Q4. (A) Attempt any THREE of the following **12 Marks**

a) List any two fuels used in modern cars. Compare them on the basis of –
i) Calorific value ii) Volatility iii) Octane rating
b) Draw a labeled block diagram of parallel type hybrid vehicle.
c) LPG is used as a fuel for petrol vehicle. Justify your answer.
d) What does DTSi stands for? State two advantages of DTSi system.

(B) Attempt any ONE of the following **06 Marks**

a) With the help of neat sketch describe construction and working of High Pressure Pump used in CRDI system.
b) Draw a labeled block diagram of LPG conversion Kit. Describe its working.

Q5. Attempt any TWO of the following **16 Marks**

a) Prepare a chart showing the tendency of following characteristics to reduce detonation or Knock in SI and CI engine-
i) Ignition temperature of fuel ii) Ignition delay iii) Compression ratio iv) Inlet temperature v) Inlet Pressure vi) Speed vii) Cylinder size viii) Cylinder wall temperature.
b) Identify and state the method used to control production of NOx in combustion chamber of an engine. How the method is applied to do so? Illustrate with neat sketch.
c) How catalytic converter performs under oxidation and reduction of exhaust gas? Give chemical reactions for the same. Why Oxygen sensors are fitted at inlet and outlet of catalytic converter.

Q6. Attempt any FOUR of the following **16 Marks**

a) How VGT is beneficial over conventional turbocharger? (Give two points).
b) State four methods to improve fuel economy of a vehicle.
c) List the source of sources of pollutants from gasoline engine describes any two in details.
d) What is diesel smoke? State two methods to control diesel smoke.
e) Describe the operation of PCV valve under two operating conditions of an engine.