

Code No: R09222401

R09

Set No. 2

II B.Tech II Semester Examinations, APRIL 2011
AUTOMOTIVE ENGINES
Automobile Engineering

Time: 3 hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What is the function of the crank case, cylinder head and gasket?
(b) Describe the wet cylinder liner with a sketch and compare it with a dry liner. [7+8]
2. (a) Distinguish the differences between petrol injection and diesel injection?
(b) Explain in brief on two important methods of petrol injection? [7+8]
3. (a) Draw the cross section of a single cylinder spark ignition engine and explain the working principle.
(b) What is meant by TDC and BDC? With a suitable sketch mark the two dead centers. [11+4]
4. (a) What are the different types of modern carburettors?
(b) Explain the working of any one modern carburettor with neat diagram. [4+11]
5. (a) Explain with a neat sketch of pressurized cooling system.
(b) Name important parts and their usage of the above system. [7+8]
6. (a) Explain in detail as to how spray formation takes place, when fuel is forced through nozzle.
(b) What are the factors determine the penetration of spray? [7+8]
7. Describe the working of Wankel Rotary combustion engine. Show the four phases of operation of a Wankel engine with the help of neat sketches. [15]
8. (a) Explain how the diesel fuel injection pump is connected to the engine?
(b) Describe the importance of "INJ" mark on fly wheel of the engine. [7+8]

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R09**Set No. 4**

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Time: 3 hours**Max Marks: 75**

Answer any FIVE Questions
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1. (a) What is the function of carburettor in SI engine?
 (b) Why multi cylinder engines require rich mixture than single cylinder engine?
 (c) What are the limitations of simple carburettor? [4+4+7]
2. Write short notes on the following related to cooling system. Draw sketches wherever required:
 (a) radiator fan
 (b) radiator core
 (c) water pump. [15]
3. (a) Why Aluminum alloy is used widely as a piston material?
 (b) What is piston clearance? Why is it necessary?
 (c) What are the functions of piston rings in an engine? What are the materials used? [4+4+7]
4. (a) Explain the working of an electric car. How the electrical power can be used for the operation of a car.
 (b) What are the advantages and disadvantages of electric car compared to a conventional car powered by a petrol engine. [7+8]
5. (a) List the features of the Wankel engine.
 (b) Wankel rotary engine could not become successful, why?
 (c) List the features which distinguish the Stirling engine from other heat engines. [5+4+6]
6. (a) What is the necessity of fuel filtration?
 (b) What are different types of fuel filters? And explain in brief about them? [6+9]
7. (a) Describe the two types of general injection systems in C.I. Engines?
 (b) Why the air injection system is not used nowadays? [7+8]
8. (a) Describe the throttle body injection system with a help of neat sketch.
 (b) Write a short note on port injection system. [7+8]

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R09**Set No. 1**

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Time: 3 hours

Max Marks: 75

Answer any FIVE Questions
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1. (a) Distinguish between cloth filter v/s paper filter.
(b) How do you clean the fuel filter? [9+6]
2. Describe different types of injection nozzles and discuss their relative advantages and disadvantages. [15]
3. (a) How many methods of water cooling system are in use? Explain.
(b) Draw the flow diagram of thermo siphon water cooling system and explain its functioning. [7+8]
4. (a) What are the functions of flywheel and vibration damper mounted on a crankshaft?
(b) Explain the working of overhead inlet and side exhaust valve actuating mechanism with a neat sketch. [6+9]
5. (a) Describe with a sketch working of any petrol injection system.
(b) What are the disadvantages of petrol injection system? [9+6]
6. (a) What are the limitations of a simple carburettor?
(b) How these limitations are taken care in a modern carburettor? Explain. [6+9]
7. (a) Describe any one method of supercharging with a neat sketch
(b) Explain briefly the thermodynamic cycle of supercharged engine on P-V diagram for an ideal Otto cycle. [7+8]
8. (a) What do you understand by scavenging process? Discuss ideal scavenging and perfect mixing type scavenging process.
(b) What do you understand by cross scavenging method? List out its disadvantages. [9+6]

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R09**Set No. 3**

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Time: 3 hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Why radiator is required in cooling system?
(b) Draw the diagram of a radiator and show important parts duly explaining the functioning. [7+8]
2. Draw the sketch of rotary distributor fuel injection plump and explain the functioning of its important parts. [15]
3. (a) Draw the port timing diagram of a two-stroke SI engine and explain the operations involved.
(b) Briefly explain the classification of two-stroke engines based on scavenging process. [9+6]
4. (a) Explain the working of Zenith carburettor with a neat diagram.
(b) State the advantages of Zenith carburettor over the other carburettors. [11+4]
5. (a) Sketch various types of main bearings for an automotive engine. Mention the materials used for them.
(b) How are the crankshafts are manufactured? Explain. [9+6]
6. (a) What are the advantages and disadvantages of diesel engine over the petrol engine?
(b) Differentiate supercharging and turbocharging. [7+8]
7. (a) Explain briefly about cylinder port injection system?
(b) Mention the major differences between cylinder port injection and Multi point fuel injection system? [9+6]
8. (a) What are the faults in injection nozzles?
(b) How they can be rectified? [7+8]
