Tips & Technology
For Bosch business partners

Current topics for successful workshops No. 77/2014

Would you have known?

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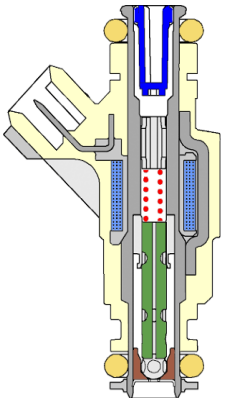
Questions on automotive engineering

Do you still remember the exam questions from when you did your training? How much of the subject matter would you still know now? What have you learnt since? Why not test your knowledge with the following questions? Good luck!

There is only ever one correct answer to each question.
The answers can be found on Page 4.

Question 1:



Which of the following statements does not apply to gasoline direct injection?

a) Fuel is injected directly into the combustion chamber at high pressure
b) A high-pressure pump compresses the fuel to 50 - 120 bar
c) These engines run with heterogeneous mixtures up to Lambda 3.0
d) The engines can run on regular gasoline without any problem

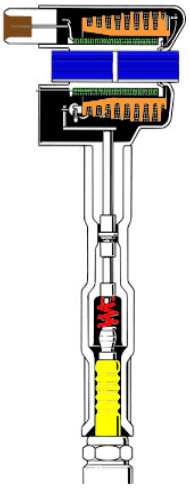
Question 2:

What is significant about gasoline direct injection?

a) The injector is located at the throttle valve
b) The injector squirts fuel directly into the combustion chamber
c) Use is made of one injector for each cylinder bank
d) The injection pressure is only 0.8 - 1.2 bar

Question 3:

Explain to a customer why "Misfiring is dangerous"



a) Because the drive train is distorted by massive torsional vibration
b) Because of flashback into the fuel system
c) Because the catalytic converter may be damaged by excess temperature
d) Because it leads to an uncontrolled increase in tire wear

Question 4:

Which factors form the basis for choosing the ignition point?

a) Max. power, good consumption, good emissions, low knock tendency
b) Constant handling properties and full load acceleration
c) Engine temperature profile, torque curve and drift properties
d) Whether injection is simultaneous, sequential or semi-sequential

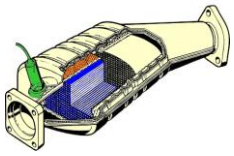
Question 5:

With simple distributors, the ignition timing is set

a) By way of the MED-Motronic control unit
b) Centrifugally as a function of engine speed, by way of vacuum as a function of load
c) As a function of speed and temperature by the engine speed
d) By way of the cold start accelerator cable

Question 6:

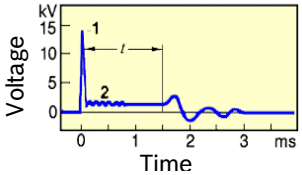
A Lambda value of 0.8 λ on the exhaust emission test protocol signifies:



a) Rich mixture with 20% air deficiency
b) Rich mixture with 20% excess air
c) Lean mixture with 20% air deficiency
d) Lean mixture with 80% air deficiency

Question 7:

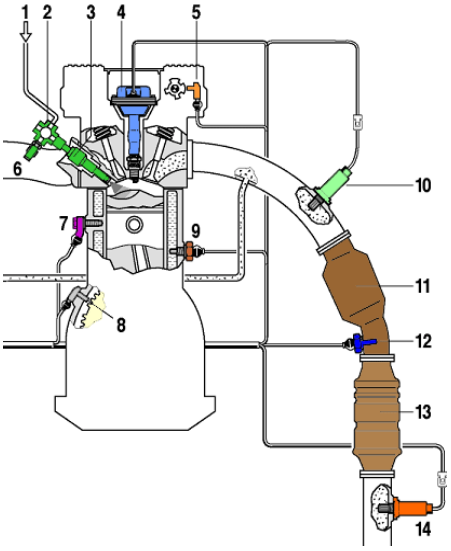
Explain the purpose of an ignition oscilloscope in engine testing to a customer



a) Measurement of the charge cycle profile
b) Measurement of the injection profile
c) Measurement of the primary and secondary ignition voltage profile
d) Measurement of the combustion pressure profile

Question 8:

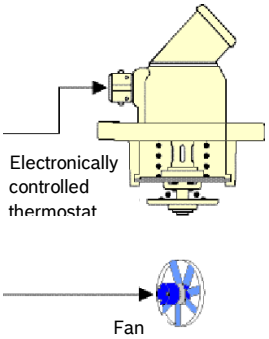
Which list of engine compartment components is correct?



a) 14 NOx sensor
   13 Storage catalytic converter
   12 Exhaust gas temperature sensor
   5 Phase sensor
b) 7 Knock sensor
   10 Exhaust gas temperature sensor
   4 Ignition coil with driver stage
   11 3-way CAT
c) 3 High-pressure injector
   8 TDC sensor
   5 Engine-speed/reference-mark sensor
   6 EGR valve
d) 9 Engine temperature sensor
   6 Rail pressure sensor
   4 Ignition coil
   3 Purge control valve

Question 9:

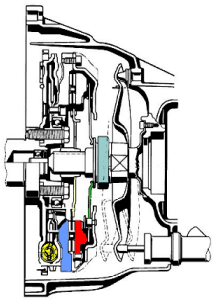
An oil/water heat exchanger is faulty. A customer wants to know whether he can do without it You answer: "No, because"



a) It lowers the coolant temperature
b) It warms the engine oil after cold starting and cools the engine oil at high oil temperatures
c) It cools the turbocharger oil flow
d) It reduces the peak combustion chamber temperatures

Question 10:

Explain to a customer why there are towing restrictions for vehicles with automatic transmission



a) Because of wear on the multi-plate clutch
b) Because of wear on the brake bands
c) Because of wear on the lock-up clutch
d) Because the transmission oil pump does not run, thus making lubrication critical

Answers: 1d) 2b) 3c) 4a) 5b) 6a) 7c) 8a) 9b) 10d)