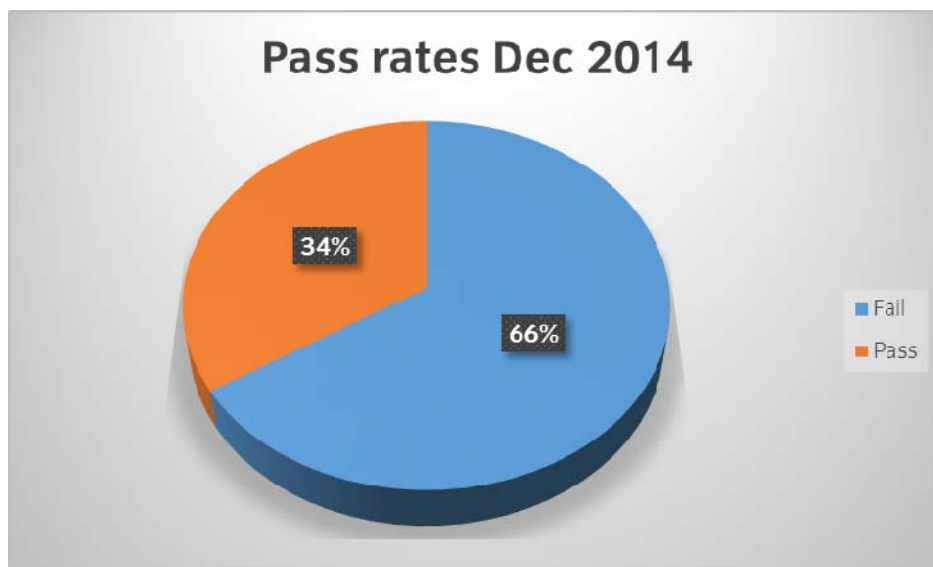


3905 Motor Vehicle Engineering Examiner's Report

Unit 3905-025
Title Engine Systems 3
Series December 2014 series



***Note – this is an overall statistic across the whole unit and not centre specific.**

The purpose of this report is intended to assist lecturers in preparing their students for examinations by informing them of common errors, shortcomings and omissions which frequently occur on answer papers, and also to highlight areas which consistently fail to meet the requirements of the syllabus. Examiner feedback is broken down by syllabus topics.

1. Engine components and maintenance

Most candidates were aware of the function of the piston and camshaft, but many confused the function of the connecting rod with that of the crankshaft. Frequently the reasons for re-facing a cylinder head were far too vague – ‘worn out’ occurred in many answers. To gain marks faults must be specific – such as ‘distorted’ or ‘badly scored’ etc.

2. Valve timing and associated timing diagram

The valve timing diagrams were reasonably well presented, but often the direction of rotation was not shown and the static ignition point was not attempted. Many had difficulty in calculating the number of degrees the inlet valve was closed, usually because they forgot the cycle is 720°. Answers relating to the reason for overlap and exhaust valve lead were often too simplistic to gain marks.

3. Fault diagnosis

Frequently, candidates are not gaining marks because the question was not read properly. The question was around common engine faults were given, and candidates had to state the symptom each would produce, on a road test other than lack of power.

At least half of the candidates gave the cause of the faults, and even those who attempted to describe the road test symptom invariably stated 'lack of power'. It would be well worth while for lecturers to emphasise these shortcomings to their students during examination revision periods.

4. Adjusting OHC valve clearance and fault diagnosis

The syllabus reference in the first column deliberately has the word 'adjusting' and 'ohc' in bold print. This is to emphasise to lecturers that the vast majority of candidates described how the clearance is checked, and was always followed by describing how an OHV arrangement is adjusted. Few described the use of selective shims to re-set the clearance on OHC engines, even though this was perfectly clear in the accompanying illustration.

5. Diesel fuel systems

Most candidates were able to identify each type of pump and describe the arrangement for stopping the engine. Often, diagrams of the fuel supply system are inadequate, lacking in the return system and indicating the different pressures.

6. Electrical systems and fault diagnosis

The faults for the stated symptoms were very well answered and some pleasing descriptions were given. The only significant part of this question which caused difficulty was asking for the reason for altering the point of ignition timing in relation to piston speed – very few referred to the constant time essential for complete combustion.

7. Measurements

Judging by the answers, it appears very few candidates have ever re-adjusted a micrometer of any size – let alone as 25 to 50 mm instrument. They must surely measure components on a daily basis at this stage in their training, and checking instrument accuracy is a pre-requisite to any measuring task. Methods of checking ovality and taper were poorly answered and frequently indicated only one point at which the measurement should be taken.

8. Diagnostic procedures

This question listed a series of faults and required candidates to list an appropriate symptom and the diagnostic equipment required to confirm that fault. Those who thought about their answers before answering did very well with this question, those who did not think about it gave the original cause of the fault, and inevitably followed it up by giving rectification procedures.

9. Cooling systems

Generally well answered, but far too many suggested the test for a blocked radiator core should be carried out with a pressure gauge instead of describing a flow test.

10. Exhaust systems

Most candidates provided excellent answers. The sketches of the method of suspending the system from the body were not very neat, but understandable in most cases. Safety aspects were well answered as usual.