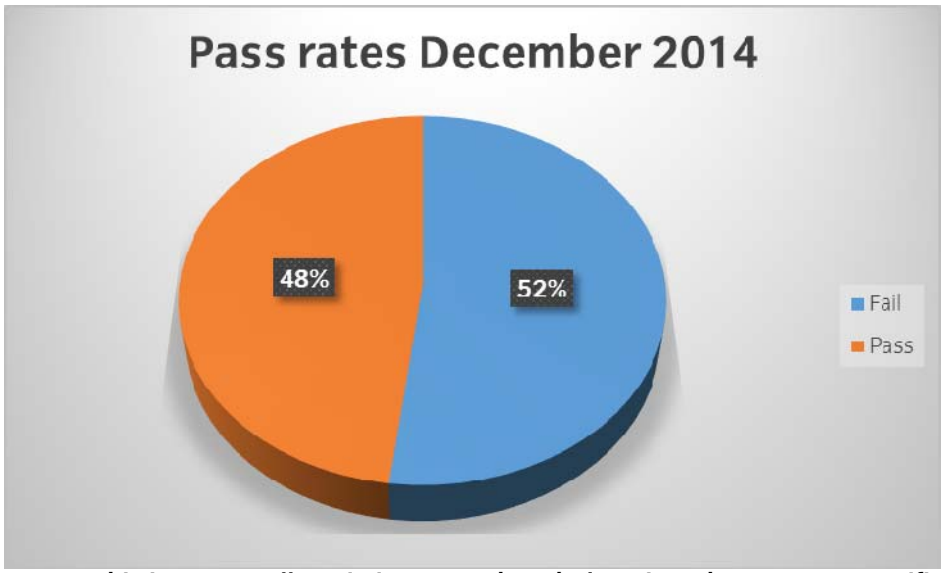
3905 Motor Vehicle Engineering
Examiner's report

Unit 3905-026
Title Chassis 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. Safety in relation to workshop tasks

These questions would often be around listing workshop tasks which require PPE and tasks which could cause various injuries. Many simply list totally unrelated tasks – thus not scoring any marks.
Barrier cream does not protect against hot surfaces, ear defenders are not necessary when changing engine oil, and 'lifting heavy things' is not an acceptable answer to causes of back injuries. Marks simply thrown away because of lack of thought about what sort of information the question was asking for.

2. Manual transmission systems

Answers for this area were well answered. Most were able to state the functions of components and where friction is desirable/undesirable. Also some excellent answers relating to the causes of each symptom. Most gained good marks here.

3. Automatic transmission & fault diagnosis

Again some very pleasing and well thought out answers to this topic – particularly good where the responses to the section relating to the effects of lack of maintenance and some excellent sketches of the simple epicyclic gear train.

4. Independent front suspension principles and calculation

The parts relating to identification of various types of IFS and road test symptoms were good overall. Unfortunately, not reading the question arose again, when instead of explaining the effects accident damage would have on the suspension *geometry* many explained the effect it would have on vehicle handling etc.
The calculations were well done, other than by those who divided the figures instead of multiplying them.

5. Use of workshop equipment for maintenance and fault diagnosis

A mixed set of answers to this question – some were able to describe *how* the equipment was used (which was the object of the question) whereas others contented themselves with simply explaining what it was for. There were very good sketches for the steering questions.

6. Power assisted steering systems & fault diagnosis

The only real criticism of the answers to this question relate to good workshop practice (or lack of it). Few candidates suggested the front of the vehicle should be lifted when turning from lock to lock during the bleeding process – the remainder left the front wheels firmly on the ground during bleeding.

7. Diagnostic technician – interpretation of customers symptoms

Here a series of scenarios were given to the candidate who was acting as a diagnostic technician. The descriptions of the faults were typical of those which would be given by a non-technical customer, and it was most pleasing to see some well thought out and logical answers given to each one. Perhaps the most common error was in relation to the 'pulsating brake pedal' where many suggested it was caused by air in the system.

8. Braking systems – principles and adjustments

This was another well answered question – albeit without any calculations. Some descriptions of the handbrake adjustment procedure were sketchy, but overall a question producing good marks for the majority.

9. Transmission drive shaft arrangements

One or two problems arose with parts of this question – few were aware of the function of the viscous coupling, and there was a lack of understanding of transmission wind-up. Perhaps this is an issue which should be addressed in the Health and Safety lectures.

10. Final drive systems and oil seal replacement

Some very good sketches of this slightly complicated rear hub layout, together with appropriate explanations relating to the reason it is used on heavy vehicles. There were unfortunately numerous poor descriptions of the procedure for oil seal replacement – few suggested using an alignment sleeve, and even fewer topped up the oil level on completion.