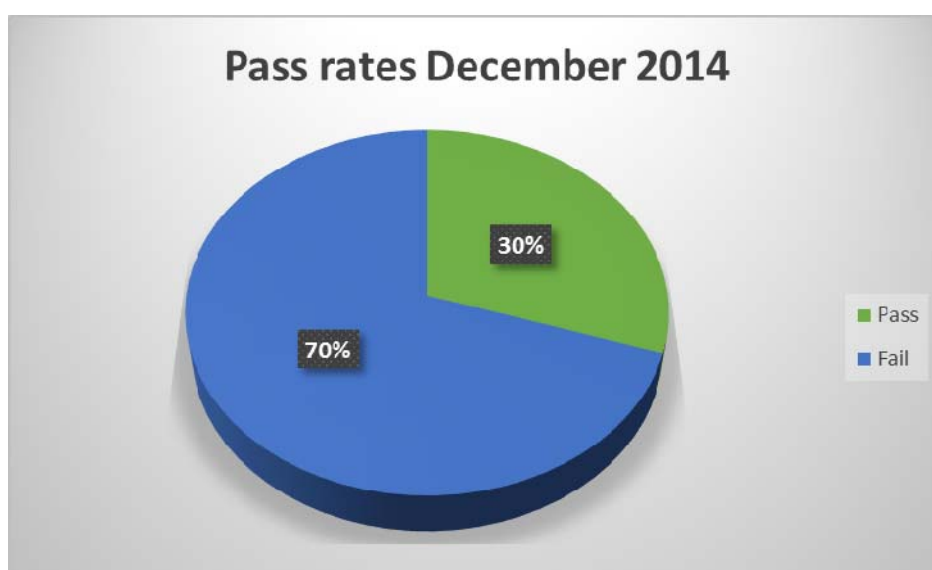


3905 Motor Vehicle Engineering Examiner's report



Unit 3905-027
Title Maths, Science and Electronics 2
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. Algebraic operations

No candidates managed to score full marks on this three part question. The vast majority scored nothing or just one mark for the part in relation to “the algebraic expansion of powers of a binomial” and only a small number of candidates correctly answered the part on identifying the binomial coefficient.

2. Trigonometric operations

A minority of candidates scored full marks on all three sections. Many candidates were able to explain the relevance of the All, Sine, Tan and Cos. Very few candidates used a common axis to display the curves required. Some candidates failed to apply the cosine rule with many getting absurd results for the rod length. Some tried using other methods to calculate the answer in spite of the question stating the cosine rule was to be used.

3. Statistical operations

Candidate answers to this area showed extremes – from full marks to zero. Some candidates cleverly used the variables given in part of the question as the basis of their answers to the other parts. Very few candidates were able to declare the four main stages to a typical statistical survey.

4. Preparing reports to identify the types and properties of materials used in motor vehicle engineering and apply calculations

Virtually no candidates scored full marks and with many scoring none. It appears that they struggled to define stress and strain and many failed to use both words and symbols in their definitions.

5. Preparing reports to identify terms used and to apply calculations associated with the combustion process

Only a few candidates were able to score good marks on the law of thermodynamics. Many were successful in stating the purpose of a heat balance sheets but failed to identify items of information necessary to determine the heat balance for an engine.

6. Preparing reports to identify the terms used and apply calculations associated with simple harmonic motion

Overall, this question was not answered in full but many candidates. None of the candidates attempted to answer the part around rich mixtures generating CO.

7. Preparing reports identifying the terms used and apply calculations associated with centripetal and centrifugal force

Preparing reports identifying the terms used and apply calculations associated with the energy of rotation

Candidates managed well in defining centrifugal force, centripetal force and moment of inertia with symbols and diagrams. However, many were unable to apply the right formula when calculating things such as angular velocity, linear velocity and centrifugal forces.

8. Preparing reports describing binary (electronic) system of digital computers

Preparing reports and convert numbers from one number base to another

With the exception of the section on KAM, the majority of the candidates answered well on binary arithmetic.

9. Collect information describing the function and role of microelectronic systems within motor vehicles

Collect information identifying and applying interrupts

There appeared to be a lack of knowledge on what an interrupt is and its functionality. In addition to that, it was evident that the two main types of interrupt (hardware and software) were not well known.

10. Collect information identifying, with the use of diagrams, the main components of microprocessor -based systems

Preparing reports describing the principles and use of electronics in anti-lock braking (ABS) systems

Good knowledge on most of this question but a downfall on the block diagrams required to show a centrally positioned ECU.