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1998 HSC

**EXAMINATION
REPORT**

Rural Technology

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1998 HIGHER SCHOOL CERTIFICATE EXAMINATION

RURAL TECHNOLOGY

The number of candidates in 1998 was 75.

SECTION I – FARM MACHINERY

Question 1

- (a) This part was generally well answered, with most candidates correctly describing the shape and size of the bales made by the baler shown.
- (b) (i) The description of the function of the flywheel was generally below average.
- (ii) (iii) The function of the plunger was generally well described.
- (c) Here most candidates correctly named three types of machinery used to harvest hay for baling; no one named four types.
- (d) (i) Few candidates could name the other optimum shaft speed for older or smaller bales.
- (ii) Many answered 'Switch off tractor'; the question was generally well answered.
- (e) Most candidates answered this part very well.
- (f) This was also answered well.
- (g) (i) Answers here were generally good.
- (ii) Candidates answered this part well.
- (h) (i) Most candidates answered this part correctly.
- (ii) This part was obviously much harder, since only approximately half of the candidature answered correctly.
- (i) (i) Only a few candidates could name Koertz, the inventor of the nineteenth century mechanical wool press.
- (ii) This part was very well answered.
- (j) (i) This part was also very well answered.
- (ii) Answers here were very good.
- (k) Here only a few candidates knew kW.
- (l) Few candidates knew the answer.

SECTION II – FARM STRUCTURES

Question 2

The majority of candidates answered this question reasonably well.

- (a) (i) This part was well answered, the only problem being that the number of zeros was either too many or too few.
- (ii) This was well answered by all candidates.
- (iii) All candidates mentioned erosion, but not all explained the purpose of the grassed waterways as being due to the need to slow and distribute the water on maximum flow.
- (iv) Most candidates could read the contours and, thus, correctly marked the highest point on the property.
- (v) A wide variety of responses were submitted, with most being considered suitable, eg access central and close to water.
- (vi) This part was well answered.
- (b) The majority of candidates handled this part well.
- (c) The majority of candidates misread the question and, consequently, answers were not good.

SECTION III – FARM GRAPHICS

Questions 3, 4 and 5 were either well or poorly answered.

Question 3

The majority of candidates understood the question and assembled in the correct order the parts of the anti-vibration mount.

Question 4

Many candidates either did not attempt this question or did it poorly. Students should be aware that developments are:

- cylindrical
- conical
- triangulated

and that all need true lengths.

The question was a simple cylindrical development; some candidates made it difficult by trying to use triangulation.

Question 5

This question was well done. Some candidates, however, did not attempt to draw the isometric curves.

SECTION IV – RELATED MATERIALS SCIENCE

Question 6

The quality and depth of responses to this question were generally poor.

- (a) The concept of mass and weight was reasonably well handled.
- (b) Most candidates could not convert km/h into m/s.
- (c) (i) This part was well answered by the majority of candidates.
(ii) Here many candidates could not or did not convert minutes to seconds.
- (d) The addition of two vectors was poorly handled while the concept of equilibrant force was not well known and its application was not widely understood.
- (e) This question produced a wide variety of incorrect answers.
- (f) Although the concept tested was not well understood, the majority of candidates calculated the correct answers.
- (g) Most candidates appeared to have guessed the answers, since the majority produced incorrect answers.
- (h) This part was badly answered with 'burn' or 'bury' being the most common response.
- (j) EMC was not widely known.
- (k) Very few responses were correct since most candidates did not pick the fulcrum point, which gave the incorrect force X distance relationship.

SECTION V – FARM WATER SUPPLIES

Question 7

This question was well done.

- (a) Many candidates did not know the term SE ratio and, therefore, found the question hard to answer.
- (b) Students should always show working in calculation type questions. Marks are allocated for working, correct formulae and correct data substitution. Many candidates simply wrote the answer, which, if incorrect, could not gain marks.

- (c) A number of candidates could not explain how circular motion produced by the windmill needs to be changed to reciprocating motion necessary on a piston pump by a crank.
- (d) Here candidates did not 'clearly' show where the 'critical measurements' were.
- (e) Many candidates were unaware of laser levelling as a process.
- (j) Students should rule lines on this type of graph to indicate they understand the meaning of head loss. Marks could be given for understanding, even if the answer is wrong.

SECTION VI – TOPICAL STUDY

COMPUTERS AND MICROCHIPS IN FARM MACHINERY AND ON THE FARM

Question 8

Some candidates did poorly on computer sprays but reasonably well on the generic question; others did well in all areas.

- (a) (i) This part was poorly answered.
(ii) and (iii) Both these parts were well answered.
(iv) and (v) Answers here were reasonably good.
- (b) This part was better answered.

REGIONAL PROJECT: FARM STUDY

It must be emphasised that although this is a farm study, there were a small number of candidates who wrote a report on an industry of their choice rather than on a particular farm. In writing the report the candidate should include all items of machinery and equipment used on a specific farm. For the crop section of the report the pertinent areas are clearly indicated in the syllabus document.

In writing the report on the livestock activity the candidates should consider this question; 'If I were starting a livestock operation on a recently cleared area, what equipment and facilities would I require to purchase or build?' This would apply to all types of livestock operations.

The following points need to be discussed:

- (i) In the cropping report, descriptions of tractors and irrigation equipment are receiving greater explanations than ploughs.
Steps in the operation of a diesel engine are not required in the report.
- (ii) In writing a report on a farm, candidates should have visited the property at least once. During this visit photographs should have been taken. Pictures from pamphlets and photocopies should not be used. It is a specific property that is being reported upon and

the report should feature the equipment used on that property. Some candidates include too many photographs when only one or two would be sufficient. The question to be asked should be 'Is the photograph necessary and does it add to my description of an activity or machine?'

The clarity of the photographs needs to be considered, as some examples do not do justice to the candidate's work.

Too many candidates draw fences, combine harvesters and shearing handpieces, rather than photographing them.

Computers were used to produce many reports which were often spoilt by untidy hand written captions for photographs. It is suggested that guidelines be used for these hand-written captions.

- (iii) A half-page description of the farm visited should precede each section. The description should include the size of the property, soil type, climatic conditions, crops grown and reasons for growing the crop. The livestock activity should have a similar description.
- (iv) The format of the project should be planned before starting, with the requirements of the syllabus being checked to ensure that all parts will be covered. A small number of candidates are still being disadvantaged because they devote too much of the report to the crop or animal type.
- (v) Spelling needs to be checked. As most candidates use computers to complete the reports it is easy for a spell-check program to be used. Common words spelt incorrectly are mulesing, auger, principles, diameter, metres, litres and hydraulics.
- (vi) Metric measurements should be used.
- (vii) It is important that each project should be proof-read to ensure that all the parts are in the correct order and that the photographs relate to the specific section of the report.
- (viii) Machinery should be correctly named, eg disc harrows as distinct from disc ploughs.
- (ix) Drawings of sheds, movements of animals and yards should comply with AS 1100 Drawing Standards and should be produced using a pencil and drawing equipment. It is inappropriate to include photocopies of promotional drawings produced by a company which builds raised board shearing sheds. These can be redrawn if necessary, as the purpose of the drawing component of the syllabus is for the candidates to be able to use the AS 1100 Drawing Standards. Circles should be drawn using a compass or a circle gauge.
- (x) If a farm did not engage in primary tillage or fertilising activity during the period in which the report is being written, the candidates should indicate how it was carried out in the past or describe an activity which replaces it. Some limited tilling processes rely on spraying applications to destroy weeds.
- (xi) There is no need to draw a fully labelled shearing hand-piece and the drive mechanism. A simple explanation of the operation and a simple sketch of the shearing cutters would be more appropriate.

(xii) If photographs are glued into the report, candidates must ensure that pages are not stuck together. One report was assembled in which the pages had been recently glued and the pages had to be carefully torn apart to be read.

(xiii) Too many candidates photocopy pages from textbooks rather than using photographs.

Candidates have approximately 12 months in which to write the report but some efforts looked as though the work were completed in a short period of time.

Written work with much crossing out and excessive use of correcting fluid detracts from the appearance of the report.

While it is not compulsory and candidates will not be penalised if the report is hand-written, the use of computers is to be encouraged. Students are encouraged to be computer literate and the use of the computer serves as preparation for tertiary studies where assignments are expected to be typed.

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