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1997 HSC

**EXAMINATION
REPORT**

**Rural
Technology**

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**1997 HIGHER SCHOOL CERTIFICATE
EXAMINATION REPORT
RURAL TECHNOLOGY**

In 1997, 102 candidates presented for the 2 Unit examination in Rural Technology and the majority of these were well prepared. The small but steady increase in the number of candidates is pleasing.

2 UNIT

This was the first year of a modified format involving the removal of the internal choice in the Farm Graphics Section; the candidates, who were required to complete one more question than in 1996, were also issued with an equation sheet.

Section I Farm Machinery

Question 1

The majority of candidates understood most parts in this question.

- (a) (vi) 2 There was confusion as to whether the arrow in the diagram pointed to the skid plate or the apron. Answers referring to either were accepted.

- (x) Candidates could not give two reasons for the use of gears on the machine in Figure 1.

- (e) Many students did not understand the term *engine capacity* and the calculation included poor mathematics.

- (f) The term *engine compression* was not widely known.

Section II Farm Structures

Question 2

This question was well answered by the majority of candidates.

(a) Parts (i), (ii), (iii), (iv), (v), (vi) and (vii) were all answered well, with a good range of correct answers being submitted.

(b)

and Both parts were handled correctly by the majority of candidates.

(c)

(d), (e)

(f), (g)

and These parts were also answered correctly by the majority of candidates, although in many cases

(h) technical language was misused, eg, *conductor* instead of *insulator*.

Section III Farm Graphics

Question 3 Assembly Drawing

- The given centre lines were used by most candidates. A small number, however, failed to understand their purpose. A number of candidates failed to select the correct view for the front view and, as a result, the incorrect top view was drawn.
- Terminology and use of AS 1100 is improving, but dimensioning standards still need to be improved.
- In drawing, the top view and front view should be positioned with the top view drawn directly above the front view. Many students failed to do so.
- A number of candidates completed the drawing, but included hidden detail lines on the views. This is not necessary as they were asked to complete an assembly drawing in which hidden lines are shown. Similarly a small number of candidates sectioned the drawing although no section lines were indicated; this indicates that candidates need to read the questions carefully.
- Very few candidates were able to draw the representation for a broken shaft correctly.
- The small hole on the top of the bracket was missed by a number of candidates, while others confused the diameter with the radius, drawing the hole twice the required size. The majority failed to put the second centre line on this hole.

Question 4 Development

This question is now compulsory; it is no longer optional as in previous years

90% of the candidature either had no idea about developments or failed to answer the question. The other 10% failed to score full marks because of poor drawing skills.

Question 5 Isometric

This question was well answered by most candidates. Accuracy was a problem in some drawings and, whilst a number of candidates drew circles freehand, many used isometric circle templates and this is quite acceptable.

Section IV Related Materials Science

Question 6

(a), (b)

and These sections were all well answered.

(c)

(d) Answers here were poor.

(e) About 50% of candidates answered this section correctly. A problem arose here because candidates multiplied by 1000, associating it with the kilogram value of the mass.

(f)

and These sections were not well answered.

(g)

(h) Answers here were poor, with many candidates failing to convert km/h to m/sec.

(i) This part was well answered by the majority of candidates.

Section V Farm Water Supplies

Question 7

(a)

and These questions were well answered.

(b)

(c) This section was not answered as well, since many students failed to mention chemical methods. Those who would have used a mechanical technique described it so poorly that it meant nothing.

(d) This question was well answered.

(e) On the whole, this question was also well answered, although in part (i) a large number of candidates could not describe the system satisfactorily.

(f) Parts (i), (ii) and (iii) were all poorly answered by the majority of candidates.

(g) (i) *Flocculation* was not understood by a number of candidates.

- (ii)
and These parts were well answered.
- (iii)

- (h), (i)
- (j), (k)
- (l), (m)
- and* A wide range of answers was accepted in answering these questions.
- (n)

Section VI Topical Study

Power Transmission

Question 8

This question was well answered, except in the case of the following.

- (a) (ii) The purpose of the overrunning clutch was not widely known.
- (f) (i)
and Both parts were poorly answered and showed little understanding of hydraulic principles.
- (ii)

Regional Project: Farm Study

These projects differed little from those of previous years.

It must be emphasised that, although this is a *farm study*, a small number of candidates wrote a report on the industry chosen rather than on a particular farm. On writing the report students should include all items of machinery and equipment used on the farm. For the Crop section of the report the pertinent areas are clearly indicated in the Syllabus.

In writing the report on the livestock activity, students should consider the following: *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 carefully considered:

- (i) Descriptions of tractors and irrigation equipment tend to be given more attention than ploughs. Steps in the operation of a diesel engine are not required in the report.
- (ii) In writing a report on a farm, students should have visited the property at least once; during this visit photographs should have been taken. Pictures from pamphlets and photocopies should not make up the greater part of the visual presentation. Some candidates tend to include too many photographs when only one or two would be sufficient. The question to be asked by the student is: *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, since some examples do not do justice to the candidate's written work.
- (iii) A half-page description of the farm visited should precede each section and should include the size of the property, soil type, climatic conditions, crops grown and reasons for growing the crop.

- (iv) The format of the project should be planned before starting and the requirements of the Syllabus must be 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. Three pages devoted to lists and descriptions of the types of wheat or of cattle are not necessary.
- (v) Spelling needs to be checked. Since most candidates used computers to complete the reports, it is easy for a spell check program to be used. Common words spelt incorrectly are *tractor*, *auger*, *principles*, *metres* 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 appropriate section of the report. Naming of the photographs is important as well.
- (viii) Machinery should be correctly named, eg, *disc harrows* as distinct from *disc ploughs*.
- (ix) Drawings of sheds, movement of animals, and yards should comply with ASA 1100 Drawing Standards and should be produced with 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 any fertilising activity in the period in which the report was written, the candidates should either indicate how it has been 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 sketch of the shearing cutters would be more appropriate.
- (xii) If photographs are glued in the report, students must ensure that pages are not stuck together.

Students have approximately 12 months in which to write the report, but some efforts looked as though the work was completed the night before. Written work with much crossing out and excessive use of correcting fluid detracts from the appearance of the report.

Whilst 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 for these projects will be a form of preparation for tertiary studies when assignments are expected to be typed.