

2007 HSC Industrial Technology Scripts of Andrew Harvey

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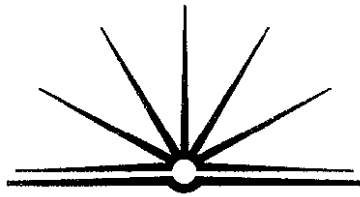
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Examination Mark: 95/100



BOARD OF STUDIES
NEW SOUTH WALES

2007

HIGHER SCHOOL CERTIFICATE
EXAMINATION

	5	2		
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Centre Number

1	7	8	0	7	7	0	6	
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Student Number

Industrial Technology

Graphics Industries

General Instructions

- Reading time – 5 minutes
- Working time – $1\frac{1}{2}$ hours
- Write using black or blue pen
- Draw diagrams using pencil
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of this page and pages 5, 9, 13 and 17

Total marks – 100

Section I Pages 2–12

60 marks

- Attempt Questions 1–3
- Allow about 55 minutes for this section

Section II Pages 13–20

40 marks

- Attempt Questions 4–5
- Allow about 35 minutes for this section

Section I

60 marks

Attempt Questions 1-3

Allow about 55 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 1 (20 marks)

(a) ²
Introduce QC checkpoints at various stages of production, before, after, & mid. QC managers would be responsible of ensuring high standards are met. Fixing products that fall below standard would maintain quality.

(b) ³
Conduct interviews with staff, research through company policies/documents. They could also observe the current facilities & practices / take notes. They may also develop a computer model of the production process/lia.

Question 1 continues on page 3

Question 1 (continued)

(c) (i) It refers to having things done automatically without human intervention. 1

(ii) It can minimise errors, it can do things faster, and staff don't need to spend time doing/over looking the process, hence less money is spent. 3

(d) more managers may be needed. Also a different management structure may be needed. (ie flat or hierarchical). 4

Question 1 continues on page 4

Question 1 (continued)

(e)

specialist

7

components

advantages

disadvantages

Advantages are that your business can focus on the parts it specialises in and not have to spend time or money on the all of the processes. Parts may be of higher quality as that ~~company~~ / organisation may specialise in that area.

Disadvantages: It may cost a large amount of money. The outsourcing may take time. The produce may have problems and ~~may~~ ^{may} not meet your standards. You may need to spend time and money ensuring this. (e.g. parts may contain toxic substances that you did not know about.)

End of Question 1

	5	2		
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Centre Number

1	7	8	0	7	7	0	6	
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Student Number

Section I (continued)

Marks

Question 2 (20 marks)

(a) Identify

minimise waste :

2

* Use more efficient machinery that consumes less materials.
* Recycle/reuse the waste.

(b)

3

The ~~can~~ ethics, values, ideas and attitudes of the people who are working at a workplace.
Workers could receive training on reasons why things are done a certain way and the outcomes if things are not done properly.

Training could be received ~~by managers~~
by managers or consultants.

It can be done on/off site and during / not during work hours.

Question 2 continues on page 6

Question 2 (continued)

4

(c) ~~On~~ Employees must follow the relevant government legislation (although much is raised at conferences).

The impact is that employees may be fined or need to attend court and can be sent to jail, if they don't abide by the legislation.

(d) It can reduce costs and people don't need to spend the ~~time~~ ^{time} on training, instead they can continue with other duties. Also the computer doesn't forget things, things that may be crucial to safety. However, computers can ~~cause~~ ^{cause} ~~questions~~ ^{questions} from employees and, workers being trained by computers may become irritated with the computer.

Question 2 continues on page 7

Question 2 (continued)

(e)

7

IR, Unions, retraining/tech,
issues

Disputes may occur relating to pay rates, work conditions, work hours, holidays, etc.

Also certain staff may become redundant

Unions may negotiate with the management and would suggest retraining redundant staff in other areas or if not then awarding a redundancy package. The industrial relation laws would be critical as they stipulate many of the personal issues.

Independent bodies may also be contacted if problems occur

End of Question 2

	5	2		
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Centre Number

1	7	8	0	7	7	0	6	
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Student Number

Section I (continued)

Marks

Question 3 (20 marks)

1	Ja
2	Fe
3	M
4	Ap
5	M
6	Ju

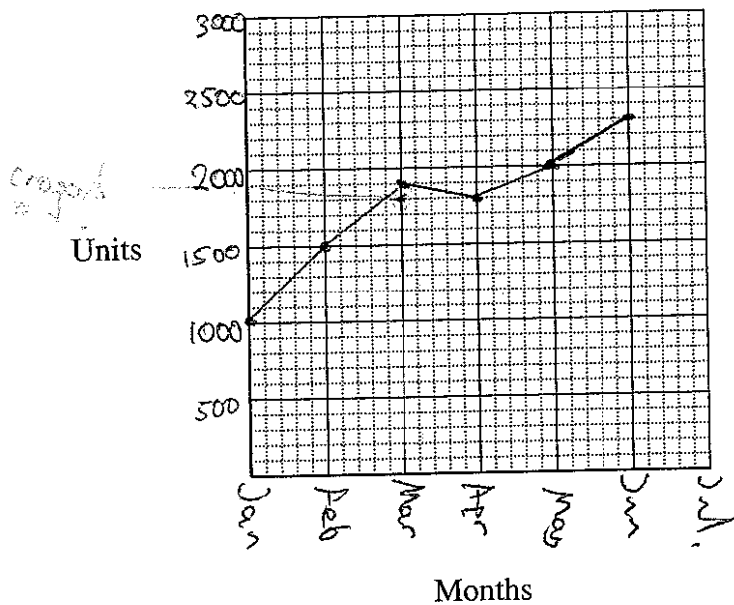
(a) ² Having targets pushes the workers/managers to meet the target. They may provide incentives for when the targets are met. Also the targets may predict the demand for the product which gives them an idea of how many they would sell and hence need to produce.

Question 3 continues on page 10

Question 3 (continued)

3

(b)



(c)

4

It quickly, simply and clearly informs the people of any things they need to know. ~~The~~ eg. whether it can get wet or not, or needs to be upright or bit fragile.

The symbols are universally understood. And can be identified without having to search for or spend time reading the fine print

Question 3 continues on page 11

Question 3 (continued)

(d)

age 10 500 units for

4

<i>Total cost</i>
\$2100
\$7350
\$3675
\$7875
\$2100 21000
\$2

Question 3 continues on page 12

Question 3 (continued)

(e)

computer-developed techniques and hand-drawn
techniques development of packaging artwork.

7

Judgement: Computer-developed ~~with~~ techniques are more effective.

Reasons: Using computer for the artwork allows for the artwork to be developed faster as you can use templates/artwork libraries, etc. Also generally the graphics are neater and clearer to understand.

If a ~~case~~ vector based software is used the artwork can be produced at any required scale.

Also computer techniques allow for the design to be sent to the printer electronically. Whereas hand-drawn ~~with~~ techniques would require the image to be scanned, which presents its own problems.

Also changes ~~can~~ can easily be made on computer, but other are difficult or cannot be done by hand-drawn methods.

End of Question 3

	5	2		
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Centre Number

1	7	8	0	7	7	0	6
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Student Number

Section II

40 marks

Attempt Questions 4-5

Allow about 35 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 4 (20 marks)

(a)

They are drawn to scale so that people can measure measurements off the drawing. Also so that large objects such as buildings can be represented on a sheet of paper, and also so that small items like a watch mechanism can be drawn easily and small detail can be understood.

2

(b)

of orthogonal and pictorial drawings.

3

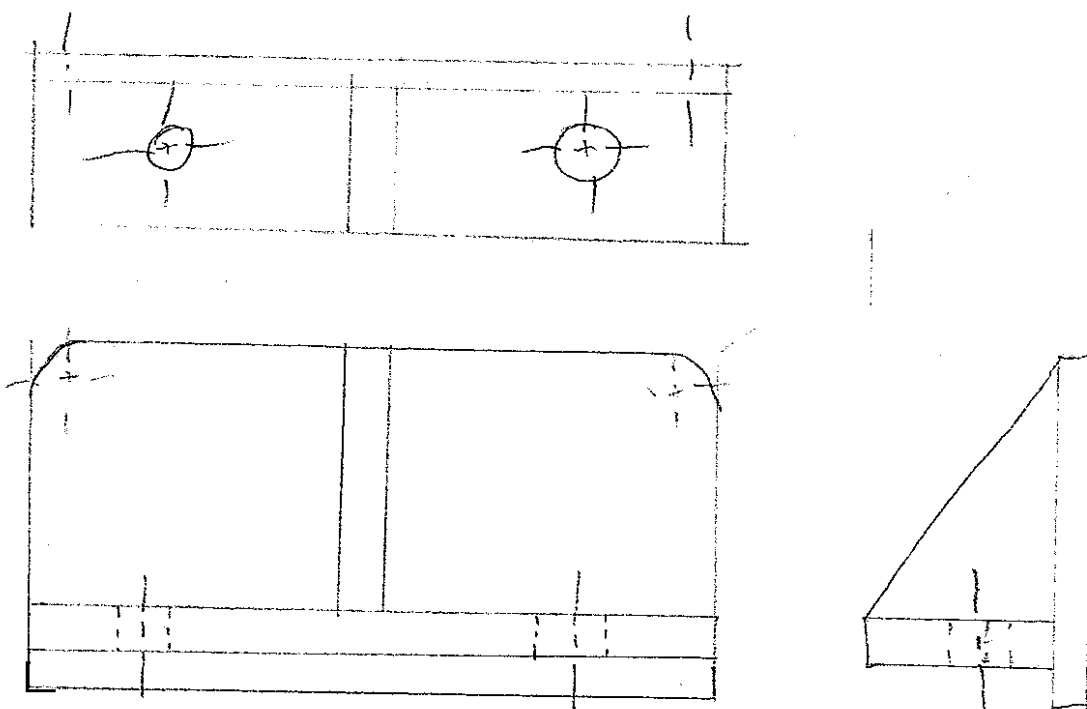
Orthogonal & pictorial both use ~~projection~~ parallel projection lines (except for perspective which is a pictorial that does not use parallel projection lines) but the main difference is that in orthogonal the main faces of the object are parallel to the projection plane, whereas in pictorial drawings the main faces of the object are not parallel to the projection plane. In terms of what you see on the projection plane, orthogonal drawings only show one face per view, whereas pictorials show all three faces on the one view. Orthogonals have no distortion whereas pictorials do have distortion. Orthogonals are hard to visualise the final design whereas pictorials are easier to visualise.

Question 4 continues on page 14

Question 4 (continued)

(c)

4



Question 4 continues on page 15

Question 4 (continued)

(d)

They are used to ~~map~~ as they show what the buildings will look like from the eye. They are a true representation of ~~the form~~ what it will look like. Because arch. technical designs are ^{relatively} a large scale, the perspective distortion is huge compared to say a ~~map~~ rubber where the persp. distortion is less. Hence perspectives are used to show large buildings as they would appear.

Question 4 continues on page 16

Question 4 (continued)

(e) presentations.of drawing methods i final 7Identify

client:

council and explain why they would be appropriate.

* Detailed orthogonal floor plan → presented to council
 * Front/side elevations → as the council require these drawings so that they can send some to nearby residents and so that they can ensure that the proposal meets their policies/regulations/statutory laws.

The client ~~would~~ also require a copy for reference. ~~As~~ These are appropriate as they show all the technical detail.

* Site plan - shows the location of the building on block/~~er~~ ~~er~~ ~~er~~ /orientation of block. The council would require a copy of this.

* Rendered Perspective Drawings - The client may require these to visualize the final design. At appropriate cost, they are simple and easy for non-technical people to understand. These could be animated to create a flythrough.

* Sectional Drawings - Council may require these to see how the ~~the~~ building will be constructed. These are appropriate as they show the internal detail of the roof/walls/floor.

End of Question 4

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Industrial Technology
Graphics Industries

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Student Number

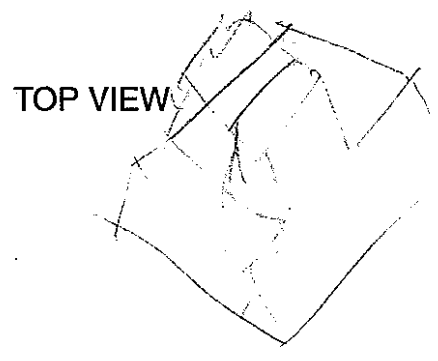
Section II (continued)

Marks

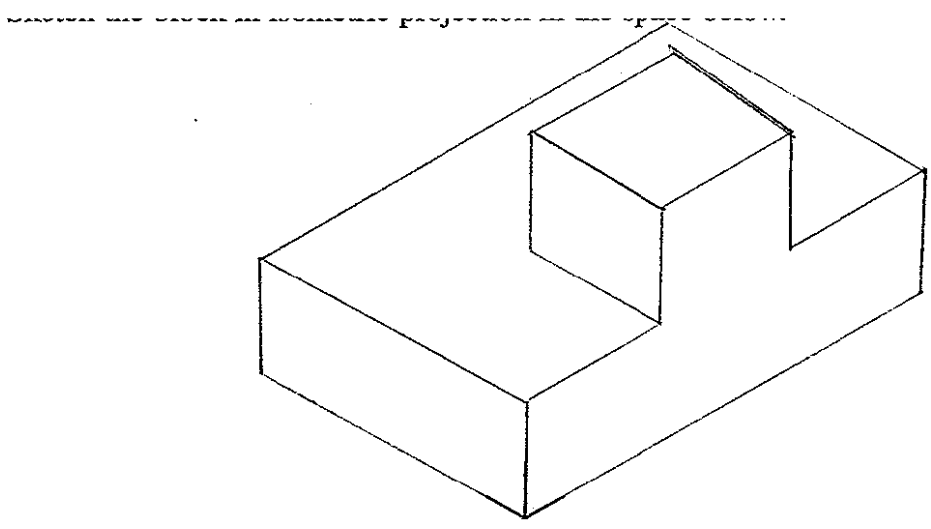
Question 5 (20 marks)

(a)

2



FRONT VIEW



Question 5 continues on page 18

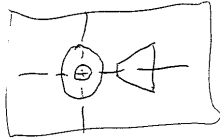
Question 5 (continued)

Marks

(b)

3

Isometric uses projection lines normal to the projection plane. Oblique the projection lines are not normal to the projection plane. The result of this is that oblique results in the receding axis to sometimes be not at a direct measurable scale. Usually the projection lines for oblique are such that the receding axis is at 45° .



ie.



Isometric has all axes at 120°



so that



(ii) Drawing symbols allow for meaning to be universally understood. It reduces the amount of explanatory notes required.

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Question 5 continues on page 19

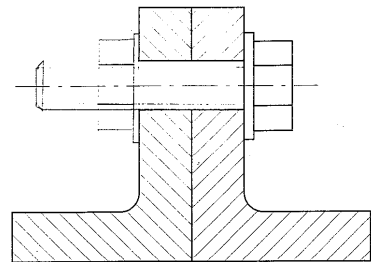
Question 5 (continued)

Marks

(d)

4

by a bolt, nut and washers.



Question 5 continues on page 20

Question 5 (continued)

(e)

computer software packages

7

the design, development and

final presentation of their products. Use

Advances have allowed for a 3D model to be made in the computer, of the final design (eg. using Solidworks/Pro-Engineer). This has allowed designers to ~~see and~~ design easier and more efficiently. They can easily modify the model and it can be e-mailed to clients so that they can inspect the progress. They can ~~hide~~ hide parts/layers to work with one part at a time. They can also see which materials are used where and how much is used. In the, they can also run engineering stress analysis/other software to test the design and see if it's mechanically strong/~~flexible~~ ^{enough} whatever be they want to test ~~enough~~. In the development stage, 2D ^{technical} drawings can be automatically generated from the 3D model. And dimensions/labeling of parts/exploded assembly ~~sections~~ ^{drawings} of all projection types can be generated ^{automatically}. In the final presentation, the 3D model can be sent to a rapid prototyping machine for a prototype to be produced. Also 3D rendering software such as 3ds max, Maya or mental ray or ~~AR~~ ~~Redo~~ ~~Man~~ can be used to create photorealistic images of the design. Software such as Autodesk Impression can also generate freehand style sketches from generated 2D drawings.

End of paper