2019 HSC Industrial Technology
Timber Products and Furniture Technologies
Marking Guidelines

Section I

Multiple-choice Answer Key

Question	Answer
1	C
2	A
3	B
4	C
5	D
6	C
7	B
8	C
9	B
10	D

Section II

Question 11

Criteria	Marks
• Correctly identifies ONE property	1

Sample answer:

- Strength in all directions.

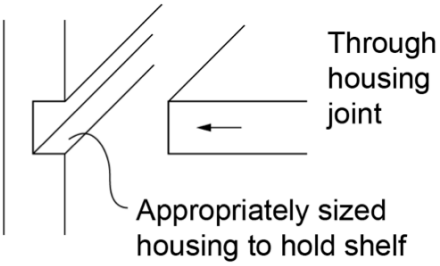
Answers could include:

- Available in large sheets
- Easy to cut and join
- Easy to finish (pre-sanded).

Question 12

Criteria	Marks
• Sketches a suitable carcass joint for this situation • Labels component parts	2
• Provides some relevant information	1

Sample answer:



Question 13

Criteria	Marks
• Correctly calculates the minimum number of sheets required with all working	3
• Provides some steps in calculating the minimum number of sheets required OR • Correctly calculates the minimum number of sheets required with some working	2
• Provides some relevant information	1

Sample answer:

For each box – 5 $\times$ 590 $\times$ 390 required.
For each sheet – 12 pieces per sheet.
Required number of boxes 150 $\times$ number of pieces per box 5 = 750 divided by the 12 pieces per sheet = 62.5

Answer needs to be 63 sheets.

Question 14

Criteria	Marks
• Describes the process involved in manufacturing the plywood	4
• Outlines the process involved in manufacturing the plywood	3
• Identifies some steps of the process involved in manufacturing the plywood	2
• Provides some relevant information	1

Sample answer:

Logs soaked in water have their bark removed. The logs are then peeled into veneers using a rotary lathe. The veneers are then cut into approximate size and then dried. This protects the wood from fungal decay to increase the mechanical properties of the finished board. Apply glue and arrange the veneers in alternating grain direction. Heat and pressure are then applied to cure the glue. Finally, the plywood is cut to the required dimensions and the surface is sanded to get the correct thickness.

Question 15

Criteria	Marks
• Provides a detailed explanation of the processes needed to produce the corner rebate joint • Includes relevant hand tools and portable power tools	5
• Provides an explanation of the processes needed to produce the corner rebate joint • Includes relevant hand tools and portable power tools	4
• Outlines processes needed to produce the corner rebate joint • Includes relevant hand tools and/or portable power tools	3
• Outlines a process needed to produce the corner rebate joint • Includes relevant hand tools and/or portable power tools	2
• Provides some relevant information	1

Sample answer:

- Mark out rebate dimensions on corner so that the cutting tool can be placed in the correct position
- Fit correct router cutter into router so that the rebate is cut to the correct size and shape
- Adjust depth of cut
- Clamp fence to timber corner at appropriate distance to ensure a straight and accurate cut
- Ensure clear passage for router to ensure the cut can be made in one pacing
- Use PPE to minimise potential risks
- Use router to cut rebate.

Answers could include:

- Marking out – details of joint width and depth
- Setting up of tools and machines required. Track saw, router, rebate router cutter, setting of fence, depth of cut
- Machinery used to cut rebate
- Assembly and preparation for gluing.

Section III

Question 16 (a)

Criteria	Marks
• Provides a detailed description of how new or emerging technologies have benefited the timber products and furniture industry	5
• Shows a sound understanding of how new or emerging technologies have benefited the timber products and furniture industry	4
• Shows some understanding of how new or emerging technologies have benefited the timber products and furniture industry	2–3
• Provides some relevant information	1

Sample answer:

Examples of new and emerging technologies could include: 3D printing, battery development, mobile phone accessories and robots.

3D printing provides a visual graphical model that can aid the design process and the development of realistic simulations and the production of individual units. The development of recent battery technology allows for the extended off-line use of technical equipment. Mobile phone accessories have enhanced communication across the work force as well as providing a means for using more sophisticated apps to carry out on-site data collection. Robots support and provide access to flexible manufacturing systems (FMS) because they can be relatively easily reprogrammed and positioned as necessary to carry out specific and repetitive tasks.

New and emerging technologies have greatly benefitted the multimedia industry. New technology has allowed the multimedia industry to be highly innovative, whilst also improving the efficiency and quality of products and services. It has enabled more comprehensive communication between managers and employees, as well as provide customers with a diverse and engaging customer experience. The efficiency and quality of multimedia products has greatly improved as a result of emerging technology. Manual labour and old mechanised processes can be replaced to improve efficiency.

New and emerging technologies can have multiple benefits to the timber industry, such as increases in productivity, accuracy and quality of work and/or products. With the increase in the quality of a product, the industry benefits from increased revenue and profit, and increase in customer satisfaction, leading to a better image for the company within the general public, leading to increased sales.

The introduction of computer numerical control (CNC) machines to an industry can have many benefits. A decrease in worker injury due to the fact that tedious processes are being done by a machine 24/7. CNC removes the issue of human error, as it can reproduce the same product, repeatedly with accuracy. Adaptability is another benefit, as CNC machines can be easily set to run different ‘part’ programs with the addition of a change in code. All of these improves the use of time in a business, which in turn can increase the profit margin for a business.

Regenerative braking is used in vehicles to recharge the battery when the brakes are applied. The kinetic energy from the movement of the car is turned into electric energy and stored in the battery. This means the engine has turned into a generator, converting energy so that it can be stored and reused. This is beneficial to the environment because it is recycling energy, which in turn boosts the image of the car manufacturer which is beneficial to the industry.

Question 16 (b)

Criteria	Marks
• Provides a detailed discussion of strategies to overcome employee resistance providing points for and/or against	10
• Provides a sound discussion of strategies to overcome employee resistance providing points for and/or against	8–9
• Provides some discussion of a strategy(ies) to overcome employee resistance providing points for and/or against	5–7
• Sketches in general terms a strategy(ies) to overcome resistance to emerging technologies	3–4
• Provides some relevant information	1–2

Answers could include:

Employers:	Employees:
• Conduct a cost/benefit analysis • Investigate government support • Need to develop a sound business plan • Benefits of possible staff reduction costs • Benefits of increased productivity/efficiency • Reduction in use of raw materials • Waste reduction • Improved WHS • Consultation with employees • Offer of voluntary redundancies	• Opportunity for upskilling • Reluctance to learn new ideas • Possibility of loss of employment • Possible increased remuneration • Increased opportunities for overtime • Cleaner work environment • Opportunity for more interesting work • Improved WHS

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Mapping Grid

Section I

Question	Marks	Content	Syllabus outcomes
1	1	Preparation of timber – edge treatment	H4.3
2	1	Timber conversion – live sawing	H1.2
3	1	Construction techniques – drilling (speed bore)	H1.2, H2.1
4	1	Timber selection – WHS issues	H2.1, H3.2
5	1	Timber joint identification	H4.3
6	1	Mechanisation	H1.2
7	1	Adhesives – PVA glue	H2.1, H4.3
8	1	Materials list – calculation	H3.1
9	1	Assembly – use of cramps	H1.2, H4.3
10	1	Preparation for finishing	H1.2, H4.3

Section II

Question	Marks	Content	Syllabus outcomes
11	1	Properties of plywood	H4.3
12	2	Carcass housing joint – sketching	H3.1, H4.3, H5.1
13	3	Calculation – economical sheet layout	H3.2, H4.3, H6.2
14	4	Manufactured boards	H4.3, H6.1
15	5	Carcass joint – cutting a rebate	H1.2, H2.1, H4.3, H5.1

Section III

Question	Marks	Content	Syllabus outcomes
16 (a)	5	Emerging technology – technical	H1.2, H7.2
16 (b)	10	Emerging technology – personnel	H1.2, H7.2