**Design & Technology**

**Adopting safe working practices, recognise and react to potential hazards**

**Materials required for questions**

* Pencil
* Rubber
* Calculator

**Instructions**

* Use black ink or ball-point pen
* Try answer all questions
* Use the space provided to answer questions
* Calculators can be used if necessary
* For the multiple choice questions, circle your answer

**Advice**

* Marks for each question are in brackets
* Read each question fully
* Try to answer every question
* Don’t spend too much time on one question

**Good luck!**

**Q1.** Which piece of safety equipment should be worn when using a pillar-drilling machine?

**A** Goggles

**B** Heat protective glove

**C** Ear defenders

**Q2.** Which statement about hazards and risks is correct?

**A** A hazard is a potential problem.

A risk is the likelihood that the problem

will occur.

**B** A risk is a potential problem. A hazard

is the likelihood that the problem

will occur.

**C** A hazard and a risk are exactly the

same thing.

**Q3.** Which symbol would suggest that the substance is irritant to skin?

A picture containing text, sign, pole, turn

Description automatically generated**A** **B**

A picture containing text, sign, pole, turn

Description automatically generated

**C**

Icon

Description automatically generated

**Q4.** Which symbol indicates a chemical that should be used in a fume cupboard?

**A** **B**

A picture containing icon

Description automatically generatedIcon

Description automatically generated

**C**

Icon

Description automatically generated

**Q5.** Which hazard symbol is used for a substance that will help other things burn faster?

A picture containing text, sign, clipart, vector graphics

Description automatically generated**A** **B**

Icon

Description automatically generated

**C**

A picture containing icon

Description automatically generated

**Q6.** Which symbol indicates a chemical that is corrosive?

A red and white sign

Description automatically generated with low confidence**A** **B**

Icon

Description automatically generated

**C**

A picture containing text, sign, pole, turn

Description automatically generated

**Q7.** What kind of substance should always be heated in a water bath, rather than by a Bunsen burner?

**A** A process whereby paint is sprayed onto the

Surface of a material

**B** A process that creates a long-lasting protective

Coating on a metal

**C** A flammable substance

**Q8.** When would wearing protective gloves and eye protection be most appropriate?

**A** When using corrosive substances

**B** When using oxidising substances

**C** When using flammable substances

**Q9**. MDF can be cut and sanded in the school workshop.

Give three health and safety risks of cutting and sanding MDF in the school workshop. **(3 marks)**

1.

2.

3.

**Q10**. Describe two health and safety precautions that should be taken when welding. **(4 marks)**

1.

2.

**Q11.** Give two health and safety issues associated with using a laser cutter. **(3 marks)**

1.

2.

3.

**Q12.** Before any manufacturing processes are carried out a risk assessment must be completed.

Outline the five steps involved in a risk assessment. **(5 marks)**

1.

2.

3.

4.

5.

**Q13.** Safe working practices are needed in modern manufacturing. Risk assessments are carried out for all manufacturing operations and processes.

Give **two** control measures, used during the pouring of an aluminium sand casting in a school workshop **(2 marks)**

**Q14.** Describe the purpose of a risk assessment in a manufacturing environment. **(6 marks)**

**Answers**

**Q1. A  
Q2. A  
Q3. C  
Q4. C  
Q5. B  
Q6. C  
Q7. C**

**Q8. A**

**Q9**.

Any three health and safety risks given from:

* The dust can cause breathing / throat / lung problems (1)
* Fine particles can cause sore eyes (1)
* General dust / particles can cause problems for others in the workshop / slippery floors (1)
* Fibres in extraction systems can potentially cause explosions / blow out (1)
* You could cut yourself when using saws (1)
* You might catch your skin on the glass paper / disc sander/ cause a scratch / remove skin (1)

**Q10**.

Two descriptions from:

* Heat / welding mask / shield / goggles should be worn (1) to avoid arc eye / damage to eyes / sparks / burns(1)
* Tinted goggles / mask (1) to avoid arc eye / damage to eyes (1)
* Ensure welding screens / curtains are closed (2) therefore no risk to others of arc eye / damage to eyes (1)
* Gloves should be worn (1) to avoid any burns to hands / splatter from welding (1)
* Apron should be worn (1) to prevent clothing catching fire (1)
* Any gas bottles should be stored correctly / chained up (1) to prevent them falling over / run the risk of exploding (1)
* Any gas bottles should be fitted with nonreturn valve (1) to reduce the risk of any ‘blowback’ / explosions (1)
* Extraction / ventilation system should be provided (1) to remove harmful fumes / gases from work area (1)
* Fire extinguisher/blankets should be provided (1) to put out any fires (1)

**Q11.**

Two issues given from:

* Fumes given off/ inhalation / use of extractor (1)
* Skin burns / burns from laser (1)
* Damage to eyes / blindness / arc eye (1)
* Materials wood / card / paper / fabric can catch fire / burn (1)
* Keep the lid closed to retain fumes / stop potential burns (1)
* Personal injury in the form of burns from hot materials / MDF / Ply (1)

(Do not accept answers related to use of gloves

or goggles)

**Q12.**

Any five of the following points:

1. Identify the hazards / risks (1)
2. Identify the people at risk / who might be harmed (1)
3. Evaluate the risks / assess the seriousness of it / likelihood of it happening (1)
4. Decide / implement / check appropriate control measures / an example of a control measure Eg. guards, PPE, signage, training maintenance, etc (1)
5. Record /store the risk assessment (1)
6. Set a review date / regularly review the risk assessment (1)

**Q13.**

* Use PPE (1)
* Use a ventilation extract (1)
* Use screens to separate user from molten metal (1)
* Sand floor to stop rapid spread of molten metal if spilled (1)
* Use specialist tools to lift crucible and pour aluminium (1)

**Q14.**

* To identify both the likely probability and potential of harm, injury or risk measured (1)
* To identify when activities or actions are deemed unsafe, or where the severity of injury is great (1)
* Ensures that they are removed, or an increased level of scrutiny is adhered to in order to make the environment safe (1)
* To identify specific PPE that a worker may need to be equipped with for a specific activity (1)
* To ensure that the manufacturing company is fulfilling its duty of care for employees (1)
* To help employers identify and minimise risk to the workforce
* To provide guidance for all employees to help reduce accidents or injuries (1)
* To ensure that annual reassessments take place and new measures/directives are implemented (1)
* To ensure all new staff are properly trained and aware of the manufacturers health and safety policy and guidance (1)
* To ensure all employees, regardless of job are aware of any dangers or risks that may occur (1)