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?

Α



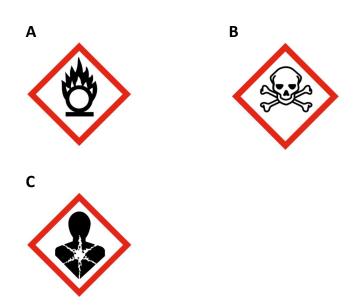
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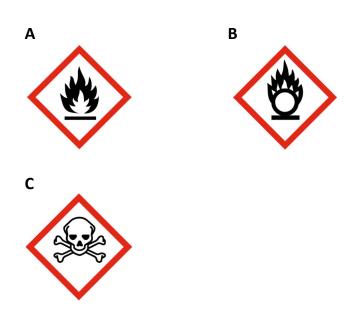
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Q4. Which symbol indicates a chemical that should be used in a fume cupboard?



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



Q6. Which symbol indicates a chemical that is corrosive?





C



- **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)