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26/28

93%

## A level Engineering

End of chapter 9, unit test.

Time: 30min

Total marks: 28



Q1A: What does COSHH stand for? (1 mark)

Control of Substances Hazardous to Health

B: Give two examples of substance which would be covered by COSHH guidance and state a control measure for each. (4 marks)

Substance Strong acid

Control measure

Keep in original packaging to avoid it dissolving any new containers you may put it in

Substance Spray Paint

Control measure

Use a gas mask (or use in a well-ventilated area) to avoid breathing in fumes.

Q2: The UK has several pieces of legislation in place to protect both workers and consumers. Discuss how an engineer might apply these legislations to the production of a new item, using examples to support your answer (8 marks)

Firstly, British Standards. The British Standards compose a number of recommendations, some guidance and some actual regulations. For example, all items of furniture must have stickers attached to show their fire safety level. This might lead the engineer of a sofa to ensure that they're using fireproof materials. The Food Standards Authority also comes under this, which might lead the engineer making a chopping board to use anti-microbial materials or finishes.

Next, Provision of Work Equipment Regulations. These are set for the safety of workplace equipment, and includes legislation about logging of equipment repairs and maintenance. This might lead to a pillar drill ~~now~~ engineer creating more thorough documentation, and including a space on the pillar drill to record maintenance dates.

Could also have discussed consumer rights act.



3: Define the following terms:

Hazard A hazard is a thing that can go wrong in the workshop. For example, a student's fingers may get trapped in the guard on a belt sander. (1)

Risk The risk is a product of the likelihood and the severity of any given hazard. (1)

Control measure A control measure is a thing done to reduce the likelihood (and thus risk) of a given hazard occurring. (1)

Q4: The image shows a pillar drill in a classroom. On the following page, create a risk assessment for its use in an A-level making task where it will be used for creating holes in sheet aluminium. In your answer, cover three different hazards. Your risk assessment can be produced in portrait or landscape. (12 marks)

- 12
- Fingers touch bit.
  - Hair/Tie in bit
  - Electrical/Installation Fault.





Hazard	1-5	1-5	1-25	Control Measure(s)	1-5	1-25
	Severity	Likelihood	Risk		New Likelihood	New Risk
The student's fingers touching the bit. This could cause injury ranging from a light graze to a chunk out of a finger. <del>This was caused</del> This was caused by a fellow student <del>for</del> bumping into them, bumping them into the drill.	2	5	6	<ul style="list-style-type: none"> <li>- Make sure the student is using the guard provided on the pillar drill.</li> <li>- Make sure the student works slowly, rather than trying to finish the work as quickly as possible to reduce the chance of a slip.</li> <li>- Ensure safety perimeters around active equipment.</li> </ul>	2	4
The student's clothes get caught in the drill bit, and it continues to spin, dragging the student in. If the student panics, they might shove their hands into the bit, and hair getting pulled out could cause head damage or just be incredibly painful.	3	4	12	<ul style="list-style-type: none"> <li>- Make sure the student is using the guard.</li> <li>- Move slowly and carefully.</li> <li>- Ensure access to a hands-free emergency stop.</li> <li>- Tie up hair and clothes.</li> </ul>	1	3
The drill is both incorrectly wired and installed. A student touches the drill and receives an electric shock, which could be painful, or cause more serious side-effects like cardiac arrest or a seizure.	3	2	6	<ul style="list-style-type: none"> <li>- Ensure that all fuses are correctly installed and set to the right current.</li> <li>- Ensure that the drill is properly grounded.</li> <li>- Possibly touch the drill with appropriate object through insulating (eg. rubber) gloves to ensure no current flows.</li> </ul>	1	3