

Nebosh Exam Action Verbs

In order to ensure you give a full answer but without wasting time providing information that isn't required there are standard action verbs which Nebosh put in their exams. Here are examples of the level of detail I think the examiners expect for each key word.

Q. List

List the three items which must be present in order for a fire to occur.

A.

Fuel, Oxygen, Source of Ignition

Q. Identify

Identify the three items which must be present in order for a fire to occur.

A.

Fuel, which can be any combustible material; Oxygen, which is normally present in the atmosphere; A source of ignition such as a spark or flame.

Q. Define

Define the term flammable

A.

Flammable is defined as a classification of substances in the Chemical (Hazard Information and Packaging for Supply) Regulations 2002 as any substances with a flash point between 21C and 55C.

Q.State

State what is commonly understood by the term "Fuel" in the sense of fire hazards.

A.

Fuel is commonly understood to be any substance which can react with in a self sustaining exothermic reaction resulting in a fire.

Q.Outline

Outline the three items which must be present in order for a fire to occur.

A.

The following three things are required in order for a fire to occur: _

Fuel – Any combustible material, this can be a gas (e.g. propane), a vapour (e.g. petrol vapour), a solid (wood or paper).

Oxygen – Oxygen is required for nearly all combustion reactions (although fires can burn in chlorine if specific conditions are met). This is usually present in the atmosphere, but can also be enriched with a source of pure oxygen such as in oxy acetylene welding.

Source of ignition – This can be a flame or an arc from welding, a spark from cutting and buffing iron and steel, a spark within a switch or from an electric motor, or from electro static discharge.

Q. Describe

Describe the items that are required and how they interact in order for a fire to occur

A.

All fires need three things, a source of fuel, a source of oxygen (or other reactive gas such as chlorine), and a source of ignition.

Putting these three things together does not guarantee a fire, they must also be in a suitable proportion, so the fuel and oxygen must be mixed in proportion between the lower flammability limit and the upper flammability limit, these are determined by tests and vary depending on the type of fuel, the physical state of the fuel (gas, vapour, liquid, solid, airborne dust), temperature and pressure. The source of ignition must also be suitable for igniting the type of fuel, that is it must exceed the ignition temperature of the fuel and ignite sufficient fuel in order for enough heat to be released to sustain the reaction.

Q. Explain

Explain the items that are required and their interactions in order for a fire to occur

A.

All fires need three things, a source of fuel, a source of oxygen (or other reactive gas such as chlorine), and a source of ignition.

Putting these three things together does not guarantee a fire, they must also be in a suitable proportion, so the fuel and oxygen must be mixed in proportion between the lower flammability limit and the upper flammability limit, these are determined by tests and vary depending on the type of fuel, the physical state of the fuel (gas, vapour, liquid, solid, airborne dust), temperature and pressure. Between the lower flammability limit and the upper flammability limit there is the stoichiometric ratio which is the ideal ratio for burning.

Some substances are classed as extremely flammable, this means they produce a flammable vapour which can flash at 0C and that they boil below 35C.

Highly flammable substances produce vapours that flash at below 21C and flammable substances flash at between 21C and 55C.

Substances with very low flashpoints are especially dangerous, such as acetone which flashes at -17C.

If a flammable substance is producing vapours, it may be impossible to ignite the vapours close to the point of vapour production because there is insufficient air (the vapour having displaced it), far away from the point of vapour release it may also be impossible to cause ignition because the vapour is too diluted by air, for petrol vapour this "Safe Dilution Point" is about 12m. Only within a region where there is sufficient air and vapour can ignition occur.

Flammable vapours are very often more dense than air and as a result pool at low points in the area, such as vehicle inspection pits, making these areas at increased risk of fire and explosion.

Some substances can self ignite as a result of exothermic reactions, e.g. when mixing polyester resin and hardener, the heat of the reaction can result in auto ignition of the resin solvent.

The source of ignition must also be suitable for igniting the type of fuel, that is it must exceed the ignition temperature of the fuel and ignite sufficient fuel in order for enough heat to be released to sustain the reaction. It is therefore much more difficult to ignite a block of wood than it is to ignite petrol vapour the wood will often require substantial heating with a flame, but the vapour only needs a spark.