The Structure of the Earth

Q1) What is **earth** is **made** of?

A1):

1. **Crust**
   - Continental crust
   - Oceanic crust
2. **Mantle**
3. **Core** ⇔ (mostly iron and nickel) it is also magnetic field of the earth
   - Outer core (liquid)
   - Inner core (solid)

Q2) What is the **lithosphere made from**?

A2) It is the outer part of the earth which is made of **crust** and top part of the **mantel**, which is relatively **cold** and **rigid**.

Q3) What is **tectonic plates**?

A3) The top of lithosphere is **cracked** in to several large pieces called **tectonic plates**.

Tectonic plates divide in to two:

1- Oceanic Plates sit under the ocean.

2- Continental Plates form the continents.

Q4) How fast do the tectonic plates **move**?

A4) About **2.5_{Cm}** per **year**.

Q5) **Where** do the **earthquake** or **volcanoes** occur?

A5) They occur **along the line** where the **two plates** meet.

Q6) Which **two natural disasters** happen at **plate boundaries**?

A6): 1- earthquake 2- volcanoes

Q6) What **causes earthquake**?

A6) Earthquakes happen when **two Plates** along the line slowly **pass** each other.

Q7) What **causes volcanoes**?

A7) When **oceanic crust** and **continental crust collide** together then oceanic crust always forced to move under the continental crust, this causes the oceanic crust **melts** and if it finds its way to the surface it raise and volcanoes form.

Q8) What is meant by subduction?

A8) When **oceanic crust** and **continental crust collide** together then oceanic crust always forced to move

under the continental crust, this is called subduction.

Duck یعنی خم شدن پایین رفتن وقتی در میدان جنگ هستی و پیاده راه می روی ناگهان یکی فریاد می زند Duck یعنی خم شوید، دراز بکشید، پایین بروید، بخوابید.

Submarine یعنی زیر دریایی Subway یعنی (راه زیر زمینی) مترو.

پس Subduction یعنی رفتن زیر یک چیز دیگری در حالی که خم یا کج می شوید.

Q9) What **is volcano**?

A9) Volcanoes occur, when **molten mantel** (**molten rock**) comes out through the earth crust.

Molten از کلمهٔ **melt** می آید یعنی آب شده (مذاب شده) پس **molten mantel** یعنی منتلی که مذاب است (**mantel** بخشی از کره زمین است که زیر **crust** قرار دارد). پس می توان آتش فشان را به صورت بالا تعریف کرد.

Q10) What is the **different** between **magma** and **lava**?

A10) When the **molten rock** (**molten mantel)** is **below** the surface of the earth it is called **magma**, but when it **comes out of the earth** from volcano it is called **lava**.

Q11) What **causes** the **tectonic plates** to move?

(Why do tectonic plates float on the mantle?)

A11) **Radioactive decay** in the **core** makes a lot of **heat**, in the deep part of the **mantel**.

This **heat** produces **convection currents** which makes the plates of **lithosphere** (tectonic plates) to **move**.

Q12) What **evidence** do you have to support that all the **continent** were **joint** together (super continent "**Pangaea**")?

(Describe four pieces of evidence for the theory of plate tectonic).

1- **JIGSAW FIT:** African & South America & even other continent can **fit** together like a **jigsaw**.
2- **MACHING FOSSILS:** Identical **plant** and **animal** fossils have been found in South America and South Africa.
3- **Identical rock sequences:** **Rock layers** of **similar ages** were found in **different** continents.
4- **Identical living creatures:** **Similar living animals** (earth worm) found in **tip** of South America and **tip** of South Africa.

Q13) What is **Igneous** rock?

A13) it is made of **magma** and when it **cools**, it becomes **hard**.

Q14) how many **types** of **Igneous** rock exist, name them.

A14) There are **two** types of igneous:

1- Extrusive igneous:

Cool quickly **above**ground. e.g. Basalt

2- Intrusive igneous:

Cool slowly **under**ground. e.g. Granite

Q15) Explain how rate of cooling effects crystal size in a piece of igneous rock, give an example of each.

A15) **Large** **crystals** are made when the rock cools **slowly.** e.g. **silica-rich granite**.

Small **crystals** are made when the rock cools **quickly.** e.g. **silica-rich rhyolite**.

Q16) What are the **properties** of **iron-rich basalt** lava?

A16) **iron-rich basalt** lava is **runny**.

Q17) What are the **properties** of **iron-rich rhyolite** lava?

A17) **iron-rich rhyolite** lava is **thicker**.

Q18) How are rocks **classified**?

A18) **Rocks** are classified in the way they are **formed**:

1. **Sedimentary**: It happens in lakes or seas.

   e.g. **limestone** formed from seashells

2. **Metamorphic**: Sedimentary rocks or igneous rocks can change to metamorphic rocks by action of Heat & pressure

e.g. limestone $\xrightarrow[\text{Pressure}]{\text{heat}}$ **marble**

3. **Igneous**: Made of magma when it cools, it becomes hard.

   There are two types of igneous:

   3.1 Extrusive igneous: Cool quickly above ground. e.g. **Basalt**

   3.2 Intrusive igneous: Cool slowly underground. e.g. **Granite**

Construction Materials

Q19) What are **ores**?

A19) **Ores** are **useful minerals**

Q20) Give an example of two **construction materials** that can be **extracted** from **ores**.

(How are **aluminium** and **iron** extracted from the earth?

A20) **Aluminium** and **Iron** are construction materials that can be extracted from their **Ores** (rock).

Q21) Give the name of four materials that just need to be shaped before it can be used as a building material.

A21) **Limestone**, **marble**, **granite**, and **aggregates** (**gravels**).

Q22) How is **brick** made of?

A22) It is made by **backing clay**.

Q23) Give an example of **sedimentary rock**, and say what material it **formed** from?

A23) **Limestone**. and it is made from **calcium carbonate** ($CaCO_3$).

Q24) Give an example of **metamorphic rock**, and say what material it **formed** from?

A24) **Marble**, and it is made from **calcium carbonate** ($CaCO_3$).

Q25) give an example of **igneous rock**.

A25) **Granite**.

Q26) Give two example of **materials** that are made of **calcium carbonate** ($CaCO_3$).

A26) 1- Limestone 2- Marble

Q27) What happens when **calcium carbonate** is **heated**? Write down the **reaction**, and tell what this type of reaction **called**).

A27) $\mathbf{CaCO_3}\,(s) \xrightarrow{\text{heated}} \mathbf{CaO}\,(s) + \mathbf{CO_2}\,(g)$

It is called **thermal decomposition**.

Q28) What is **thermal decomposition** reaction?

A28) When one material is **heated** and it **brakes** down into **two or more new substances**.

one material $\xrightarrow{\text{Heat}}$ **two** or **more** new substances.

Q29) What is a **composite material**? Give an example of it.

A29) A composite material **combines** the **best properties** of **each** material. **Reinforced concrete** is an example of it.

Q30) How is glass (brick, cement, concrete) made? **Learn the followings by heart**.

A30):

Calcium carbonate + Silicon dioxide + Sodium carbonate $\xrightarrow{\text{heat}}$ Glass

Limestone + Sand + Soda $\xrightarrow{\text{heat}}$ Glass

Clay $\xrightarrow{\text{heat}}$ Bricks

Limestone + Clay $\xrightarrow{\text{heat}}$ Cement

Cement + Sand $\longrightarrow$ Concrete

Concrete + steel rods $\rightarrow$ reinforced concrete

Q31) What are the **impact** of **mining** and **quarrying** on the **environment**?

A31):

1. It is **noisy** and **dusty**.
2. It **take up land**.
3. It **changes** the **shape** of **landscape**.
4. It **increases** the local road and **traffic**.

Q32) Decide whether each of the building material is **manufactured** or **natural**.

A32):

Slate: Natural

Steel: Manufactured

Cement: Manufactured

Marble: Natural

Brick: Manufactured

Metals and Alloys

Q33) **Copper** is an important metal found in ores.

a): explain how copper is **extracted** (**obtained**) from its ore (**malachite**).

A33a) By a process called **reduction**.(√)

A33a) It is **heated** with **carbon**.(√)

b): Electrical wires are made out of copper. The copper needs to be very pure. Copper is purified by electrolysis. In the process of electrolysis, what is:

i. The **electrolyte**? It is copper (II) solution that conducts electricity.
ii. The **cathode** (**negative** electrode)? It is made of **pure** copper.
iii. The **anode** (**positive** electrode)? It is made of **impure** copper.

Copper can be extracted from its ores by a process called **reduction**.

(They will ask you a question such as next page)

Q34) Which one is a better way to **extract** copper from its ores, **reduction** or **electrolysis**, give your reasons and tell what it is used for?

A34) **Electrolysis** is a better way, because by **reduction** the copper that we get is **not pure** enough but by **electrolysis** it **is pure**, and it can be used to conduct electricity.

Q35) What does **electrolysis** mean?

A35) Electrolysis means **splitting up**, with use of **electricity**.

Q36) During the **purification** process, which electrode gets **bigger**-the **cathode (⁻Ve)** or **anode (+Ve)**? Write down the equations for the reactions at the anode and cathode, and name them.

A36) the cathode (⁻Ve) gets bigger.

For **anode (+Ve)**: $Cu - 2e^- \longrightarrow Cu^{2+}$

This is called the **oxidation** process.

For **cathode (⁻Ve)**: $Cu^{2+} + 2e^{-} \longrightarrow Cu$

This is called the **reduction** process.

Q37) Write a mini-essay about **electrolysis** of **copper**. Draw the diagram.

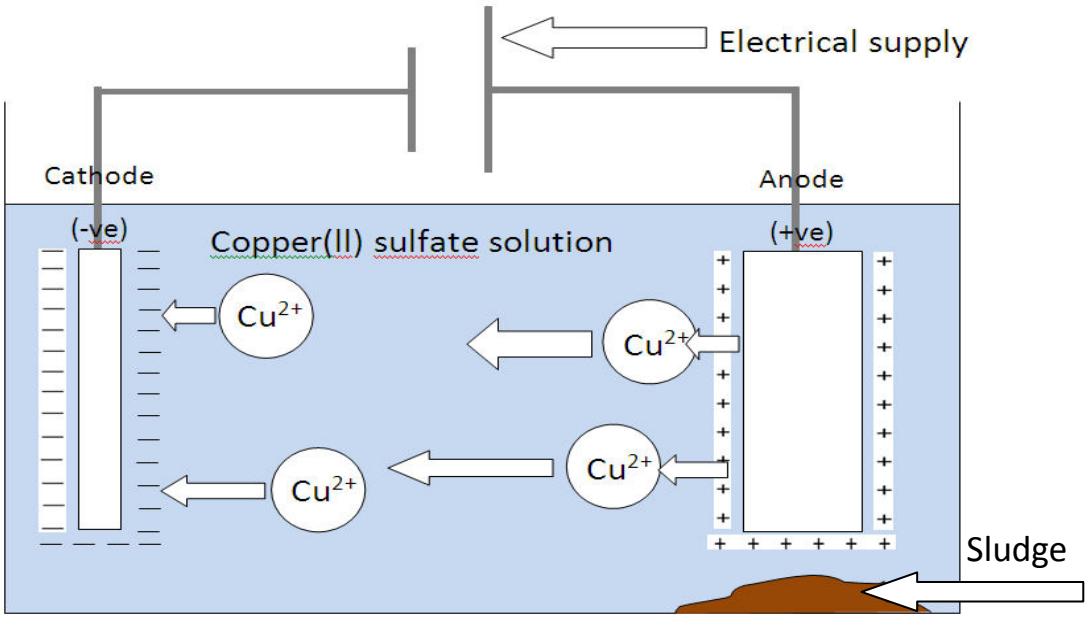
A37) **Electrolysis** is a **better** way of extracting copper from its ores **than reduction**.

In electrolysis we have one rode of small, **pure copper**, which is **cathode (-ve)** and another big lump of **impure copper**, which is **anode** (**+ve**), in a pool of **electrolyte**, which conducts electricity (**Copper (ll) sulphate solution**).

When electricity is supplied, this **pulls out electrons**, off copper **from anode** as (**cu^{2+}**) and **gives them** to **cathode**.

The impurities then **dropped** at the bottom of anode as **sludge**.

This can go on for **weeks**, which then cathode gets about **twenty times bigger**.



Q38) Give one reason why do we need to **recycle copper**?

(Why is it important to recycle metals).

A38) Recycling copper (metals) **<u>saves</u> money** and **resources**.

Q39) What is an **alloy**?

A39) Alloy is a mixture of **metal** and **other element**.

e.g. **Copper + Zinc = Brass** (which is stronger than both)

Metal + Metal

Copper + Tin = **Bronze**

Lead + Tin = **Solder**

Copper + Zinc = **Brass**

Nickel + Titanium = **Nitinol**

Metal + None-Metal

(90%) Iron + (1%) Carbon = Steel

Steel is harder and stronger **than Iron**, and **does not rust**.

Still is used for **bridges**, **engine parts**, **cutlery**, **washing machine**, **saucepans**, **ships**, **drill bits**, **cars ….**

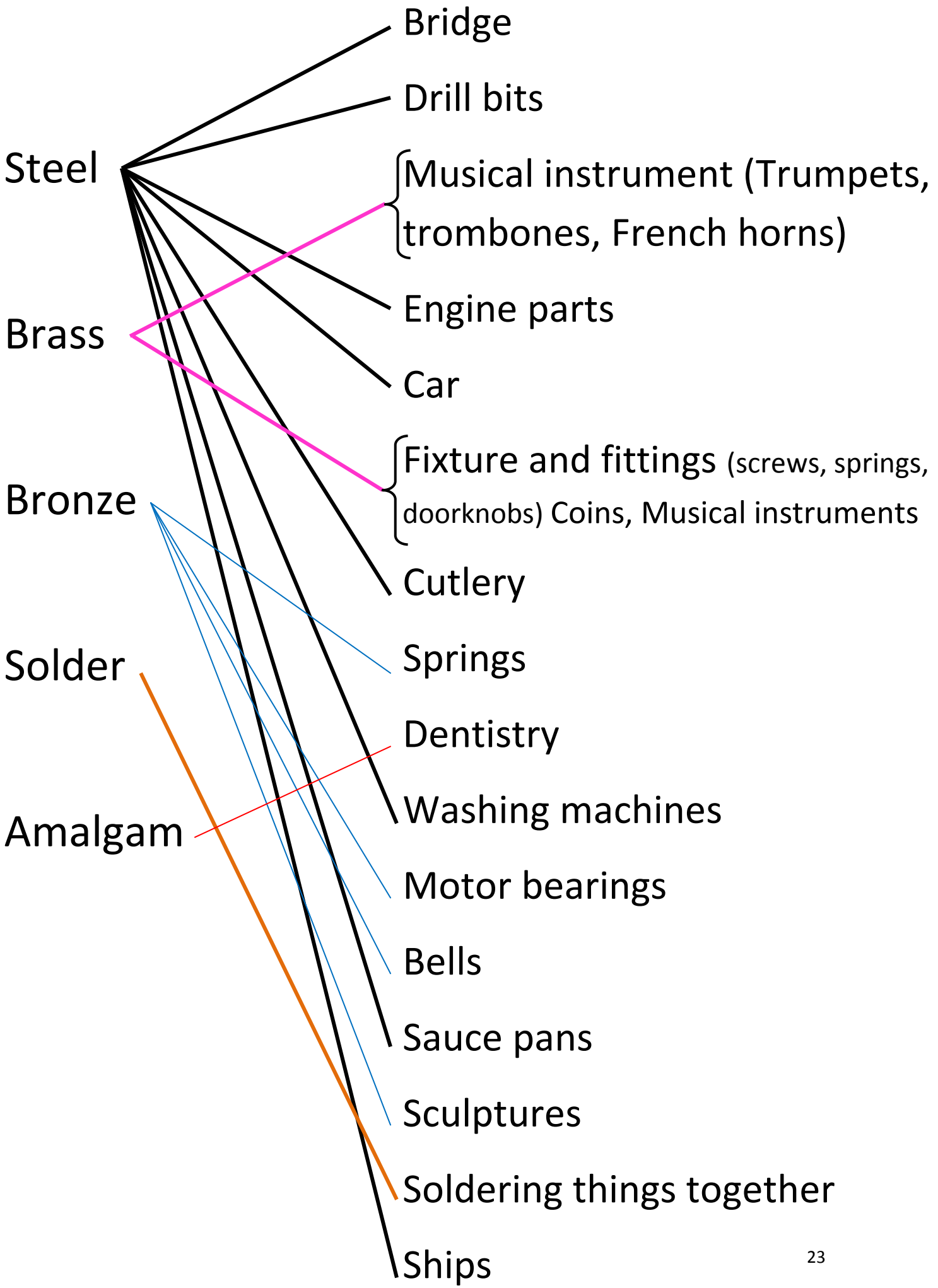
Q40) Why is **glass** used to make car **windscreen**?

A40) Because it is **transparent**.

If you get a question in the exam such as:

Q) What alloy is best for a particular job?

A) Just use your **common sense**! Next page are some examples:


Steel
Brass
Bronze
Solder
Amalgam
Bridge
Drill bits
Musical instrument (Trumpets, trombones, French horns)
Engine parts
Car
Fixture and fittings (screws, springs, doorknobs) Coins, Musical instruments
Cutlery
Springs
Dentistry
Washing machines
Motor bearings
Bells
Sauce pans
Sculptures
Soldering things together
Ships

Q41) Give an example of smart alloy. What is it used for?

A41) Nitinol which is a family of alloys made of (**Nickel + Titanium**) that have **shape memory** (they remember their original shape).

Smart alloy is **used** for the **frames of reading glasses** (you can sit on it and bend it, yet it comes back to its original shape, isn't that something).

Making Cars

Q42) What does malleable means?

A42) Material's ability to form a thin sheet by hammering.

Q43) Put **tick** or **cross** in the following table.

A43):

Property	Aluminium	Iron
Dense	X	✓
Magnetic	X	✓
Resists corrosion	✓	X
Malleable	✓	✓
Conducts electricity	✓	✓

Q44) Iron in the form of steel is often used to make car bodies. What **two substance** must be present to make **Iron rust**?

A44) **1- Water** **2- Oxygen** (air)

Q45) Write down the **word equation** for the **corrosion** of **iron**.

(What is **Formula for rusting**).

A45)

Iron + oxygen + water $\xrightarrow{\text{time}}$ **hydrated iron (lll) oxide**

Q46) Explain why a car parked on the Brighton sea front rust more than a car parked in hot, dry Cairo?

A46) cars can rust in a place near the **sea** quicker because there is water (moist) in the air, and in **deserty** place it hardly rust because it is dry and there is **no water**.

Q47) Why **does not aluminium corrode** when it is **wet**?

A47) Because aluminium **reacts quickly** with **oxygen in the air** to form **aluminium oxide**, which acts as a protective layer, and **stops any further reaction taking place**.

Q48) Consider **safety**, **environmental impact**, and **cost** in making a car By choosing different material such as: **Steel** or **aluminium**.

A48) Aluminium is **better** than **steel**,

1. It is **lighter**, so a car made of Aluminium uses **less fuel**.
2. It does **not rust**, so a car made of aluminium has **longer life**.
3. **Cost** of aluminium is, a **lot more** than steel, so **cars** will be **expensive** if made **by aluminium**.

Q49) **Polypropylene** or **nylon** fibres are **cheap** and **hard wearing**.

What might they be used for when building a car?

A49) They are used to cover **seats** and **floor**.

Q50) Since 2006 at least 85% of a car has to be able to be recycled.

What are two main environmental reasons for recycling car at the end of its useful life?

A50): **1-** It **saves resources**.

2- It **reduces disposal problems**.

Manufacturing Chemicals

Making Ammonia

Q51) What is ammonia (NH_3) is used for?

A51) It can be used to make:

1. **Nitric acid**.
2. **Fertiliser**.

Q52) What is a **reversible** reaction?

A52): It means that: **Nitrogen** and **Hydrogen** can form **Ammonia**, and **Ammonia** can **decompose** to make **Nitrogen** and **Hydrogen**.

Q52) What are the reactants in Haber process?

A52): **1- Nitrogen.** **2- Hydrogen.**

Q53) In Haber process what is the **compromise** that is made?

(Describe the **conditions** for the Haber process.).

A53):

1. Pressure of **200 atmosphere**.
2. Temperature of **450°$_C$**

Q54) In Haber process what **yield** of the reactant gases make **ammonia**, and what will happen to the rest?

A54) Only **15%**, and the rest are **recycled back** in to the **reactor**.

Q55) Write down the **word** & **symbol** equation of **Haber process**.

A55) **Nitrogen + Hydrogen ⇌ Ammonia**

$$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3$$

Q56) What dose the cost of making a new substance depends on?

A56):

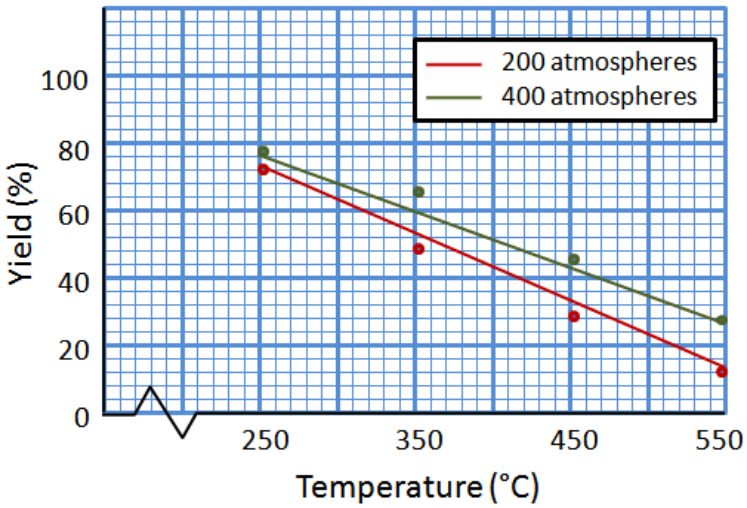
1. Cost of **equipment**.
2. Cost of **materials**.
3. Cost of **catalyst**.
4. Cost of **labour**.
5. Price of **energy**.

Q57) What are the factors that effect cost of making a new substance?

Q57):

1. **Catalyst**.
2. **Number** of **labours**.
3. **Temperature**.
4. **Pressure**.
5. **Amount of unreacted material**.

Q58) The Haber process is used in industry to make ammonia (NH3). The graph on the right shows how the yield changes with the temperature and pressure.



a)

Yield (%) / Pressure (Atmospheres)	Temperature °C			
	250	350	450	550
200	73	50	28	13
400	77	65	45	26

Name the tow reactants used for making ammonia.

(Which elements are found in the ammonia?).

A58:a) 1- Nitrogen 2- Hydrogen (air).

b) What is the yield of ammonia when the temperature is 250°C and the pressure is 200 atmospheres?

A58:b) 73%

c) At what temperature was the yield 44% when the pressure was 400 atmospheres?

A58:c) **450°C**

d) If the temperature was 250°C, which pressure would give the greatest yield?

A58:d) **400** atmosphere.

e) Explain what happens to the Yield as temperature increases.

A58:e) Yield **decreases**.

HT **You may also be asked to interpret data on other industrial processes in terms of rate, percentage yield and cost.**

Q59) It is important that the **maximum amount** of ammonia is made in the **shortest possible time** at a **reasonable cost**. This requires a **compromise**.

What are the **compromises**?

A59):

1. Temperature of **450°C**
2. Pressure of **200** atmosphere
3. Catalyst of **iron**.

Acids and Bases

Q60) What is the **PH** of an **acid**?

A60) **Acids** are substances with a PH of **less than 7**.

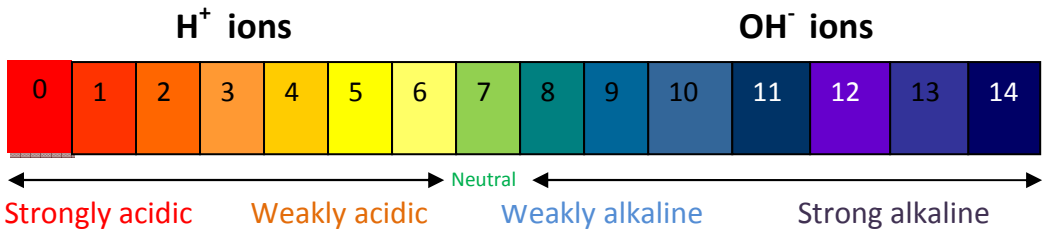
Q61) What is an Acid?

A61) **Acids** are chemicals with a PH of **less than 7**.

Q62) What is an Alkali?

(What is the **PH** of a **base**?)

A62) **Bases** (**Alkalis**) are chemicals with a PH of **greater than 7**.



Q63) What are **other names** of **bases**?

A63) Alkalis, metal oxides, metal hydroxide.

Q64) What is **neutralisation**, and what is its **PH**?

A64) When **bases** are **added** to **acids** in the **correct amount**, they can cancel each other out. This is called **neutralisation** because the resulting solution has a **neutral PH of 7**.

Q65) Complete the following formula:

A65):

Acid + base ⟶ salt + water

Acid + carbonate ⟶ salt + water + carbon dioxide

Q66) As an **acid** is added to an **alkali**, what happens to the **PH** of the solution?

A66) The **PH de**creases.

Q67) AS an **alkali** is added to an **acid**, what happens to the **PH** of the solution?

A67) The **PH in**creases.

Q68) Where does the **first name** of the **salt** come from?

A68) From **base** or **carbonate** used.

Q69) Where does the **second name** of the **salt** come from?

A69) From the **acid** used.

Q70) Give the **first name** of the following **salt**?

A70):

1. **Sodium** hydroxide	**Sodium** salt
2. **Copper** oxide	**Copper** salt
3. **Calcium** carbonate	**Calcium** salt
4. **Ammonia**	**Ammonium** salt

Q71) Give the **second name** of the following **salt**?

A71):

1. Hydro**chlori**c acid	**Chlori**de salt
2. **Sulf**uric acid	**Sulf**ate salt
3. **Nitr**ic acid	**Nitr**ate salt
4. **Phosph**oric acid	**Phosph**ate salt

Q72) What dose **alkalis** in **solution** contain?

A72) Hydroxide Ions. OH^- (aq).

Q73) What dose **acids** in **solution** contain?

A73) Hydrogen Ions. H^+ (aq).

Q74) How does the **PH** of a **solution** is measured?

(What is the **PH** of a **solution**?).

A74) It is a **measure** of the **concentration of H^+ Ions.**

So by knowing the answers, to the two questions above:

Q75) How can you **describe** the **neutralisation**?

A75) It can be described using Ionic equation:

$$H^+(aq) + OH^-(aq) \longrightarrow H2O(L)$$

Q76) Write the **word equations** of the following **symbol equations** and **balance** them too.

A76):

1- Base + Acid:

a. Sodium Hydroxide (NaOH) + Hydrochloric Acid (HCl)

$$NaOH + HCl \longrightarrow NaCl + H_2O$$

b. Sodium Hydroxide (NaOH) + Sulfuric Acid (H_2SO_4)

$$2NaOH + H_2SO_4 \longrightarrow NaSO_4 + 2H_2O$$

c. Sodium Hydroxide (NaOH) + Nitric Acid (HNO_3)

$$NaOH + HNO_3 \longrightarrow NaNO_3 + H_2O$$

a. Potassium Hydroxide (KOH) + Hydrochloric Acid (HCl)

$$KOH + HCl \longrightarrow KCl + H_2O$$

b. Potassium Hydroxide (KOH) + Sulfuric Acid (H_2SO_4)

$$2KOH + H_2SO_4 \longrightarrow K_2SO_4 + 2H_2O$$

c. Potassium Hydroxide (KOH) + Nitric Acid (HNO_3)

$$KOH + HNO_3 \longrightarrow KNO_3 + H_2O$$

a. Copper(ii) Oxide (CuO) + Hydrochloric Acid (HCl)

$$CuO + 2HCl \longrightarrow CuCl_2 + H_2O$$

b. Copper(ii) Oxide (CuO) + Sulfuric Acid (H_2SO_4)

$$CuO + H_2SO_4 \longrightarrow CuSO_4 + H_2O$$

c. Copper(ii) Oxide (CuO) + Nitric Acid (HNO_3)

$$CuO + 2HNO_3 \longrightarrow Cu(NO_3)_2 + H_2O$$

a. Ammonia (NH_3) + Hydrochloric Acid (HCl)

$$NH_3 + HCl \longrightarrow NH_4CL$$

b. Ammonia (NH_3) + Sulfuric Acid (H_2SO_4)

$$2NH_3 + H_2SO_4 \longrightarrow (NH_4)_2SO_4$$

c. Ammonia (NH_3) + Nitric Acid (HNO_3)

$$NH_3 + HNO_3 \longrightarrow NH_4NO_3$$

2- Carbonate + Acid:

a. Sodium Carbonate (Na_2Co_3) + Hydrochloric Acid (HCl)

$$Na_2CO_3 + 2HCl \longrightarrow 2NaCl + H_2O + CO_2$$

b. Sodium Carbonate (Na_2Co_3) + Sulfuric Acid (H_2SO_4)

$$Na_2CO_3 + H_2SO_4 \longrightarrow Na_2SO_4 + H_2O + CO_2$$

c. Sodium Carbonate (Na_2Co_3) + Nitric Acid (HNO_3)

$$Na_2CO_3 + 2HNO_3 \longrightarrow 2NaNO_3 + H_2O + CO_2$$

a. Calcium Carbonate ($CaCo_3$) + Hydrochloric Acid (HCl)

$$CaCO_3 + 2HCl \longrightarrow CaCl_2 + H_2O + CO_2$$

b. Calcium Carbonate ($CaCo_3$) + Sulfuric Acid (H_2SO_4)

$$CaCO_3 + H_2SO_4 \longrightarrow Ca_2SO_4 + H_2O + CO_2$$

c. Calcium Carbonate ($CaCo_3$) + Nitric Acid (HNO_3)

$$CaCO_3 + 2HNO_3 \longrightarrow Ca(NO_3)_2 + H_2O + CO_2$$

Q77) Write down the general word equation for the reaction between a metal carbonate and an acid.

A77) Sodium Carbonate + Hydrochloric Acid → Sodium chloride + Water + Carbon dioxide

Fertilisers and Crop Yield

Q77) What is a **fertiliser**?

A77) **Fertilisers** provide plants with the **essential elements** and **nitrogen** for **growth**.

Q78) Which **three elements** are found in **fertiliser**?

A78):

1- **Nitrogen**
2- **Phosphorus**
3- **Potassium**

Q79) What is **eutrophication**?

A79) fertilisers can **increase** food supply but can also cause **death of animals** in waterways.

هر (product) که نیتروژن یا فسفر یا پتاسیم و یا هر مخلوطی از اینها، مثل: (potassium nitrate) که هم پتاسیم دارد و هم نیتروژن، را کود شیمیایی (fertiliser) می گویند.

Q80) Some **fertilisers** can be manufactured by **neutralising** an **acid** with an **alkali**, name three of them.

A80):

1- **Ammonium sulfate**
2- **Ammonium nitrate**
3- **Potassium nitrate**.

Q81) why **ammonium nitrate** is a **good** fertiliser?

A81) because it has **nitrogen** from, both of **ammonia** and **nitric acid**. Kind of **double dose**.

Q82) Why **potassium nitrate** is a **good** fertilise?

A: Because it has **two good elements**.

1- Potassium 2- Nitrate

Which both are **essential** for plant **growth**.

Q83) Why do **plants** absorb **soluble nitrate fertiliser**?

A83) Because it is essential for plant growth.

Q84) **Ammonium nitrate** is an example of the fertiliser that can be made from a **neutralisation** reaction.

a) What **alkali** would be reacted with **nitric acid** to make this fertiliser?

A84-a) Ammonia

b) Write a **balance <u>symbol equation</u>** for this reaction.

A84-b) $NH_3 + HNO_3 \longrightarrow NH_4NO_3$

Q85) Why fertilisers **<u>damage</u> lakes** and **rivers**?

A85) Because if **nitrate** gets to **lakes** and **rivers** it makes **rapid growth of plants and algae**, and then:

- Some plants **die** because **less light** gets to them.
- **<u>Aerobic bacteria</u> feed on dead plants**, **<u>increase their population</u>** and **use all oxygen** in water which **this can kill the fish**.

Chemical from the Sea: Sodium Chloride

Q86) What is the **use** of **Sodium chloride** (**Table salt**)?

A86) It is used as:

1- **Food**
2- **Preservative**
3- **Flavouring**
4- **Raw material in chemical industry.**

Q87) What are the **uses**, for the **products** of **electrolysis** of **sodium chloride**?

A87):

1- **Sodium chloride** is used to make **soap**.
2- **Hydrogen** is used to make **margarine**.
3- **Chlorine** is used to **sterilise water**.
4- **Chlorine** and **sodium** are reacted together to make **house hold bleach**.

You may be asked the last question differently such as:

What is the use of **Sodium chloride?**

What is the use of **Sodium Hydrogen?**

What is the use of **Sodium Chlorine?**

Or

How is **house hold bleach** made?

How is **margarine** made?

How is **soap** made?

The answer is the same as parts of answer to the last question.