Hello students.

My name is Shritesh Mhapsekar assistant Professor, Government College of Arts, Science and Commerce sanquelim Goa. We're going to learn Unit 1 model name, classification of mineral deposits, Model number 3. Outline of the topic. Systematic study of our deposits. Study of processes of formation of ore deposits. Systematic Classification of ore deposits . Learning outcomes student will be able to understand the process of formation, identify and classify the Ore deposits, evaluate different processes of formation, geologic and geographic distribution, and explore new mineral deposits. So from this topic of a classification of ore deposites, the different things that we will learn is understanding the processes,

that is,

which are the different processes that are responsible for the formation of ores and how they are used in classifying them accordingly, that is either as a magmatic or Igneous or sedimentary, then sedimentary ore deposits. And when the metamorphic processes are involved then they are called metamorphic. Apart from that even the shapes and sizes of the ore are taken into consideration while classifying that is when we were speaking about the cavity filling deposits. Depending on how they occur. There were different names that were given to them as well as when it comes to Metasomatic replacement. Also what was happening in that case was it was replacing one of the

minerals and forming new minerals.

In case of Metasomatic replacement

and depending on the shapes and

how it has occurred,

they were given different names.

That is,

it was either lode deposits or massive loads, or disseminated and apart from that the later on a different processes were involved, like a sedimentary. Many sedimentary processes were also involved, like evaporation which is different than the sedimentary processes wherein the water ocean water plays a major role in the deposition of orel minerals. The common examples are gypsum or halite minerals. That occurs from that. classification of ore deposits, different ore deposit

classifications were proposed.

Some of them are as follows.

Niggli's (1929) volcanic-plutonic classification proposed by Niglli in 1929 Shneiderhohn's (1941) ore association classification proposed in 1941 Lindgrens (1911) depth- temperature classification proposed in 1911 wherein modified Lindgrens classification was also proposed later on and it is one of the widely followed classification of ore deposits. The classification includes all types of or deposits and is based on the processes of formation of ore deposits, the temperature and depth of formation, the place of formation of ore deposits, and the form of ore deposits. Magnetic concentrations are those Wherein minerals are formed by magmatic concentration it may be early magmatic deposits wherein all those minerals or ore deposits forms at the earliest stages of magma crystallization,

which may occur as a disseminated crystallization, segregation or injection deposits. Late magmatic deposits are all those which crystallizes from the magma at the later stages of a deposition. Wherein they may occur as a residual liquid segregation residual liquid injection, immiscible liquid segregation, an immiscible liquid injection. Hydrothermal processes that is a temperature and depth. This Hydrothermal processes depending on temperature and depth. They were classified into Tele thermal wherein the temperature of formation is less than 50 degrees Celsius. The depth of the formation is a near surface ore minerals are mostly Galena, sphalerite, epithermal deposits, the temperature of

formation of epithermal deposits are 50 to 200 degrees Celsius. Depth of formation is near surface to 1500 meters ore minerals are Mostly native gold pyrite. galena, mesothermal deposits where in the temperature of formation is around 200 to 300 degrees Celsius. Depth of formation is 1200 to 4500 meters. Ores are mostly native gold, charcoal pyrite, bornite and pyrite. Hyperthermal deposits were in the temperature of formation of hypothermal. Deposits are 300 to 600 degrees Celsius. Depth of formation is 3000 to 15000 thousand meters and ore minerals are magnetite, specularite, Cassiterite, bornite, chalcopyrite. apart from these hydrothermal processes also gives rise to cavity filling deposits.

Where in the formation of cavity filling is when hydrothermal solutions are deposited into a rock openings, wherein different types of cavity filling deposits are Fissure Veins Shear – zone deposit Stock-works Ladder Veins Solution cavity filling Saddle Reefs Pitches and Flats ,Breccia Fillings Pore space filling and Vesicular filling Next processes which involved in the hydrothermal deposits or hydrothermal processes are metasomatic replacement, wherein what happens is that when the magma body intrudes into a country rock, the effect of a heat and magmatic fluids brings about the metasomatic replacement or metasomatic changes in a country rock. Which made it to formation of a different metasomatic replacement, which are a massive load deposits or load

Fissure deposits and disseminated deposits. Sublimation normally occurs at low temperature and pressure conditions wherein There's a direct transition phase from solid to gaseous state, or vice versa, without passing through the liquid phase. The Sublimates are quite common at volcanic sources or fumaroles the most common example of deposite of the sublimation is a sulfur. Next is a contact metasomatic or skarn deposits. Wherein whenever magma body intrudes into a country rock which has a carbonate chemical composition, or it is a carbonate in nature, then the effects are more compared to the other rockbodies and the deposits that are found are called skarn deposits. The sedimentary processes involves the

formation of iron, manganese and phosphate Deposits where in different sedimentary processes are active in there for disposition of this particular minerals, or this particular deposits. Bacterial products very different bacterias are active in deposition of minerals or ore minerals. Then there is a submarine volcanic. Evaporite where in There are different types of evaporite deposits that may occur in nature.. They may be Marine, Lake or groundwater deposits. Residual deposits involves iron, manganese, bauxite etc, wherein they occur whenever unwanted materials are removed from a rock or a mineral are removed and the deposits of ore minerals are concentrated

whereas in case of a mechanical concentration, what happens is that those minerals which are heavy or high density minerals are separated from the light minerals or a low density minerals by the agents of different agents like air, water and the deposits that occurs are called as Placer deposits. Different types of placer deposits, maybe stream deposits, beach, alluvial, or eolian deposits. Examples involves here is gold, magnetite etc and we have oxidation supergene sulfides. Which are also ordered as secondary sulfide deposit and the last one is a metamorphic Deposits very different metamorphic processes are involved in the deposition of ore bodies. That is, an example is asbestos Graphite deposits where in temperature and pressure plays an important role.

To form these particular deposits.

So this was regarding the

classification of orel deposits wherein.

These are the different processes

are based on which this particular

classification is done.

Apart from that,

their shape and sizes are also

taken into consideration while

classifying these particular deposits.

For this entire topic,

the references that were used or the

books that were referred are

Jensen M.L. and Bateman A.M. Economic Mineral Deposits, John Wiley and Sons

Park C.F. and MacDiarmid R.A. Ore Deposits, Freeman and Co.

Anthony Evans, An Introduction To Ore Geology, ELBS Books

Economic Geology by Ajay Kumar and P.K.Guha

Thank you.