



SNS COLLEGE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)

COIMBATORE-35

II BE / III SEMESTER

UNIT III

19CET201-ENGINEERING GEOLOGY



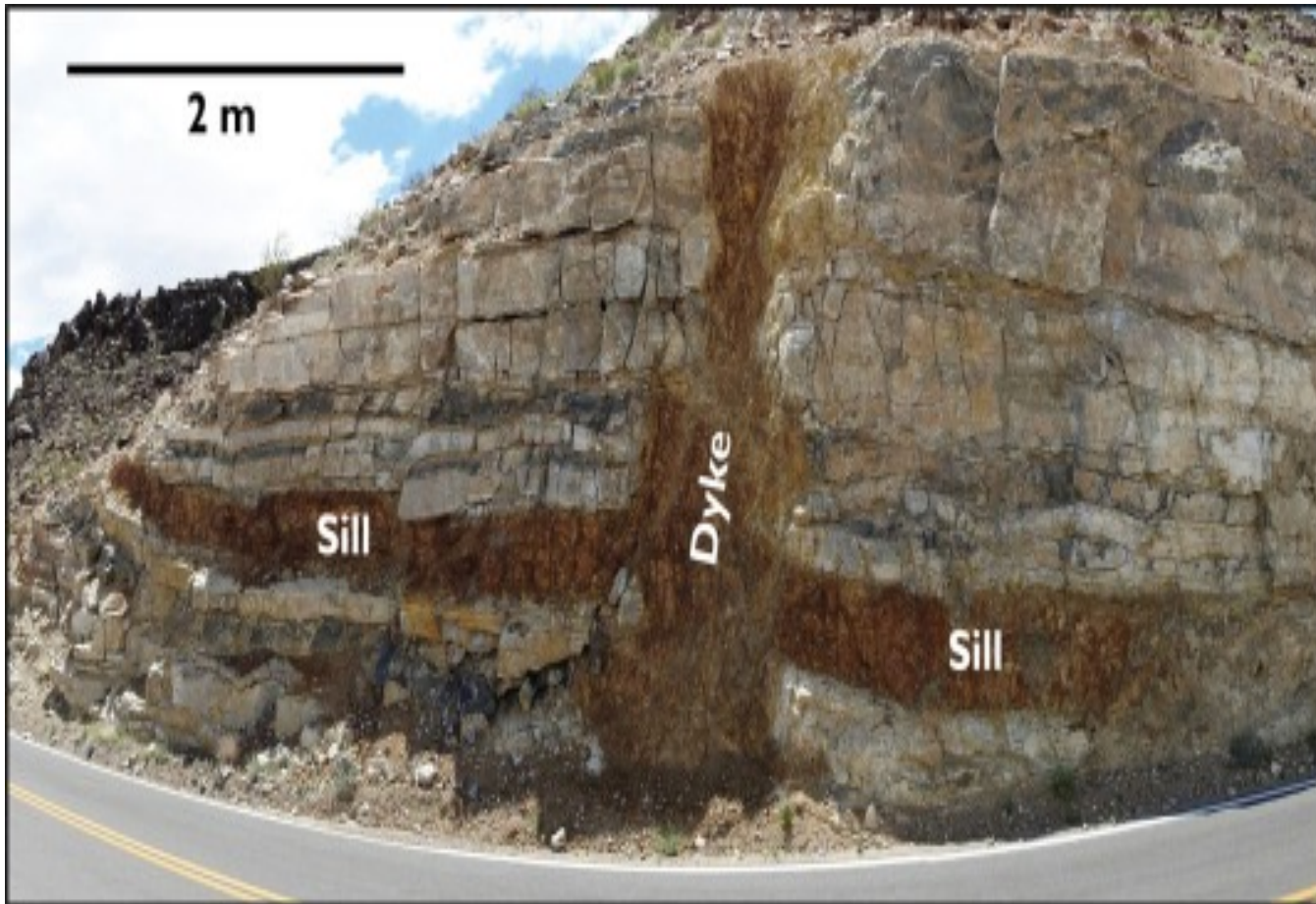
SYLLABUS

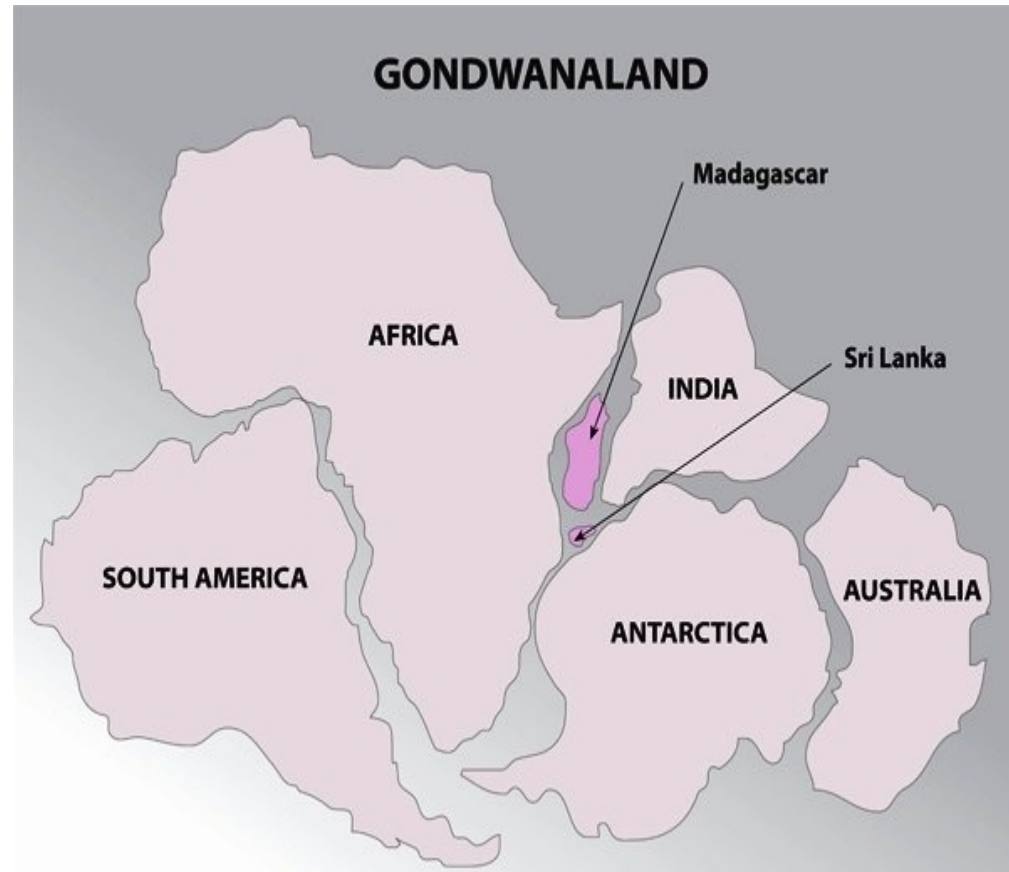
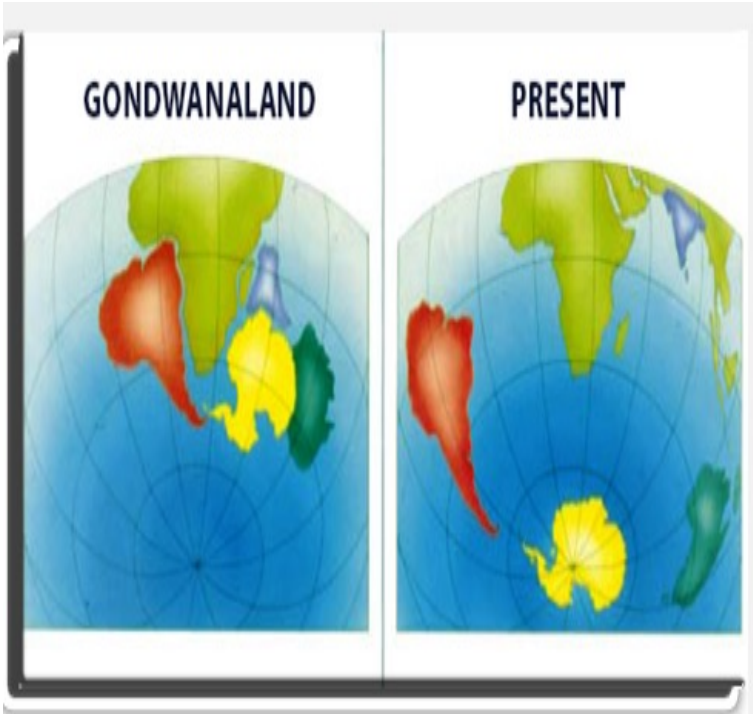
Classification of rocks, distinction between Igneous, Sedimentary and Metamorphic rocks. Engineering properties of rocks. Description, occurrence, engineering properties, distribution and uses of Granite, Dolerite, Sandstone, Limestone, Shale, Quartzite



DOLERITE

- Dolerite is an **igneous rock**, that is, rock initially molten and injected as a fluid into older sedimentary rocks
- Dolerite sills and dykes are intrusions of igneous rock formed by **molten magma from the Earth's mantle, which forced its way to the surface through cracks in the rock layers**. Cracks may form when there is tension in the Earth's surface, e.g. the break-up of Gondwanaland.







DOLERITE





TEXTURES

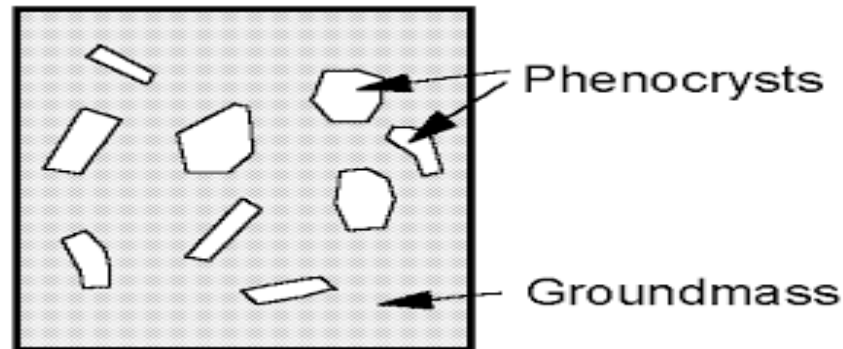
- ❖ **Ophitic texture** laths of plagioclase in a coarse grained matrix of pyroxene crystals, where in the plagioclase is totally surrounded by pyroxene grains. This texture is common in diabases and gabbros.





TEXTURES

- ❖ **Subophitic texture:** similar to ophitic texture where in the plagioclase grains are not completely enclosed in a matrix of pyroxene grains
- ❖ **Porphyritic Texture:** Minerals formed at different temperatures
Large crystals (phenocryst) are embedded in a matrix of smaller crystals (groundmass)





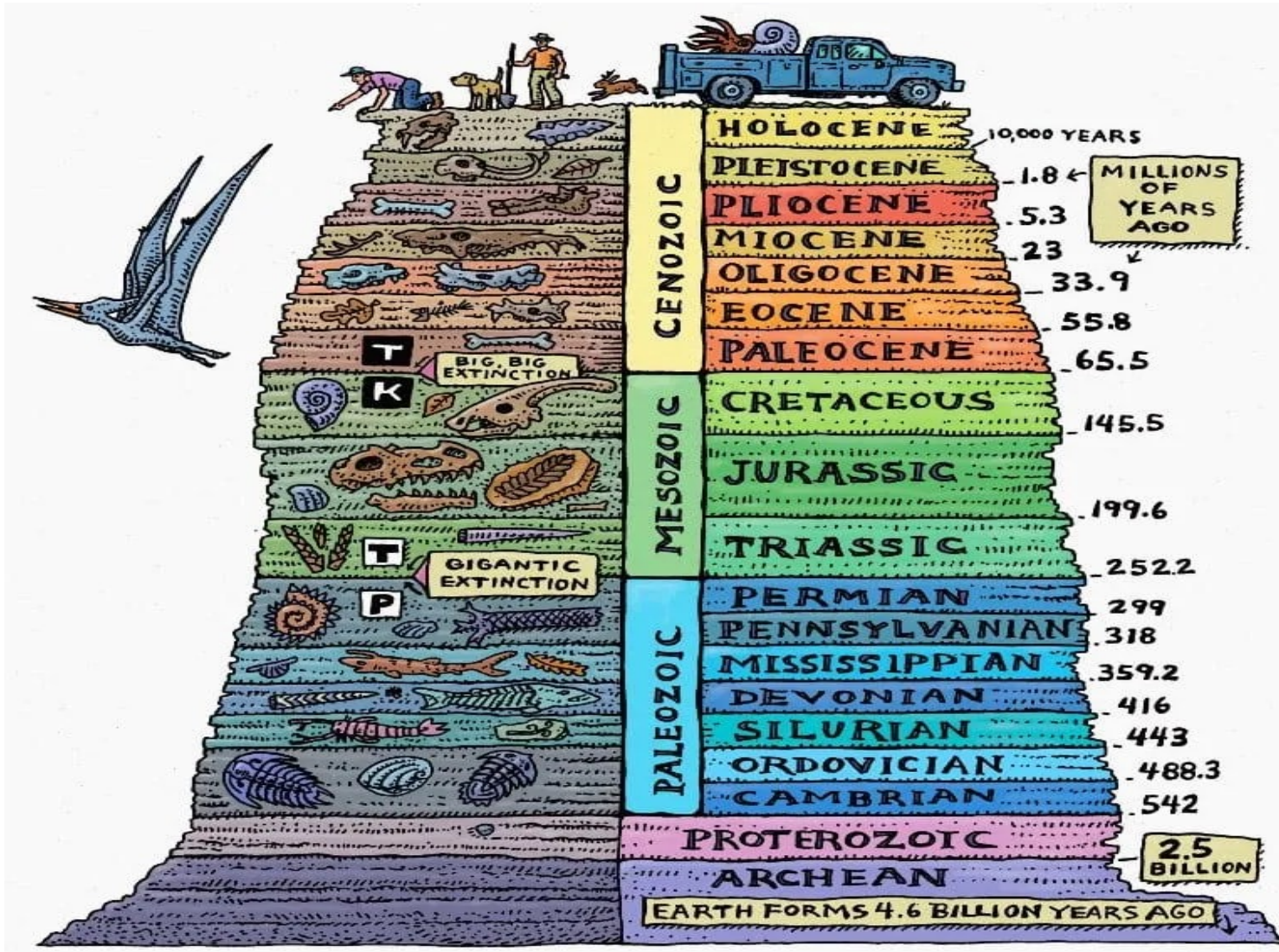
DISTRIBUTION

- ❖ **Tholeiitic dolerite** - occur in karroo of South Africa and those of Tasmania and Antarctica were intruded.
- ❖ **Alkali dolerites** - occur in Scotland particularly in where they may form large sills. Midlands of England, as at Rowley Regis, near Birmingham; in the Clee hills, Shropshire and Derbyshire.



In geological timescale this Karoo dolerite intruded approximately 83 million years ago during the Mesozoic era







USES

- ❑ Diabase is crushed and used as a construction aggregate for road beds, buildings, railroad beds (rail ballast), and within dams and levees.
- ❑ Diabase can be cut for use as headstones and memorials; the base of the Marine Corps War Memorial is made of black diabase "granite" (a commercial term, not actual granite).
- ❑ Diabase can also be cut for use as ornamental stone for countertops, facing stone on buildings, and paving. A form of dolerite, known as bluestone, is one of the materials used in the construction of Stonehenge



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A dolerite pillar in the organ pipe, Tasmania, Australia



Marine Corps War Memorial





CONCLUSION

- A dolerite is the medium-grained equivalent of a basalt - a basic rock dominated by plagioclase and pyroxene.
- One of its distinguishing character is its ophitic texture.
- Dolerite is typically found as a hypabyssal igneous rock, typically within dykes, however, it may also occur in sills.
- Tholeiitic dolerite and alkali dolerite are the two types



SANDSTONE

These are mostly composed at sand grade particles that have been compacted and consolidated together in the form of beds in basins of sedimentation





SANDSTONE

Composition:

- Quartz (SiO_2) is the most common mineral making the sand stones. Beside, quartz, minerals like feldspars, micas, garret and magnetite may also be found in small proportions in much sandstone.

Texture:

- Sand stones are in general medium to fine grained in texture. The individual grains may be round or angular in outline, loosely packed or densely packed and in simple or interlocking arrangement.

Colour:

- Sandstones naturally occur in a variety of colours, red, brown, grey and white being the most common colours

Types:

- Siliceous sand stones,
- Calcareous sand stones,
- Argillaceous sandstones



THANK YOU..

