Economic Importance:

1. Wood:
i. They are most important as source of wood and constitute major forest wealth.
ii. Wood is light coloured, straight grained and light weight.
iii. The strongest Indian coniferous wood is used for making Railway slippers is deodar wood obtained from *Cedrus deodara*. The heart wood of this tree is resistant to insect or fungus attacks and has strong scent.

2. Ornamental value:
A number of gymnosperms are grown as ornamental plants, e.g., *Cycas, Araucaria, Thuja* etc.

3. Religious Plant:

Ginkgo biloba (Maiden hair tree) is grown in temples of China and Japan and is worshipped.

4. Funeral wreaths:

The leaves of *Cycas* are strong, leathery ad remain green for long time after being cut from the plant and hence used by Europeans in funeral wreaths.

5. Food Value:
i. 'Sago' starch obtained from pith and cortex of stem of *C. revoluta, C. rumphii* etc.

ii. *Zamia* is a rich source of starch.

iii. 'Seed starch' obtained from seeds of *Cycas rumphii, Dioon edule* etc. It is prepared into flour and cooked before eating.

iv. Seeds of *Pinus gerardiana* (chilgoza), *Cephalotaxus* and many species of *Gnetum* are edible.

v. 'Kaffir bread' prepared from the stem pith of *Encephalartos*.

vi. Young leaves of *Cycas* cooked as vegetables.

vii. Stem and seeds of *Cycas revoluta* used in making wine.

3. Medicinal value:
i. **Ephedrine** (alkaloid) extracted from *Ephedra* used in treating asthma, cough, cold, bronchitis etc.

ii. Tincture of *Ephedra* is a cardiac stimulant.

iii. The juice extracted from young leaves of *Cycas revoluta* is used for curing blood vomiting and flatulence.

iv. Anti-cancerous drug called **taxol** is obtained from the bark *Taxus*.

v. In Assam the pounded stem of *Cycas pectinata* is used as a hair wash for diseased hair roots.

4. Industrial Use:

i. **Gum**-*Cycas* gum used as adhesive, antidote for snake bites and using malignant ulcers.

ii. **Tannins** – Tannins extracted from bark of *Araucaria, Pinus, Sequoia* etc. used in leather industry.

iii. **Canada balsam** – It is turpentine obtained from *Abies balsamea* and used as a mounting medium in biological preparations.

iv. **Resins**, **Rosins, Turpentine, Copals and Amber**–

Resins are plant exudates. They make the wood resistant to decay. Conifers are the major resin yielders of the world. They are used in enamel, plasters, varnishes etc, In India, a very important plant resin is obtained by tapping the chir pine (*Pinus roxburghii*) and blue pine (*Pinus wallichiana).*

Turpentines are oleoresins obtained almost exclusively from coniferous trees. On distillation turpentine yield the essential oil or sprits of turpentine and rosin. Crude turpentine is obtained from *Pinus australis* and *P. caribaea*.

Rosin is a type of resin obtained as a residue after the distillation of pine oleoresin, it is used in paper sizing, varnish making, enamels and preparation of plasters and oinments.

The Copals comprise a considerable group of hard resins of recent semifossil and fossil origin. Copals have almost no oil and yield a hard elastic varnish. They are used chiefly for interior work and enamels eg. *Agathis* is source of copals.

Amber is a fossilized terpenoid resin obtained from *Pinus succinifera*. It is hard and brittle substance. The colour varies from yellow to brown and even black.

v. Plywood prepared from *Podocarpus*.

vi. Papers like newsprints, writing and printing papers are being prepared from the wood pulp of *Pinus, Picea, Abies, Gnetum* etc.

vii. The leaves of cycads are used for preparing baskets, mats, hats, brooms etc.

viii. The fibres obtained from the leaves of *Cycas* and *Macrozamia* are used for stuffing pillows and making mattresses.

5. Source of oils:

i. Oils extracted from seeds of *C. revoluta, Macrozamia riedlei*, *Pinus cembra* and *Cephalotaxus drupacea* are used as edible oils.

ii. Red cedar wood oil extracted from the heart wood of *Juniperus virginiana* is used for cleaning microscopic preparations and for oil immersion lenses.