

**Practical Manual**  
on  
**Ornamental Gardening and Landscaping**  
HFL-505, 3(2+1)

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**Department of Floriculture and Landscaping**  
**College of Horticulture & Forestry**

**RANI LAKSHMI BAI CENTRAL AGRICULTURAL**  
**UNIVERSITY, Jhansi-284003**

**Syllabus:**

**Practical: Graphic language and symbols in landscaping, study of drawing instruments viz.;T-square, setsquare, drawing board etc., identification of various types of ornamental plants for different gardens and occasions, Preparation of land, planning, layout and planting, deviations from landscape principles, case study, sit analysis, interpretation of map of different sites, use of GIS for selection, Enlargement from blueprint, Landscape design layout and drafting on paper as per the scale, preparation of garden models for home gardens, farm houses, industrial gardens, institutional gardens, corporate avenue planting, practices in planning and planting of special types of gardens, burlapping, lawn making, planting of edges, hedges, herbaceous and shrubbery borders, project preparation on landscaping for different situations, creation of formal and informal gardens, visit to parks and botanical gardens.**

**Name of Student .....**

**Roll No. ....**

**Batch .....**

**Session .....**

**Semester .....**

**Course Name : .....**

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## CERTIFICATE

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This is to certify that Shri./Km. ....ID No.....has completed the practical of course.....course No. .... as per the syllabus of M.Sc. Horticulture (Floriculture and Landscaping)..... semester in the year.....in the respective lab/field of College.

Date:

Course Teacher

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## Practical No. 1

**Objective:** To study graphic language and use of drawing equipment, graphicsymbols and notations in landscape designing

**Exercise:** Draw different graphic symbols used for making landscape plan.

**Graphic language:** The mode of communication through sketches is called graphic language. Graphic language use lines to represent the surfaces, edges and contours of objects. A drawing can be done using freehand, instruments or computer methods.

**Graphic symbol:** Graphics/garden symbols or signs are the pictures which are used for representing various garden components. They are mainly used in preparing the garden plan or design. Through these graphics or signs, landscape designers are able to understand and read a landscape layout without further explanations and texts.

**Exercise:** Make neat and clean diagrams of different symbols used for making landscape plans.

### 1. Needled Evergreens:



### 2. Broad leaved Evergreens:



### 3. Deciduous trees:



**4. Vines:**



**5. Trailing groundcovers:**



**6. Hardscape Materials:**



**7. Explain the idea of using symbols:**

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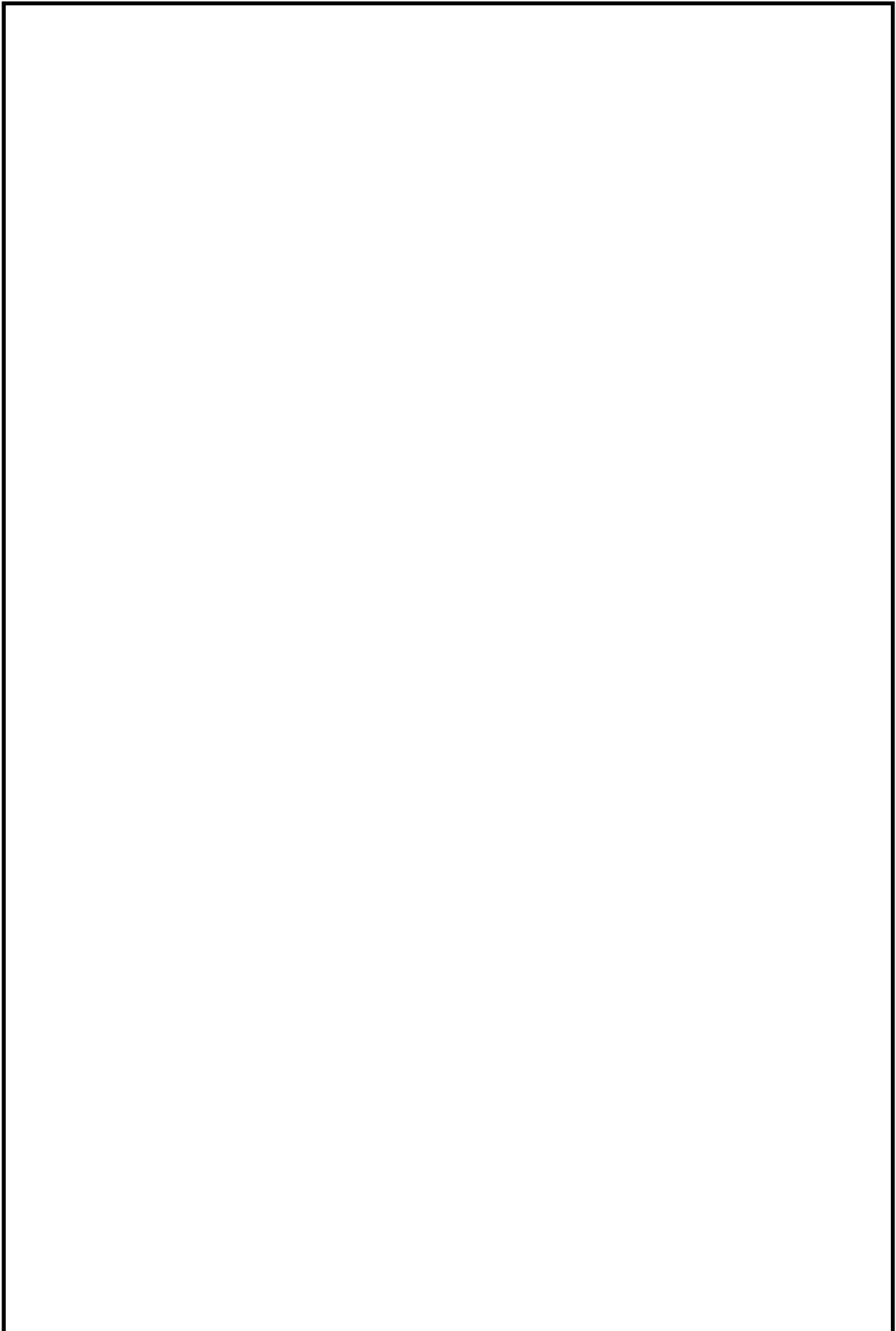
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**Draw a design for a college building using graphic language:**



**Drawing equipment and instruments:**

Write the uses of following instruments used in a drawing Board

| Equipment/instruments | Uses and description |
|-----------------------|----------------------|
| French Curve          |                      |
| Drafting tape         |                      |
| 45° Triangle          |                      |
| 30-60° Triangle       |                      |
| T square              |                      |
| Scale                 |                      |
| Compass               |                      |
| Eraser                |                      |
| Dividers              |                      |
| Pencil Pointer        |                      |
| Dusting brush         |                      |
| Erasing Shield        |                      |
| Drawing board         |                      |
| Drafting machine      |                      |

**Instruments required for field measurement in landscaping:**

| Instruments    | Description |
|----------------|-------------|
| Measuring tape |             |
| Cross stop     |             |
| Ranging rod    |             |
| Pegs and bars  |             |

Q1. Describe Graphic language: .....

.....  
 .....

Q2. Describe Graphic symbol: .....

.....  
 .....

Q3. Describe Drawing equipment: .....

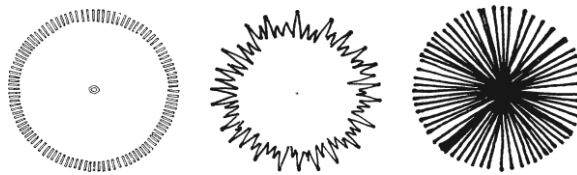
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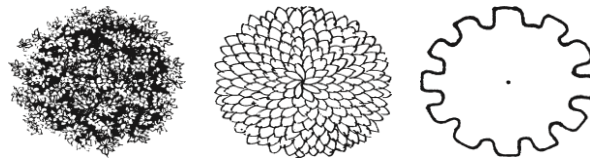
**LANDSCAPE SYMBOLS:** When preparing landscape designs in plan view, designers use symbols that offer a suggestion of how the proposed or existing features would appear if seen from above. To be functional the symbols must be scaled to their true size. The size is actual in the case of existing objects such as buildings and streets, and eventual with the plants, which are usually drawn to scale their full or near mature size rather than their size at the time of installation or planting.

**LANDSCAPE SYMBOLS USED FOR MAKING PLANS**

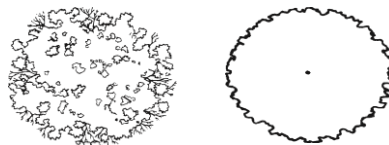
**1. Needled Evergreens:** these symbols suggest the spiny leaves which are green throughout the year. These symbols can be used to represent both trees and shrubs as long as they are needled and evergreen. A prominent dot at the centre marks the spot on the plan where plant is to be set into the ground.



**2. Broadleaved Evergreen:** another group of plants are usually green throughout the year, but have wider and usually thicker, fleshy leaves. The symbols used to represent them suggest the larger leaf size and semi rigid growth habit of the plants. As with the needled evergreens, these symbols can be used for both broadleaved trees and shrubs.



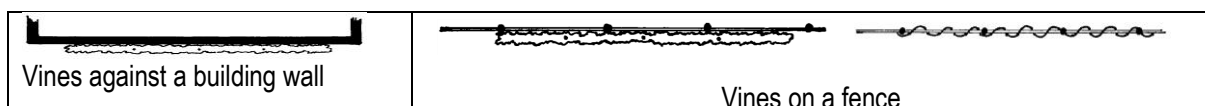
**3. Deciduous shrubs:** the edge of the plant is loose and irregular, suggestive of the plant is loose and irregular, suggestive of less rigid habit of most deciduous shrubs.



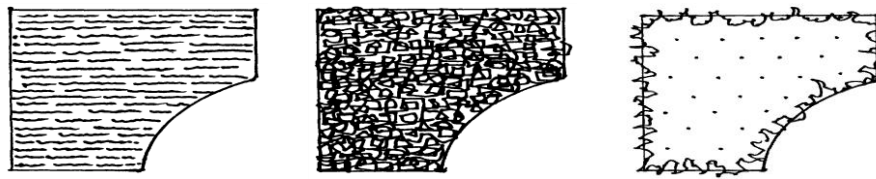
**4. Deciduous trees:** like deciduous shrubs, deciduous trees also lose their leaves during the winter season. Unlike most shrubs, trees usually have only a centre trunk rather than multiple stems. The symbols for trees are usually wider because trees are commonly larger than shrubs. The lines representing them may be thicker and/or darker too, reflecting their greater height and prominence within the design.



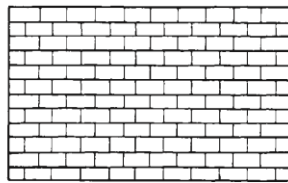
**5. Vines:** Vines grow in linear manner, and they do not hold to predictable shape. Their symbols are shaped to suggest that resembling linearity.



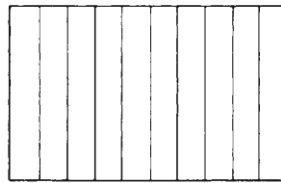
**6. Trailing ground covers:** Ground covers are those plants, usually 18 inches or less in height, that fill the planting be beneath the trees and shrubs. Like vines, many ground covers are shapeless, linera plants that would have little impact on the landscape alone. The symbols used for ground covers are more textural than structural.



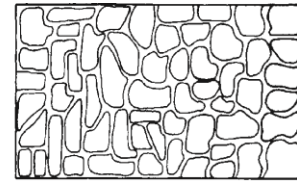
**7. Hardscape material:** Design materials that are not living plant materials are often referred to as hardscape. They include such things as paving, fencing, and wall materials, furnishings, lighting and water features. Like plant symbols, hardscape symbols appear in the landscape.



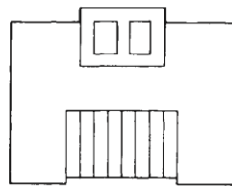
Brick



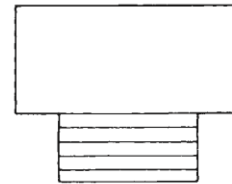
Decking



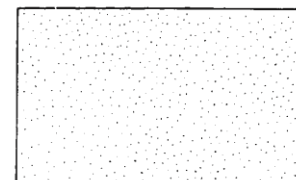
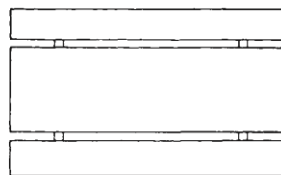
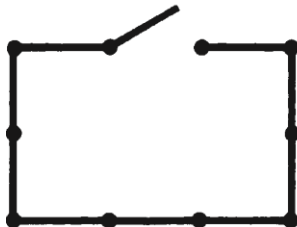
Stonework



Outdoor Grill



Steps and Landing



**Explaining an idea with symbols:** When one landscape object passes beneath another, the upper symbol is drawn with a wider, darker, and/or solid solid line, and the symbol for the object hidden beneath it is drawn with a thinner, lighter, and/or broken line. This is termed as line-weight variation.

**Labelling:** to make the landscape plan as useful and understandable as possible, it is usually necessary to add labelling and other notations to the plan.

**Symbol labelling:** All the graphic symbols used on the landscape plan must be labelled. Two methods of label placement are commonly used; either within the drawing or outside the drawing. In the latter method all labels are placed around the perimeter of the design and neatly justified, usually on right or left side.

When labelling is done within the drawing, the labels must be on or as close to the symbols as possible. The closer the symbols, the easier the plan will be to read. When scale of the design results in very small symbols, it may be necessary to code the label. That means a number or letter code is used on or near the symbol that corresponds to a lettered label placed elsewhere on the plan.

## Practical No. 2

**Objective:** To identify flowering and foliage trees used for landscaping

**Exercise:** Identify different trees according to their classification

**Ornamental flowering trees:** Grown for the beauty of their showy and ornamental flowers.

| Sr. No. | Common Name                          | Botanical Name | Family | Flower colour and time |
|---------|--------------------------------------|----------------|--------|------------------------|
| 1.      | Bara champa                          |                |        |                        |
| 2.      | Bottle Brush                         |                |        |                        |
| 3.      | Burmese Pink Cassia                  |                |        |                        |
| 4.      | Champak/<br>Champa                   |                |        |                        |
| 5.      | Devil's tree                         |                |        |                        |
| 6.      | Dhak/Palash/<br>flame of the forest  |                |        |                        |
| 7.      | Earleaf Acacia/<br>Auri              |                |        |                        |
| 8.      | Fountain tree/<br>African Tulip tree |                |        |                        |
| 9.      | Giant Crepe Myrtle                   |                |        |                        |
| 10.     | Gulmohar/<br>Royal Poinciana         |                |        |                        |
| 11.     | Indian Coral tree                    |                |        |                        |
| 12.     | Indian Laburnum/<br>Amaltas          |                |        |                        |
| 13.     | Java Cassia                          |                |        |                        |
| 14.     | Kasod tree                           |                |        |                        |

|     |                                    |  |  |  |
|-----|------------------------------------|--|--|--|
| 15. | Mahua                              |  |  |  |
| 16. | Molumein<br>rosewood               |  |  |  |
| 17. | Neeli<br>Gulmohar                  |  |  |  |
| 18. | Neem                               |  |  |  |
| 19. | Orchid tree /<br>Kachnar           |  |  |  |
| 20. | Orchid tree/<br>Purple<br>Bauhinia |  |  |  |
| 21. | Pagoda tree/<br>Temple tree        |  |  |  |
| 22. | Pagoda tree/<br>Temple tree        |  |  |  |
| 23. | Red Frangipani                     |  |  |  |
| 24. | Roheda                             |  |  |  |
| 25. | Rosy trumpet<br>tree               |  |  |  |
| 26. | Sausage tree                       |  |  |  |
| 27. | Silk Cotton<br>tree/ Simbal        |  |  |  |
| 28. | Silk floss tree                    |  |  |  |
| 29. | Silver oak                         |  |  |  |
| 30. | Silver trumpet<br>tree             |  |  |  |
| 31. | Sita Ashoka                        |  |  |  |

|     |                                    |  |  |  |
|-----|------------------------------------|--|--|--|
|     |                                    |  |  |  |
| 32. | Tree jasmine/<br>Indian cork tree  |  |  |  |
| 33. | Yellow<br>Bauhinia/<br>Orchid tree |  |  |  |
| 34. | Yellow<br>Flamboyant               |  |  |  |

**2. Foliage trees:** Trees grown for their showy ornamental foliage or for providing shade in garden.

| S. No. | Common Name              | Botanical Name | Family |
|--------|--------------------------|----------------|--------|
| 1.     | Arjun tree               |                |        |
| 2.     | Australian pine tree     |                |        |
| 3.     | Bayur tree/ Kanak Champa |                |        |
| 4.     | Blue gum tree/ Safeda    |                |        |
| 5.     | Bohr or Banyan tree      |                |        |
| 6.     | Buddha coconut           |                |        |
| 7.     | Cedar pine/ Deodar       |                |        |
| 8.     | Chalta                   |                |        |
| 9.     | Chinaberry tree/ Drake   |                |        |
| 10.    | Chinese Juniper          |                |        |
| 11.    | Chirpine                 |                |        |
| 12.    | False Ashok              |                |        |

|     |                            |  |  |
|-----|----------------------------|--|--|
| 13. | Golden Bottle brush        |  |  |
| 14. | Jamun/ Java plum           |  |  |
| 15. | Monkey Puzzle Tree         |  |  |
| 16. | Pipal                      |  |  |
| 17. | Pongam tree                |  |  |
| 18. | Putrajiva                  |  |  |
| 19. | Rubber tree                |  |  |
| 20. | Saru                       |  |  |
| 21. | Sat Patia or Devil's tree  |  |  |
| 22. | Spanish cherry or Maulsari |  |  |

**Botanical names of trees for specific conditions:**

|                             |  |
|-----------------------------|--|
| <b>Wind resistant trees</b> |  |
| <b>Salt resistant trees</b> |  |
| <b>Drought resistant</b>    |  |
| <b>Wet land trees</b>       |  |

|   |  |
|---|--|
| <b>Fast growing Trees</b>               |  |
| <b>Shade giving trees</b>               |  |
| <b>Trees tolerant to dust and smoke</b> |  |
| <b>Trees for noise reduction</b>        |  |

## Appendix

### CLASSIFICATION OF TREES

**Ornamental flowering trees:** Grown for the beauty of their showy and ornamental flowers.

| Sr. No. | Botanical Name                        | Common Name                      | Family       | Flower colour and time          | Description  |
|---------|---------------------------------------|----------------------------------|--------------|---------------------------------|--|
| 1.      | <i>Acacia auriculiformis</i>          | Earleaf Acacia/ Auri             | Fabaceae     | Yellow, August-September        | An evergreen tree with pendulous branches and phyllodes leaves. The tree is medium sized   |
| 2.      | <i>Alstonia scholaris</i>             | Devil's tree                     | Apocynaceae  | Greenish white, March- April    | It is tall, spreading and shady tree. Leaves are shiny and dark green. The tree bears small greenish white flowers during Nov –Dec.  |
| 3.      | <i>Azadirachta indica</i>             | Neem                             | Meliaceae    | White, April- May               | 10-15 m high, good shady tree. It grows successfully on rocky and alkaline soils. Very good shade tree for tropical/sub-tropical areas   |
| 4.      | <i>Bauhinia purpurea</i>              | Orchid tree/ Purple Bauhinia     | Fabaceae     | Rosy- purple, Nov – Feb.        | A medium sized tree suitable for avenue planting,  |
| 5.      | <i>Bauhinia tomentosa</i>             | Yellow Bauhinia/ Orchid tree     | Fabaceae     | Yellow , April- June            | A small tree with drooping branches which bear showy yellow flowers and suitable for growing in gardens.   |
| 6.      | <i>Bauhinia variegata</i>             | Orchid tree / Kachnar            | Fabaceae     | White-pink, Feb- April          | A small sized tree, bear flowers when the tree is leafless. The flowers are edible and used for culinary purpose.  |
| 7.      | <i>Bombax ceiba</i>                   | Silk Cotton tree/ Simbal         | Malvaceae    | Red , orange, Jan- March        | A large deciduous tree, stem is straight and undivided. The young stem is covered with sharp prickles. It bears flowers when tree is leafless.   |
| 8.      | <i>Butea monosperma</i>               | Dhak/Palash/ flame of the forest | Fabaceae     | Orange red, March- April        | A small deciduous tree having irregular branches. It bears showy flowers when the tree is leafless. It is drought resistant tree and can be grown in alkaline soils                        |
| 9.      | <i>Callistemon lanceolatus</i>        | Bottle Brush                     | Myrtaceae    | Red, Round the year             | A beautiful small tree having weeping habit, the crowded scarlet flowers are borne in spikes almost throughout the year.   |
| 10.     | <i>Cassia fistula</i>                 | Indian Laburnum/ Amaltas         | Fabaceae     | Yellow, May- June               | A medium sized shady tree, bears pendulous racemes of large bright yellow flowers, when tree is leafless. It is drought-resistant and can tolerate quite a high salt levels.               |
| 11.     | <i>Cassia javanica</i>                | Java Cassia                      | Fabaceae     | Pink, May- June                 | A medium sized tree with spreading crown, bears clusters of pink flowers with the foliage.   |
| 12.     | <i>Cassia renigera</i>                | Burmese Pink Cassia              | Fabaceae     | Pink, May- July                 | It bears flowers in clusters giving appearance of bunches of roses on long branches.   |
| 13.     | <i>Cassia siamea</i>                  | Kasod tree                       | Fabaceae     | Yellow, Nov- Feb                | A medium sized shady tree. It is drought resistant and can tolerate lot of dust. It is suitable for planting along roadside.   |
| 14.     | <i>Ceiba speciosa</i>                 | Silk floss tree                  | Malvaceae    | Pink, July- August              | It is beautiful tree with a bottle shaped green thorny trunk   |
| 15.     | <i>Delonix regia</i>                  | Gulmohar/ Royal Poinciana        | Fabaceae     | Scarlet red, April- June        | A large tree with umbrella like crown and feathery leaves.   |
| 16.     | <i>Erythrina indica/ E. variegata</i> | Indian Coral tree                | Fabaceae     | Scarlet, crimson, March- April  | A quick growing tree. It bears flowers when the tree is leafless.  |
| 17.     | <i>Grevillea robusta</i>              | Silver oak                       | Proteaceae   | Yellow, April- June             | An evergreen tree with a conical crown. The leaves are fern like and silvery from the lower side. It bears coppery yellow flowers in April.  |
| 18.     | <i>Jacaranda mimosaeifolia</i>        | Neeli Gulmohar                   | Fabaceae     | Purple-mauve, March- May        | Medium to large sized tree, with feathery bipinnate leaves. Quick growing tree suitable for avenue planting  |
| 19.     | <i>Kigelia pinnata</i>                | Sausage tree                     | Bignoniaceae | Dark red-maroon, April- May     | A large tree with good spreading crown. Sausage like fruits borne on long pendulous stalks can be seen hanging on trees.   |
| 20.     | <i>Lagerstroemia speciosa</i>         | Giant Crepe Myrtle               | Lythraceae   | Mauve/ pinkish, April to August | A medium sized deciduous tree. Suitable for avenue planting.   |
| 21.     | <i>Madhuca indica</i>                 | Mahua                            | Sapotaceae   | Cream, Feb- March               | Fast growing large deciduous tree. The leaves are borne in clusters near the end of the branches and are coppery coloured when young. The flowers are used for making vegetables and wine. |
| 22.     | <i>Magnolia champaca</i>              | Champak/ Champa                  | Magnoliaceae | Light yellow, May- September    | A medium sized evergreen tree. Bears fragrant flowers  |
| 23.     | <i>Magnolia grandiflora</i>           | Bara champa                      | Magnoliaceae | White, April- May               | A medium sized, evergreen tree with beautiful foliage, large scented white flowers.  |



|     |                                |                                      |              |                                      |   |
|-----|--------------------------------|--------------------------------------|--------------|--------------------------------------|---|
| 24. | <i>Millingtonia hortensis</i>  | Tree jasmine/<br>Indian cork tree    | Bignoniaceae | White, April-<br>June                | A tall evergreen tree which bears sweet scented flowers. The tree is quick growing.                                     |
| 25. | <i>Milletia ovalifolia</i>     | Molumein<br>rosewood                 | Fabaceae     | Light pink, pink,<br>Feb- March      | A medium sized tree. Bears profuse flowers when the tree is leafless  |
| 26. | <i>Peltophorum pterocarpum</i> | Yellow<br>Flamboyant                 | Fabaceae     | Yellow, Sept-<br>November            | Deciduous tree with bipinnate leaves, erect trunk and suitable for avenue planting                                      |
| 26. | <i>Plumeria acutifolia</i>     | Pagoda tree/<br>Temple tree          | Apocynaceae  | White, April-<br>November            | Dwarf evergreen tree with large green leaves with acute tips.   |
| 27. | <i>Plumeria alba</i>           | Pagoda tree/<br>Temple tree          | Apocynaceae  | White, April-<br>November            | Dwarf evergreen tree with large glabrous dark green leaves with round tip, bear fragrant flowers                        |
| 28. | <i>Plumeria rubra</i>          | Red Frangipani                       | Apocynaceae  | Pinkish red, red,<br>April- November | Dwarf deciduous tree with large dark green conical leaves, bear red flowers   |
| 29. | <i>Saraca indica</i>           | Sita Ashoka                          | Fabaceae     | Bright orange-<br>Red, April – May   | Evergreen tree with drooping branches, bear fragrant flowers.   |
| 30. | <i>Spathodea campanulata</i>   | Fountain tree/<br>African Tulip tree | Bignoniaceae | Red, Feb-May.                        | Monotypic genus in the family Bignoniaceae, A medium sized tree. Flower on pressing trickles out water like a fountain. |
| 31. | <i>Tabebuia rosea</i>          | Rosy trumpet<br>tree                 | Bignoniaceae | Deep rose pink,<br>Feb- April        | Large tree which bears flowers when leafless.   |
| 32. | <i>Tabebuia argentea</i>       | Silver trumpet<br>tree               | Bignoniaceae | Yellow, March-<br>May                | Quick growing tree, bears flowers when leafless. Suitable for avenue planting.  |
| 33. | <i>Tecomella undulata</i>      | Roheda                               | Bignoniaceae | Orange, March-<br>April              | It is dwarf tree, evergreen to semi-deciduous tree suitable for dry and desert areas.                                   |

## 2. Foliage trees: Trees grown for their showy ornamental foliage or for providing shade in garden.

| S. No. | Botanical Name                              | Common Name                 | Family         | Description   |
|--------|---|-----------------------------|----------------|---|
| 1.     | <i>Alstonia scholaris</i>                   | Sat Patia or Devil's tree   | Apocynaceae    | Bright green leaves borne in cluster of seven. It is good shady tree, used for avenue planting and near parking areas   |
| 2.     | <i>Araucaria cookii</i>                     | Monkey Puzzle Tree          | Araucariaceae  | It has symmetrical growth habit. Good for planting as specimen tree. Propagated from seed.                              |
| 3.     | <i>Casuarina equisetifolia</i>              | Australian pine tree        | Casuarinaceae  | Tall columnar tree with needle like leaves, suitable for wind breaks  |
| 4.     | <i>Cedrus deodara</i>                       | Cedar pine/ Deodar          | Pinaceae       | Evergreen pine tree of temperate areas, suitable for roadside planting and timber.                                      |
| 5.     | <i>Cupressus sempervirens</i>               | Saru                        | Cupressaceae   | Conical tree with thin foliage and suitable for planting in the graveyard.  |
| 6.     | <i>Dillenia indica</i>                      | Chalta                      | Dilleniaceae   | Dwarf slow growing tree with shiny green serrated leaves.   |
| 7.     | <i>Eucalyptus spp.</i>                      | Blue gum tree/<br>Safeda    | Myrtaceae      | Slender trunk, smooth clean few branches lemon scented leaves. Grow rapidly and planted as avenues on marshy land.      |
| 8.     | <i>Eugenia jambolina</i>                    | Jamun/ Java plum            | Myrtaceae      | Tall and spreading with dark green foliage, suitable for providing shade. It bears fruits and attract birds.            |
| 9.     | <i>Ficus benghalensis</i>                   | Bohr or Banyan tree         | Moraceae       | Tall, round shaped foliage tree, usually grown for providing shade in gardens.  |
| 10.    | <i>Ficus religiosa</i>                      | Pipal                       | Moraceae       | Tall, evergreen, round shaped tree usually grown for providing shade in gardens.  |
| 11.    | <i>Ficus elastica</i>                       | Rubber tree                 | Moraceae       | Evergreen medium size tree, bright shining blackish green leaves, can be used as a specimen tree and as a pot plant.    |
| 12.    | <i>Juniperus chinensis</i>                  | Chinese Juniper             | Cupressaceae   | Conical growth habit and fine needle like thin green leaves, can be planted as pot plant or as specimen.                |
| 13.    | <i>Melia azedarch</i>                       | Chinaberry tree/<br>Drake   | Meliaceae      | Winter deciduous tree, light green shiny foliage, suitable for plantation as shady tree                                 |
| 14.    | <i>Melaleuca bracteata</i>                  | Golden Bottle brush         | Myrtaceae      | Tree with pendulous branches, leaves are golden-greenish in colour.   |
| 15.    | <i>Mimusops elengi</i>                      | Spanish cherry.<br>Maulsari | Sapotaceae     | Slow growing tree with round canopy and dark green foliage, bears scented flowers                                       |
| 16.    | <i>Polyalthia longifolia</i>                | False Ashok                 | Annonaceae     | Tall evergreen tree with a symmetrical columnar crown, good for screening and roadside planting.                        |
| 17.    | <i>Pinus roxburghii</i>                     | Chirpine                    | Pinaceae       | Evergreen pine tree grown in hills. It can be grown as specimen tree.   |
| 18.    | <i>Pongamia pinnata</i>                     | Pongam tree                 | Fabaceae       | Medium size shady tree with dark green foliage, bears purplish white flowers.   |
| 19.    | <i>Pterospermum acerifolium</i>             | Bayur tree/ Kanak<br>Champa | Malvaceae      | Medium sized evergreen tree with beautiful foliage and creamish yellow scented flower which appears from April to June. |
| 20.    | <i>Pterygote alata/<br/>Sterculia alata</i> | Buddha coconut              | Malvaceae      | Tall slow growing tree with broad leaves, less spreading, suitable for planting as avenue tree.                         |
| 21.    | <i>Putranjiva roxburghii</i>                | Putrajiva                   | Putranjivaceae | Large tree with a semi-globular crown dense glossy, foliage, good for avenues.  |

|     |                           |            |              |   |
|-----|---------------------------|------------|--------------|---|
| 22. | <i>Terminallia arjuna</i> | Arjun tree | Combretaceae | Large evergreen shady tree. Flowers are not showy. Suitable for planting along roads and in groups for shade. |
|-----|---------------------------|------------|--------------|---|

### Practical No. 3

**Objective:** To shrubs and climbers used for landscaping.

**Exercise:** Identify different shrubs according to their classification

**Flowering shrubs:** Shrubs are grown for their beautiful flowers.

| S. No. | Common Name                   | Botanical Name | Family | Flower colour and flowering time and other features |
|--------|-------------------------------|----------------|--------|---|
| 1.     | Abelia                        |                |        |   |
| 2.     | Bell Bauhinia                 |                |        |   |
| 3.     | Bleeding heart                |                |        |   |
| 4.     | Bougainvillea                 |                |        |   |
| 5.     | Camellia                      |                |        |   |
| 6.     | Changeable Rose               |                |        |   |
| 7.     | Chenille plant/<br>Cat's tail |                |        |   |
| 8.     | China Rose                    |                |        |   |
| 9.     | Chinese lantern               |                |        |   |
| 10.    | Chitra                        |                |        |   |
| 11.    | Christmas Flower              |                |        |   |
| 12.    | Cup-n-Saucer                  |                |        |   |
| 13.    | Datura                        |                |        |   |
| 14.    | Desert Cassia                 |                |        |   |

|     |                                  |  |  |  |
|-----|----------------------------------|--|--|--|
| 15. | Din ka Raja                      |  |  |  |
| 16. | False Heather                    |  |  |  |
| 17. | Fire cracker plant               |  |  |  |
| 18. | Firebush/<br>humming<br>birdbush |  |  |  |
| 19. | Forest Jasmine                   |  |  |  |
| 20. | Gandhraj                         |  |  |  |
| 21. | Golden shower                    |  |  |  |
| 22. | Jacobinia                        |  |  |  |
| 23. | Jungle<br>geranium               |  |  |  |
| 24. | Kaner                            |  |  |  |
| 25. | Karonda                          |  |  |  |
| 26. | Mexican<br>petunia               |  |  |  |
| 27. | Milk weed                        |  |  |  |
| 28. | Motia                            |  |  |  |
| 29. | Mussaenda                        |  |  |  |
| 30. | Parijaat/ Har-<br>Shingar        |  |  |  |
| 31. | Peacock flower                   |  |  |  |
| 32. | Peeli chameli                    |  |  |  |

|     |                          |  |  |  |
|-----|--------------------------|--|--|--|
|     |                          |  |  |  |
| 33. | Philippine violet        |  |  |  |
| 34. | Pili Kaner               |  |  |  |
| 35. | Pink Cestrum             |  |  |  |
| 36. | Pink Powder puff         |  |  |  |
| 37. | Pinwheel flower/ Chandni |  |  |  |
| 38. | Purple king's mantle     |  |  |  |
| 39. | Rat ki Rani              |  |  |  |
| 40. | Rockspray Cotoneaster    |  |  |  |
| 41. | Rose of Sharon           |  |  |  |
| 42. | Sawani                   |  |  |  |
| 43. | Scrambled egg bush       |  |  |  |
| 44. | Sleeping Hibiscus        |  |  |  |
| 45. | Trailing Lantana         |  |  |  |
| 46. | Yellow trumpet bush      |  |  |  |

**Foliage shrubs:** These shrubs are grown for their foliage either green or variegated

| <b>S. No.</b> | <b>Common Name</b>         | <b>Botanical Name</b> | <b>Family</b> |
|---------------|----------------------------|-----------------------|---------------|
| 1.            | Acalypha                   |                       |               |
| 2.            | Caribbean copper leaf      |                       |               |
| 3.            | Chinese croton             |                       |               |
| 4.            | False Eranthemum           |                       |               |
| 5.            | Forest Jasmine             |                       |               |
| 6.            | Golden bottle brush        |                       |               |
| 7.            | Golden Dewrop              |                       |               |
| 8.            | Japanese Privet            |                       |               |
| 9.            | Mehndi                     |                       |               |
| 10.           | Miniature Holly            |                       |               |
| 11.           | Mouse tail plant           |                       |               |
| 12.           | Nirgundi                   |                       |               |
| 13.           | Privet or Japanese spindle |                       |               |
| 14.           | Weeping fig                |                       |               |
| 15.           | Willow leaved Justicia     |                       |               |

### IDENTIFICATION OF ORNAMENTAL CLIMBERS

| S. No. | Common Name                 | Botanical Name | Family | Flower colour and flowering time | Identifying characters |
|--------|-----------------------------|----------------|--------|----------------------------------|------------------------|
| 1.     | Allamanda                   |                |        |                                  |                        |
| 2.     | Butterfly pea               |                |        |                                  |                        |
| 3.     | Australian bower plant      |                |        |                                  |                        |
| 4.     | Banksian Rose               |                |        |                                  |                        |
| 5.     | Bengal Clockvine            |                |        |                                  |                        |
| 6.     | Bleeding Heart              |                |        |                                  |                        |
| 7.     | Blue Passion flower         |                |        |                                  |                        |
| 8.     | Bougainvillea               |                |        |                                  |                        |
| 9.     | Cape Honeysuckle            |                |        |                                  |                        |
| 10.    | Cat's claw                  |                |        |                                  |                        |
| 11.    | Chameli/<br>Spanish jasmine |                |        |                                  |                        |
| 12.    | Chinese Wisteria            |                |        |                                  |                        |
| 13.    | Climbing rose               |                |        |                                  |                        |
| 14.    | Coral Vine                  |                |        |                                  |                        |
| 15.    | Creeping fig/<br>Chipku bel |                |        |                                  |                        |
| 16.    | Curtain creeper             |                |        |                                  |                        |
| 17.    | Cypress vine                |                |        |                                  |                        |
| 18.    | Duck flower                 |                |        |                                  |                        |
| 19.    | Flaming glory bower         |                |        |                                  |                        |
| 20.    | Garlic Vine                 |                |        |                                  |                        |
| 21.    | Golden shower               |                |        |                                  |                        |
| 22.    | Honeysuckle                 |                |        |                                  |                        |
| 23.    | Juhi                        |                |        |                                  |                        |
| 24.    | Madhavi lata                |                |        |                                  |                        |

|     |                                       |  |  |  |  |
|-----|---------------------------------------|--|--|--|--|
| 25. | Maljhan,<br>Climbing<br>bauhinia      |  |  |  |  |
| 26. | Morning glory                         |  |  |  |  |
| 27. | Mysore<br>trumpet vine                |  |  |  |  |
| 28. | Nepal trumpet<br>creeper              |  |  |  |  |
| 29. | Potato vine/<br>Jasmine<br>nightshade |  |  |  |  |
| 30. | Purple wreath                         |  |  |  |  |
| 31. | Railway<br>creeper                    |  |  |  |  |
| 32. | Rangoon<br>creeper/<br>Jhumka bel     |  |  |  |  |
| 33. | Red passion<br>flower                 |  |  |  |  |
| 34. | Star jasmine                          |  |  |  |  |
| 35. | Trumpet flower                        |  |  |  |  |

## IDENTIFICATION OF SHRUBS

## 1. Flowering shrubs: Shrubs are grown for their beautiful flowers.

| S. No. | Botanical Name                                       | Common Name                      | Family         | Flowering time                           | Identifying characters   |
|--------|--|----------------------------------|----------------|--|--|
| 47.    | <i>Abelia grandiflora</i>                            | Abelia                           | Caprifoliaceae | May-June                                 | It grows to a height of 1.5-2m, spreading habit and propagated through cuttings.                                     |
| 48.    | <i>Abutilon pictum</i>                               | Chinese lantern                  | Malvaceae      | Orange-yellow                            | Short shrub, propagated from seeds and cuttings and prefer partial shade.  |
| 49.    | <i>Acalypha hispida</i>                              | Chenille plant/<br>Cat's tail    | Euphorbiaceae  | Throughout the year,<br>red              | Bushy shrub with dark green foliage and long red coloured fuzzy pendulous inflorescence which looks like cat's tail. |
| 50.    | <i>Achania malvaviscus/<br/>Malvaviscus arboreus</i> | Sleeping<br>Hibiscus             | Malvaceae      | Throughout the year,<br>red              | Popular shrub used as hedge, easily propagated from cuttings   |
| 51.    | <i>Asclepias currassavica</i>                        | Milk weed                        | Asclepiadaceae | Summer season<br>Orange-yellow           | As a specimen shrub, good for border, propagated from seed or cuttings   |
| 52.    | <i>Barleria cristata</i>                             | Philippine violet                | Acanthaceae    | Oct-Dec.<br>Violet blue, pink, white     | It is a small shrub, winter deciduous in nature propagated from seed.  |
| 53.    | <i>Bauhinia tomentosa</i>                            | Bell bauhinia                    | Leguminosae    | August-October<br>Sulphur yellow         | 5-8 m high, winter deciduous shrub, quick growing. Grown for foliage and flower beauty. Propagated from seed.        |
| 54.    | <i>Bougainvillea</i> spp                             | Bougainvillea                    | Nyctaginaceae  | Red, yellow, white,<br>purple, pink      | It is a multipurpose shrub, quick growing. Hardy and can be grown under neglected conditions for screening purpose.  |
| 55.    | <i>Brugmansia suaveolens</i>                         | Datura                           | Solanaceae     | Pink flowers                             | Very good landscape plant, prefers partial shade.  |
| 56.    | <i>Caesalpinia Pulcherrima</i>                       | Peacock flower                   | Leguminosae    | May-Aug.<br>Scarlet, yellow              | It is medium sized shrub grown for foliage and flower beauty. It is a quick growing shrub suitable for dry areas.    |
| 57.    | <i>Calliandra brevipes</i>                           | Pink Powder puff                 | Leguminosae    | Red, pink, white                         | It is medium to tall, evergreen shrub with beautiful foliage.  |
| 58.    | <i>Camellia japonica</i>                             | Camellia                         | Theaceae       | April-June<br>Red, Pink                  | Very good specimen shrub suitable for high elevations.   |
| 59.    | <i>Carissa carandus</i>                              | Karonda                          | Apocynaceae    | March-April, white                       | A good hedge plant and can be planted in a large shrubbery.  |
| 60.    | <i>Cascabela thevetia/<br/>Thevetia peruviana</i>    | Pili Kaner                       | Apocynaceae    | Year round, Yellow                       | Tall evergreen shrubs with shining leaves, for roadside plantation and screening, propagation is from seed.          |
| 61.    | <i>Cassia biflora</i>                                | Desert Cassia                    | Leguminosae    | Feb-April<br>Yellow                      | It is 6-8 ft. in height propagated from seed and air layering, used as specimen shrub.                               |
| 62.    | <i>Cassia glauca</i>                                 | Scrambled egg bush               | Leguminosae    | Mar-May, Sept. -Nov.,<br>Yellow          | It is tall, evergreen, quick growing shrub suitable for arid areas.  |
| 63.    | <i>Cestrum diurnum</i>                               | Din ka Raja                      | Solanaceae     | June-Aug<br>White                        | It is medium sized quick growing, evergreen shrub with blue berries.   |
| 64.    | <i>Cestrum elegans</i>                               | Pink Cestrum                     | Solanaceae     | Sept-Dec.<br>Purple red                  | A plant suitable for temperate climate and high altitudes.   |
| 65.    | <i>Cestrum nocturnum</i>                             | Rat ki Rani                      | Solanaceae     | Spring & Rainy<br>season white           | It is 5-6 ft high, evergreen, hardy quick growing shrub, propagated from cuttings, fragrant flowers open at night.   |
| 66.    | <i>Clerodendrum thomsonae</i>                        | Bleeding heart                   | Verbenaceae    | Rainy season<br>Scarlet with white calyx | Very attractive shrub/climber suitable for tropical areas.   |
| 67.    | <i>Cotoneaster microphyllus</i>                      | Rockspray<br>Cotoneaster         | Rosaceae       | White flowers                            | Prostrate trailing shrubs, climbs over rocks and suitable for rock gardens.  |
| 68.    | <i>Cuphea hyssopifolia</i>                           | False Heather                    | Lythraceae     | July-September<br>blue flowers           | Evergreen shrub suitable as good edging plant bearing pinkish purple flowers.  |
| 69.    | <i>Galphimia gracilis</i>                            | Golden shower                    | Malpighiaceae  | Jul-Nov.<br>Yellow                       | It is evergreen medium shrub, can be used as hedge. Propagated through seed.   |
| 70.    | <i>Gardenia jasminoides</i>                          | Gandhraj                         | Rubiaceae      | March-Sept.<br>White                     | Evergreen medium shrub. Grown as a specimen shrub, bears sweet scented flowers.                                      |
| 71.    | <i>Hamelia patens</i>                                | Firebush/<br>humming<br>birdbush | Rubiaceae      | Year round<br>Red                        | Tall shrub. On rockery it can be trained as small bush, grown for the foliage and flower beauty and for screening.   |
| 72.    | <i>Hamiltonia suaveolens</i>                         | -                                | Rubiaceae      | Feb-March<br>Lavender                    | Medium to large shrub 6-8'. Propagated from cutting, used for group plantation.                                      |



|     |   |                          |                  |  |  |
|-----|---|--------------------------|------------------|--|--|
| 73. | <i>Hibiscus mutabilis</i>                     | Changeable Rose          | Malvaceae        | White to Pink to red                           | It is tall growing, deciduous shrub with large leaves..  |
| 74. | <i>Hibiscus rosa-sinensis</i>                 | China Rose               | Malvaceae        | Year round<br>White, pink rose, yellow         | Evergreen medium sized. Used for making flowering hedge.   |
| 75. | <i>Hibiscus syriacus</i>                      | Rose of Sharon           | Malvaceae        | Summers, White & Mauve                         | Deciduous shrub 5-6'. Propagated from cuttings. Good for temperate climatic areas.                             |
| 76. | <i>Holmskioldia Sanguinea</i>                 | Cup-n-Saucer             | Verbenaceae      | Yellow, red                                    | Medium sized shrub. Long branches used for dry decoration.   |
| 77. | <i>Ixora coccinea</i>                         | Jungle geranium          | Rubiaceae        | Deep scarlet<br>July-Aug                       | Evergreen specimen shrub. Prefers partial shade for growth.  |
| 78. | <i>Ixora parviflora</i>                       | -do-                     | Rubiaceae        | White, Mar-Apr                                 | Tall evergreen specimen shrub with sweet scented flowers.  |
| 79. | <i>Ixora singaporiensis</i>                   | -do-                     | Rubiaceae        | Pinkish red                                    | Dwarf shrub, used as a specimen bush. Prefers partial shade for growth.  |
| 80. | <i>Jacobinia carnea</i>                       | Jacobinia                | Acanthaceae      | Orange   | 4-5' evergreen shrub, bears tubular orange flower, grown for making flowering hedge.                           |
| 81. | <i>Jasminum humile</i>                        | Peeli chameli            | Oleaceae         | Feb-Mar, Yellow                                | Evergreen shrub. Thrives well in poor soil, can be used as climber.  |
| 82. | <i>Jasminum sambac</i>                        | Motia                    | -do-             | March-Sept.<br>White                           | Dwarf shrub, planted for sweet scented flowers. Propagated by suckers and cuttings.                            |
| 83. | <i>Lagerstroemia indica</i>                   | Sawani                   | Lythraceae       | May-Aug Mauve, pink and white                  | Tall, winter deciduous shrub, Propagated from cuttings.  |
| 84. | <i>Lantana sellowiana</i>                     | Trailing Lantana         | Verbenaceae      | Year round<br>Pale mauve                       | Medium shrub, evergreen, good for planting on mounds and rockeries.  |
| 85. | <i>Mussaenda frondosa</i>                     | Mussaenda                | Rubiaceae        | Summers<br>White sepals                        | Evergreen shrub. Long white sepals form a part of flowers.   |
| 86. | <i>Nerium oleander</i>                        | Kaner                    | Apocynaceae      | May-Oct<br>White, pink, Red                    | Evergreen shrub. Suitable for roadside plantation, screening. Variegated varieties are used as specimen plant. |
| 87. | <i>Nyctanthes arbor-tristis</i>               | Parijaat/ Har-Shingar    | Oleaceae         | October- January<br>White with orange peduncle | Tall evergreen shrub, with numerous sweet scented flowers, propagation is from seed.                           |
| 88. | <i>Plumbago capensis</i>                      | Chitra                   | Plumbaginaceae   | Mar.-Oct., White turn light blue               | Evergreen shrub, used as ground cover, pot plant or for foundation plantation.                                 |
| 89. | <i>Poinsettia pulcherrima</i>                 | Christmas Flower         | Euphorbiaceae    | Dec.-Jan Yellow and Red                        | Deciduous shrub, 5-6 ft height, terminal leaves look like flowers.   |
| 90. | <i>Ruellia simplex</i>                        | Mexican petunia          | Acanthaceae      | Spring to summers,<br>Purple, pink, white      | Thriving best under semi-shade, suitable for shrubbery and hanging baskets.                                    |
| 91. | <i>Russelia juncea</i>                        | Fire cracker plant       | Scrophulariaceae | June to Aug,<br>Coral red                      | Dwarf, evergreen shrub, used as foundation plant, bears tube like flowers. Used in bouquet making.             |
| 92. | <i>Tabernaemontana coronaria</i>              | Pinwheel flower/ Chandni | Apocynaceae      | Round the year, white                          | Tall evergreen shrub with glossy leaves used in shrubbery, specimen shrub, avenue and screening.               |
| 93. | <i>Tecoma stans</i>                           | Yellow trumpet bush      | Bignoniaceae     | Year round, Golden yellow                      | Dwarf growing shrub grown in shrubbery or as hedge.  |
| 94. | <i>Thunbergia erecta</i>                      | Purple king's mantle     | Acanthaceae      | Year round<br>Dark blue                        | Medium sized evergreen shrub, used for making flowering hedge.   |
| 95. | <i>Volkmeria inermis /Clerodendrum inermi</i> | Forest Jasmine           | Verbenaceae      | July-Nov.<br>White                             | It is evergreen shrub, good for hedge making, can be trained for topiary making and good for dry areas.        |

## 2. Foliage shrubs: These shrubs are grown for their foliage either green or variegated

| S. No. | Botanical Name                | Common Name                | Family        | Flowering time   | Identifying characters   |
|--------|-------------------------------|----------------------------|---------------|------------------|--|
| 16.    | <i>Acalypha wilkensisiana</i> | Acalypha                   | Euphorbiaceae | -                | It is 3-4 ft. in height. It is good for hedge, foundation plantation and pot plant. It prefers partial shade for healthy growth. |
| 17.    | <i>Duranta repens</i>         | Golden Dewrop              | Verbenaceae   | May-Jul,<br>Blue | Medium sized, suitable for dry areas, propagated through cuttings. Used for edge & hedge making.                                 |
| 18.    | <i>Euonymus japonicus</i>     | Privet or Japanese spindle | Celastraceae  | -                | Medium sized shrub, used for hedge making, as pot plant, foliage is used as cut stem.  |
| 19.    | <i>Euphorbia cotinifolia</i>  | Caribbean copper leaf      | Euphorbiaceae | -                | Fast growing shrub with reddish foliage, suitable as pot plant, shrubbery and specimen   |
| 20.    | <i>Excoecaria bicolor</i>     | Chinese croton             | Euphorbiaceae | -                | Attractive leaves, red and green on opposite sides of leaf blade, good shrub for pots.   |
| 21.    | <i>Ficus benjamina</i>        | Weeping fig                | Moraceae      | -                | Shrub with dark green leaves suitable for hedges, specimen and topiary.  |
| 22.    | <i>Justicia gendarussa</i>    | Willow leaved Justicia     | Acanthaceae   | -                | Medium shrub, good for making edges. Can also be grown under partial shade.  |

|     |  |                     |                |                            |  |
|-----|--|---------------------|----------------|----------------------------|--|
| 23. | <i>Lawsonia inermis</i>                                | Mehndi              | Lythraceae     | Creamy white               | Medium sized fragrant, quick growing shrub, powder of its leaves used for decorating hand and feet.  |
| 24. | <i>Ligustrum ovalifolium</i>                           | Japanese Privet     | Oleaceae       | Dull white                 | It is popular as a hedge plant can be propagated through cuttings.   |
| 25. | <i>Malpighia coccigera</i>                             | Miniature Holly     | Malpighiaceae  | Throughout the year, White | Evergreen shrub with small dark green spiny leaves. Good for making topiary, hedges, edges and bonsai.                                     |
| 26. | <i>Melaleuca bracteata</i>                             | Golden bottle brush | Myrtaceae      | April – Oct, White         | Shrub of weeping habit, most suitable for topiary making, can be propagated from cuttings.   |
| 27. | <i>Phyllanthus myrtifolius</i>                         | Mouse tail plant    | Phyllanthaceae | May-Sept., red             | Evergreen shrub with small light green leaves borne on drooping branches, producing a dense crown. Suitable for hedges, edges and topiary. |
| 28. | <i>Pseuderanthemum carruthersii</i>                    | False Eranthemum    | Acanthaceae    | June-October, White, pink  | Medium growing evergreen shrub, with green, dark purple and variegated leaves, suitable as pot plant                                       |
| 29. | <i>Vitex negundo</i>                                   | Nirgundi            | Verbenaceae    | May-June Lilac             | Tall shrub, silvery leaves. Suitable for saline, alkaline soil, drought resistant.   |
| 30. | <i>Volkmeria inermis</i> / <i>Clerodendrum inermis</i> | Forest Jasmine      | Verbenaceae    | July-Nov. White            | It is evergreen shrub, good for hedge making, can be trained for topiary making. Propagated from cuttings and is drought resistant.        |

### IDENTIFICATION OF ORNAMENTAL CLIMBERS

| S. No. | Botanical Name                                   | Common Name                       | Family                 | Flower colour and flowering time              | Identifying characters   |
|--------|--|-----------------------------------|------------------------|---|--|
| 36.    | <i>Allamanda cathartica</i>                      | Allamanda                         | Apocynaceae            | Yellow, May-September                         | Light green foliage with narrow pointed leaves arranged in whorl of four. It can be grown as garden shrub or as climber.                   |
| 37.    | <i>Antigonon leptopus</i>                        | Coral Vine                        | Polygonaceae           | Rose-pink, July-October                       | Deciduous quick growing climber, good for trellis and cascading  |
| 38.    | <i>Aristolochia elegans</i>                      | Duck flower                       | Aristolochiaceae       | June-September                                | Deciduous quick growing climber, good for trellis and cascading  |
| 39.    | <i>Bauhinia vahlii</i>                           | Maljhan, Climbing bauhinia        | Caesalpinaceae         | Creamy-white, May-June                        | Large, evergreen climber/ rambler, good for growing in foothills in drought prone areas.   |
| 40.    | <i>Beaumontia grandiflora</i>                    | Nepal trumpet creeper             | Apocynaceae            | White, January-April                          | Evergreen quick growing heavy climber with shining coarse textured foliage   |
| 41.    | <i>Bougainvillea</i> spp                         | Bougainvillea                     | Nyctaginaceae          | Pink, magenta, white, orange, Throughout year | Evergreen to semi-deciduous climber usually pruned for restricting growth. It is valued for coloured bracts                                |
| 42.    | <i>Clerodendrum splendens</i>                    | Flaming glory bower               | Lamiaceae/ Verbenaceae | Red, January-April                            | Large evergreen climber with coarse textured dark green foliage.   |
| 43.    | <i>C. thomsonae</i>                              | Bleeding Heart                    | Lamiaceae              | White bracts with red flowers, Jan-April      | Evergreen climber dark green foliage and suitable for pots.  |
| 44.    | <i>Clitoria ternatea</i>                         | Asian pigeon wings/ Butterfly pea | Fabaceae               | Blue, white November-March                    | It is an annual climber, slow growing, can be grown as a pot climber   |
| 45.    | <i>Combretum indicum/ Quisqualis indica</i>      | Rangoon creeper/ Jhumka bel       | Combretaceae           | Reddish pink, Round the year                  | Beautiful creeper with moderately scented flowers. Used on long pillars, arches and trellis.   |
| 46.    | <i>Dolichandra unguicati/ Bignonia unguicati</i> | Cat's claw                        | Bignoniaceae           | Yellow, March-July                            | Evergreen light climber and have ability to climb over bare walls and pillars, emerging leaves purple-red. Good for making topiary.        |
| 47.    | <i>Ficus repens</i>                              | Creeping fig/ Chipku bel          | Moraceae               | -   | Evergreen climber and climbs with help of root exudates on walls, dead trees etc. and cover the wall. Best for growing in shady situations |
| 48.    | <i>Hiptage benghalensis</i>                      | Madhavi lata                      | Malpighiaceae          | Creamy-white, February-June                   | Heavy woody semi-deciduous climber with shining foliage, emerging orange-red and red purple in autumn and have fragrant flowers.           |
| 49.    | <i>Ipomoea cairica</i>                           | Railway creeper                   | Convolvulaceae         | Purple, Throughout year                       | Evergreen quick growing climber.   |
| 50.    | <i>Ipomoea learii</i>                            | Morning glory                     | -do-                   | Scarlet-pink, blue, June-September            | Annual climber and usually grow in wild as weed.   |
| 51.    | <i>I. quamoclit</i>                              | Cypress vine                      | -do-                   | Red, Oct-March                                | Annual climber with fine textured dark green leaves like fern  |
| 52.    | <i>Jasminum auriculatum</i>                      | Juhi                              | Oleaceae               | White, April-July                             | Evergreen climber with fragrant flowers.   |
| 53.    | <i>J. grandiflorum</i>                           | Chameli/                          | -do-                   | White, March-                                 | Evergreen climber with dark green fine textured foliage and  |

|     |  |                                 |                |                                     |   |
|-----|--|---------------------------------|----------------|-------------------------------------|---|
|     |  | Spanish jasmine                 |                | October                             | fragrant flowers.   |
| 54. | <i>Lonicera japonica</i>                       | Honeysuckle                     | Caprifoliaceae | Creamy-white, Throughout year       | Evergreen heavy quick growing creeping plant with fragrant flowers.   |
| 55. | <i>Mansoa alliacea/ Adenocalymma alliicum</i>  | Garlic Vine                     | Bignoniaceae   | Mauve-purple, March-June            | Hardy climber with shining leaves which produce garlic like smell on rubbing. Suitable for pergolas and arches. |
| 56. | <i>Pandorea jasminoides</i>                    | Australian bower plant          | Bignoniaceae   | Reddish pink, April- Nov.           | Light climber with shining green foliage  |
| 57. | <i>Pyrostegia venusta</i>                      | Golden shower                   | Bignoniaceae   | Orange, February-April              | Heavy climber with drooping branches.   |
| 58. | <i>Passiflora caerulea</i>                     | Blue Passion flower             | Passifloraceae | White with blue filament, Sept-Nov  | Flowers look like clock/ watch, planted on arches and entrances.  |
| 59. | <i>Passiflora coccinea</i>                     | Red passion flower              | Passifloraceae | Red, August- November               | Tropical climber bears showy scarlet red flowers, suitable for sunny and high humidity.                         |
| 60. | <i>Petrea volublis</i>                         | Purple wreath                   | Verbenaceae    | Spring, purple                      | Creepers with woody stem with drooping long racemes of star like flowers.                                       |
| 61. | <i>Rosa sp.</i>                                | Climbing rose                   | Rosaceae       | Many colours, Feb- July             | Many varieties of climbing rose are suitable for growing in arches, pergolas and trellises.                     |
| 62. | <i>Rosa banksiana</i>                          | Banksian Rose                   | Rosaceae       | Creamish white, white, March- April | Trailing type of species which produces small flowers in bunches.   |
| 63. | <i>Solanum jasminoides</i>                     | Potato vine/ Jasmine nightshade | Solanaceae     | White, bluish white, Sep- Feb       | A slender twining shrub suitable for medium to high elevations.   |
| 64. | <i>Tecoma grandiflora/ Campsis grandiflora</i> | Trumpet flower                  | Bignoniaceae   | Orange, March- October              | Deciduous climber and have ability to climb over walls. Bear glossy dark green leaves.                          |
| 65. | <i>Tecomera capensis</i>                       | Cape Honeysuckle                | Bignoniaceae   | Orange, throughout the year         | Evergreen climber, it can be trimmed to give shapes.  |
| 66. | <i>Thunbergia grandiflora</i>                  | Bengal Clockvine                | Acanthaceae    | Sky blue, Feb-Mar                   | Dense green foliage, heart shaped. It can cover walls, trees  |
| 67. | <i>T. mysorensis</i>                           | Mysore trumpet vine             | Acanthaceae    | Orange, red, yellow, Jan- March     | Flowers are borne in pendulous racemes, suitable for arches, pergolas and trellis.                              |
| 68. | <i>Trachelospermum jasminoides</i>             | Star jasmine                    | Apocynaceae    | April-June, white                   | Evergreen climber, suitable for growing in shady situation and bears fragrant flowers.                          |
| 69. | <i>Wisteria sinensis</i>                       | Chinese Wisteria                | Fabaceae       | Purple, white, February- March,     | It is a winter deciduous creeper which can be trained over pergolas, fences and trellis.                        |
| 70. | <i>Tarlmounia elliptica</i>                    | Curtain creeper                 | Asteraceae     | Foliage shrub with white flowers    | It is evergreen climber with drooping branches. Good for covering boundary wall and verandas.                   |

## Practical No. 4

**Objective:** To identify different annuals used for landscaping.

**Exercise:** Identify different annual flowers in the campus and note down distinguishing characteristics along with common name and family.

Annual flowers, commonly called as seasonal flowers are classified as winter, summer and rainy season annuals.

### Winter season Annuals:

| Sr. No. | Common Name             | Botanical Name | Family | Colour |
|---------|-------------------------|----------------|--------|--------|
| 1.      | African Daisy           |                |        |        |
| 2.      | African Marigold        |                |        |        |
| 3.      | Annual baby's breath    |                |        |        |
| 4.      | Annual chrysanthemum    |                |        |        |
| 5.      | Bells of Ireland        |                |        |        |
| 6.      | Blue eyed African daisy |                |        |        |
| 7.      | Californian poppy       |                |        |        |
| 8.      | Candytuft               |                |        |        |
| 9.      | China aster             |                |        |        |
| 10.     | Chinese pink            |                |        |        |
| 11.     | Cineraria               |                |        |        |
| 12.     | Clarkia                 |                |        |        |
| 13.     | Common poppy            |                |        |        |
| 14.     | Corn flower             |                |        |        |

|     |                          |  |  |  |
|-----|--------------------------|--|--|--|
| 15. | Dahlia                   |  |  |  |
| 16. | Drummond's Phlox         |  |  |  |
| 17. | English daily            |  |  |  |
| 18. | Fairy primrose           |  |  |  |
| 19. | French Marigold          |  |  |  |
| 20. | Garden Cosmos            |  |  |  |
| 21. | Greater quacking grass   |  |  |  |
| 22. | Hare's-tail or Bunnytail |  |  |  |
| 23. | Hollyhock                |  |  |  |
| 24. | Ice plant                |  |  |  |
| 25. | Lance-leaved coreopsis   |  |  |  |
| 26. | Larkspur                 |  |  |  |
| 27. | Love -in- a -mist        |  |  |  |
| 28. | Lupin                    |  |  |  |
| 29. | Nasturtium               |  |  |  |
| 30. | Nemesia                  |  |  |  |
| 31. | Pansy                    |  |  |  |
| 32. | Paper Flower             |  |  |  |

|     |                                     |  |  |  |
|-----|-------------------------------------|--|--|--|
| 33. | Petunia                             |  |  |  |
| 34. | Plains tickseed                     |  |  |  |
| 35. | Pot marigold                        |  |  |  |
| 36. | Scarlet sage                        |  |  |  |
| 37. | Sea-lavender<br>/Statice            |  |  |  |
| 38. | Snapdragon                          |  |  |  |
| 39. | Star of the Veldt/<br>Cape marigold |  |  |  |
| 40. | Stock                               |  |  |  |
| 41. | Straw flower                        |  |  |  |
| 42. | Sulphur Cosmos                      |  |  |  |
| 43. | Swan River Daisy                    |  |  |  |
| 44. | Sweet Alyssum                       |  |  |  |
| 45. | Sweet pea                           |  |  |  |
| 46. | Sweet sultan                        |  |  |  |
| 47. | Sweet William                       |  |  |  |
| 48. | Treasure daisy                      |  |  |  |
| 49. | Verbena                             |  |  |  |
| 50. | Wall flower                         |  |  |  |

|     |                 |  |  |  |
|-----|-----------------|--|--|--|
| 51. | Wishbone flower |  |  |  |
|-----|-----------------|--|--|--|

**Summer and rainy season annuals**

| <b>Sr. No.</b> | <b>Common Name</b> | <b>Botanical Name</b> | <b>Family</b> | <b>Colour</b> |
|----------------|--------------------|-----------------------|---------------|---------------|
| 1              | Cock's comb        |                       |               |               |
| 2              | Plumed cockscomb   |                       |               |               |
| 3              | Love-lies-bleeding |                       |               |               |
| 4              | Blanket flower     |                       |               |               |
| 5              | Bachelor's button  |                       |               |               |
| 6              | Sunflower          |                       |               |               |
| 7              | Moss Rose          |                       |               |               |
| 8              | Summer Cypress     |                       |               |               |
| 9              | Balsam             |                       |               |               |
| 10             | Impatiens          |                       |               |               |
| 11             | Mexican Sunflower  |                       |               |               |
| 12             | Periwinkle         |                       |               |               |
| 13             | Zinnia             |                       |               |               |

## IDENTIFICATION OF ANNUALS

## 1. Winter season Annuals:

| Sr. No. | Botanical Name                   | Common Name            | Family          | Colour                         | Description   |
|---------|----------------------------------|------------------------|-----------------|--------------------------------|---|
| 1.      | <i>Acroclium roseum</i>          | Paper Flower           | Asteraceae      | Pink & White                   | Grown for bedding purpose and as dry flowers for decoration.                |
| 2.      | <i>Alcea rosea</i>               | Hollyhock              | Malvaceae       | Various colours                | Can be used for screening purpose, background and borders                   |
| 3.      | <i>Antirrhinum majus</i>         | Snapdragon             | Plantaginaceae  | White, yellow pink, rose mauve | Bedding and pots, good cut flower   |
| 4.      | <i>Arctotis grandis</i>          | African Daisy          | Asteraceae      | White                          | Bedding purpose and herbaceous borders                                      |
| 5.      | <i>Arctotis venusta</i>          | Ble eyed frican daisy  | Asteraceae      | White                          | Bedding purpose and herbaceous borders                                      |
| 6.      | <i>Brachycome iberidifolia</i>   | Swan River Daisy       | Asteraceae      | White, pink and blue           | Bedding purpose and herbaceous borders.                                     |
| 7.      | <i>Bellis perennis</i>           | English daily          | Asteraceae      | White, pink, red               | Bedding purpose   |
| 8.      | <i>Bromus sp.</i>                | -                      | Poaceae         | Green to pale                  | Used as bedding plant and excellent dry flower                              |
| 9.      | <i>Briza maxima</i>              | Greater quacking grass | Poaceae         | Green to pale                  | Used as bedding plant and excellent dry flower                              |
| 10.     | <i>Calendula officinalis</i>     | Pot marigold           | Asteraceae      | Yellow, orange                 | Bedding and pots  |
| 11.     | <i>Callistephus chinensis</i>    | China aster            | Asteraceae      | White, pink, blue              | Bedding and pots, good cut flower   |
| 12.     | <i>Centaurea cyanus</i>          | Corn flower            | Asteraceae      | -do-                           | Bedding purpose   |
| 13.     | <i>Centaurea moschata</i>        | Sweet sultan           | Asteraceae      | Mauve, white, yellow           | Bedding purpose and pots, having scented flowers                            |
| 14.     | <i>Erysimum cheiri</i>           | Wall flower            | Brassicaceae    | Yellow burnt orange            | Bedding purpose and pots, having scented flowers                            |
| 15.     | <i>Clarkia elegans</i>           | Clarkia                | Onagraceae      | White, rose, pink, purple      | Bedding purpose   |
| 16.     | <i>Coreopsis tinctoria</i>       | Plains tickseed        | Asteraceae      | Yellow                         | -do-  |
| 17.     | <i>Coreopsis lanceolata</i>      | Lance-leaved coreopsis | Asteraceae      | Yellow                         | -do-  |
| 18.     | <i>Cosmos bipinnatus</i>         | Garden Cosmos          | Asteraceae      | White, pink, mauve, magenta    | Bedding purpose and can be grown throughout the year                        |
| 19.     | <i>Cosmos sulphureus</i>         | Sulphur Cosmos         | Asteraceae      | Yellow                         | -do-  |
| 20.     | <i>Consolida ajacis</i>          | Larkspur               | Ranunculaceae   | Blue                           | Bedding purpose   |
| 21.     | <i>Dahlia variabilis</i>         | Dahlia                 | Asteraceae      | Various colours                | Bedding purpose and pots  |
| 22.     | <i>Dianthus barbatus</i>         | Sweet William          | Caryophyllaceae | White, pink and red            | Bedding purpose and as cut flower, have scented flowers                     |
| 23.     | <i>Dianthus chinensis</i>        | Chinese pink           | Caryophyllaceae | -do-                           | Bedding purpose.  |
| 24.     | <i>Dimorphotheca sinuata</i>     | Star of the Veldt      | Asteraceae      | White                          | Bedding purpose and pots  |
| 25.     | <i>Eschscholtzia californica</i> | Californian poppy      | Papaveraceae    | Yellow and Orange              | Medium growing , for bedding purpose  |
| 26.     | <i>Gazania splendens</i>         | Treasure daisy         | Asteraceae      | Yellow and dark brown          | Bedding purpose and pots  |
| 27.     | <i>Glebionis coronaria</i>       | Annual chrysanthemum   | Asteraceae      | White, yellow                  | Bedding purpose and good loose flower.                                      |
| 28.     | <i>Gypsophila elegans</i>        | Annual baby's breath   | Caryophyllaceae | White, pink yellow             | Bedding purpose, good cut flowers used as fillers.                          |
| 29.     | <i>Helichrysum bracteatum</i>    | Straw flower           | Asteraceae      | Yellow, white, pink            | Bedding purpose and good dry flower   |
| 30.     | <i>Iberis amara</i>              | Candytuft              | Brassicaceae    | White, pink                    | Can be grown in pots and for edging of herbaceous border                    |
| 31.     | <i>Lagurus ovatus</i>            | Bunnytail              | Poaceae         | Green                          | Bedding purpose, pots and excellent dry flower                              |
| 32.     | <i>Lathyrus odoratus</i>         | Sweet pea              | Fabaceae        | Various colours                | Annual climber with fragrant flowers, suitable for screening and trellises. |
| 33.     | <i>Limonium sinuatum</i>         | Sea-lavender /Statice  | Plumbaginaceae  | White, pink, yellow purple     | Fairly drought resistant, very good cut flower as filler and as dry flower  |
| 34.     | <i>Lobularia maritima</i>        | Sweet Alyssum          | Brassicaceae    | White, lilac                   | Bedding purpose and pot plants  |



|     |                                    |                   |                  |   |   |
|-----|------------------------------------|-------------------|------------------|---|---|
| 35. | <i>Lupinus hartwegii</i>           | Lupin             | Fabaceae         | Purplish blue                             | For bedding purpose and as cut flower   |
| 36. | <i>Mathiola incana</i>             | Stock             | Brassicaceae     | White, purple, yellow                     | For bedding purpose and good cut flower   |
| 37. | <i>Dorotheanthus bellidiformis</i> | Ice plant         | Aizoaceae        | Pink, white, yellow                       | Leaves are fleshy and have small dew like natural eruptions. For edging, pots, hanging baskets, rockery.  |
| 38. | <i>Moluccella laevis</i>           | Bells of Ireland  | Lamiaceae        | Green like bells                          | Used in flower arrangements and good dry flower   |
| 39. | <i>Nemesia strumosa</i>            | Nemesia           | Scrophulariaceae | Yellow, red, orange                       | Bedding and pots  |
| 40. | <i>Nigella damascena</i>           | Love -in- a -mist | Ranunculaceae    | Blue, white ,purple                       | Sunny areas and pods are used as dry flowers  |
| 41. | <i>Petunia hybrida</i>             | Petunia           | Solanaceae       | Various colours                           | Good for pots, hanging baskets and bedding purpose  |
| 42. | <i>Phlox drummondii</i>            | Drummond's Phlox  | Polemoniaceae    | Various colours                           | Dwarf plants are very showy when grown in borders, baskets and pots                                       |
| 43. | <i>Papaver orientale</i>           | Common poppy      | Papaveraceae     | Red                                       | Good for bedding purpose and herbaceous borders   |
| 44. | <i>Primula melacoides</i>          | Fairy primrose    | Primulaceae      | Mauve, pink, white                        | Good for bedding purpose and pots. Suitable for temperate areas.  |
| 45. | <i>Salvia splendens</i>            | Scarlet sage      | Lamiaceae        | Scarlet, red, white, purple               | Easily grown in shady places and rockery, used as bedding plant and in pots                               |
| 46. | <i>Senecio cruentus</i>            | Cineraria         | Asteraceae       | Various colours                           | Grown in shady places, good for bedding purpose and pots  |
| 47. | <i>Tagetes erecta</i>              | African Marigold  | Asteraceae       | Yellow, orange                            | Easily grown, good for bedding, pots and commercially grown for loose flowers                             |
| 48. | <i>Tagetes patula</i>              | French Marigold   | Asteraceae       | Yellow, orange, red                       | Hardy annual used for bedding purpose, pots and as loose flower.  |
| 49. | <i>Torenia fourieri</i>            | Wishbone flower   | Lindeniaceae     | blue ,purple, pink, rose and white        | blooms abundantly in shady conditions, good for edging and containers                                     |
| 50. | <i>Tropaeolum majus</i>            | Nasturtium        | Tropaeolaceae    | -do-                                      | Mostly grown in rockeries. It has trailing habit, so used as climbers and in hanging baskets.             |
| 51. | <i>Verbena hybrida</i>             | Verbena           | Verbenaceae      | Purple, pink, blue, red, white            | Good for bedding purpose, pots, hanging baskets, window boxes and rockery.                                |
| 52. | <i>Viola wittrockiana</i>          | Pansy             | Violaceae        | Yellow, blue, red, purple, violet bicolor | Sunny location is preferred, good for bedding and hanging baskets. Flowers resembles with the butterflies |

## 2. Summer and rainy season annuals

| Sr. No. | Botanical Name                          | Common Name        | Family        | Colour                       | Remarks   |
|---------|---|--------------------|---------------|------------------------------|---|
| 1       | <i>Celosia cristata</i>                 | Cock's comb        | Amaranthaceae | Pink, yellow, orange         | Very hardy and longer flowering period and makes good crest                         |
| 2       | <i>Celosia plumosa</i>                  | Plumed cockscomb   | Amaranthaceae | -do-                         | Flowers like plume of ostrich. Good for bedding purpose.                            |
| 3       | <i>Amaranthus caudatus</i>              | Love-lies-bleeding | Amaranthaceae | Pink & White                 | Due to variegated leaves, it is also grown in pots for indoor decoration            |
| 4       | <i>Gaillardia pulchella</i>             | Blanket flower     | Asteraceae    | Yellow, orange scarlet brown | It can resist dry conditions and can be grown as perennial also. Good cut flower    |
| 5       | <i>Gomphrena globosa</i>                | Bachelor's button  | Amaranthaceae | Pink, Magenta                | Good for dry conditions and used as dry flower.                                     |
| 6       | <i>Helianthus annus</i>                 | Sunflower          | Asteraceae    | Yellow orange                | Can be grown throughout the year and sown directly from seeds into permanent places |
| 7       | <i>Portulaca grandiflora</i>            | Moss Rose          | Portulacaceae | Various colours              | Easily propagated by cutting, can be grown in pots, hanging basket and small boxes. |
| 8       | <i>Bassia scoparia/ Kochia scoparia</i> | Summer Cypress     | Amaranthaceae | ---                          | Mostly grown for foliage beauty due to uniform, well-shaped and bushy growth.       |
| 9       | <i>Impatiens balsamina</i>              | Balsam             | Balsaminaceae | Various colours              | Early flowering and for short duration, Very delicate and needs much care           |
| 10      | <i>Impatiens walleriana</i>             | Impatiens          | Balsaminaceae | pink, red or white           | Suitable for pots and bedding purpose.  |
| 11      | <i>Tithonia speciose</i>                | Mexican Sunflower  | Asteraceae    | Orange, scarlet              | Sown directly from seeds  |
| 12      | <i>Catharanthus roseus</i>              | Periwinkle         | Apocynaceae   | Purple, Pink white           | Can be grown throughout the year  |
| 13      | <i>Zinnia elegans</i>                   | Zinnia             | Asteraceae    | Various colours              | Very hardy and grown easily for longer duration                                     |

## Practical No. 5

**Objective:** To identify pots plants used for indoor and outdoor gardening.

**Exercise:** Identify different pot plants in the campus and write distinguishing characteristics along with common/botanical name and family

### **Pot Plants:**

Pot plants refer to a group of ornamental plants, both flowering and foliage type, used for decoration of house interiors, patios, porticos, stairs, window sills etc. The group includes variety of plants viz., trees (juvenile), shrubs, herbs, bulbs/ tubers/ rhizomatous plants, succulents, etc. in many forms and growth habit, which are mainly grown in pots.

**Indoor plants are of following types:**

#### **A. Foliage type**

Plants having ornamental foliage but inconspicuous flowers.

*Examples:*

#### **B. Flowering Type**

Plants that produce conspicuous flowers are flowering type indoor plants.

*Examples:*

### C. Ferns

Ferns are valued for their beautiful foliage beauty.

*Examples:*

### D. Palms

Palms have elegant foliage in different forms and patterns.

| Feather-leaved palms | Botanical name |
|----------------------|----------------|
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|                      |                |
| Fan-leaved palms     |                |
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|                      |                |

### E. Bromeliads

Bromeliads have colourful leaves in rosette form as well as attractive inflorescence.

*Examples:*

### **F. Bulbous/ Rhizomatous plants**

Bulbous plants include true bulbs but also plants that grow from tubers, corms and rhizomes. These are basically the storage organs.

*Examples:*

**G. Cacti:** Cactus or Cacti (plural) is a member of the plant family Cactaceae. Cacti are succulent plants, meaning they have thickened, fleshy parts adapted to store water.

*Examples:*

### **F. Succulents**

Succulent are plants that are able to store moisture in succulent tissue either in leaves, stems or rootstock.

*Examples:*

## Practical No. 6

**Objective:** To study about propagation of trees, shrubs and other ornamental plants

**Exercise:** Prepare different types of cuttings of ornamental plants (herbaceous, semi-hardwood, hardwood and leaf cuttings) and write the procedure followed.

**Material required:** Secateurs, Growing media, rooting hormone.

**Procedure:**

### I. Propagation through seeds:

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**Examples:**

### II. Propagation through cuttings

#### 1. Herbaceous cuttings

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**Examples:**

## 2. Semi-hardwood cuttings

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*Examples:*

## 3. Hardwood cuttings

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*Examples:*

## 4. Leaf cuttings

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*Examples:*

## PROPAGATION OF ORNAMENTAL PLANTS

**Material required:** Secateurs, mother plants, knife, rooting hormones, rooting medium, tags, watering can

**Procedure:**

a) **Herbaceous cuttings:**

- These are made from succulent, non-woody plants.
- Terminal cuttings or nodal cuttings of 7 to 12 cm long with leaves retained at the upper end are taken.
- Coleus, geranium, chrysanthemum, carnation, *Begonia semperflorens*, *Iresine*, *Alternanthera* etc.

b) **Soft-wood cuttings:**

- Cuttings prepared from soft, succulent, new spring growth of deciduous or evergreen species are softwood cuttings.
- The softwood condition for most woody plants ranges from two to eight weeks.
- The cuttings are usually 8 to 12 cm long with leaves retained at the upper end.
- Examples are *Duranta*, *Ficus benjamina*, *Pseuderanthemum* etc.

c) **Semi-hardwood cuttings:**

- Semi-hardwood cuttings are those made from woody or with partially matured wood.
- Cuttings of broad leaved evergreen species are generally taken during the summer through early fall from the new shoots just after a flush of growth has taken place and the wood is partially matured.
- Examples are *Bougainvillea*, *Clerodendrum*, *Duranta*, *Hibiscus*, *Hydrangea*, rose, evergreen azaleas are commonly propagated by this method.

d) **Hardwood cuttings:**

- Hardwood cuttings of narrow-leaved evergreens are also dormant and in deciduous plants, their foliage is retained when propagated.
- Examples are *Thuja*, *Juniperus*, *Taxus*, firs, pines, spruce are propagated through hardwood cuttings.

e) **Leaf cuttings:**

- In leaf cuttings, the leaf blade, or leaf blade and petiole, is utilized in starting new plants.
- Adventitious buds, shoots, and roots form at the base of the leaf and develop into a new plant; the original leaf does not become a part of the plant. Examples are *Bryophyllum*, *Portulaca argentea*, *Sedum morganianum*, *Senecio rowleyanus*, *Schlumbergera*, *Saintpaulia*, Gloxinia, Begonias, *Sansevieria* and *Peperomia* are routinely propagated through leaf cuttings.

**Objective:** To study different garden features

**Exercise:** Make a hedge, edge, and pergola (for 10 m length area), topiary and arch, write the procedure and examples of suitable plants.

**Materials Required:** .....

**Procedure:**

**1. Hedge:**

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*Examples:*

**2. Edge:**

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*Examples:*



**3. Pergola:**

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**Examples:**

**4. Topiary:**

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**Examples:**

**5. Arch:**

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**Examples:**

## DIFFERENT GARDEN FEATURES

**Material required:** Secateurs, Pruning shear, spade, *khurpi*, watering can, plants

**Garden features**

1. **Hedge:** Shrubs or trees planted at regular intervals to form a continuous screen is called a hedge. Plants suitable for hedges are as following-
  - Shrubs:** *Acalypha wilkesiana*, *Bougainvillea sp.*, *Carissa carandus*, *Duranta repens*, *Hamelia patens*, *Hibiscus rosa-sinensis*, *Justicia gendarussa*, *Malpighia coccigera*, *Murraya exotica*, *Plumbago capensis*, *Rosa sp.*, *Thuja, orientalis*, *Volkemeria inermis*.
  - Trees:** *Pithecellobium dulce*, *Polyalthia longifolia*, *Casuarina equisetifolia*, *Putranjiva roxburghii*
  - Succulents:** *Agave americana*, *Furcraea selloa*, *Euphorbia tithymaloides*
2. **Edges:** Lining of borders of flower beds, paths, lawn and shrubbery with brick, concrete, living plants is known as edging. Plants suitable for making the purpose of edging are called edge plants, and these should grown very low as the purpose is not for screening but to provide lining only, for the purpose of decoration or demarcation. Plants suitable for edging are *Alternanthera amabilis*, *A. versicolor*, *Cineraria maritima*, *Cuphea hyssopifolia*, *Echeveria*, *Iresine lindenii*, *Ophiopogon japonicus*, *Tradescantia spathecea* etc.
3. **Arches:** Arches are the structures on which climbers or ramblers are trained in a garden. Arches are generally constructed near the gate or over the paths in the garden. The arch should be 2-2.5 m in height and breadth depends upon the path over which it is constructed but should not be less than 1 m. arches can be made with wooden poles, iron angles or galvanized pipes. Plants suitable for training over arches are *Bougainvillea spp.*, *Passiflora cearulea*, *Rosa banksiana*, climbing rose, *Thunbergia grandiflora*, *Trachelospermum jasminoides*,
4. **Pergolas:** a pergola may be defined as series of arches joined together. Pergolas are generally constructed over pathways, and climbers are trained over it. Like arches support can be made up of wooden, angle iron, galvanized pipes etc. the width of pergola is generally kept 2-2.5 m and the height is also same or higher than this. Plants suitable for training over pergolas are *Bougainvillea spp.*, *Pyrostegia venusta*, *Thunbergia grandiflora*, *T. mysorensis*, *Trachelospermum jasminoides*, *Wisteria sinensis*,
5. **Topiary:** It is an art of training trees or shrubs by clipping or trimming the foliage into different shapes like birds, animals etc. the plants used in topiary are evergreen, having small leaves with dense growth habit. Shaped wire cages are sometimes used to make topiary. Examples of plants for making topiary are *Bougainvillea sp.*, *Buxus sempervirens*, *Duranta repens*, *Malpighia coccigera*, *Melaleuca bractata*, *Murraya exotica*, *Thuja, orientalis*, *Volkemeria inermis*.

**Practical No. 8**

**Objective:** To study about lawn establishment and maintenance

**Material required:** Lawn grass, watering can, manures and fertilizers, raking hoe, lawn mower, grass shear etc.

**Exercise:** Make a lawn for an area of 10 m x 10 m and write the procedure of different methods

What is a lawn?

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Common grasses used for lawn making along with botanical names are:

| Warm-season grasses | Cool-season grasses |
|---------------------|---------------------|
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Methods of lawn raising:

| Method   | About it |
|----------|----------|
| Seeding  |          |
| Dibbling |          |

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|-------------------|--|
|                   |  |
| Turfing           |  |
| Turf – plastering |  |

Planting time:

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Care and maintenance of lawn:

Mowing

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Irrigation

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Manures and fertilizers

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Scrapping of Lawn

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Coring

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Spiking

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Disease, insect-pest and other problems in Lawn with their management:

| Problems | Symptoms | Control |
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### Methods of establishment of lawn:

- 1. Seeding:** The best time for sowing of seed is about end of August or it may be done in February- March. Seed rate is 250-300g/100 sq. m area. The seed should be mixed with small amounts of carrier, which may be top soil or sand, to obtain uniform distribution of the seed. After the sowing is complete, a light covering with dry, sieved, garden compost or weed-free straw helps to retain moisture for longer time and prevents washing of seed during watering or rainfall. The surface soil has to be kept moist until the seeds germinate and seedlings establish. Normally, the seeds germinate in 10-12 days.
- 2. Dibbling:** Dibbling is the most commonly used method for developing lawn. In the month of February- March or July- August runners are obtained by tearing apart or shredding pieces of established sod which are dibbled about 4-6 inches apart. Watering should be one immediately afterwards.
- 3. Turfing or Sodding:** It may be done where immediate effect is required or on steep slopes or terraces. This is the fastest method of establishing lawn. The mats about 1 inch in thickness are cut manually or mechanically and laid like bricks and fitted as tightly as possible. After laying it should be tamped lightly and top dressed with a small amount of top soil. The sod should be kept moist till the lawn is well established.
- 4. Turf Plastering:** A paste is prepared by mixing garden soil and fresh cow dung and water plus chopped pieces of lawn grass having nodal sections. The paste is spread and covered with 2cm dry soil and irrigated. The soil is kept moist until sprouting of grass. This method is not suitable especially in dry and variable climate.

**Objective:** To study about use of computer software used in landscape designing

**Exercise:** Give description about software used in landscape designing

**Components of Computer Aided Design (CAD) system**

The two main components of CAD (Computer Aided Design) system are software and hardware.

***What is Software?***

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***What is Hardware?***

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*(a) Input devices:*

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*(b) Output devices:*

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**Major steps in designing garden through CAD are:**

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**Designing through AUTOCAD:**

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**Designing through ArchiCAD:**

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**Practical No. 10**

**Objective:** To design layout of formal and informal gardens

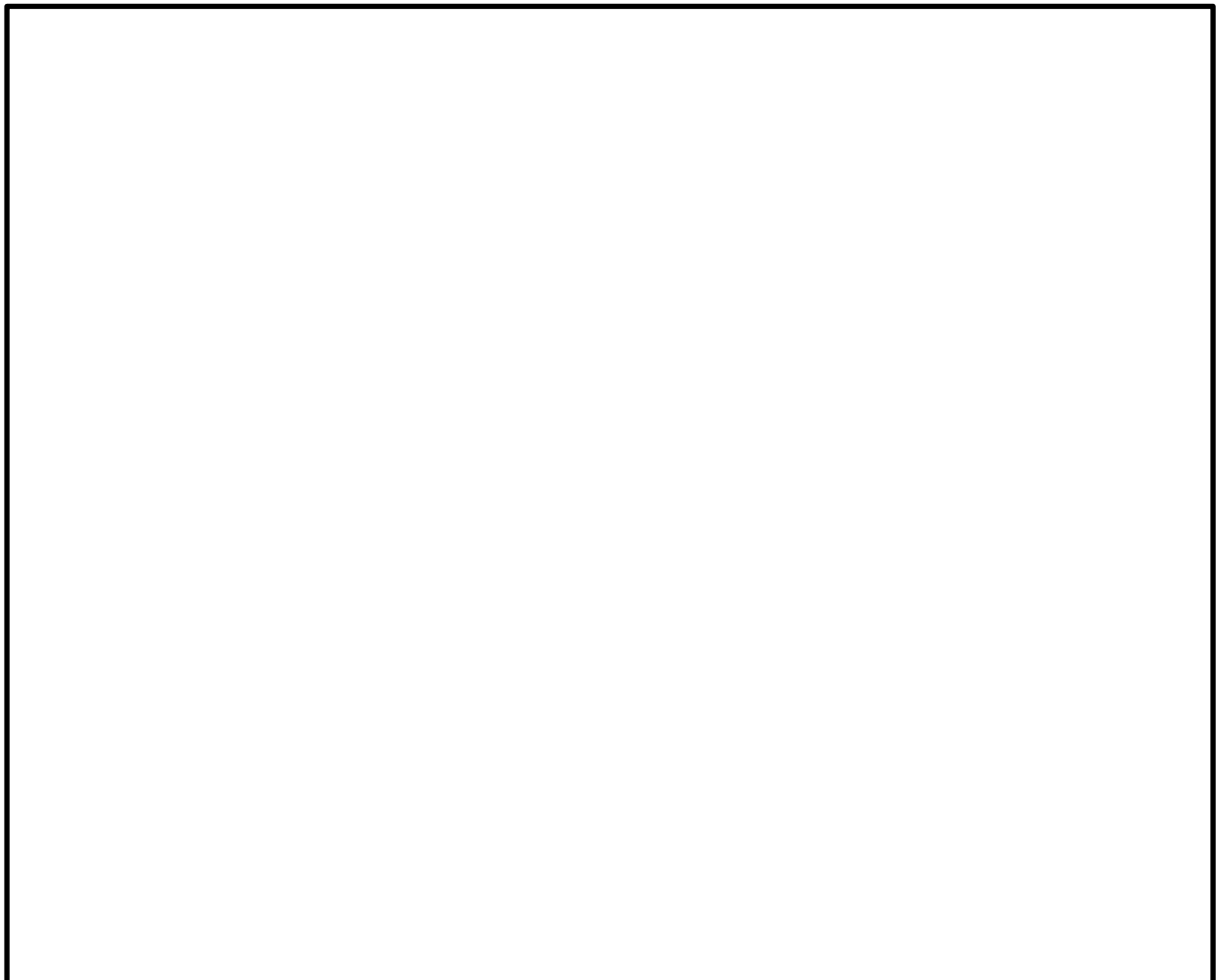
**Exercise:** Write down the features of different styles of gardens.

**Features of formal gardens are:**

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*Examples of formal gardens:*

*Draw a typical formal garden depicting its main features:*

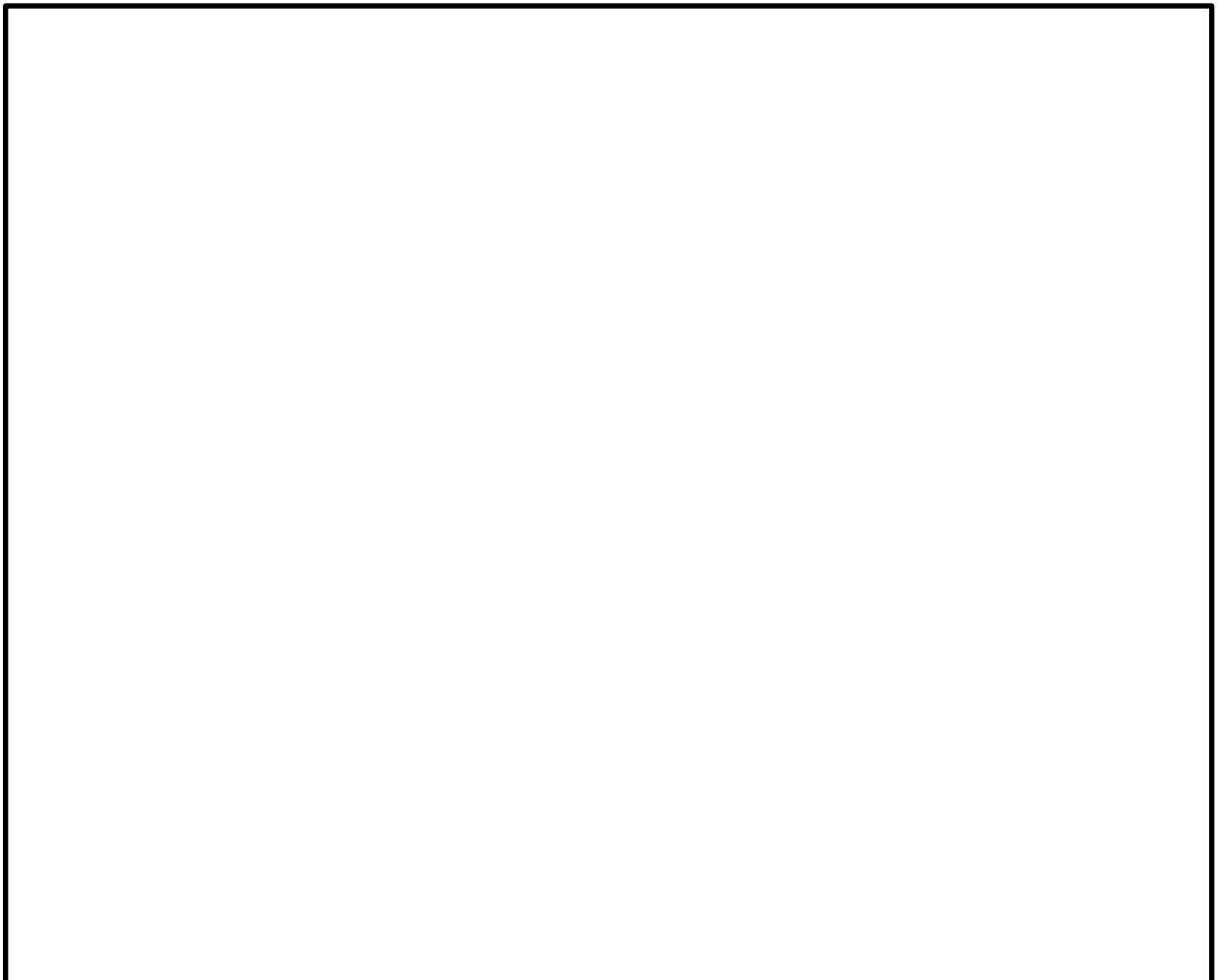


**Features of informal gardens are:**

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*Examples of informal garden:*

*Draw a typical informal garden depicting its main features:*



## STYLES OF GARDENS

The different styles of gardening are as follows:

### Formal gardens:

- A formal garden is laid out in a symmetrical or a geometrical pattern like with square and rectangular shapes.
- The outline of the garden as well as the outline of different parts like paths, flower beds, hedges and lawns are of geometrical shape.
- If there is a plant on the left-hand side of a straight road, a similar plant must be planted at the opposite place on the right hand side i.e. both are mirror image of each other.
- In such gardens everything is planted in straight lines.
- The roads cut at right angles.
- It has a sort of enclosure or boundary.
- The arrangement of trees and shrubs are in geometrical shape and kept in shape by trimming and training. The flower beds, borders, and shrubbery are arranged in geometrically designed beds.
- Trimmed formal hedges, Cypress, Ashoka trees, and topiary are typical features of a formal garden.  
Examples: Mughal, Persian, Moorish garden of Spain, Italian and French styles

### Informal Garden:

- In an informal garden, the whole design looks informal, as the plans and the features are arranged in a natural way and represents natural beauty. The idea behind this design is to imitate nature.
- It is contrast to formal style. Plan is asymmetrical according to the land available for making the garden.
- Smooth curvaceous out lines are more appropriate.
- Water bodies are more irregular in shape.
- Hillock are made, water falls provided, lakes and islands, cascades, rocks, and a rustic hutment are provided to create rural effect.
- Appropriately grouped plants provide living quality and they are not trimmed. Ex: English and Japanese gardens

**Objective:** To study site selection for preparing a landscape design.

**Exercise:** Write down different steps of site selection and prepare a checklist of features of given area.

**1. Understanding the site:**

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**2. Site features and characteristics**

**a) Natural features**

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**b) Man-made features**

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**c) Cultural features**

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**3. Sources of site information**

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#### **4.Information through GIS and GPS**

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#### **5. Reading the terrain**

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#### **6. Grading the land**

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#### **7. Performing a site analysis**

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#### **8. Preparing a base map**

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## 9 Site Analysis Checklist

### SITE ANALYSIS CHECKLIST

Client/Project Name \_\_\_\_\_

Prepared by \_\_\_\_\_ Date \_\_\_\_\_

| Site Feature   |     |    |
|--|-----|----|
| <b>THE HOUSE AND OTHER STRUCTURES</b>  | Yes | No |
| Does the house provide good physical linkage with the yard?  |     |    |
| Is there visual linkage (glass) between key rooms and the yard?  |     |    |
| Are there utility and/or maintenance items such as meters, hose faucets, air conditioning units, dryer vents, that need to be left accessible? |     |    |
| Are all doors at grade level?  |     |    |
| Are any structures scheduled for replacement, removal, or major renovation?  |     |    |
| Do the locations of the structures create favorable or unfavorable conditions for plant growth?  |     |    |
| Are there any existing exterior hardscape features attached to the house or other structures? If so, list them.                                |     |    |
| Does the house have any feature(s) that need to be emphasized or deemphasized by the landscape design?   |     |    |
| <b>NATURAL FEATURES</b>  | Yes | No |
| Have the existing plants been counted by species, numbers, size, and condition? (Attach the inventory to this sheet.)                          |     |    |
| Do some of the plants require removal?   |     |    |
| Is the lawn acceptable in its present condition?   |     |    |
| Are there plants on adjacent properties that will impact the design and use of this property?  |     |    |
| Has a soil test been made or scheduled? (Attach results to this sheet.)  |     |    |
| Is there evidence of poor or excessive drainage?   |     |    |
| Are any problem areas evident, such as low spots or eroded areas?  |     |    |
| If the site is sloped, does it appear problematic for human use?   |     |    |
| Does surface water clear the site readily?   |     |    |

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| Does surface water runoff flow to a harmless disposal location?  |  |  |
| Are there strong prevailing winds that will necessitate protection for certain areas or uses of the landscape? |  |  |
| Do existing trees on or off the property, or existing structures create heavily shaded areas in the landscape? |  |  |
| Are there any bodies of water on the site? (If so, attach descriptive information to this sheet.)              |  |  |

| <b>OTHER SITE FEATURES</b>  | Yes | No |
|---|-----|----|
| Are there utility lines above or below the property?  |     |    |
| Is there presently any source of night time illumination such as flood lighting or an existing night lighting system? |     |    |
| Is there presently an irrigation system?  |     |    |
| Are existing paved areas adequate and in good condition?  |     |    |
| Do existing paved areas match well with the materials of the house and other structures?                              |     |    |
| Is there a need for additional on-site parking?   |     |    |
| <b>OFF-SITE FEATURES</b>  | Yes | No |
| Are there views from the house or yard that should be incorporated into the design?                                   |     |    |
| Are there views that should be screened or minimized by the design?   |     |    |
| Is there a need for a greater privacy from some off-site feature(s)?  |     |    |
| Is there a nearby feature that should be left easily accessible?  |     |    |
| Is there a nearby feature that should be safe guarded against?  |     |    |
| Where does trash collection occur for this property?  |     |    |

**Objective:** To design special type of gardens: water garden

**Exercise:** Make a water garden and write the procedure giving a diagrammatic representation of a water garden.

**Procedure:**

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**Give examples of plants suitable for water garden**

**1. Surface flowering plants:**

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**2. Oxygenators/ submerged plants:**

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**3. Floating plants:**

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**4. Marginal plants/ Bog plants:**

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## WATER GARDENS

**Materials required:** Spade, tank for formal pool, sticky clay soil, FYM, plants.

**Procedure:**

- For planting fill the tank to a depth of 30-40 cm with heavy loam or clay mixed with sufficient FYM.
- The lilies and lotus are planted directly in the soil and then water is filled in just to cover the crown of the plants.
- More water is filled in stages as the plant makes new growth.
- In an already filled up pool, the planting procedure is first to plant the water plant in a pot filled with compost and then lowering it in water, keeping in the view that crown remains above the water.

**Plants suitable for water garden**

5. **Surface flowering plants:** *Euryale ferox*, *Nelumbo lutea*, *Nelumbo nucifera*, *Nymphaea alba*.
6. **Oxygenators/ submerged plants:** *Callitriche autumnalis*, *Elodea canadensis*, *Ranunculus aquatili*, *Vallisneria spiralis*.
7. **Floating plants:** *Azolla Carolina*, *Eichhornia speciosa*, *Lemna gibba*, *Trapa nutans*, *Pistia stratiote*, *Salvinia minima*.
8. **Marginal plants/ Bog plants:** *Acorus calamus*, *Calla palustris*, *Cyperus alternifolius*, *Iris laevigata*, *I. kaempferi*, *Typha angustifolia*/ *T. latifolia*, *Caltha palustris*.

**Objective:** To study planning of avenue planting of highways.

**Exercise:** Plan an avenue planting scheme suitable for highways in India.

**What is avenue planting:**

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**Criteria for selecting trees for avenue planting on highways in India**

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**Types of avenue planting**

**1. Pure Avenues**

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**Examples:**

## 2. Mixed Avenues

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Examples:

## 3. Double Avenues

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Examples:

**Practical No. 14**

**Objective:** To design special type of gardens: rock garden

**Exercise:** Make a rock garden and write the procedure giving a diagrammatic representation of a rock garden.

**Material required:** Natural looking rocks of different sizes, compost, sand, soil, plants, spade, watering can.

**Procedure of making rock garden or rockery:**

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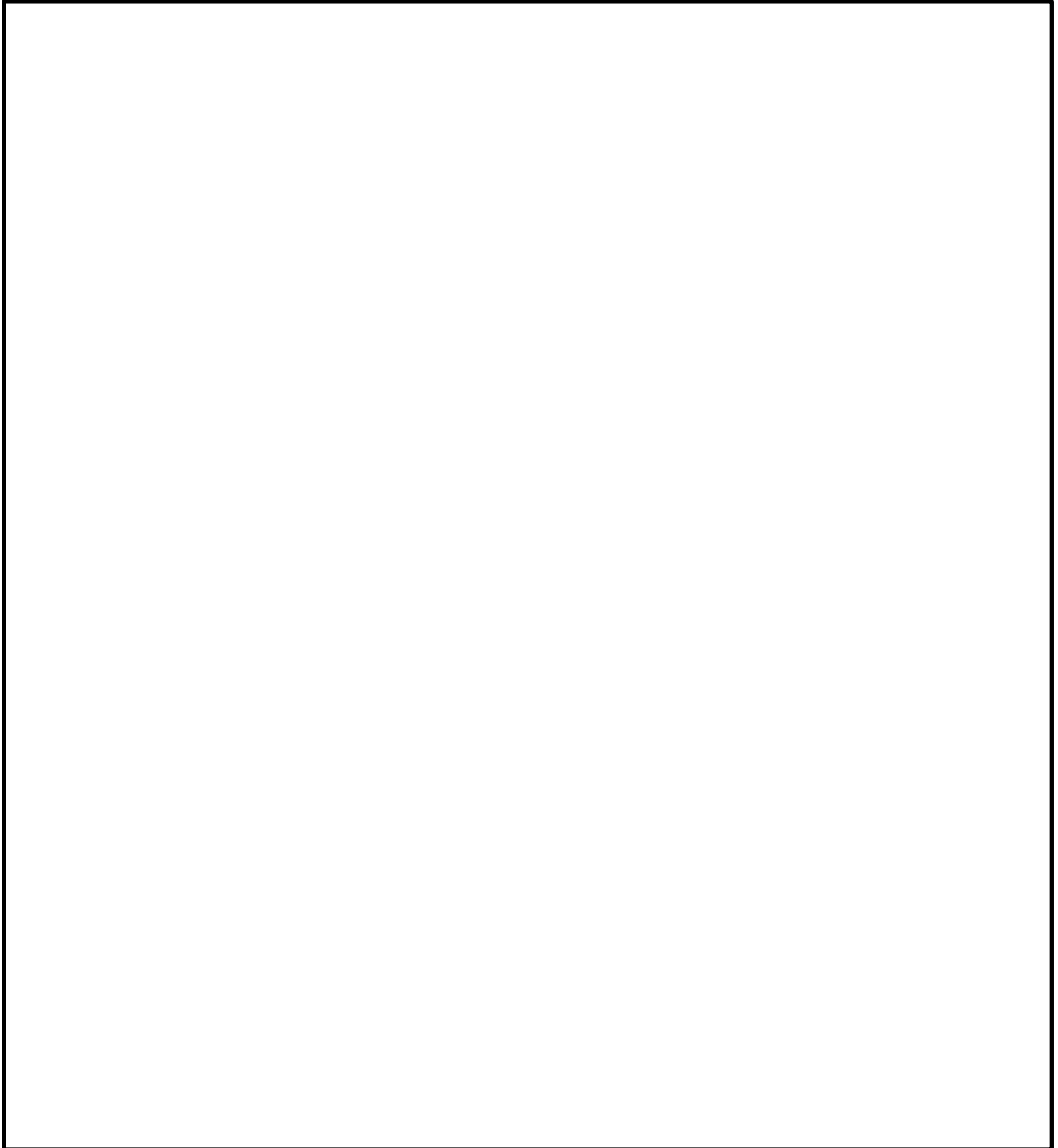
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**Write the botanical names of the plants suitable for rock garden:**

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|-----------------------------|--|
| <b>Cacti and succulents</b> |  |
| <b>Ferns</b>                |  |
| <b>Shrubs</b>               |  |
| <b>Herbaceous plants</b>    |  |

|                         |  |
|-------------------------|--|
| <b>Seasonal flowers</b> |  |
|-------------------------|--|

**Diagram of rock garden:**



## ROCK GARDEN OR ROCKERY

**Material required:** Natural looking rocks of different sizes, compost, sand, soil, plants, spade, watering can.

**Procedure of making rock garden or rockery:**

- Rocks should be of local origin, porous, and have a weathered look.
- Stones of uniform size having diameter around 60 cm should be selected or even larger which can be handled without much difficulty.
- A mound is created by putting a good garden loam or a mixture of soil, sand, FYM and leaf mould in equal proportion.
- This compost is spread only on top 15-45 cm of the top layers of rockery, the sub-soil should be well drained and have the property to absorb sufficient water.
- Before placing and setting the rocks, the mound should be allowed to settle for some time or firmed by beating, if needed.
- The stones are placed in slightly slanting position gently leaning backwards, not forwards, so that rain water flows towards plant roots.
- Pockets are created in between stones varying in size from 15-60 cm across. These pockets are created in such a manner that it look natural and compost inside is not washed away with rain water.
- The rockery is planted with grown up and well established plants. Dense planting should be avoided rather planting is done at wide distance as with time plants will fill up the space as they grow.

**Examples of plants for rock garden:**

**Cacti and succulents:** Cacti like *Opuntia*, *Cereus*, *Mammillaria*, *Hylocereus* and succulents like *Agave*, *Aloe*, *Euphorbia splendens*, *Furcraea*, *Gasteria*, *Howarthia*, *Kalanchoe*, *Euphorbia tithymaloides*, *Portulaca oleracea*, *Sansevieria trifasciata*, *S. cylindrica*, *Sedum*, *Tradescantia pallida*, *T. spathecea*, *T. zebrina*, *Yucca* etc.

**Ferns:** *Nephrolepis*, *Pteris*, *Polypodium* etc.

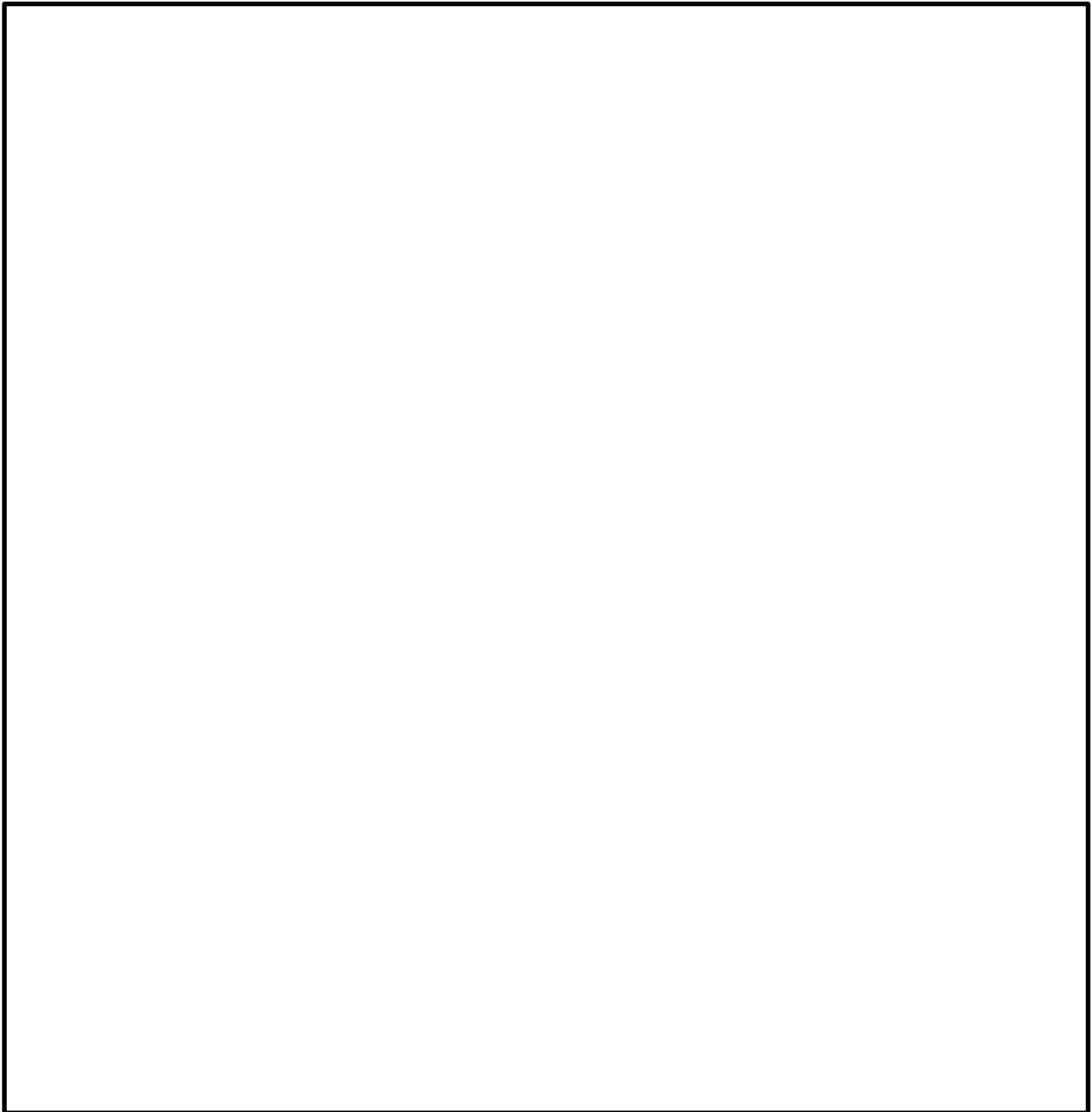
**Shrubs:** *Azalea* sp., *Bougainvillea* sp., *Calliandra brevips*, *Cassia biflora*, *Crossandra infundibuliformis*, *Duranta repens*, *Juniperus horizontalis*, *Lantana sellowiana*, *Ruellia simplex*, *Russelia juncea*, *Sanchezia nobilis*, *Thuja occidentalis* etc.

**Herbaceous plants:** *Catharanthus roseus*, *Dracaena* sp., *Hymenocallis*, *Verbena erinoides*, *Wedelia trilobata*, *Zephyranthes*, etc.

**Annuals:** *Brachyscome*, *Candytuft*, *Dianthus chinensis*, *Gaillardia*, *Ice plant*, *Sweet Alyssum*, *Phlox*, *Pansy*, *Portulaca grandiflora*, *Verbena*, *Zinnia* etc.

**Objective: To study designing of garden for factory.**

**Exercise: Draw a neat landscape design and planting scheme for factories using coloured pencils and enlist the suitable plant species:**



**Examples of suitable plant species:**

## LANDSCAPE PLAN FOR FACTORIES

Factory landscaping is not only needed from the point of beautification, but also to fight pollution and dust.

### Objectives of factory landscaping:

- To arrest the drifting dust and smoke.
  - To minimize the pollution.
  - Beautification of factory area.
  - To provide ample shade and coolness
  - To enhance the productivity of employees
- 
- In factories such as cement, steel, fertilizers etc., which emit a lot of dust, smoke and harmful chemicals comparatively hardy plants should be selected for plantation. For neat factories such as a plywood factory and a fruit-processing plant, which emit less dust and other polluting materials, a wider range of flowering plants can be used.
  - Tall and hardy trees should be planted all around or in the direction of the winds to stop the spread of dust and smoke.
  - In a large factory a buffer zone may be created by forestation between the factory and its residential colony.
  - A factory can also be beautified with rockeries, statues, water pools or lakes, fountains etc. Bougainvillea should be used freely to beautify a factory area. This may be planted in rows along all the roads of the factory spaced at 3-5m and trained as half standards.
  - *Canna indica* a hardy plant is also suitable for planting in beds or groups in a factory area for remediation of water pollution.
  - Shrubberies consisting of hardy shrubs also beautify factories.
  - Lawns add beauty and cut down dust.

### Sulphur dioxide tolerant trees

*Albizia lebbbeck*, *Ailanthus excelsa*, *Alstonia macrophylla*, *A. scholaris*, *Azadirachta indica*, *Lagerstroemia flos-reginae*, *L. thorelii*, *Mimusops elengi*, *Parkinsonia aculeata*, *Polyalthia longifolia*, *Terminalia arjuna*, *T. muelleri*.

### Trees for Automobile pollution

*Acacia auriculiformis*, *Butea frondosa*, *Cassia fistula*, *C. marginata*, *Madhuca latifolia*, *Polyalthia longifolia*, *Putranjiva roxburghii*, *Thespesia populnea*.

### Trees for noise pollution

*Alstonia scholaris*, *Lagerstroemia speciosa*, *Azadirachta indica*, *Madhuca indica*, *Butea monosperma*, *Mangifera indica*, *Erythrina variegata*, *Morus alba*, *Eucalyptus citriodora*, *Pterospermum acerifolium*, *Grevillea robusta*, *Syzygium cumini*, *Kigelia pinnata*, *Terminalia arjuna*

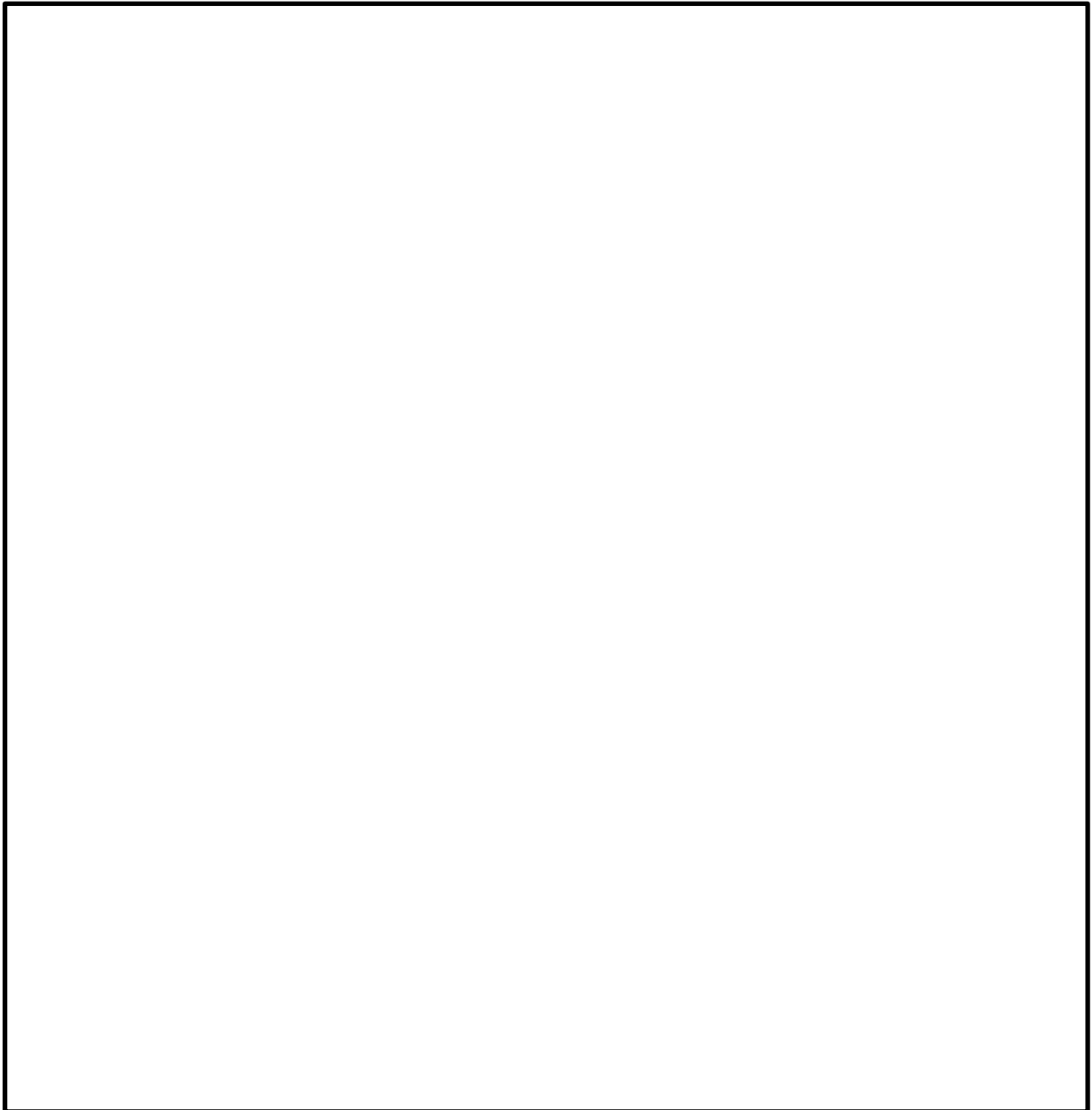
### Trees for dust control

*Acacia auriculiformis*, *Eucalyptus citriodora*, *Melia azedarach*, *Albizia lebbbeck*, *Eugenia cuspidate*, *Millettia ovalifolia*, *Alstonia scholaris*, *Ficus benjamina*, *Millingtonia hortensis*, *Bombax ceiba*, *F. religiosa*, *Pongamia pinnata*, *Cassia fistula*, *Grevillea robusta*, *Syzygium cumini*, *C. javanica*, *Jacaranda flos-reginae*, *Tamarindus indica*, *Cordia dichotoma*, *Kigelia pinnata*, *Terminalia arjuna*, *Dalbergia sissoo*, *Lagerstroemia speciosa*, *Toona ciliata*, *Erythrina variegata*, *Madhuca indica*



**Objective:** To study designing of garden for Children's park.

**Exercise:** Draw a neat landscape design and planting scheme for Children's park using coloured pencils and give the list of suitable plant species.



**Examples of suitable plant species:**

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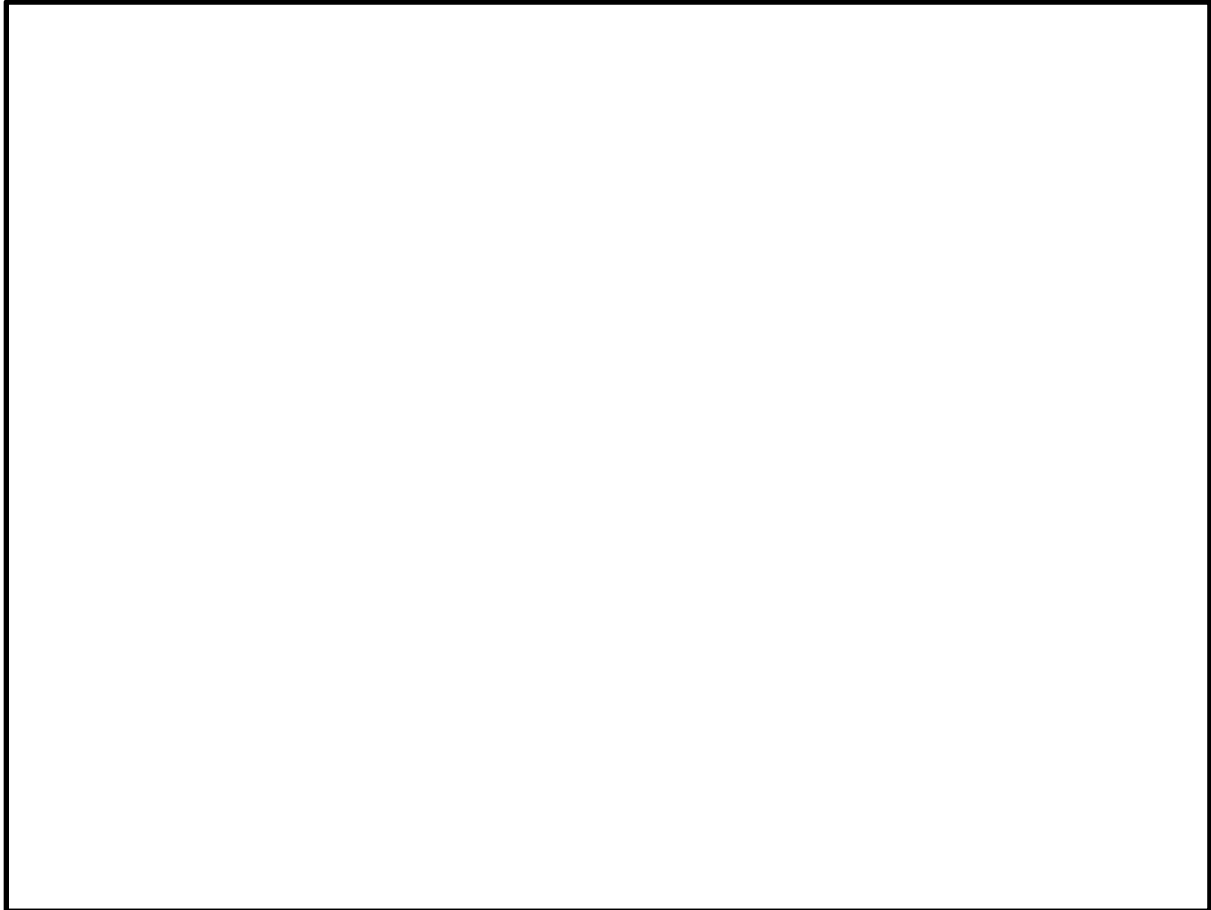




**Objective:** Visit to important gardens/ parks/ institutes

**Exercise:**

**I. Draw the design followed for landscaping of garden.**



**II. Enlist the different plant species available in the garden according to different types of classifications**

**1. Seasonal flowers:**

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**2. Shrubs:**

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**3. Climbers:**

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**4. Trees:**

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**5. Ground covers:**

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**6. Herbaceous perennials:**

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**III. Enlist the shortcomings in the designing of garden, if any:**

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**IV. Suggest appropriate modifications:**

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