projects the flower for pollination.

A flower with pedicel is called pedicellate flower or a stalked flower and flower without pedicel is known as non-pedicellate flower or sessile flower. Ills generally an elongated, cylindrical and green structure. In some flowers, a small leaf-like structure called bract may also be found on the pedicel. A flower, having a bract is known as bracteate flower (Clitoria, Hibiscus) and the one without a bract is called an ebracteate flower (Lily).

ii. **Thalamus:**

The upper, swollen, condensed, knob-like part of the pedicel is called thalamus. It is also called receptacle or torus.

It is differentiated into nodes, in which the floral whorls are inserted and internodes, that are highly condensed.

Thalamus consists of four compactly arranged nodes and three highly condensed internodes.

iii. Floral whorls:

A circle of modified floral leaves is called a floral whorl.

A typical dicotyledonous flower has four floral whorls namely calyx, corolla, androecium and gynoecium. They are arranged in concentric manner with calyx as outer and gynoecium being the innermost whorl.

A flower with all the four whorls is described as a complete flower and the flower having the absence of one or more floral whorls is called an incomplete flower.

Among these, calyx and corolla are called accessory whorls or helping whorls of the flower.

The androecium and gynoecium are called essential whorls or reproductive whorls.

a. Calyx:

Calyx is the outermost, accessory whorl of the flower.

Its individual member or unit is called sepal. The sepals are usually small and green.

When the sepals are free from each other, the condition is termed as polysepalous

calyx. e.g. Brassica

When the sepals are united, it is termed as gamosepalous calyx.

e.g. China rose.

Corolla: b.

Corolla is the second accessory whorl of the flower present on the inner side of the calyx.

Its individual member or unit is called petal.

The petals are usually brightly coloured and fragrant.

When the petals of the corolla are free from each other, the corolla is called polypetalous corolla. e.g. Rose

When the petals are united, it is known as gamopetalous corolla.

e.g. Datura

Perianth:

When the members of accessory whorls of a flower are not differentiated into sepals and petals, it is called perianth.

In such flowers, the floral members are identical in shape, size and colour.

Each member of perianth is called a tepal.

Tepals of the perianth may be free (polyphyllous perianth) or united (gamophyllous perianth).

Androecium: c.

Androecium is the third essential and male reproductive whorl of er the flower.

It consists of individual members or units called stamens or microsporophylls.

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Corolla

Stamen

Calyx

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	 Each stamen consists of a filament, connective and anther. The filament projects the anther to facilitate dispersal of pollen grains. The anther is fertile part of the stamen which is usually bilobed. Each anther lobe contains two microsporangia filled with microspores or pollen grains at maturity. Hence, the anther is bilobed and tetrasporangiate. Stamen An anther with two microsporangia is called two celled or dithecous (Datura), while anther with a single microsporangium is called one-celled or monothecous (Hibiscus). Connective is the cementing tissue which connects the anther lobes and the filament together.
d.	Gynoecium: Gynoecium is the fourth, innermost and female reproductive whorl of the flower. Its individual member or unit is called a carpel or megasporophyll. Each carpel consists of three parts: ovary, style and stigma. The ovary is basal, hollow, swollen, fertile part of the carpel. Its cavity is called ovarian cavity or locule. The cavity bears one or more ovules attached to the placenta. The mode of arrangement of ovules on placenta in the ovary is called placentation. The style is middle, narrow, elongated, sterile part of the carpel which connects ovary with the stigma. The stigma is the terminal part of the carpel which receives pollen grains during pollination. Therefore it becomes sticky at maturity. It also facilitates germination of pollen organs
	Gynoecium is also called pistil. It may be simple (monocarpellary) or compound (polycarpellary).
Q.60. Explai floral le	in the classification of flowers based on the position of ovary in the flower or insertion of eaves.

Describe the arrangement of floral members in relation to their insertion on thalamus.

Ans: Insertion of floral leaves is the position and arrangement of the floral whorls (leaves) with respect to gynoecium on the thalamus.

This is of the following three types:

 i. Hypogynous (hypo = below; gynoe = gynoecium) flower: The thalamus of the flower is conical or dome-shaped. The members of calyx, corolla and androecium are inserted at the base of the ovary. Such a condition is called hypogyny and such a flower is known as hypogynous flower. In such flower, ovary is superior and other floral leaves are inferior. e.g. Hibiscus.

 ii. Perigynous (Peri = around or surrounding) flower: The thalamus of the flower is cup-shaped and the ovary is present in the concavity of the thalamus. The members of calyx, corolla and androecium are inserted at the rim, around the ovary. This condition is termed as perigyny and such a flower is described as perigynous flower.
 In such flowers, compute helf superior and helf inferior, a.g. Part Completion.

In such flowers, ovary is half-superior and half inferior. e.g. Rose, Caesalpinia.

iii. Epigynous (epi = upon) flower:

The thalamus of the flower is cup-shaped and the ovary is sunken in the thalamus.

The wall of the ovary and thalamus are often fused together.

The members of calyx,. corolla and androecium are inserted above the level of the ovary. This condition is termed as epigyny and such a flower is called epigynous flower as in Guava, sunflower. In such flowers, ovary is inferior and other floral leaves are superior.

Q.61. Write the functions of :

- i. Calyx ii. Corolla
- Ans: i. Functions of Calyx:
 - a. The calyx protects the flower in bud condition.

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- b. Being green in colour, it helps in photosynthesis.
- c. It encloses and protects corolla, androecium and gynoecium.
- d. It may become modified for dispersal of fruits and seeds by wind as in Tridax.
- e. In some flowers, sepals are brightly coloured to attract insects for pollination.

ii. Functions of Corolla:

- a. Corolla protects the essential whorls of the flower.
- b. Being brightly coloured and fragrant, it helps attracting insects for pollination.
- c. The nectar present in the lower portion of the tubular corolla helps in attracting the pollinating agents.

Q.62. What are unisexual and bisexual flowers?

Ans: Unisexual flower: A flower which has only one reproductive part, i.e. either androecium or gynoecium is called unisexual flower.

Bisexual flower: A flower having both androecium and gynoecium is said to be bisexual or hermaphrodite flower.

Q.63. What is hermaphrodite flower?

Ans: A flower having both essential whorls, i.e. androecium and gynoecium is called hermaphrodite flower.

Q.64. Which whorls are essential floral whorls? What functions do they serve?

Ans: Essential floral whorls are:

i. Androecium ii. Gynoecium

Functions of Androecium:

- a. To produce pollen grains.
- b. To store, protect and disperse pollen grains.

Functions of Gynoecium:

- a. To produce ovules.
- b. To protect ovules.
- c. To facilitate fertilization by arranging ovule suitably

Q.65. Describe first accessory whorl of the flower.

- Ans: i. The first accessory floral whorl is calyx, which is the outermost whorl of the flower.
 - ii. The individual member of calyx is called sepal and are green in colour.
 - iii. When the sepals are free from one another, it is described as polysepalous calyx. e.g. Brassica.
 - iv. When the sepals are united with one another, it is described as gamosepalous calyx. e.g. China rose.
 - v. When the sepals fall off, as soon as the flower bud opens, the calyx is called caducous. e.g Argemone.
 - vi. When the calyx survives till the withering of petals, it is known as deciduous calyx.
 - vii. In some cases, the sepals remain even after fruit formation. This condition is known as persistent calyx. e.g. Brinjal, Pea, etc.

Q.66. What is adelphy?

Ans: When stamens are united by their filaments and anthers are free, it is known as 'adelphy'.

Q.67. Write a note on 'Adelphy' in stamens.

Ans: Adelphy in stamens:

When the stamens are united by their filaments and anthers are free, it is known as 'adelphy'. Androecium shows three types of adelphy, as:

i. Monoadelphous:

In Hibiscus, there are numerous stamens. Filaments of all stamens are fused to form one bundle, i.e. staminal tube and anthers are free. This is described as monoadelphous condition.

ii. Diadelphous:

In pea flower, there are ten stamens. Filaments of nine stamens are fused to form one bundle and one stamen is free. This is described as diadelphous condition.

iii. Polyadelphous:

In some flowers like lemon, more than two bundles of filaments are formed and it is described as polyadelphous condition.



Diadelphous



Polyadelphous

Adelphy in stamens

Q.68. Write the structural characteristics of anther. Ans: Structural characteristics of anther:

- i. Anther is the upper swollen fertile part of stamen, usually having two lobes.
- ii. Each lobe has two chambers called pollen sacs or microsporangia.
- iii. Pollen grains (micro spores) are produced within microsporangia.
- iv. A two lobed anther is called dithecous anther, whereas an anther with a single lobe IS called monothecous anther.
- v. Pollen grains are male reproductive units or male spores.

Q.69. Define syngeny.

Ans: Syngeny: When anthers are united and filaments are free, it is known as syngeny. e.g sunflower.

Q.70. What is a connective?

Ans: Connective: Connective is the part of stamen which is in continuation with the filament. It is a midrib like sterile structure between the two fertile lobes of the anther and connects them lengthwise.

Q.71. What is aestivation? Describe various types of aestivation.

Ans: Aestivation: Arrangement of sepals or petals with reference to each other in bud condition IS called aestivation.

There are four types of aestivation:

i. Valvate:

In this type, margins of sepals or petals just touch each other or lie close to each other but do not overlap. e.g. Calotropis.

ii. Twisted or contorted:

In this type, the margins of sepals or petals overlap each other in a specific manner. e.g Corolla of Hibiscus.

One margin of each sepal or petal is directed inwards and is overlapped, while the other margin is directed outwards and overlaps the margin of adjacent one.

iii. Imbricate:

In this type, one petal or sepal is completely inside (overlapped by other), one is completely outside (overlapping others), while remaining three members overlap along one margin and get overlapped along the other margin. e.g Cassia, Bauhinia, etc.

iv. Vexillary:

This type of aestivation is observed in corolla of Papilionaceae family.

In this type, corolla is butterfly shaped. It consists of five petals. One large petal called standard or vexillum. Two lateral petals called wings and two smaller petals which are nearly fused called keel or carina.



The standard or vexillum is completely outside and overlaps the two lateral wings. The wings in turn overlap the two other smaller innermost petals called keel. e.g. pea, bean.



Q.72. Describe vexillary aestivation with a suitable example. Ans: Vexillaryaestivation:

- i. In vexillary aestivation, corolla is butterfly shaped (papilionaceous) and consists of five petals.
- ii. The largest outermost petal is known as standard or vexillum. Two lateral petals are known as wings and two smaller nearly fused petals forming a boat shaped structure is known as keel or canna.
- iii. The vexillum overlaps the two lateral wings.
- iv. The wings overlap the two innermost petals called keel. e.g Pea, bean, etc. Vexillary aestivation

Q.73. Describe different types of placentation,

Describe the various types of placentation found in flowering plants.

Ans: Placentation:

The arrangement of ovules on the placenta within the ovary is called placentation. There is a cellular ridge (cushion of cells) present at the point of attachment of ovule to wall of ovary, is called placenta. Following types of placentation are generally seen in different plants:

OR

i. Marginal:

When ovules are borne at the fused margins of unilocular ovary, it is called marginal placentation. e.g. Pea, bean, etc.

ii. Axile:

When ovules are produced on the central axis of a multilocular ovary, it is known as axile placentation. e.g. China rose.

iii. Parietal:

When ovules are borne on the inner wall of unilocular syncarpous ovary, it is called parietal placentation. e.g. papaya, cucumber.



Types of placentation

iv. Basal:

When a single ovule is produced at the base of a unilocular inferior ovary, it is known as basal placentation. e.g. Sunflower.

Q.74. Define the following terms:

i. Aestivation:

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Ans: Arrangement of sepals or petals with relation to each other in bud condition is known as aestivation.

ii. Placentation:

Ans: The mode of arrangement of ovules on the placenta within the ovary is called placentation.

iii. Actinomorphic flower:

Ans: Actinomorphic flower is the one in which sepals and petals are of same size and shape and are so arranged that the flower. can be divided into two equal halves along any plane passing through the centre. e.g. China rose, mustard.

iv. Zygomorphic flower:

Ans: Zygomorphic flower is the one in which the flower can be divided into two equal halves only along one plane.e.g, Pea, Ocimum.

v. Superior ovary:

Ans: When ovary. is situated above the remaining three whorls of a flower, it is described as superior ovary.

vi. Perigynous flower:

Ans: The flower in which thalamus is disc like, the ovary is present at the centre and surrounded by remaining three whorls of a flower, is called as perigynous flower. e.g Rose, Pea, etc.

vii. Apocarpous pistil:

Ans: When the carpels of pistil are free from each other, it is called apocarpous pistil.

viii. Irregular flower / Asymmetrical flower:

Ans: It is a flower which cannot be divided into two equal halves along any plane. e.g Canna.

ix. Epipetalous stamens:

Ans: When the stamens are united to the petals, they are described as epipetalous.

- x. Syncarpous gynoecium:
- Ans: When the carpels of a gynoecium are fused with each other, it is called syncarpous gynoecium.

xi. Apocarpous gynoecium:

Ans: When the carpels of gynoecium are free from each other, it is described as apocarpous gynoecium.

Q.75. Classify flowers on the basis of symmetry.

Ans: On the basis of symmetry, flowers are classified into three types:

i. Actinomorphic (regular or radially symmetrical) flowers:

The flowers in which floral whorls (sepals and petals) are of the same size and shape are known as actinomorphic flowers. The floral whorls are arranged in such a manner so that the flower can be divided into two equal (identical) halves along any plane passing through the centre. e.g. Mustard, China rose, etc.

ii. Zygomorphic (Monosymmetrical or bilaterally symmetrical) flower:

In zygomorphic flowers, the flowers can be divided into two equal halves only along one plane (anterioposterior plane). e.g. Pea, Ocimum etc.

iii. Asymmetrical or irregular flower: The flowers which cannot be divided into two equal halves along any plane are known as asymmetrical or irregular-flower. e.g. Canna.

Q.76. Differentiate between actinomorphic and zygomorphic flower. Ans:

No.	Actinomorphic flower	Zygomorphic flower
i.	Sepals and petals are of same size and shape.	Sepals and petals are not of same size and
		shape.
ii.	The flower can be cut in any plane passing	The flower can be cut only along one plane
	through the centre in order to obtain two	passing through the centre in order to obtain
	identical halves.	two identical halves.
iii.	e.g. China rose	e.g. Ocimum, Pea

Q.77. Differentiate between: Apocarpous and syncarpous ovary. Ans:

No.	Apocarpous ovary	Syncarpous ovary
i.	Free carpels form apocarpous ovary	Two or many fused carpels form syncarpous
		ovary.
ii.	Form aggregate fruit.	Form single fruit.
iii.	e.g. Custard apple	e.g. Tomato, Hibiscus

Q.78. Justify the following statements on the basis of external features:

- i. Underground parts of a plant are not always roots.
- ii. Flower is a modified shoot.
- **Ans:** i. Underground parts of plant may bear stem like characters, e.g. in potato, stem gets modified into 'tuber' like structure for storage of reserve food material. These tubers develop and grow under the ground. These tubers show nodes and internodes, scale leaves.
 - ii. Flower is considered as modified shoot because; the internodes in a flower are highly condensed and appendages like sepals, petals, stamens and carpels are generally large in number.

<u>5.1.6 Fruit</u>

Q.79. Derme fruit.

Ans: Fruit may be defined as the metamorphosed or ripened ovary without or with one or more seeds.

Q.80. What are parthenocarpic fruits?

Ans: Parthenocarpic fruits: The fruits which are developed without fertilization are known as parthenocarpic fruits and the phenomenon is known as parthenocarpy.

Q.81.What are true and false fruits? Explain with examples.

Ans: The fruit developing exclusively from ovary of a flower is called a true fruit. Most of the fruits are true fruits. e.g. Mango.

The fruits derived from ovary along with other accessory floral parts such as thalamus, receptacle, calyx, etc, are known as false fruits or pseduocarps.

e.g. Apple, cashewnut.

Q.82. Describe the structure of a typical fruit.

Ans: A typical fruit consists of two parts - the wall of the

fruit or Peri carp and seed.

Pericarp:

Wall of the ovary after fertilization becomes the fruit wall or pericarp (carp-fruit).

Pericarp may be dry or fleshy.

In dry fruits like pea and bean, peri carp is not distinguished into different parts, but in fleshy fruits like mango, it is further distinguished into three parts, as: Typical fruit



Typical fruit

- i. Epicarp: It is the outermost layer of pericarp forming skin or protective covering of fruit.
- ii. Mesocarp: It is the middle part of peri carp forming pulpy or juicy part of a fruit as in mango.
- iii. Endocarp: It is the innermost layer of pericarp. It may be thin and membranous as in orange or hard and stony in mango, plum and coconut.

Seeds: The fruit wall enclose one or more seeds which develop from fertilized ovules.

Q.83. Write a note on simple fruits.

Ans: Simple fruits: Simple fruits are those fruits which develop from a single flower with monocarpellary or polycarpellary syncarpous gynoecium.

Simple fruit can be further classified into two types as:

- i. Fleshy fruits. e.g Banana and tomato.
- ii. Dry fruits. e.g cotton and Datura.

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Fleshy fruit is a fruit in which the pericarp is differentiated into three layers as, epicarp, mesocarp and endocarp.

Dry fruit is a fruit in which pericarp is a single layer.

Fleshy fruit can be further divided into two types based on the nature of endocarp.

- i. Drupe: In drupe, endocarp is hard and stony. Fruit is single seeded. e.g. Mango.
- **ii. Berry:** In berry, endocarp is fleshy. Fruit is many seeded. e.g Tomato.



Q.85. With suitable diagram give an account of composite or multiple fruits.

Ans: Composite or Multiple fruits: The fruits which develop from a complete inflorescence are called composite or multiple fruits.

Here, ovaries as well as other floral parts of several flowers are involved in the formation of fruit. On the basis of the type of inflorescence involved, they are of two types:

i. Syconus: This type of fruit develops from hypanthodium inflorescence. e.g. Ficus, i.e. anjeer.

ii.Sorosis: It develops from spike, spadix, or catkin type of inflorescence. e.g. Pineapple, jack fruit.Power by: VISIONet Info Solution Pvt. LtdwebSite : www.edubull.comMob no. : +91-9350679141



5.1.7 Seed

Q.86. Define seed.

Ans: A seed is fertilized and metamorphosed ovule containing an embryo and enclosed in resistant protective coats.

Q.87. Describe the structure of a dicotyledonous seed.

Ans: Structure of dicotyledonous seed:

A typical dicotyledonous seed (pea) shows the presence of seed coat and embryo. **Seed coat:**

- i. The pea seed is rounded, yellow-green, wrinkled or smooth surfaced.
- ii. Seed is attached to the placental tissue of the fruit by a stalk called funicle.
- iii. The point of attachment of funicle to seed is called hilum.
- iv. Just below the hilum, a small pore is present called micropyle.
- v. A short ridge present along the hilum is called raphe.
- vi. The seed is covered by an outer, thick, rigid, coloured seed coat called testa, developed from outer integument of ovule.
- vii. Inner to it is a thin semi-transparent, colourless, inner seed coat developed from inner integument of ovule called tegmen.

Embryo:

- i. The contents enclosed within' the seed coat are together called kernel.
- ii. Enclosed by the seed coat is seen the embryo axis called tigellum.
- iii. The embryo axis consists of two parts, a radicle lying towards the micropylar end and a plumule lying between the cotyledons.
- iv. A radicle gives rise to root, while plumule gives rise to shoot.
- v. Dicotyledonous seed is a non-endospermic or exalbuminous seed as it lacks endosperm at maturity.

Q.88. Describe the structure of a monocotyledonous seed.

Ans: Maize grain is a single seed fruit in which the seed coat and the fruit wall are inseparable. (enlarged peduncle).

A grain of maize (Zea mays) is in fact a dry, one seeded fruit called caryopsis.

The pericarp (fruit wall) is fused with testa.

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Micropyle

Dicotyledonous seed e.g. Gram



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Each grain is made up of following parts, i.e. seed coat, endosperm and embryo.

i. Seed coat:

The covering of the grain is formed by 'Hull', which is formed by the fusion of membranous testa and thick pericarp, i.e. fruit wall.

ii. Endosperm:

It comprises the major part of the grain storing reserve food material like starch, fat and proteins. Endosperm.is made up of two regions:

- a. the outer 1 3 layered thick structure called aleurone layer which stores abundant proteins called aleurone proteins.
- b. inner to it a large mass of starch is present.

The endosperm and an embryo are separated by a layer called epithelium.

The endosperm is food storage tissue.

iii. Embryo:

Embryo has an embryonal axis which bears radicle towards the lower end, plumule towards the upper end. A large, single shield-shaped lateral cotyledon is present called scutellum.

The radicle is covered by a protective sheath called coleorhiza or radicle sheath.

The plumule is also protected by an outer sheath called coleoptile.

The maize grain is monocotyledonous and endospermic.

Q.89. What is Epicotyl?

Ans: The part of embryonal axis between plumule and cotyledonary node is called epicotyl.

Q.90. What is Hypocotyl?

Ans: The part of embryonal axis between radicle and cotyledonary node is called hypocotyl.

5.2 : Floral Formula, Floral Diagram and Plant Families :

Q.91.Enlist various symbols used in writing floral formula.

Ans: i	. 0	Э	:	Actinomorphic symmetry
ii.	%	ó	:	Zygomorphic symmetry
iii	. c	f	:	Male flower
iv			:	Female flower
v.			:	Bisexual flower
vi	В	r	:	Bracteate flower
vi	i. K		:	Calyx
vi	ii. C	,	:	Corolla
ix	. P		: 🍃	Perianth
X	. A		:	Androecium
xi	i. G	÷	: /	Gynoecium
xi	ii. 🤇	r r		Superior ovary
xi	ii. Ō	ž		Inferior overy
X	iv. G	ń—	:	Half superior ovary

Q.92. Define floral diagram.

Ans: A diagram showing the relative position of different floral members is known as floral diagram.

Q.93. In C_(s), what does symbol C, number 5 and bracket indicate?

Ans: In C₍₅₎, symbol C indicates Corolla, number 5 indicates number of floral leaves, i.e. petals in Corolla, bracket indicates the union or cohesion of members of corolla, i.e all petals are fused.

Q.94. Describe the family Fabaceae with suitable floral diagram.

OR

Take one flower of family Fabaceae and write its essential description. Also draw their floral diagrams after studying them.

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Ans: Family Fabaceae is distributed all over the world; it was earlier called Papilionoideae, a subfamily of family

Leguminosae.		
Example	:	Pisum sativum
Habit	:	Tree, shrubs, herbs, root with root nodules.
Stem	:	Erect or climber.
Leaves	:	Alternate, Pinnately compound or simple; Pulvinate leaf base; Stipulate; reticulate
		venation.
Inflorescence	:	Racemose
Flower	:	Pedicellate, zygomorphic, hermaphrodite, complete.
Calyx	:	Sepals five, gamosepalous, imbricate aestivation.
Corolla	:	Petals five, polypetalous, papilionaceous, consisting of a posterior Petal: standard
		or vexillum two lateral petals : wings or alae two anterior ones forming a keel or
		carina, vexillary aestivation.
Androecium	:	Stamens ten, diadelphous, anther dithecous.
Gynoecium	:	Ovary superior, monocarpellary, unilocular with many ovules, marginal
		placentation, style long.
Fruit	:	Legume.
Seed	:	One to many, non-endospermic
Floral formula	:	$\% K_{(5)} C_{1+2+(2)} A_{(9)} + 1 \underline{G}_{1}$
Leaves Stem		Tendrils Petal Ovary Flower Sepal L.S. of Flower Foliaceous Stipule Stipule Covary Style Covary Style Covary Style Covary Style Covary Style Covary Style Covary Covary Style Covary Covary Style Covary Covary Covary Style Covary Cov
Flowerin	g Twi	Placenta
		Locule Stigma Ovule Ovary Ovary wall Ovary T.S. of Ovary Gynoecium
		Stigma

Androecium and Gynoecium

Floral diagram

Q.95. Give the economic importance of family Fabaceae.

Ans: Family Fabaceae Includes many pulses like gram, arhar, moong, soyabean; edible oil seeds like soyabean,

Fused stamens

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Free stamen

groundnut; dye (Indigofera); fibres which can be obtained from Sunhemp, Sesbania trifolium which can be used as fodder; some plants are ornamental like lupin, sweet pea; some medicinal plants like muliathi.

Q.96. Describe the family Solanaceae with suitable floral diagram.

OR

Take one flower of family Solanaceae and write its essential description. Also draw their floral diagrams after studying them.

Ans: Solanaceae family is also called as 'Potato family'.

It is a large family and widely distributed in tropics, subtropics and even temperate zones.

Example : **Datura stramonium (thorn apple)** Habit : Mostly herbs, shrubs and rarely small trees. Herbaceous, rarely woody, aerial, erect, cylindrical, branched, solid or hollow, hairy or glabrous, Stem · sometimes it may be underground like in potato. Leaves : Alternate, simple, rarely pinnately compound, exstipulate, reticulate venation. Inflorscence: Solitary, axillary cymose as in Solanum. Flower : Actinomorphic, hermaphrodite, complete. Calyx Sepals five, gamosepalous, persistent, Valvate aestivation. Corolla Petals five, gamopetalous, Valvate aestivation. : Androecium : Stamens five, epipetalous Gynoecium: Bicarpellary, syncarpous, superior ovary, bilocular, placenta swollen with many ovules, axile placentation. **Fruits** : Berry or capsule. Seeds Many, endosperrnic.



Q.97. Give the economic importance of family Solanaceae.

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Ans: Family Solanaceae includes many plants which are good source of food e.g. tomato, brinjal, potato; Spice e.g. chilli; Medicine e.g. belladonna, ashwag;andha; Ornamental plants like Petunia.

Q.98. Describe the family Liliaceae with suitable floral diagram.

Ans: Family Liliaceae mainly includes monocotyledonous plants and commonly called as Lily family.

Habit	:	Perennial herbs with underground bulbs/corms/rhizomes
Leaves	:	Mostly basal, alternate, linear, exstipulate with parallel venation
Inflorescenc	e :	Solitary, cymose, often umbellate clusters
Flower	:	Bracteate, actinomorphic, hermaphrodite
Perianth	:	Tepals six, arranged in two whorls of 3 each, often united into tube, gamophyllous.
Androecium	:	Stamens six, arranged in two whorls of 3 each, epiphyllous.
Gynoecium	:	Tricarpellary, syncarpous, superior ovary, trilocular with many ovules; axile placentation
Fruit	:	Capsule, rarely berry.
Seed	:	Endospermic.



Q.99. Give the economic importance of family Liliaceae.

- **Ans.** Family Liliaceae includes many ornamental plants like tulip, Gloriosa, Medicinal plants like Aloe vera, Asparagus and source of colchicine, e.g. Colchicum autumnale.
- Q.100. Write the floral formula of a actinomorphic, bisexual, hypogynous flower with five united sepals, five free petals, five free stamens and two united carpels with superior ovary and axile placentation.

Ans: \oplus K₍₅₎ C₅ A₅ <u>G</u>₍₂₎

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