

# OBJECTIVES

**Semester** : IV (New)  
**Course Number** : HORT-243  
**Credit** : 2 (1+1)  
**Course Title** : Production technology for fruit and plantation crops

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## TEA

1. Origin of Tea is  
a) Brazil  
**c) China**  
b) Japan  
d) India
2. Family of Tea is  
a) Rubiaceae  
c) Rosaceae  
b) Sapotaceae  
**d) Theaceae**
3. Chromosome number of tea is  
**a) 30**  
c) 22  
b) 32  
d) 26
4. Botanical name of Tea is  
a) Grewia subinequalis  
c) Juglans regia  
**b) Camelia sinensis**  
d) Carya illieonsis
5. Common name of Tea is  
**a) Queen of beverage crop**  
c) Both  
b) Food of God  
d) None
6. Which state in highest producer of Tea in India  
a) West Bengal  
**c) Assam**  
b) Tamil Nadu  
d) Kerala
7. Which country is the highest producer of Tea in the World  
a) India  
c) Shri Lanka  
b) Kenya  
**d) China**
8. India rank \_\_\_\_\_ in Tea production.  
**a) Second**  
c) Third  
b) Fourth  
d) Fifth

9. Bitter taste in Tea is due to  
a)Theol  
**c)Tannin**  
b)Theine  
d)None
10. Aroma and flavor in Tea imparted by  
a) Theine  
**b) Theol**  
c)Tannin  
d)All
11. Which method is used for manufacturing the black Tea.  
a)Orthodox method  
**c)Both a and b**  
b)CTC(Crush, tear, curl)  
d)None
12. Which compound responsible for dark colour of Tea.  
a)Thearubigins  
**d)Both a and b**  
c)Theanine  
b)Theaflavins

## COFFEE

1. Family of Coffee is  
a)Rosaceae  
**c)Rubiaceae**  
b)Rhamnaceae  
d)Arecaceae
2. Origin of Coffee is  
a)USA  
**d) Ethiopia**  
c)Japan  
b)China
3. Chromosome number of Coffea arabica and Coffea robusta are  
**a)22, 44**  
b)40,20  
c)20, 40  
d)44,22
4. Fruit type of Coffee is  
a)Pepo  
**b)Drupe (stone)**  
c)Nut  
d)Capsule
5. Coffee is commercially propagated by  
a)Softwood grafting  
**b) Seed**  
c)Layering  
d)Cutting
6. Highest producer of coffee in the World is  
**a)Brazil**  
b)Vietnam  
c)Colombia  
d)Indonesia
7. India's rank in Coffee production in the World is  
**a)8th**  
b)7th  
c)5th  
d)6th
8. Largest Coffee producing state in India is  
**b)Karnataka**  
a)Kerala

- c)Tamil Nadu  
d)Andhra Pradesh
9. \_\_\_\_\_ is the variety of Coffee.  
a)Robusta  
c)Blue mountain  
b)Brooklands  
**d)Both a and c**

## RUBBER

1. Botanical name of Rubber is  
a)Actinidia deliciosa  
**c)Hevea brasiliensis**  
b)Carya illieonsis  
d)Macadamia ternifolia
2. Rubber belongs to the family  
a)Ebenaceae  
**c) Euphorbiaceae**  
b)Sterculiaceae  
d)Actinidaceae
3. The World leading producer of Rubber is  
a)Indonesia  
**c)Thailand**  
b)Vietnam  
d)India
4. \_\_\_\_\_ is the largest producer of Rubber plantation in India.  
**a)Kerala**  
c)Karnataka  
b)Tamil Nadu  
d)Andra Pradesh
6. India ranks \_\_\_\_\_ in Rubber production.  
a)3rd  
c)2nd  
**b)4th**  
d)6th
7. \_\_\_\_\_ is the physiological disorder of Rubber.  
a)Sun scald  
c) Multiple crown  
**b)Tapping panel dryness (Brown blast)**  
d)little leaf
8. Latex produced in the bark tissue is harvested through a process called \_\_\_\_\_.  
a)Notching  
c)Girdling  
**b)Tapping**  
d)None

## PINEAPPLE

1. The largest producer of pineapple in the world  
a) France  
c) Iran  
**b) Thailand**  
d) USA
2. Origin of pineapple  
a) China  
c) Mediterranean region  
**b) India**  
**d) Brazil**
3. Botanically the fruit of pineapple is  
a) Drupe  
c) Berry  
**b) Pome**  
**d) Sorosis**
4. Pineapple fruit contains an enzyme called  
a) Prunasin  
**c) Bromelin**  
**b) Amygdalin**  
d) Tanins
5. Pineapple is generally propagated by  
a) Air layering  
c) Inarching  
**b) Budding**  
**d) Suckers**
6. The major disorder of pineapple is  
a) fruit drop  
**c) Multiple crown**  
**b) Yellow spot**  
d) Dry neck
7. Best vegetative material for the propagation of pineapple is  
a) Shoot suckers  
c) Crown  
**b) Ground suckers**  
d) Stumps
8. Pineapple is \_\_\_\_\_ fruit  
**a) Non-climacteric**  
c) Both  
**b) Climacteric**  
d) None

9. Botanically the pineapple fruit is  
a) Capsule  
c) Drupe  
b) Syconus  
**d) Sorosis**
10. Chromosome number of pineapple is  
**a) 50**  
c) 40  
b) 30  
d) 60
11. Botanical name of pineapple is  
a) *Borassus flabellifer*  
c) *Annona squamosa*  
b) *Annona reticulata*  
**d) *Annanas comosus***
12. \_\_\_\_\_ season is the best time of planting pineapple  
a) Summer  
c) Winter  
**b) Rainy**  
d) a and b both
13. \_\_\_\_\_ is leading commercial variety valued particularly for canning, late variety  
**a) Kew**  
c) Mauritius  
b) Queen  
d) Jaldhup
14. Pineapple exhibits \_\_\_\_\_ parthenocarpy  
**a) Vegetative**  
c) Stimulative  
b) Sternospermocarpy  
d) both b and c
15. Edible part of Pineapple is  
**a) Bract/Perianth**  
c) Thalamus  
b) Mesocarp  
d) Fleshy receptacle

## POMEGRANATE

1. Pomegranate belongs to the family  
a) Sapindaceae  
c) Rutaceae  
**b) Punicaceae**  
d) Moraceae
2. Pomegranate is native of  
a) China  
c) India  
**b) Tropical America**  
**d) Iran**
3. Maximum area of Pomegranate is under  
**a) Maharashtra**  
c) Karnataka  
**b) Punjab**  
d) Assam
4. Botanically the fruit of Pomegranate is  
a) Drupe  
**c) Balausta**  
**b) Berry**  
d) Hesperidium
5. Pomegranate juice is valued for the treatment of  
a) Dysentery  
**c) Leprosy**  
**b) Diarrhoea**  
d) Night blindness
6. Which variety of pomegranate has very hard seeds  
a) Dholka  
c) Muskat red  
**b) Paper shell**  
**d) Alandi**
7. Commercially Pomegranate is propagated through  
**a) Hard wood cutting**  
c) Budding  
**b) Grafting**  
d) Seeds
8. The most physiological disorder in Pomegranate is  
a) Fruit drop  
c) Stem end rot  
**b) Fruit cracking**  
d) Yellow spot
9. In young pomegranate fruits cracking is due to  
a) Zinc deficiency  
**c) Boron deficiency**  
**b) Sulphur deficiency**  
d) molybdenum deficiency
10. Early ripening pomegranate variety is  
a) Dholka  
c) Ganesh  
**b) Jalore Seedless**  
d) Alandi
11. Pomegranate is \_\_\_\_\_ fruit  
**a) Non- climacteric**  
c) Both  
**b) Climacteric**  
d) None
12. The inflorescence of pomegranate is

- a) Panicle  
c) Solitary
- b) Cymose  
**d) Hypanthodium**
13. Edible part of pomegranate is  
**a) Juicy seed coat**  
c) Fleshy aril
- b) Thalamus  
d) Juicy placental hairs
14. Chromosome number of pomegranate is  
a) 16  
**c) 18**
- b) 20  
d) 31
15. "Ruby" is hybrid variety of \_\_\_\_\_  
**a) Pomegranate**  
c) Pineapple
- b) Litchi  
d) Grape
16. "Ganesh" a variety of pomegranate is a selection from \_\_\_\_\_  
a) Karadi  
c) Madhugiri
- b) Muskati red  
**d) Alandi**
17. Ideal time of planting in tropics  
a) February- March  
**c) July-August**
- b) September-October  
d) December-january

**Variety released by MPKV, Rahuri :**

**Mridula, G-137, Ganesh, Bhagwa, Phule Arakta,  
Phule Bhagwa Super**

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## JACKFRUIT

1. Jackfruit belongs to the family  
a) Myrtaceae  
**c) Moraceae**  
b) Rutaceae  
d) Musaceae
2. Origin of Jackfruit is  
a) China  
c) Brazil  
b) Iran  
**d) India**
3. Chromosome number of Jackfruit is  
a) 50  
c) 36  
**b) 56**  
d) 38
4. Botanical name of Jackfruit is  
**a) Artocarpus heterophyllus**  
c) Syzygium cumunni  
b) Emblica officinalis  
d) Punica granatum
5. Botanically the Jackfruit fruit is  
**a) Sorosis**  
c) Pome  
b) Drupe  
d) Syconus
6. Jackfruit is commonly propagated by  
**a) Seed**  
c) Inarching  
b) Stooling  
d) T- budding
7. Edible part of Jackfruit is  
a) Pericarp  
c) Thalamus  
b) Mesocarp  
**d) Bract/Perianth**
8. Champa, Hazari, Monkey jack, Gulabi, Ceylon jack and Rudrakshi are the varieties of



- a) **Jackfruit**  
c) Strawberry
- b) Pineapple  
d) Pomegranate
9. Common name of Jackfruit is  
a) Melon tree  
c) **Monkey jack**  
b) Kalpavriksha  
d) Apple of tropics
10. Cauliflory is observed in  
a) Carambola  
c) **Both**  
b) Jackfruit  
d) none
11. Vivipary is observed in  
a) Cocoa  
c) Avocado  
b) **Jackfruit**  
d) None
12. Jackfruit is \_\_\_\_\_ plant  
a) **Tropical**  
c) Both a and b  
b) Temperate  
d) None

**STRAWBERRY**

1. How much % of edible portion exists in Strawberry  
a) 88%  
c) 78%  
**b) 98%**  
d) 68%
2. Strawberry belongs to the family  
**a) Rosaceae**  
c) Rutaceae  
b) Rhamnaceae  
d) Rubiaceae
3. Origin of Strawberry is  
a) China  
**c) Man made hybrid (F. chilonensis x F. Virginiana)**  
b) Brazil  
d) Iran
4. Chromosome number of Strawberry is  
a) 50  
**c) 56**  
b) 36  
d) 22
5. Botanical name of Strawberry is  
a) Feronia limonica  
c) Prunus persia  
**b) Fragaria ananasa**  
d) Prunus avium
6. Edible part of Strawberry is  
a) Fleshy aril  
**c) Fleshy thalamus**  
b) Mesocarp  
d) Placentae
7. Strawberry is commercially propagated by  
a) Suckers  
c) Seed  
b) Slips  
**d) Runner plants**
8. The inflorescence of strawberry is  
**a) Cymose (Solitary)**  
c) Spadix  
b) Racemose  
d) Hypanthodium
9. Highest producer of strawberry  
a) Brazil  
**c) USA**  
b) China  
d) India
10. Strawberry is \_\_\_\_\_ fruit  
**a) Non-climacteric**  
c) Both a and b  
b) Climacteric  
d) None
11. Strawberry is \_\_\_\_\_ plant  
a) Long day  
c) Day neutral  
**b) Short day**  
d) None
12. Strawberry is \_\_\_\_\_ plant  
a) Tropical  
c) Subtropical  
**b) Temperate**  
d) Both a and c

13. Flower colour of strawberry  
a) Pink  
c) Purple  
b) Yellow  
**d) White**
14. Chandler, Tioga, Torrey, Selva, Belrubi, Fern and Pajaro are the cultivar of  
a) Phalsa  
c) Plum  
b) Cherry  
**d) Strawberry**
15. Which training system commonly followed in India  
Simplest and least expensive training system-----  
**a) Matted row**  
c) Spaced row  
b) Hill system  
d) Plastic film

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## COCONUT

1. Chromosome number of Coconut  
a) 30  
c) 58  
**b) 32**  
d) 36
2. Family of Coconut  
**a) Arecaceae**  
c) Musaceae  
b) Annonaceae  
d) Vitaceae
3. Botanical name of Coconut  
a) Areca catechu  
**c) Cocos nucifera**  
b) Ealias guinensis  
d) Phoenix dactylifera
4. Coconut is.....  
a) Monocot  
c) Both  
b) Dicot  
d) None
5. Botanically the fruit of Coconut is  
a) Pepo  
**c) Drupe**  
b) Nut  
d) Pome
6. Maximum area of Coconut is under  
a) Tamil nadu  
c) Karnataka  
b) Andhra pradesh  
**d) Kerala**
7. Origin of Coconut  
a) West Asia  
c) Europe  
**b) South-East Asia**  
d) Japan
8. The inflorescence of Coconut is  
a) Raceme  
**c) Spadix**  
b) Solitary  
d) Cymose

9. Edible part of Coconut is  
a) Mesocarp  
c) Pericarp  
**b) Endosperm**  
d) Fleshy receptacle
10. Maximum production of coconut is under  
**a) Kerala**  
c) Karnataka  
b) Tamil Nadu  
d) Andhra Pradesh
11. Coconut commercially propagated by  
a) Suckers  
c) Air layering  
b) Runners  
**d) Seed (Nut)**
12. Common name of Coconut is  
a) Kalpataru  
c) Tree of paradise  
**b) Kalpavriksha**  
d) Tree of wisdom
13. Which country rank 1<sup>st</sup> in Coconut production  
a) India  
c) Philippines  
**b) Indonesia**  
d) Sri Lanka
14. India rank .....in Coconut production  
a) 2<sup>nd</sup>  
**c) 3<sup>rd</sup>**  
b) 4th  
d) 5th
15. ....month old seedlings are used for planting  
a) 2-5  
c) 7-8  
b) 4-7  
**d) 9-12**
16. Which state gives highest productivity of coconuts  
**a) Andhra Pradesh**  
c) Karnataka  
b) Kerala  
d) Tamil Nadu
17. "Gudanjali dwarf" is variety of  
a) Banana  
**c) Coconut**  
b) Arecanut  
d) Date palm

- ✓ Coconut is heliotropic plant (Sun loving)
- ✓ Source of cytokinin hormone in Coconut- water
- ✓ Optimum temperature-27 ° C
- ✓ Generic name **Cocus** is derived from **Spanish** word coco means **monkey face**
- ✓ In Kerala 60-65% of total Coconut product is converted into milling copra
- ✓ 55% of coconut production is consumed as raw
- ✓ Coconut has water percentage- 94.5%
- ✓ Dwarf Coconut- Self pollinated
- ✓ Tall Coconut- Cross pollinated
- ✓ Coconut ripens in from the opening of the inflorescence: 12-13 months
- ✓ Male parent for hybrid variety: Choughat orange dwarf, Gangabondan
- ✓ First hybrid between tall and dwarf Coconut was released in year 1932
- ✓ Fan like appearance of leaves is due to – Rhinoceros beetle
- ✓ Gummosis is caused due to- Red palm weevil
- ✓ Monophagus pest of Coconut- Black headed caterpillar (Opisania arenosella)

## ARECANUT

1. Dried ripe nuts of Arecanut is called as  
a)Chali  
**c)Both**  
b)Kottapak  
d)None
2. "Mohitnagar" is improved cultivar of  
a)Coconut  
c)Date palm  
**b)Arecanut**  
d)Cashewnut
3. Chromosome number of Arecanut  
**a) 32**  
c)28  
b)40  
d)50
4. Family of Arecanut  
**a) Arecaceae**  
c)Bromiliaceae  
b) Annonaceae  
d)Myrtaceae
5. Botanical name of Arecanut is  
a) Annanas comosus  
**c)Areca catechu**  
b) Anacardium occidentale  
d)Aegle marmelos
6. Botanically the fruit of Arecanut is  
**a)Berry**  
c)Pome  
b)Pepo  
d)Sorosis
7. Maximum production of Arecanut is under  
a)Kerala  
**c)Karnataka**  
b) Tamil Nadu  
d) Andhra Pradesh
8. Arecanut commercially propagated by  
a) Suckers  
c) Air layering  
b) Runners  
**d) Seed**
9. The inflorescence of Arecanut is  
a) Raceme  
**c)Spadix**  
b)Solitary  
d) Cymose
10. Which country is highest producer and consumer of Arecanut  
a)Bangladesh  
c)Indonesia  
b)Myanmar  
**d)India**
11. "Arecotin" stimulating agent, present in.....  
a) Coconut  
**c)Arecanut**  
b) Betel vine  
d)Date palm
12. Mangla, Sumangla and Shree mangla are the varieties of  
a)Coconut  
b)Date palm

c)Cashewnut

**d) Arecanut**

13. Nut cracking is the physiological disorder of \_\_\_\_\_.

**a)Arecanut**

b)Cashewnut

c)Both

d)None

14. Interspecific cross of Arecanut is

a) Samrudhi

b)Mangla

c) Sumangla

**d)Shreevardhani**

**(Areca catechu X Areca triandra)**



## CASHEWNUT

1. Common name of Cashew is  
a) **Dollar earning crop**  
c) Food of God  
b) King of nut  
d) Butter fruit
2. Botanical name of Cashew is  
a) Juglans regia  
c) Camelia sinensis  
b) Syzygium cumunni  
d) **Anacardium occidebtale**
3. Family of Cashew  
a) Apocyanaceae  
c) **Anacardiaceae**  
b) Annonaceae  
d) Arecaceae
4. Fruit type of Cashew is  
a) Capsule  
c) **Nut**  
b) Drupe  
d) Berry
5. Cashew is \_\_\_\_\_.  
a) Climacteric  
c) Both a and b  
b) **Non-climacteric**  
d) None
6. Chromosome number of cashew is  
a) 40  
c) 36  
b) 22  
d) **42**
7. Origin of Cashew is  
a) **Brazil**  
c) India  
b) China  
d) Iran
8. Cashewnut is commercially propagated by  
a) Inarching  
c) **Softwood grafting**  
b) T- budding  
d) Tongue grafting
9. Edible part of Cashew is  
a) Pericarp  
c) Endocarp  
b) Mesocarp  
d) **Cotyledon**
10. Common name of Cashew is  
a) Dollar earning crop  
c) Gold mine of waste land  
b) Plough crop  
d) **All**
11. \_\_\_\_\_ is the variety of Cashew.  
a) Vengurla-1  
c) Priyanka  
b) Vengurla-4  
d) **All**
12. \_\_\_\_\_ is the pest of Cashew.  
a) Rhinoceros beetle  
b) Red palm weevil

**c)Tea mosquito bug**

d) Striped mealy bug

13. Kernel contains \_\_\_\_\_% protein.

a)25%

b)12%

c)15%

**d)21%**

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## CITRUS

1. The botanical name of sweet orange is  
a) Citrus reticulata  
c) Citrus limon  
**b) Citrus sinensis**  
d) Citrus grandis
2. Sweet orange is generally a fruit with  
**a) Tight skinned**  
c) Partially loose  
b) Loose skinned  
d) Partially tight
3. Exanthema in citrus due to deficiency of  
**a) Cu**  
c) Ca  
b) Mo  
d) K
4. "Pineapple" variety of sweet orange is commercially grown in  
a) Maharashtra  
c) Haryana  
b) Uttar Pradesh  
**d) Punjab**
5. "Mosambi" variety of sweet orange is commercially grown in  
a) North India  
c) East India  
b) South India  
**d) Western India**
6. The original home of mandarin is  
**a) China**  
c) Brazil  
b) India  
d) South Africa
7. Satsuma group of mandarin oranges are commonly grown in  
a) India  
c) West Indies  
b) Brazil  
**d) Japan**
8. Mandarin are commercially propagated by  
a) Layering  
**b) T- budding**

- c) Tongue grafting  
d) Cutting
9. Kinnow is a famous variety of mandarin in  
a) Karnataka  
c) Tamil Nadu  
b) Maharashtra  
**d) Punjab**
10. All the commercial mandarin varieties grown in India, belongs to species  
**a) Citrus reticulata**  
c) Citrus Latifolia  
b) Citrus Limonia  
d) Citrus paradise
11. The botanical name of grape-fruit is  
**a) Citrus reticulata**  
c) Citrus Latifolia  
b) Citrus Limonia  
**d) Citrus paradise**
12. The chromosome number of grape-fruit is  
a) 12  
**c) 18**  
b) 16  
d) 24
13. The most widely planted cultivar of grape-fruit is  
**a) Marsh**  
c) Foster  
b) Ruby  
d) Triumph
14. Botanically the grapefruit is  
a) Berry  
**c) Hesperidium**  
b) Pome  
d) Sorosis
15. Largest producer of lime in the world is  
**a) India**  
c) Brazil  
b) China  
d) South Africa
16. In India leading lime production state is  
a) Bihar  
c) Assam  
b) Karnataka  
**d) Andhra Pradesh**
17. Lime is a good source of  
a) Vit A  
c) Vit B1  
**b) Vit C**  
d) Vit B2
18. Acid lime (*C. aurantifolia*) is commonly called as  
a) Lime  
**c) Kaghzi lime**  
b) Lemon  
d) Rangapur lime
19. Acid lime is usually propagated by  
**a) Seeds**  
c) Air layering  
b) Cutting  
d) T- Budding
20. Sweet lime is commercially propagated by  
a) T- budding  
**b) Hard wood cutting**

- c) Tongue-grafting
- d) Air layering
21. The botanical name of lemon is  
 a) Citrus reticulata  
**c) Citrus limon**  
 b) Citrus sinensis  
 d) Citrus grandis
22. Original home of lemon is  
 a) Brazil  
 c) Burma  
**b) East Asia**  
 d) China
23. Granulation in mandarin can be controlled by  
**a) Spraying of lime**  
 c) Zn application  
 b) Reduction in irrigation  
 d) Copper application
24. Kinnow was introduced in India in the year  
 a) 1958  
**c) 1959**  
 b) 1957  
 d) 1956
25. Granulation is serious problem in  
**a) Citrus**  
 c) Grape  
 b) Mango  
 d) Strawberry
26. Kinnow a hybrid is evolved by  
 a) H. P. Olmo  
 c) N. E. Lee  
**b) H. B. Frost**  
 d) G. S. Cheema
27. June flowering in citrus is known as  
**a) Mrig Bahar**  
 c) Haste Bahar  
 b) Ambe Bahar  
 d) None of the above
28. Degreening of citrus fruit is done by  
 a) Ethephone  
**c) Calcium carbide**  
 b) Ethylene  
 d) Methyl Bromide
29. Which citrus spp act as a indicator plant for tristiza virus  
 a) Mandarin  
**c) Acid lime**  
 b) Pummelo  
 d) Sweet lime
30. Nutrient loving plant is  
 a) Apple  
**c) Citrus**  
 b) Banana  
 d) Papaya
31. Flying dragon is a rootstock of  
 a) Cherry  
**c) Citrus**  
 b) Bael  
 d) Apple
32. Bitter principle present in citrus is

- a) Lycopene
- c) Eugenol

- b) Isocoumarin
- d) Limonin**

33. Seedless strain of acidlime is

- a) Pramalini
- c) Chakradhar**

- b) Vikram
- d) PKM-1

- ✓ Mandarin occupies 50% area under citrus spp.
- ✓ Rootstock for HDP- Troyer citrange (1.8 x 1.8 m<sup>2</sup>)
- ✓ Highly polyembryonic- Mandarin, sweet orange, acide lime, grape fruit
- ✓ Monoembryonic- Pummelo, Tahiti, Citron
- ✓ Pineapple and Valencia- indicator of greening
- ✓ Ultra dwarf rootstock of citrus- Flying dragon

## APPLE

1. Leading country in production of apple is  
a) South Africa  
c) India  
b) Brazil  
**d) China**
2. Botanically the apple fruit is  
**a) Pome**  
c) Drupe  
b) Berry  
d) Sorosis
3. Apple belongs to the family  
a) Eupobiaceae  
c) Musaceae  
**b) Rosaceae**  
d) Arecaceae
4. Serious physiological disorder of apple is  
a) Gummosis  
**c) Bitter pit**  
b) Fruit necrosis  
d) Fruit cracking
5. Dwarfing rootstock of apple  
a) M-27  
c) M-21  
b) M-13  
**d) M-9**
6. Generally apple is propagated by  
a) Seeds  
**c) Grafting**  
b) Cuttings  
d) Layering
7. Serious pest in apple orchard is  
**a) Woolly aphids**  
c) Hairy caterpillar  
b) Blossom thrips  
d) Sanjose scale
8. Export variety of apple is  
a) Newton wonder  
**b) Golden delicious**

- c) Golden russet  
d) Rome beauty
9. Origin of Apple is  
a) N. America  
c) S.E. Asia  
b) S. America  
**d) S.W. Asia**
10. Ultra dwarf rootstock of Apple is  
a) M-9  
c) MM-106  
**b) M-27**  
d) MM-111
11. Apple scab is caused due to  
a) Bacteria  
c) MLO  
**b) Fungus**  
d) None of these
12. Chromosome number of Apple is  
a) 14  
c) 32  
**b) 34**  
d) 16
- ✓ Apple is most widely grown temperate fruit in the world
  - ✓ Apple account 55% of total area and 75% of total production of temperate fruits in the country
  - ✓ HP is known as "Apple bowl of India"
  - ✓ Scarlet gola, Red fuji : High yielding varieties
  - ✓ Sanjose scale got its entry into India from France in 1906
  - ✓ Cider- fermented wine prepared from Apple
  - ✓ J & K is leading apple producing state
  - ✓ Commercial method of propagation of rootstock- stooling
  - ✓ Amber- Indigenous variety grown in Kashmir and it have longest storage life
  - ✓ Rymer- Indigenous variety grown in Kashmir



# PEAR

1. Largest producer of pear in the world is  
a) Spain  
**c) Italy**  
b) India  
d) Brazil
2. The inflorescence of pear is  
a) Panicle  
c) Raceme  
b) Solitary  
**d) Corymb**
3. Botanically the pear fruit is  
a) Drupe  
c) Berry  
**b) Pome**  
d) Sorosis
4. The dwarf rootstock of pear is  
a) Quince A  
**c) Quince C**  
b) Quince B  
d) Shegal
5. Serious pest of pear in Kullu valley is  
a) Hopper  
c) Fruit fly  
b) Stem borer  
**d) Sanjose scale**
6. The main disorder of pear is  
**a) Pear decline**  
c) Pear softnose  
b) Stem and root  
d) Taper tip in pear
7. Commercial method of pear propagation is  
a) Hardwood cuttings  
**c) Tongue grafting**  
b) Layering  
d) Chip budding
8. Cork spot disorder in pear is caused due to deficiency of  
a) Boron  
**c) Calcium**  
b) Manganese  
d) Iron
9. Fruit cracking in pear is due to deficiency of  
**a) Boron**  
c) Calcium  
b) Manganese  
d) Iron
10. Most of the pear varieties grown in India are  
a) Self fruitful  
c) Cross fruitful  
b) Self- unfruitfulness  
**d) Partially self fruitful**
11. Edible part of pear is  
a) Seed  
c) Endosperm  
b) Mesocarp  
**d) Thalamus**
12. China pear is the variety of

- a) Plum
- c) Peach

- b) Pear**
- d) Apple

13. Chromosome number of pear is

- a) 34**
- c) 16

- b) 18
- d) 20

# PEACH

1. The original home of peach is  
a) India  
c) South America  
b) Brazil  
**d) China**
2. Peach belongs to the family  
a) Tilliaceae  
**c) Rosaceae**  
b) Moraceae  
d) Rutaceae
3. Chromosome number of peach is  
a) 12  
c) 22  
**b) 16**  
d) 28
4. Type of flower arrangement in peach is  
a) Racemose  
c) Umble  
b) Fascicle  
**d) Solitary**
5. Commercially peach is propagated by  
**a) Budding**  
c) Air layering  
b) Inarching  
d) Stooling
6. Serious pest of peach is  
a) Defoliating beetles  
**c) Leaf curl aphid**  
b) Black aphid  
d) Case worm
7. Most peach varieties grown in India are  
**a) Self-unfruitful**  
c) Self-fruitful  
b) Self sterile  
d) Partially self- fruitful
8. Dwarf cultivar of peach is  
a) Flordarsum  
**c) Redhaven**  
b) Early Grande  
d) J. H. Hale
9. Botanical name of peach is  
**a) Prunus persia**  
c) Pyrus communis  
b) Prunus domestica  
d) Prunus avium
10. Prunacin is the principle glycoside present in pulp of  
a) Plum  
c) Pear  
**b) Peach**  
d) Cherry

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**MANGO**  
**Objective type questions**

1. Mango is a \_\_\_\_\_ fruit.  
a) **Climacteric**  
c) Both a and b  
b) Non-climacteric  
d) None
2. Fruit type of mango is  
a) Pome  
c) Pepo  
b) **Drupe**  
d) Balausta
3. Origin of mango is  
a) Indo-Malaya  
c) **Indo-Burma**  
b) Indo-China  
d) Europe
4. Common name of mango is  
a) Bathroom fruit  
c) Adam's fig  
b) King of fruits  
d) **Both a and b**
5. The leading mango growing state in India is  
a) Karnataka  
c) **Uttar Pradesh**  
b) Tamilnadu  
d) Punjab
6. The largest mango producing country in World is  
a) **India**  
c) China  
b) Brazil  
d) Europe
7. Export variety of mango is  
a) Langra  
c) **Alphonso**  
b) Dashehari  
d) Bombay Green
8. Which variety of mango mostly grown in Punjab  
a) Fazli  
c) Neelum  
b) Chausa  
d) **Langra**
9. The polyembryony variety of mango is

- |     |                                                       |                               |
|-----|-------------------------------------------------------|-------------------------------|
|     | a)Bangalore<br>c)Alphanso                             | b)Goa<br><b>d)Himsagar</b>    |
| 10. | The inflorescence of mango is<br>a)Catkin<br>c)Raceme | <b>b)Panicle</b><br>d)Umbel   |
| 11. | Dwarf mango variety is<br>a)Chausa<br>c)Neelam        | b)Langra<br><b>d)Amrapali</b> |

#### Fill in the blanks

- Mango belongs to the family \_\_\_\_\_. (Anacardiaceae)
- The chromosome number of mango is \_\_\_\_\_. (40)
- In nutritive value mango is rich in \_\_\_\_\_. (vit. A)
- \_\_\_\_\_ variety of mango is highly susceptible to malformation. (Bombay green)
- \_\_\_\_\_ disorder in mango is caused due to effect of brick kiln fumes. (Black tip)
- “Malika” a hybrid variety of mango is cross between \_\_\_\_\_ and \_\_\_\_\_. ( Neelum, Dashehari)

#### BANANA

##### Objective type questions

- |    |                                                                                    |                                          |
|----|------------------------------------------------------------------------------------|------------------------------------------|
| 1. | Banana belongs to the family<br>a)Rhamnaceae<br><b>c)Musaceae</b>                  | b)Annonaceae<br>d)Vitaceae               |
| 2. | Which state has highest production of banana in India<br>a) Tamil Nadu<br>c)Gujrat | <b>b)Maharashtra</b><br>d)Andhra Pradesh |
| 3. | The inflorescence if banana is<br><b>a)Spadix</b><br>c)Solitary                    | b)Panicle<br>d)Corymb                    |
| 4. | Botanically the fruit of banana is<br>a)Drupe<br>c)Pome                            | <b>b)Berry</b><br>d)Pepo                 |
| 5. | Banana is generally planted in<br>a)Sep-Oct<br>c)Feb-March                         | <b>b)June-July</b><br>d)April-May        |
| 6. | Average temperature required for banana is<br>a)17 °C<br><b>c)23 °C</b>            | b)27 °C<br>d)35 °C                       |

7. Banana streak virus (BSV) is a serious problem and is transmitted through  
a) Aphids  
c) Banana beetle  
b) White fly  
d) Mealy bug
8. Which variety of banana covers about 50% of the total area  
a) Monthan  
c) Dwarf Cavendish  
b) **Poovan**  
d) Pusa nanha
9. Which variety of banana is essentially used for cooking  
a) **Monthan**  
c) Kunnan  
b) Lal kala  
d) Amritsagar
10. Commercial propagation method of banana is  
a) Seed  
c) **Suckers**  
b) Cuttings  
d) Budding
11. Close planting of banana increase the incidence of  
a) Panama wilt  
c) Leaf spot disease  
b) Bunchy top  
d) **Finger tip**
12. Important disease of banana in India is  
a) Bacterial wilt  
c) **Bunchy top**  
b) Leaf spot  
d) Panama wilt

## Fill in the blanks

1. The botanical name of banana is \_\_\_\_\_. (Musa paradisiaca)
2. Seedlessness in banana is due to \_\_\_\_\_. (Vegetative parthenocarpy)
3. \_\_\_\_\_ with narrow, slender leaf blades is the best planting material. (Sword suckers)
4. \_\_\_\_\_ variety of banana retain green colour of the rind even when ripe. (Harichhal)
5. \_\_\_\_\_ banana variety is suitable for making chips. (Nendran)
6. \_\_\_\_\_ deficiency in banana results in improper bunch filling. (Potassium)
7. A chemical used for artificial ripening in banana is \_\_\_\_\_. (Calcium carbide)

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**GRAPE**  
**Multiple choice questions**

1. The botanical name of grape is  
a)Prunica arneniaca  
c)Persea amerocana  
b)Prunus amygdalus  
**d)Vitis venifera**
2. The largest productivity of grape is attained in  
**a)Tropical region**  
c)Temperate region  
b)Sub-tropical region  
d)None of above
3. The chromosome number of grape is  
a)24  
**c)38**  
b)18  
d)32
4. The inflorescence of grape is  
a)Raceme  
**c)Panicle**  
b)Spadix  
d)Catkins
5. Grape variety developed by clonal selection is  
**a)Pusa seedless**  
c)Pusa Urvashi  
b)Pusa Navrag  
d)Arka kanchan
6. In World 90% of grapes produced are used as  
a)Table  
c)Juice  
b)Rasin  
**d)Vine**
7. Bower system of training in grapes is also called as  
a)Head system  
**c)Arbour system**  
b)Kniffin system  
d)Single stalk system
8. A seedless grape hybrid developed at IIHR Bangalore is  
**a)Arkavati**  
c)Arka shyam  
b)Arka Hans  
d)Arka kanchan

9. Serious pest of grape vine is  
 a) Scales  
 c) Turmites  
 b) Beetle  
**d) Thrips**
10. "Dakh" is a popular grape variety of  
**a) Punjab**  
 c) Tamil Nadu  
 b) Andhra Pradesh  
 d) Karnataka

### Fill in the blanks

11. Grape is a \_\_\_\_\_ pollinated crop. (Self)
12. Original home of grape is \_\_\_\_\_. (Black Sea of Caspian)
13. \_\_\_\_\_ is adopted for quality improvement in grapes. (Stem girdling)
14. The commercial method of propagation of grape is \_\_\_\_\_. (Hard wood cutting)
15. "Thompson seedless" variety of grape is excellent for \_\_\_\_\_ as well as of high \_\_\_\_\_.  
 (Raisin, table quality)
16. The most common system of planting vineyards in plain is \_\_\_\_\_. (Square system)
17. The true kniffin system has originated by \_\_\_\_\_ of New York. (Mr. William Kniffin)
18. \_\_\_\_\_ chemical is used for thinning and berry elongation in grape. (Gibberellins)
19. "Perlette" grape variety was developed in \_\_\_\_\_. (California)
20. \_\_\_\_\_ variety of grape is a new mutant developed from Thompson seedless.

### True/false

21. The edible portion of grape is mesocarp and endocarp. (True/**False**)
22. Grape is tolerant to salinity and alkalinity. (**True**/False)
23. Head system of training is also called as Pergola system. (True/**False**)
24. General seedlessness in grape is due to stenospermocarpy. (**True**/False)
25. Most effective chemical in breaking bud dormancy in grape is Thiourea. (True/**False**)
26. Hen and chicken disorder in grapes is caused due to boron deficiency. (**True**/False)
27. "Pusa seedless" variety of grape was developed at IARI, New Delhi. (**True**/False)
28. Grapes are the richest source of glucose and fructose. (**True**/False)
29. Perlette variety of grape is most suitable for raisin making. (True/**False**)
30. Grape is a climacteric fruit. (True/**False**)



**GAUVA**  
**Multiple choice questions**

1. Largest guava producing state in India is  
a) Punjab  
c) Maharashtra  
**b) Uttar Pradesh**  
d) Karnataka
2. The diploid chromosome number of guava is  
**a) 22**  
c) 16  
b) 28  
d) 44
3. Guava is the richest source of  
a) Vitamin A  
c) Vitamin B<sub>2</sub>  
b) Vitamin B<sub>1</sub>  
**d) Vitamin C**
4. Pear shaped variety of guava is  
a) Hafzi  
c) Harijha  
**b) Karela**  
d) Chittidar
5. In guava high temperature at the time of fruit development causes  
a) Gauva wilt  
c) Yellow leaf disease  
**b) Fruit drop**  
d) Gauva canker
6. Botanically the guava fruit is  
a) Drupe  
c) Sorosis  
b) Hesperidium  
**d) Berry**
7. "Lucknow-49" variety of guava is tolerant to  
**a) Gauva wilt**  
c) Stem canker  
b) Fruit drop  
d) Anthracnose
8. Guava is generally trained by  
a) Open centre system  
**c) Modified leader system**  
b) Central leader system  
d) None of above
9. Guava decline is due to  
**a) Wilt**  
c) Bacterial canker  
b) Anthracnose  
d) Virus
10. Major product from ripe guava is  
a) Jam  
**c) Jelly**  
b) Nectare  
d) Square
11. Guava is commercially propagated through  
a) Whip grafting  
c) Chip budding  
b) Cutting  
**d) Inarching**

### Fill in the blanks

12. Guava is called \_\_\_\_\_ of the tropics. (Apple)
13. \_\_\_\_\_ has the reputation of growing the best guava in the country as well as in the World. (Allahabad)
14. \_\_\_\_\_ is the most popular variety of Uttar Pradesh. (Allahabad safeda)
15. The edible portion of guava is \_\_\_\_\_ and \_\_\_\_\_. (Thalamus, Pericarp)
16. Seedless variety of guava was originated from \_\_\_\_\_. (Allahabad)
17. The young plants of guava are susceptible to \_\_\_\_\_ and \_\_\_\_\_ conditions. (drought, cold)
18. The best time of planting guava is \_\_\_\_\_. (Monsoon)
19. At mature stage Vitamin C in guava is highest in \_\_\_\_\_. (Fruit peel)
20. The inflorescence of guava is \_\_\_\_\_. (Solitary)
21. "Apple colour" variety of guava is tolerant to \_\_\_\_\_. (Anthracnose)

### True/false

22. "Lucknow-49" variety of guava is also known as "Sardar guava". (True/False)
23. Guava is a non-climacteric fruit. (True/False)
24. Guava plants cannot withstand slightly alkaline soils. (True/False)
25. Original home of guava in India. (True/False)
26. Guava flowers only once in North India. (True/False)
27. Guava tree are drought tolerant. (True/False)
28. For avoiding wilt disease "Sardar guava" is good root-stock for budding. (True/False)
29. Guava belongs to Mystaceae family. (True/False)
30. For making guava jelly low pectin content is desired. (True/False)
31. Guava canker is caused by fungus. (True/False)

## **Important objectives for Semester End Exam.**

### **DEFINITIONS:**

**Asepsis:** - Maintenance of general cleanliness during picking, packing and transportation of fruit and vegetables for keep out microorganisms.

**Blanching:** - Treatment of fruits and vegetables with boiling water or steam for short periods, followed by dipping in cold water immediately in cold water is called Blanching. It separate pulp to maximum extent from the peel.

**Breather:** - If pressure gauge shows no vacuum inside a can it is called as breather

**Candied fruits:** - A fruit impregnated with sugar and glucose, and subsequently drained and dried is called as candied fruit covered or coated with thin transparent coating of X sugar, which impart to it a glossy appearance is called glazed fruit.

**Canning:** - The process of sealing food stuffs hermetically in container and sterilizing them by heat for long storage known as canning.

**Cordial:** This is sparkling clear, sweetened fruit juice from which all the pulp and other suspended material have been completely eliminated. Jam is prepared by boiling the fruit pulp with sufficient quantity of sugar to a remarkably thick consistency, firm enough to hold the fruit tissues in position. It should contain not less than 68% of soluble solids as determined by refract meter when cold. Fruits used: Papaya, Sapota, Pine apple, Mango, strawberry, Tomato, Cashew apple, etc.

**Crystallized fruits:** - When candied fruit is coated with crystals of sugar, either by rolling it in finely powdered sugar or by allowing the sugar crystals firm dense syrup to deposit on it is called as Crystallized fruit.

**De-greening:**— Degreening is the process of decomposing green pigments in fruits usually by applying ethylene or other similar metabolic inducer to give a fruit its characteristic colour i.e. called degreening.

**Dehydration:** - It is the process of removal of moisture for fruits and vegetables by the application of artificial heat under controlled condition of temperature, R.H. and air flow.

**Fermentation:** - Decomposition of carbohydrate by microorganisms or enzymes is called fermentation

**Flipper:** - This is due to mild positive pressure resulted inside the can due to under exhausting or over filling.

**Food Preservation:** - The science which deals with the method of prevention of decay or spoilage of fruits thus allowing it to be stored in a fit condition for future use.

**Fruit Juice:** This is a natural juice prepared out of a fruit and remain practically unaltered in its composition during its preparation and preservation.

**Grading:** - It is sorting of vegetables and fruits into different grades according to size, shape, colour and volume to fetch higher price in the market.

**Harvest:** - These are the activities or actions carried out to separate the commodity from the plant or plant as a whole after desired maturity.



**Horticultural maturity:** - It is the stage of development when fruits or vegetables required by the market or consumer.

**Jelly:** - It is prepared by boiling the fruit with or without water, staining, mixing the strained and clear juice extract with sugar and boiling the mixture to a stage at which it will set to a clear jel. Pectin is most important constituent of jelly. Only such fruits which have good flavour and are rich in pectin should be used for jelly making.

**Marmalade:** Marmalade is fruit jelly in which slices of the fruit or peels are suspended. The marmalade is generally associated with the products made from citrus fruit like orange and lemons in which shredded peels are included as the suspended material.

**Maturity:** - It is the stage in which any organ of plant attains full growth and development, beyond which no further growth takes place i.e. called maturity

**Nectar:** - Fruit beverage contains 20% fruit pulp/juice and minimum 0.3% acid and 15% T.S.S. it is not diluted before serving.

**Pasteurization:** - It is the process of heating the product below boiling temperature (100°C) for sufficient time to kill majority of the microorganism but not all.

**Pickle :-** Pickle is the preserve product of fruits and vegetables in which common salt is added as preserving agent and spices, condiments and oil added for flavouring.

**Post-harvest:-** It is the condition in which commodity finds itself, & the activities carried out with it after its separation from the mother plant.

**Preservative:** - It is any substance capable of inhibiting, retarding or arresting the process of fermentation, acidification and decomposition of fruits but does not include salt, sugar, acetic acid or vinegar.

**Preserve:** - Preserve is made by cooking the entire fruit or pieces in heavy sugar syrup till it become tender and transparent.

**Ripening:** - Sequential changes in sensory factors of colour texture and taste which render the fruit acceptable to eat and commencement of senescence.

**Shelf life:** - It is the period of time during which fruit and vegetables remain fresh, attractive and appealing.

**Squash:** - This consists essentially of strained juice containing moderate quantities of fruit pulp to which cane sugar is added for sweetening e.g. Orange squash, Mango Squash, Pine apple squash, Passion fruit squash.

**Sterilization:** - It is the process of heating above boiling temperature to kill all the microorganisms completely.

**Syrup and sharbat:** This is clear sugar syrup which has been artificially flavored. Syrup is concentrated beverage prepared from juicy or pulpy fruits or scented material such as Rose, Sandal Wood, Raspberry, Gooseberry, Strawberry, wherein higher concentration of sugar is used (70 to 35%).

**Tomato ketchup:** - It is made by concentrating tomato juice or pulp without seeds and pieces of skin. Spices salt, sugar, vinegar, onion, garlic etc., are added to the extent that the ketchup contains not less than 12% tomato solids and 28% total solids.

**Weeping jelly / Synergic:** - It is sudden exudation of fluid from jelly due to excess of acid, too low concentration of sugar, insufficient pectin etc.

## B) Match the pair.

- |             |                                                |                               |                 |
|-------------|------------------------------------------------|-------------------------------|-----------------|
| <b>1)</b>   | <b>A</b>                                       |                               | <b>B</b>        |
| 1)          | Non-climacteric fruit                          | a.                            | Salinometer     |
| 2)          | Pickle                                         | b.                            | Ethylene        |
| 3)          | Ripening                                       | c.                            | Banana          |
| 4)          | Climacteric fruit                              | d.                            | Vine.g.ar       |
| 5)          | Brine solution                                 | e.                            | Grape           |
| <b>Ans.</b> | <b>(1) e            (2) d            (3) b</b> | <b>(4) c            (5) a</b> |                 |
| <b>2)</b>   | <b>A</b>                                       |                               | <b>B</b>        |
| 1)          | Non-climacteric fruit                          | a.                            | Caustic soda    |
| 2)          | Rich in pectin fruit                           | b.                            | Salt            |
| 3)          | Lye peeling                                    | c.                            | Wood apple      |
| 4)          | Climacteric fruit                              | d.                            | Pomegranate     |
| 5)          | Brine solution                                 | e.                            | Custard apple   |
| <b>Ans.</b> | <b>(1) d            (2) c            (3) a</b> | <b>(4) e            (5) b</b> |                 |
| <b>3)</b>   | <b>A</b>                                       |                               | <b>B</b>        |
| 1)          | Irradiation                                    | a.                            | Gamma rays      |
| 2)          | Brining                                        | b.                            | Salt            |
| 3)          | Antibiotic                                     | c.                            | Nisin           |
| 4)          | Chemical preservative                          | d.                            | Sodium benzoate |
| 5)          | Vinegar                                        | e.                            | Acetic acid     |
| <b>Ans.</b> | <b>(1) a            (2) b            (3) c</b> | <b>(4) d            (5) e</b> |                 |

## C) True OR False

- For most fruits and vegetables, higher the temperature during the growing period earlier is the time of harvest.  
**Ans. True**
- Bhendi is harvested 15-18 days after opening of flower for vegetable purpose.  
**Ans. False (6-7 days)**
- Harvesting of banana is done either by pulling or twisting individual fruits.  
**Ans. False (whole bunch is harvested)**

|  |
|--|
|  |
|--|

- 4) The corrugated fibre board boxes (CFB) are commonly used for packaging of grapes for distant market.  
**Ans. True**
- 5) For preserving naturally coloured juices sodium benzoate is commonly used.  
**Ans. True**
- 6) Sodium benzoate is used to preserve naturally coloured juice.  
**Ans. True**
- 7) Custard apple is a non-climacteric fruit.  
**Ans. False (Climacteric fruit)**
- 8) A good jelly should be sticky, gummy and syrupy.  
**Ans. False (Should not be)**
- 9) Atul sapota harvester is developed by MPKV, Rahuri.  
**Ans. False (Developed by Dr. BSKKV, Dapoli)**
- 10) Vinegar is used to preserve mango pickle.  
**Ans. True**
- 11) Ethylene oxide is used for hastening of ripening in fruits.  
**Ans. False (Delaying)**
- 12) The prepared jam should not contain less than 68 per cent fruit.  
**Ans. False (45% fruit) (68% TSS)**
- 13) In Watermelon, the most important indication of maturity is metallic sound when fruit is thumped.  
**Ans. False (Dull sound)**
- 14) The TSS of tomato ketchup preferably is 28-30 percent.  
**Ans. False (10-12%)**
- 15) Mango fruits require 210-255 days to mature after flowering.  
**Ans. False (95-115 days)**
- 16) Growth of micro-organism activity gets affected by lower temp.  
**Ans. True**
- 17) In case of sweetened juice the minimum % of juice in final product should be 70%  
**Ans. False**
- 18) By drying we get better quality product than dehydration  
**Ans. False**
- 19) After freezing of fruits the dehydration is done in case of dehydro freezing method  
**Ans. False**

#### **D) Do as directed**

- 1) Two names of food spoilage bacteria  
**Ans. *Acetobacter*, *Lactobacillus*, *Proteus*, *Pseudomonas***
- 2) Two names of useful bacteria  
**Ans. *Acetobacter Sp.*, *Lactobacillus Sp.***
- 3) Two Antibiotics used for preservation

- Ans. Nisin, Pimaricin, subtilin etc.**
- 4) Two causes of weeping of jelly  
**Ans. a) Insufficient pectin b) Too low concentration of sugar c) Excess of acid**
- 5) Precooling define  
**Ans. Rapid removal of field heat from fruits and vegetable known as precooling.**
- 6) Chemical used for ripening of fruits  
**Ans. 1) Ethylene 2) Calcium carbide**
- 7) Total percentage of fruit and sugar in prepared jam.  
**Ans. T.S.S. – 68%  
Jam – Not less than 45% fruit**
- 8) In which crop neck fall is considered as indication of maturity.  
**Ans. Onion and Garlic**
- 9) Name of mango harvester developed by Dr. BSKKV, Dapoli.  
**Ans. Nutan mango harvester.**
- 10) Methods of manual harvesting  
**Ans. 1) Ladder / bag picking method 2) Poles / Clippers method  
3) Harvesting by means of cutting knives  
4) Harvesting by means of digging tools**
- 11) Examples of climacteric fruits  
**Ans. Mango, Banana, Sapota, Custard apple, Papaya.**
- 12) Examples of Non-climacteric fruits  
**Ans. Pomegranate, Grape, Citrus, Cashew nut**
- 13) Name of rootstocks in citrus for increasing post-harvest quality  
**Ans. Trifoliate orange, Cleopatra, Tangolo etc.**
- 14) Examples of vegetables in which curing is done  
**Ans. Potato, sweet potato, onion, Garlic etc.**
- 15) Types of wax emulsion  
**Ans. a) Wax 'W' b) Wax 'O'**
- 16) Chemical that hastens ripening  
**Ans. Ethylene, Calcium Carbide, ABA, Hexanol, etc.**
- 17) Chemical that delay in ripening  
**Ans. Ethylene oxide, maleic acid, GA, MH, CCC etc.**
- 18) Grades according to international market  
**Ans. a) Extra class (b) Class 1<sup>st</sup> (c) Class 2<sup>nd</sup>**
- 19) Packaging material for vegetable crop.  
**Ans. Gunny bags, Bamboo baskets, paper board boxes, polythene film etc.**
- 20) Controlled Atmospheric Storage (CAS)  
**Ans. Higher conc. of CO<sub>2</sub> and lesser conc. of O<sub>2</sub> is beneficial for best storage of fruits.**
- 21) Name of ionizing radiation to extend shelf life of perishable fruits

- Ans. Gamma rays**
- 22) Low temperature ranges for check the growth of micro-organisms.  
**Ans. 0° to 4.4°C (32° F to 40°F)**
- 23) Name of chemical preservatives  
**Ans. i) Potassium metabisulphide (KMS)      ii) Sodium benzoate**
- 24) Acids used for preservation  
**Ans. Citric acid (lime juice), Acetic acid (vinegar) and Lactic acid**
- 25) Temperature range when enzymatic spoilage not happen.  
**Ans. 80°C**
- 26) Modes of microbial spoilage  
**Ans. Bacteria, yeasts, Moulds**
- 27) Stable / Non-perishable foods  
**Ans. Sugar, flour and dry beans**
- 28) Semi perishable foods  
**Ans. Potato and some varieties of apples**
- 29) Perishable food  
**Ans. Most of the fruits and vegetables, meat, fish, egg and milk.**
- 30) Two names of food spoilage bacteria  
**Ans. Clostridium botulism, Lactobacillus, Acetobacter, Proteus**
- 31) Two names of useful bacteria  
**Ans. Acetobacter spp. Lactobacillus spp.**
- 32) Two antibiotics, used for preservation  
**Ans. Nisin, Subtilin, Pimaricin**
- 33) Two causes for weeping of jelly  
**Ans. Excess of acid, low concentration of Sugar, Insufficient pectin**
- 34) Two products prepared from ginger  
**Ans. Ginger candy, Jelly, soft drinks, Pickles, Mukhwas**
- 35) Name two products prepared for Mango  
**Ans. Mango slice, Mango Juice**
- 36) Criteria (indices) for judging the maturity of aonla  
**Ans. Computation period**
- 37) In which crop neck fall is considered as indication of maturity  
**Ans. Onion and garlic**
- 38) Give the two causes of weeping of jelly  
**Ans. Excess of Acid, low concentration of sugar, insufficient pectin.**
- 39) Name two climacteric fruits  
**Ans. Banana, custard apple, Guava, Mango, fig, Avocado**
- 40) What is meant by pre cooling?  
**Ans. Pre-cooling means removal of field heat with the help of cool water, cool air**
- 41) Which chemical is used for ripening of fruits?  
**Ans. Ethylene**
- 42) How many days after opening of flower, Bhendi is ready for harvesting for vegetable purpose?  
**Ans. 6 – 7 days**



## E) Fill in the blanks

- 1) Mango slices are preserved in syrup solution
- 2) Bacteria micro-organisms are responsible for formation of toxins in food
- 3) Asepsis is a method of Temporary preservation
- 4) 1.2% acidity and 12% salt is used for preparation of pickles
- 5) Ethephon, alcohol chemical is used for hastening of ripening
- 6) At full maturity specific gravity of mango is 1 to 1.02
- 7) Asepsis is method of temporary preservation
- 8) Temperature below 100°C is essential for pasteurization
- 9) Green peas are canned in Brine solution
- 10) The process of removal of air from cans is known as Exhausting
- 11) Full slip stage is maturity indices of Muskmelon crop
- 12) Tenderness of pea is measured by using Tenderometer
- 13) At full maturity specific gravity of mango is 1 to 1.02
- 14) Ideal maturity indices of Banana is Angularity of fruit
- 15) Total soluble solid (T.S.S.) of produce measured by Refractometer
- 16) Computation means day from Fruit Set to maturity.
- 17) Coconut usually matures in about 350 to 375 days after appearance of Inflorescence.
- 18) Marmalade is mostly prepared from Citrus fruits.
- 19) CFTRI- Central Food Technological Research Institute, Kasargod
- 20) Solution of Sugar in water is called as Syruping.
- 21) In Canning the salt is used in the form of Brine Solution.
- 22) Removal of outer skin of fruits is called as Peeling.
- 23) CFB- Corrugated Fibre Board Box
- 24) The fundamental principle of preservation of foods by heat is known as Processing.
- 25) Ethyl Alcohol can be produced by fermentation.
- 26) Vinegar is a liquid obtained by alcoholic and acetic fermentation of suitable material containing starch and sugar.
- 27) Flame Peelers are mostly used for peeling onions.
- 28) For natural coloured juices and pulps Sodium benzoate preservative is used.
- 29) As per FPO specification, percentage of TSS (W/W) in the final product of preserve should be 68%.
- 30) Zero energy cool chamber is based on the principle of Direct Evaporative Cooling.
- 31) In Onion Neck Fall is considered as indication of maturity.
- 32) Wine is an Example of Fermented Fruit product.
- 33) CFB Boxes are used for Packaging of horticultural crops.
- 34) Sterilization involves complete elimination of microorganisms.
- 35) Cordial is sparkling clear sweetened fruit juice without any suspended material.
- 36) During sealing of the can, temperature should not fall below 74°C

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- 37) Vacuum Cooling is mostly used for **Leafy** vegetables.
- 38) According to ripening behaviour Guava & Pineapple are **Non-Climacteric fruits**.
- 39) Black neck is a problem of **Sauce/Ketch up**
- 40) Toddy is prepared from **Coconut** fruit.
- 41) **C A Storage** is a more precise method of storage.
- 42) **1-2%** only value addition done in India.
- 43) **Post-harvest technology / post-harvest management** may be defined as the branch of Horticulture that deals with all the operations right from harvesting or even the preharvest stages till the commodity reaches the consumer, either in fresh (grains, apple, mango, tomato fruits) or processed form (flour, juice, nectar, ketchup) and utilization of the wastes (pomace, peel, seed, skin etc.) in a profitable manner (manufacture of fermented beverages, colour extraction, pectin extraction etc.)
- 44) Attainment of full size by the plant organ (Root, stem, flower, Fruit,) Or Whole plant beyond which no further growth takes place known as **maturity**
- 45) **Degreening** is the process of decomposing green pigment (Chlorophyll) in fruits usually applying ethylene or similar metabolic inducers to fruit.
- 46) **Pre-cooling** is a means of removing the field heat.
- 47) **Waxing** is accomplished to reduce the rate of respiration & to enhance the product gloss.
- 48) **Ripening** is the process by which fruits attain their desirable flavour, quality, colour, palatable nature and other textural properties.
- 49) Apple, Banana, Mango, Sapota, Papaya, Tomato- **Climacteric fruits**.
- 50) Cherry, Pomegranate, cucumber, grape, Citrus, pineapple, grapefruit, strawberry, Melons- **Non Climacteric fruits**.
- 51) Changes occurring during ripening-

| Mature fruit   | Enzyme's   | Ripe fruits              |
|----------------|------------|--------------------------|
| Acid           | Kinase     | Neutral                  |
| Starch         | Amylase    | Sugar                    |
| Chlorophyll    | Hydrolase  | Anthocyanin/ Xanthophyll |
| Pectin         | Pectinase  | Pectic acid              |
| Large organics | Hydrolases | Aromatics                |

- 52) **Chemicals that delay ripening and senescence:** (1) Kinetin, (2) GA, (3) Auxin, (4) Growth retardant (MH), (5) Alar, (6) CCC, (7) CIPC, (8) Metabolic Inducers (a) Cycloheximide, Actinomycin-D (b) Vitamin-k, (c) Maleic acid, (d) Ethylene Oxide, (e) NA-DHA, (f) Carbon monoxide, (9) Ethylene absorbents- (a) KMnO<sub>4</sub> (b) Fumigants like methyl bromide (c) Reactants

- 53) **Respiration** is the process by which stores fruits and vegetable or food materials (Carbohydrates, Protein, and fats) are broken down into simple end products with a release of energy.
- 54) **Ethylene** is a natural plant hormone that the fruit itself emits as it ripens.
- 55) Freezing injury will be initiated at **30°F (-1°C)**, depending on the soluble solids content.
- 56) **Musk melon** should be harvested at the formation of abscission layer.
- 57) **Food preservation** can be defined as the science which deals with the methods of prevention of decay or spoilage of food, thus allowing it to be stored in a fit condition for future use.
- 58) Sugar act as a preservative when its conc. **66% or more**
- 59) **Sugar** act as a preservative by **osmosis** and not as a true poison for microorganisms.
- 60) The concentration of **15-25%** is used for the preparation such as pickles. **Salt** inhibits enzymatic browning and discolouration and also acts as an **anti-oxidant**.
- 61) **14% alcohol** act as a preservative in wine because yeast.
- 62) **2% Acetic acid** prevents spoilage of many products.
- 63) Decomposition of carbohydrates by microorganisms or enzymes is called as **fermentation**.
- 64) A layer of **oil** on the surface of any food products **anaerobic conditions** which prevent the growth of moulds and yeasts.
- 65) Certain metabolic products of microorganism have been found to have germicidal effects and are termed as **antibiotics**.
- 66) **Nisin** is an antibiotics produced by ***Streptococcus lactis***.
- 67) **Subtilin** is an antibiotics produced by ***Bacillus subtilis***.
- 68) Pimaricin is an anti-fungal antibiotics.
- 69) **Carbonation** is the process of dissolving sufficient carbon dioxide in water or beverage so that the product served gives the gas as fine bubbles and has a characteristic taste.
- 70) Fruit juice beverages are generally bottled with **CO<sub>2</sub>** content varies from **1 to 8gm per lit.**
- 71) The keeping quality of carbonated fruit beverages is enhanced by adding about **0.005 percent Sodium benzoate**
- 72) As per FPO, Sulphur dioxide allowed in the fruit juice is 700 ppm, in squash, crush and cordial 350 ppm, and RTS and nectar 100 ppm.

- 73) As per FPO, Sodium benzoate allowed in the squash, crush and cordial 60 ppm, and RTS and nectar 100 ppm.
- 74) For preserving natural coloring juices **Sodium benzoate** is used as a preservatives.
- 75) Principle of canning- Destruction of spoilage organisms within the sealed container by means of heat.
- 76) **Lye peeling- 1-2% Caustic soda** solution for 30 sec to 2 min.
- 77) Flame peeling- Onion Garlic
- 78) Unfermented fruit beverage- fruit juice which do not undergo with alcoholic fermentation. RTS, Nectar, Juice, squash, crush, syrup, Cordial.
- 79) Fermented fruit beverage- fruit juice which undergone with alcoholic fermentation. Wine, Champagne, Port, Perry, Sherry, Tokay, Muscat, Nira, Cidar, Perry.
- 80) Tendrometer- Tenderness of pea.

| Sr. No. | Name of product                    | Fruit % | TSS % | Acid%    |
|---------|------------------------------------|---------|-------|----------|
| 1       | Natural juice                      | 100     | -     | -        |
| 2       | Sweetened juice                    | 85      | 10    | -        |
| 3       | RTS(Ready To Serve)                | 10      | 10    | 0.3      |
| 4       | Commercial RTS                     | 10      | 13    | 0.3      |
| 5       | Nectar                             | 20      | 15    | 0.3      |
| 6       | Orange, Pineapple nectar           | 40      | 15    | 0.3      |
| 7       | Cordial                            | 25      | 30    | 1.3-1.5  |
| 8       | Squash                             | 25      | 40-50 | 1        |
| 9       | Crush                              | 35      | 55    | 1        |
| 10      | Syrup (fruit)                      | 25      | 65    | 1.3-1.5  |
| 11      | Syrup (Synthetic)                  | -       | 70-75 | 1.3-1.5  |
| 12      | Jam                                | 45      | 68    | 0.5-0.6  |
| 13      | Jelly                              | 45      | 65    | 0.5-0.75 |
| 14      | Marmalade                          | 45      | 65    | -        |
| 15      | Preserve                           | 55      | 68    | -        |
| 16      | Candy                              | 55      | 75    | -        |
| 17      | Fruit chutney                      | 40      | 50    | -        |
| 18      | Barley water (0.25% Barley starch) | 25      | 30    | 1.3-1.5  |
| 19      | Tomato ketch up                    | 12      | 28    | -        |
| 20      | Tomato sauce                       | 12      | 30    | -        |