MODEL ANSWER

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD,PUNE

SEMESTER END EXAMINATION

B.Sc. Hons (Hort.)

Semester : III (New)	Academic year : 2019-20
Course No.H/FS-234	Title : Temperate Fruit Crops
Credits : 2 (1+1)	Total Marks : 40
Day & Date :	Time : 2.00 hrs.

Note :- 1. Solve **ANY EIGHT** question from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw net diagrams wherever necessary.

SECTION "A"

Q.1. Write the importance and scope for growing temperate fruit crops in India.

Ans. The answer should cover the following points. 4 marks

Importance : Gives foreign exchange, nutritional value, medicinal value, raw material for industries, by products industries, cottage industries, rural industries help in employment generation, role in crop diversification, export potential, rich source of edible oil, help for conserve the soil and eco system.

Scope : As the per capita production and consumption is very low due to low productivity. Scope for growing these crops in large scale by attempts have been made to adopt the conventional as well as more advanced techniques in temperate fruit crops. To solve the marketing problems of small farmers through establishment of cooperative societies. The produce of these crops is of superior quality and has great export potential. These crops yield several by products which not only have export prospects but also considerable internal demand in several industries.

Q.2. Write the cultivation of walnut on the following aspects.

a) Soil and climate b) Improved varieties

c) Propagation methods d) Harvesting and yield

Ans. The answer should cover the following points on. 4 marks

a) Soil and climate – A well drained, silt loam, rich inorganic matter. Alkaline soil should be avoided. Sensitive to low temperature during spring and high temp during summer. Frost free climate, temp below 2-3°c result in killing of flowers, temp range 29 to 32°c well distributed rainfall 75 cm or more.

b) Improved varieties – Late English, Drainovsky, Opex caulchry, Gobind, Eureka, Plancentia, Wilson etc.

c) Propagation methods – Walnut is propagated by patch budding or veneer gra
Walnut seedlings are used as rootstock. Walnuts current seasons are directly sown in
beds during November. Seedlings of more then pencil thickness are budded and 5-6 m
old defoliated scion is used.
d) Harvesting and yield – Walnuts are harvested when hull colour changes from green t
yellowish with cracks or when spitting stans at suture from Radical end. Nuts are harv
at PTB stage. Yield is 10-20 kg/tree.

Q.3. Write the cultivation of peach with respect to soil and climate, propagation, varieties and important physiological disorders.

Ans. Answer should cover points on 4 marks

1. Soil and climate : Soil deep, sandly loam and rich in organic matter, humid with cold winter and dry summer moderately winter hardy. 2 mark
2. Propagation : Tongue grafting or T budding on seedling peach rootstock in June – July.
3. Varieties : Alton, July Elberta, Words earliest, Early white Giant, Redhaven, Shimizu, Sunhaven, Saharanpur Prabhat, Peshwari, Alexander etc.
4. Important physiological disorder :
   - Sunscald – most destructive physiological disorder, it causes severe damage to exposed trunk and main scaffold branches control painting of exposed surface with lime paste and shading by wrapping straw or hay around the trunk.
   - Split pit and gumming - observed in some cultivars, causes great loss and fruits become unmarketable splitting occurs at the joint of dorsal and ventral sides of the fruit. Some time gum exudes from the fruits. Real causes of these problem are unknown.

Q.4. Write about the cultivation of apricot on the following points.
a) Soil and climate b) Varieties
c) Planting d) Harvesting and yield

Ans. The answer should cover the following points on 4 marks
a) Soil and climate :
Soil : Can grow deep fertile and well drained loamy soils are suitable for growth and development, pH range 6.0 – 6.8.

Climate : Apricots can be successfully grown at an altitude between 900-2000 above MSL. The long cool winter (300-900 chilling hours below 7°C) and frost free and warm spring are favorable for fruiting. Summer temperature – 16.6°C-32.2°C is better for growth and quality fruit production. An annual rainfall of about 100 cm and well distributed is good for growth and fruiting.

b) Varieties – New castle, Early shipley, Shakarpara, Kaisha, Nugget, Royal, Suffaida, Charmagz, Mootpark, Chaubatia Alankar, Baiti, Beladi, Farming dale etc.

c) Planting – Apricot is planted during the dormant season (December end to mid March) but early planting gives better establishment of plants. pits of 1m x 1m x 1m size are dug and they are filled with soil and well decomposed FYM. On flat land regular layout of square and triangular system is followed. Spacing is 6m x 6m one year old healthy disease free seedlings are planted in the middle of pit and soils pressed and water is given.

d) Harvesting and yield : Apricot fruits mature during forest week of May-June depending upon variety and location. The fruits are harvested when change in colour from green to yellow. Days from full bloom to harvesting and fruits TSS are considered for best indices of maturity. Apricots are perishable, due care is taken during harvesting yield 50-80kg fruits tree.

Q.5. Discuss the cultivation of plum on the following points.

a) Soil b) Climate
c) Varieties d) Planting

4 marks

Ans. The answer should cover the following points on

a) Soil – Grown on wide range of soil, deep, fertile and well drained, loamy soil with pH of 5.5 to 6.5 is most suitable, soil should be free from hard pan, water logging and excessive salt.

b) Climate – It is grown from subtropical plains to the temperature high hills. They require 1000 to 1200 chilling hours below 7°c during winter to break down the rest period which is found at an elevation of 1000 to 1600 meters. Frost free climate, in spring, good air drainage and adequate sunshine in summer is ideal for plum cultivation. Rainfall about 90 to 110 cm with well distributed. Prolonged drought during fruit growth, and executive rains during maturity hamper fruit quality.

c) Varieties – Sweet Early, Methley, Kelsey, Satsuma, Mariposa, Elephant Heart, Santa Rosa, Frontier, Alucha Purple, Titron, Jamuni, Zardula, Howe, Alubukhara Sharbati, Chamba, Chittidar, Early Subza, Saharanpuri White.

d) Planting – Planting is done December to January. While planting graft union should be kept 15-20 cm above the ground to avoid collar rot and scion rooting planting spacing 6x6 m.

Q.6. Write short notes on (Any Two).

1) Improved varieties of apple
2) Pruning of cheery
3) Alternate bearing in apple

2 mark

Ans. 1) Improved varieties of apple

a)Early varieties – Michal, Maayan, Anna, Early Shanburry, Irish Peach, Benoni, Fenny, Chaubattia Princess.

b) Midlate – Starking Delicious, Red Delicious, Top Red, Red Chief, Red Spur, Red Go
Queens Apple, Rome Beauty, Scarlet Siberian, Cort Land, Jonathan.
c) Late varieties - Golden Delicious, Yellow Newton, Winter banana.
d) Hybrids – Lal ambri, Chaubatia princess, Chaubatia Anupam.

2) Pruning of cheery 2 marks

- Done with a view to remove week and unnecessary branches centre of bearing tr should be kept open in sweet cherry, fruit is borne laterally on spur with arise on o year old shoots. Ten per cent of fruit bearing area should be removed annually.

- In sour cherry, 10-20 cm long annual shoot length is sufficient in full grown bearin trees. Fruits buds produced laterally on one year old terminal growth. Pruning should b done late in season after growth has started.

3) Alternate bearing in apple 2 marks

Alternate bearing tendency observed in Royal Delicious, Red Delicious and Golde Delicious Cultivars. They bear heavy crop in a year followed by poor cropping seas The alternate bearing can be checked to certain extent by adopting some practices.

1. Thinning of fruit in one year often increases bloom in the following year. In a heavy cropping year, thinning is essential.
2. Judicious pruning of spurs in winter preceding 'on' year to reduce crop load.
3. Application of growth retardant ex. SADH @ 2000 ppm, Paclobutrazol @ 1500 ppm in June – July before flower bud differentiation

Q.7. Write the cultivation of straw berry on the following points.

a) Soil and climate b) Varieties
c) Propagation and planting d) Harvesting and yield

Ans. The answer should cover the on following points 4 marks

a) Soil and climate

Soil – Grows on any type of soil, poor sand to heavy clay provided proper moisture, organic matter and good drainage. Alkali and lime containing soil should be avoided. Sandy loa to loamy soil with pH – 5.7 to 6.5 is ideal for straw berry cultivation.

Climate: Straw berry grows well under temperate climate. Some cultivars on gown in sub tropical climate. Day light period of 12 hours or less and moderate temperature are important for flower bud formation. Day temp range from 68° to 70° F is optimum for good growth. It is susceptible to frost.

b) Varieties –

Chandler, Tioga, Torrey, Selva, Belrubi, Fern, Pajaro etc

c) Propagation and planting :

Propagation – straw berry is commercially propagated by runner plants. Generally one plant produces 7-10 numbers. Propagation by seed is not suitable as the seedlings are not true to type and are undesirable for propagation. It can also be propagated by crowns, but division of crowns of older plant is tedious and expensive.

Planting :
Planting in the month of September – October in hilly areas, planting material should be healthy, disease and insect free. The spacing is 60 cm in between rows and 25 cm between plants. Care should be taken that to prevent damage to the runners. Runners are uprooted from nursery and planted in the field and irrigation is given.

d) Harvesting and yield

Straw berries are harvested when half to three fourth of skin develops colour. Firm, well coloured fruits are harvested every day or alternate day with pieces of stalk intact. Over ripe and rotted berries are discarded if there is delay in harvesting.

Average yield 175-200 qt./ha.

Q.8. Give the information of almond cultivation with respect to soil and climate, propagation, varieties and harvesting.

4 marks

Ans. The answer should cover the following points on

Soil and climate – Well drained soil, free from hail storm and frost in spring Grows up to 750-3210 above msl, Blossoms can with stand temp up to -2.2°c to -3°c for a short time only but if low temp, continues for many hours they are damaged. The most tender stage in bloosming and development of young fruits is shortly after dropping of husk.

Propagation – Bitter or sweet almonds current season seeds are sown directly in the field or on seed beds in the month of November. Peach is used as rootstock. Seedlings of pencil thickness and more should be budded 10 cm above the ground level in July – August by shield budding methods.

Varieties – Makhdoom, Parbat, Waris, Shalimar, Jordanolo, Merced, Katha, Peerless, Neplus Ultra.

Harvesting – Almonds are ready for harvesting when they change their colour from green to yellowish with cracks Nuts are harvested prematurely and care should be taken that nuts are not to be damaged. For better recovery tarpolin is spread below the tree prior to harvesting. Nuts are not to be damaged. Nuts are spread in shade for better drying.

Q.9. Describe the physiological disorder and its control measures in apple.

4 marks

Ans. Physiological disorders in apple as follows:

1) Bitter pit – small, dry, brown pocket usually spherical in below the skin Northern Spy and Delicious prone to disorder. Heavy dose of nitrogenous fertilizers, excessive shedding and heavy pruning favor bitter pit. Control – storage at 32-34°F under high humidity (85-95%).
2) Scald – mottling on surface of fruit immature fruits are most susceptible to scald which is aggravated by warmer temperature.
3) Internal Browning – Browning streaks radiated into flesh form the core controlled by storage at 36oF. Controlled atmospheric storage with higher temperature also helpful. Mainly associated with Yellow Newton applies

Q.10. Describe the cultivation of pear on the following points.
a) Soil and climate b) Improved varieties
c) Propagation d) Pruning 4 mark

Ans. The answer should cover the or following points
a) Soil and climate – Light textured dry soil. Tree growth more in wet soils. Arid clim
i.e. moderate to hot climate. A deep open sandy loam soils is considered suitable, Soil
6.0-7.5 suits well. Water stagnation should be avoided so provided with good mois
supply during summers must be ensured.
b) Improved varieties – Gosh Baghu and Baghu Gosha (Bartlett), Kieffer (South India) –
P. *communis x P. pyrifolia*. Bonne of Jersey. Beurre Hardy.
For Punjab – Pathar Naakh, Smith, Kieffer, Nashpati
For Plains – Kashmir pear, Leconte, Pathar Naakh, China Gola etc.
c) Propagation - Commercially. "T" budding in April-May or August – September, W
Himalayan pears *Pyrus Pashia.Ppyrifolia* are generally used as rootstock. Double work
– Growing of suitable cultivar even on incompatible stock through the agency of mutua
compatible yet substandard cultivar. Whenever dwarfing is required quince (c
oblonga) used rootstock.
d) Pruning – Pear with upright growing habit can be trained as pyramids, bushes or cordo
if the stock is quince. Main consideration is to thin out central branches and encoura
lateral growth. Pear produce fruit buds very easily, So that after ten years they usually ne
thinning out by cutting back the spur bearing fruit buds to half their size.

SECTION "B"

Q.11. Match the pairs. 4 marks
Ans. Each bit carry one mark.

"A"	"B"
1. Cheery	d. *Prunus avium*
2. Almond	a. *Prunus amygdalus*
3. Peach	c. *Prunus persica*
4. Apple	b. *Malus domestica*

Q.12. Fill in the blanks. 4 mark
Ans. Each bit carry one mark.
1) Mazzard is considered the best root stock for Cherry fruit crop.
2) Botanical name of queens land nut is ***Macadamia integrifolia***.
3) Nugget is a variety of Apricot crop.
4) Persimmon belongs to family Ebanaceae.

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