MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	**: VI (New)**	**Term**	**: II**	**Academic Year**	**: 2015-16**
Course No.	**: AGRO 3610**	**Title**	**: Farming Systems and Sustainable Agriculture**		
Credits	**: 2 (1+1)**				
Day & Date	**: Monday, 02.05.2016**	**Time**	**: 09.00 to 11.00**	**Total Marks**	**: 40**

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

SECTION "A"

Q.1 What are different basis for classification of farming systems? Explain any one of them.

Q.2 Explain advantages of Integrated Farming Systems.

Q.3 Give classification of cropping system and explain monoculture.

Q.4 What are the basic principles of organic farming?

Q.5 Explain factors affecting ecological balance.

Q.6 Write in short about the basic components of organic farming.

Q.7 What are the various non-monetary inputs in agriculture?

Q.8 Write short note on goals of sustainable agriculture.

Q.9 What problems arise due to use of poor quality water for irrigation?

Q.10 Write about concept of LEIA

SECTION "B"

Q.11 Define the following terms.

1) Afforestation
2) Strip inter-cropping
3) Agrisiviculture
4) Allelopathy

Q.12 Fill in the blanks

1. *Neochitina eichorniae* weevil is used against _____
2. Murrah is a important _____ breed of buffalo.
3. Catla is mainly a _____ feeder.
4. NWDB refers to _____.

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	**: VI (New)**	**Term**	**: II**	**Academic Year**	**: 2015-16**
Course No.	**: AGRO 3611**	**Title**	**: Organic and Rainfed Farming**		
Credits	**: 2 (1+1)**				
Day & Date	**: Tuesday, 26.04.2016**	**Time**	**: 09.00 to 11.00**	**Total Marks**	**: 40**

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

SECTION "A"

Q.1 What is IPM? Give its importance in organic farming.

Q.2 What is drought? What are the mechanisms plants adopt to overcome drought and describe any one of them.

Q.3 Enlist the different organic sources of plant nutrients.

Q.4 Differentiate between organic farming and conventional farming.

Q.5 Elaborate scope of organic farming. What are the constraints of organic farming?

Q.6 Describe the recycling of crop residues in organic farming.

Q.7 What is contingent crop planning? Suggest contingency crop plan under delayed monsoon.

Q.8 What is water harvesting? Discuss in short the technique of water harvesting and recycling of runoff water.

Q.9 Explain the term dry farming, dryland farming and rainfed farming. Write down the characteristics of rainfed farming.

Q.10 Write short notes on (Any two).
1) Green manuring
2) Antitranspirant
3) Mulching

SECTION "B"

Q.11 Fill in the blanks
1) NADEP is the method of _____.
2) The father of organic farming is _____.
3) *Parthenium hysterophorus* weed can be controlled by_____ insect.
4) The biological fungicide is _____.

Q.12 Give full form of the following.
1) IFOAM
2) APEDA
3) NPOP
4) VAM

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
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B.Sc. (Agri.)

Semester	**: V (New)**	**Term**	**: I**	**Academic Year**	**: 2016-17**
Course No.	**: ASDS 353**	**Title**	**: Technology of Milk and Milk Products**		
Credits	**: 2(1+1)**				
Day & Date	**: Tuesday, 22.11.2016**	**Time**	**: 14.00 to 16.00**	**Total Marks**	**: 40**

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

SECTION "A"

Q.1 Define milk. Explain its nutritional significance on the basis of various constituents.

Q.2 Write in brief on impact of following factors on milk composition.

a) Species b) Stage of lactation

c) Season d) Frequency and interval of milking

Q.3 Write in brief on following physic-chemical properties of milk.

a) Specific gravity b) Viscosity

c) Specific heat d) Refractive index

Q.4 Write in short on present status of dairy industry in Maharashtra and India.

Q.5 What do you mean by standardization? How will you prepare 500 kg milk with 4.0 % fat by using with 3.0 % fat and cream with 30.0 % fat.

Q.6 Define homogenization. State its merits and demerits.

Q.7 State the classification of milk products with at least one example each from Indigenous and Western type of milk product.

Q.8 Write short notes (Any Two).

1) AGMARK standards 2) Modified atmospheric packaging

3) Utilization of whey for value added products

Q.9 Define packaging. State the functions of packaging and prescribe requirements for ideal packaging material.

Q.10 Write in detail on HTST method of pasteurization with its merits and demerits.

SECTION "B"

Q.11 State only.

1) Freezing point and boiling point of milk.
2) Fat percentage in fore milking and stripping.
3) Types of homogenizers.
4) Spell out abbreviations of ISI and PFA with respect to legal standards.

Q.12 Match the following pairs.

"A"	**"B"**
1) Lecithin	a) Dissolved nitrogen
2) Xanthophylls	b) Phospho lipid
3) Carotene	c) Pigment
4) NPN	d) Vitamin A

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B.Sc. (Agri.)

Semester	: **V (New)**	**Term**	: **I**	**Academic Year**	: **2016-17**
Course No.	: BOT 356	**Title**	: **Principles of Plant Biotechnology**		
Credits	: 3(2+1)				
Day & Date	: Monday, 21.11.2016	**Time**	: 14.00 to 17.00	**Total Marks**	: **80**

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

SECTION "A"

Q.1 a) Define biotechnology.

b) Explain in brief applications of biotechnology in agriculture.

Q.2 a) Write the different techniques of *in vitro* culture.

b) Write in short the application of the techniques of *in vitro* culture.

Q.3 a) Define genetic engineering.

b) Write in brief the agrobacterium mediated method of gene transfer.

Q.4 Write short notes (Any Two).

1) Embryo rescue technique

2) Gene cloning

3) DNA fingerprinting

Q.5 a) How somatic hybrid is different from cybrid.

b) Write in short the methods of inducing protoplast fusion.

Q.6 a) Define androgenesis.

b) Discuss the advantages of anther culture technique.

Q.7 a) Explain the methods of isolating somaclonal variant at cell level and phenotype level.

b) Write the advantages and limitations of somaclonal variation.

Q.8 a) Discuss test tube fertilization.

b) Discuss the role of growth regulators in plant tissue culture.

Q.9 a) Define somatic embryogenesis.

b) Write about direct and indirect somatic embryogenesis.

c) Discuss stages of development of somatic embryos.

Q.10 a) What do you understand by PCR.

b) Describe the steps in PCR amplification.

(P.T.O.)

SECTION "B"

Q.11 Define the following terms.

1) Callus
2) Redifferentiation
3) Plasmid
4) Vector
5) Probe
6) Southern blotting
7) Molecular marker
8) Restriction enzymes

Q.12 A) State True or False.

1) The genesis of root from the explants or calli is termed as Rhizogenesis.
2) Mapping population is a population used to identify genetic loci controlling quantitative traits.
3) Meristem culture technique is used to obtain virus/disease free plant.
4) Berghman's planting technique is the commonly used method for single cell and protoplast culturing.

B) Write the contribution of following scientists in the field of plant biotechnology.

1) Karl Ereky
2) Kary Mullis
3) Larkin and Scowcroft
4) Skoog and Miller

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B.Sc. (Agri.)

Semester	: **V (New)**	**Term**	: **I**	**Academic Year**	: **2016-17**
Course No.	: ECON 354	**Title**	: **Agricultural Marketing, Trade and Prices**		
Credits	: 2(1+1)				
Day & Date	: Saturday, 19.11.2016	**Time**	: 14.00 to 16.00	**Total Marks**	: **40**

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

SECTION "A"

Q.1 What do you mean by market structure? Explain in brief components of it.

Q.2 Define co-operative marketing. Enlist functions of co-operative marketing society.

Q.3 a) What is need of storage of agricultural produce?
b) What types of risks are involved in storage of agricultural commodities?

Q.4 a) Give Thomsen's classification of marketing function.
b) Enlist various means of transportation.

Q.5 What do you mean by state trading? Enlist objectives of it.

Q.6 Define processing. Explain in brief about importance of processing of agricultural commodities.

Q.7 Discuss in detail hedging and speculation with their benefits.

Q.8 a) Write note on AGMARK.
b) Enlist functions of Food Corporation of India.

Q.9 Differentiate between marketed surplus and marketable surplus. Discuss in brief about the factors which affect marketable surplus.

Q.10 Write short notes. (Any Two)
1) Central Warehousing Corporation 2) Regulated market
3) Advantages of packaging

SECTION "B"

Q.11 State True or False.
1) The market where there is only one seller is called monopsony market.
2) Public warehouses are owned by individuals, large business houses or wholesalers for the storage of their own stocks.
3) Terminal market is one where the produce is either finally disposed off to the consumers or processors or assembled for export.
4) Headquarter of WTO is situated at Geneva.

Q.12 Fill in the blanks.
1) _____is an act, operation or service by which original producer and final consumers are linked together.
2) Value expressed in terms of money is called_____.
3) _____are the routes through which agricultural produce moves from producer to consumer.
4) Food Corporation of India (FCI) was established in the year_____.

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SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	:	**V (New)**	**Term**	:	**I**	**Academic Year** :	**2016-17**
Course No.	:	ENGG 353	**Title**	:	**Farm Power and Machinery**		
Credits	:	2(1+1)					
Day & Date	:	Saturday,12.11.2016	**Time**	:	14.00 to 16.00	**Total Marks** :	**40**

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

SECTION "A"

Q.1 Write factors to be considered while selecting the tractor.

Q.2 Write the comparison between four stroke and two stroke engine.

Q.3 A four cylinder four stroke gas engine has cylinder diameter of 25 cm, stroke bore ratio of 1.8, clearance volume 4400 cm^3, engine speed 250 rev/min, mean effective pressure 7 kg/cm^2 and mechanical efficiency is 78 per cent. Calculate (1) Swept volume (2) Compression ratio (3) IHP and (4) BHP.

Q.4 What is duster? Explain different types of dusters.

Q.5 Explain the fuel supply system of the diesel engine with neat sketch.

Q.6 Enlist different sowing methods and write functions of seed drill.

Q.7 a) Enlist different sources of farm power available in India.

b) The following results were obtained while calibrating a seed drill. Calculate the seed rate per hectare.

(i) Number of furrows = 10 (ii) Spacing between furrows = 20 cm (iii) Diameter of drive wheel = 1.4 m (iv) Speed = 525 rev/min (v) Total seed collected = 22 kg.

Q.8 a) Enlist objectives of tillage.

b) What adjustments are required for controlling depth and width of ploughing in disc plough

Q.9 A five tyned cultivator having tynes spaced 10 cm apart and working to a depth of 5 cm is running at a speed of 3 km per hour. There is a time loss of 10 per cent while turning. Calculate the time required to cultivate per hectare. If resistance of the soil is 0.6 kg/cm^2 and width of furrow is 5 cm, what would be the maximum draft and HP required.

Q.10 Write short notes (Any Two).

1) Single plate clutch
2) Components of disc harrow
3) Power tiller

(P.T.O.)

SECTION "B"

Q.11 Define the following terms.

1) Tilt angle
2) Tractor
3) Specific fuel constumption
4) Stroke length

Q.12 State True or False.

1) Crankshaft rotates at half the speed of camshaft.
2) Share is that part of plough bottom to which frog, mould board and landside are attached.
3) Plough is a primary tillage implement.
4) Disk angle of a good plough varies between 15^0 and 25^0.

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B.Sc. (Agri.)

Semester	:	V (New)	**Term**	:	I	**Academic Year** :	**2016-17**
Course No.	:	ENTO 353	**Title**	:	**Crop Pests and Stored Grain Pests and their Management**		
Credits	:	3(2+1)					
Day & Date	:	Tuesday, 15.11.2016	**Time**	:	14.00 to 17.00	**Total Marks** :	**80**

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

SECTION "A"

Q.1 Enlist the major pests of sugarcane along with scientific name. Describe the nature of damage and management practices of sugarcane wooly aphids and top shoot borer.

Q.2 Give the site of oviposition and site of pupation of following pests.

a) Hairy caterpillar of sunflower
b) Tomato fruit borer
c) Potato tuber moth
d) Lemon butterfly

Q.3 Enlist pests of sorghum along with their scientific names. Give the host plants, nature of damage and management practices of jowar shoot fly

Q.4 Enlist the major pests of cotton with scientific name. Explain in detail the nature of damage and management practices of cotton bollworm complex.

Q.5 Give the nature of damage and management practices for *Leucinodes orbonalis* and *Plutella xylostella* infesting vegetable crops.

Q.6 Give the scientific name, host plants, nature of damage and management practices of the following.

a) Bark eating caterpillar
b) Mango hopper

Q.7 Enlist the stored grain pests and describe in detail the management practices.

Q.8 Give in detail the management practices of the following.

a) Termites
b) Locust
c) White grub
d) *Spodoptera litura*

Q.9 Write short notes (Any Two).

1) Chilli thrips
2) Udadya beetle
3) Fruit sucking moth

Q.10 Write scientific name, host plants, nature of damage and management practices of coconut rhinoceros beetle and chiku moth.

(P.T.O.)

SECTION "B"

Q.11 Give the damaging stages/stage of following.

1) Paddy steam borer
2) Surface grasshopper
3) Sugarcane pyrilla
4) Tur plume moth
5) Groundnut leaf miner
6) Scale insect
7) Rhizome fly
8) Banana root stock weevil

Q.12 Do as directed.

1) Parasitoid for the control of *Pyrilla perpusilla* in sugarcane.
2) The reproduction in aphid is _____type.
3) Silvery shoot in paddy is damaging symptom of_____ insect.
4) Give the name of host plants for adult white grub.
5) White patches on onion leaves are characteristics symptom of _____infestation.
6) Name any two rodenticides.
7) Glistering zigzag tunnels on citrus leaves is due to_____.
8) Chalky appearance in sorghum grain is due to_____.

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B.Sc. (Agri.)

Semester	:	V (New)	**Term**	:	I	**Academic Year** :	2016-17
Course No.	:	EXTN 353	**Title**	:	Extension Methodologies for Transfer of Agriculture Technology		
Credits	:	2(1+1)					
Day & Date	:	Wednesday, 16.11.2016	**Time**	:	14.00 to 16.00	**Total Marks** :	40

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

SECTION "A"

Q.1 Define communication and describe the elements of communication.

Q.2 Define adoption and write down characteristics of the adopter categories.

Q.3 Define extension teaching methods. Give classification with suitable examples.

Q.4 Define result demonstration. Write down procedure for result demonstration.

Q.5 Write short notes (Any Two).

1) Evaluation 2) News 3) Transfer of technology

Q.6 What is programme planning? Describe the steps of programme planning.

Q.7 What do you mean by agricultural journalism? Write down its functions.

Q.8 What do you mean by internet? Describe the benefits of internet.

Q.9 Define training. Explain in brief the types of training.

Q.10 Define group discussion and explain any four types of group discussion.

SECTION "B"

Q.11 Fill in the blanks.

1) _____ means to educate a person so as to be benefited, qualified and become proficient in doing some jobs.
2) In India the Kisan Call Centers (KCC) are presently using a toll free telephone number_____.
3) _____ is the global network of computers.
4) _____ is a gathering of people for a brief period for intensive discussions.

Q.12 Define the following terms.

1) Monitoring
2) Farm and Home visit
3) Diffusion
4) Exhibition

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B.Sc. (Agri.)

Semester	: **V (New)**	**Term**	: **I**	**Academic Year**	: **2016-17**
Course No.	: PATH 354	**Title**	: **Diseases of Horticultural Crops and their Management**		
Credits	: 3(2+1)				
Day & Date	: Friday, 18.11.2016	**Time**	: 14.00 to 17.00	**Total Marks**	: **80**

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

SECTION "A"

Q.1 a) Give the causes of stone graft mortality in mango and describe its management.
b) Write epidemiology, mode of spread and survival of bird's eye spot disease of grape.

Q.2 a) Write perpetuation and management of quick decline of citrus.
b) Give the favorable conditions and survival and spread of panama disease of banana.

Q.3 a) Write symptoms and management of *Sclerotium* foot rot of betel vine.
b) Write symptoms and management of *Phomopsis* blight of brinjal.

Q.4 a) Give the causes of black heart of potato and describe its management.
b) Write symptoms and management of yellow mosaic of beans.

Q.5 a) Write symptoms and management of early blight of tomato.
b) Write symptoms and management of die-back of rose.

Q.6 a) Write perpetuation and epidemiology of smudge disease of onion.
b) Write symptoms and management of leaf curl of chilli.

Q.7 a) Write disease cycle and management of black rot of crucifers.
b) Write host range and perpetuation of cucumber mosaic.

Q.8 a) Give causal organism, survival and spread, favorable conditions and management of soft rot of papaya.
b) Give symptoms and management of fruit canker of guava.

Q.9 a) Give causal organism, survival and spread, epidemiology and management of fire blight of apple.
b) Give symptoms and management of wilt complex of pomegranate.

Q.10 a) Give causal organism, perpetuation, favorable conditions and management of stem bleeding of coconut.
b) Write symptoms and management of yellow vein mosaic of okra.

(P.T.O.)

SECTION "B"

Q.11 Write primary source of infection and secondary source of infection of following diseases.

Sr. No.	Name of disease	Primary source of infection	Secondary source of infection
1)	Coffee rust		
2)	Red rust of tea		
3)	Powdery mildew of ber		
4)	Die-back of cashew		

Q.12 Match the following pairs.

"A"	"B"
1) Flat limb of sapota	a) *Trichothecium roseum*
2) Fig rust	b) *Sclerotium cepivorum*
3) Fruit rot of custard apple	c) *Cerotelium fici*
4) Koleroga disease of arecanut	d) *Alternaria alternata*
5) White rot of garlic	e) *Uromyces hobsonii*
6) Powdery mildew of gerbera	f) *Botryodiplodia theobromae*
7) Leaf spot of aster	g) *Erysiphe chichoracearum*
8) Jasmine rust	h) *Phythopthora palmivora*

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B.Sc. (Agri.)

Semester	: V (New)	**Term**	: I	**Academic Year**	: 2016-17
Course No.	: SSAC 354	**Title**	: Biochemistry		
Credits	: 3(2+1)				
Day & Date	: Friday, 11.11.2016	**Time**	: 14.00 to 17.00	**Total Marks**	: 80

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

SECTION "A"

Q.1 a) Define biochemistry. Write its scope and importance in agriculture.

b) Define fatty acid. Classify fatty acids with suitable examples.

Q.2 a) Define carbohydrates and classify monosaccharide with suitable examples.

b) Draw a neat diagram of plant cell and explain in brief function of cell organelles.

Q.3 a) Define amino acid. Write its classification with suitable examples.

b) What is nucleic acid? Write difference between DNA and RNA.

Q.4 a) Define protein. Classify them on the basis of composition.

b) What is lipid? Classify them on the basis of product of hydrolysis.

Q.5 a) What is biochemical energetic? Write difference between exergonic and endergonic reaction.

b) Define enzyme. What are different factors affecting the enzyme activity.

Q.6 a) Define phosphorylation. Differentiate between cyclic and non-cyclic photophosphorylation.

b) Define vitamins. Give co-enzyme derivatives of water soluble vitamins.

Q.7 a) Write the steps involved in β-oxidation of fatty acid.

b) Write down the physiological role and use of tannins.

Q.8 a) Write down the properties of gum and mucilage.

b) Define alkaloids and write its physiological role.

Q.9 a) Define plant pigment and give its classification.

b) Give properties and physiological role of glycoside.

Q.10 a) Define enzyme immobilization. Enlist the methods used for enzyme immobilization and explain entrapment methods.

b) Define biomolecule. Write down the important biomolecules of life.

(P.T.O.)

SECTION "B"

Q.11 Fill in the blanks.

1) Father of biochemistry is _____.
2) The term protein was suggested by _____.
3) Vitamin c is also called _____.
4) Final product of glycolysis is_____.
5) Agar agar is an example of _____.
6) Organic substance imparting various colours to plant parts is called _____.
7) Structural polysaccharide found in cell wall of plant is _____.
8) Structural and functional unit of all living organism is _____.

Q.12 Match the following pairs.

"A"	"B"
1) Enzyme	a) Unsaturated fatty acid
2) Vitamin D	b) S-containing amino acid
3) Methionine	c) Biocatalyst
4) Glycogen	d) Protein synthesis
5) Non reducing sugar	e) Osteomalecia
6) Linolenic acid	f) Sucrose
7) Cephalins	g) Storage of polysaccharide
8) RNA	h) Phospholipids

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