MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	: **IV (Old)**	**Term**	: **II**	**Academic Year**	: **2017-18**
Course No.	: AGRO 247	**Title**	: **Field Crops – II (*Rabi* Crops)**		
Credits	: 3 (2+1)				
Day & Date	: Wednesday, 02.05.2018	**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 Explain in detail the cultivation practices of irrigated wheat (timely sown) on the following points.

a) Soil and climate b) Seeds and sowing

c) Irrigation management d) Harvesting and yield.

Q.2 Describe the cultivation practices of chick pea with respect to.

a) Soil and climate b) Seeds and sowing

c) Improved varieties d) Harvesting and yield

Q.3 Explain in detail the cultivation of safflower on the following points.

a) Soil and climate b) Seeds and sowing

c) Nutrient management d) Harvesting and yield

Q.4 Prepare a leaflet on cultivation of lucerne on the following points.

a) Seed bed preparation b) Seeds and sowing

c) Nutrient management d) Cutting management and yield

Q.5 Describe in brief the cultivation of pre-seasonal sugarcane on the following points.

a) Selection of seed material b) Planting time and method

c) Fertilizer management d) Varieties

Q.6 Write about the cultivation of potato on following points.

a) Soil and climate b) Seeds and sowing

c) Varieties d) Harvesting and yield

Q.7 Describe in brief the cultivation of Isabgol on following points

a) Soil and climate b) Seeds and sowing

c) Fertilizer management d) Harvesting and yield

(P.T.O.)

Q.8 Describe in brief the cultivation practices of mustard with respect to.

a) Soil and climate
b) Seeds and sowing
c) Varieties
d) Harvesting and yield

Q.9 Describe in brief the cultivation of *rabi* sorghum on following points.

a) Seed bed preparation
b) Seeds and sowing
c) Irrigation
d) Harvesting and yield

Q.10 Write short notes (Any Four).

a) Importance of Pulses in Indian Agriculture.
b) Malting in barley.
c) Uses of lemon grass.
d) Hand pollination in sunflower.
e) Curing of tobacco.

SECTION "B"

Q.11 Fill in the blanks.

1) The sunflower belongs to _____ family.
2) Botanical name of Palmarosa is _____.
3) The flowering in sugarcane is known as _____.
4) The root parasitic weed associated with sorghum is_____.
5) The seed rate requirement of linseed is _____kg ha^{-1}.
6) Berseem is originated from _____.
7) _____kg seed is sufficient for raising one hectare nursery of tobacco.
8) The seed rate requirement of oat is _____ kg ha^{-1}.

Q.12 State True or False.

1) Sunflower can be grown in any season.
2) Malvika (HD-4502) is dwarf durum variety of barley.
3) Green tops of sugar beet are fed directly to cattle.
4) Citronella is aromatic tuber plant.
5) Productivity of sugarcane is more in North India than South India.
6) Mexican wheat is sown in shallow depth.
7) *Phaseolus vulgaris* is a botanical name of pea.
8) Seed rate required for fodder maize is 25 kg/ha.

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B.Sc. (Agri.)

Semester	: **IV (Old)**	**Term**	: **II**	**Academic Year**	: **2017-18**
Course No.	: ASDS 242	**Title**	: **Livestock Breeding and Nutrition**		
Credits	: 2 (1+1)				
Day & Date	: Saturday, 28.04.2018	**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 Classify the feeding stuffs with examples and explain in brief about non conventional feed stuff.

Q.2 Describe the functions of various organs of digestive system of cattle.

Q.3 State concept and brief history of animal breeding.

Q.4 What is feeding standard? Classify the feeding standards and give their advantages.

Q.5 Differentiate between the following.

a) Quantitative and qualitative traits

b) Plant and animal body

Q.6 Explain in brief the methods of selection.

Q.7 Enlist feed nutrients and state functions of minerals in animal body.

Q.8 Write in brief on.

a) Complete feed block b) Gene frequency

Q.9 Describe cell division with respect to mitosis.

Q.10 Describe gene and their functions.

SECTION "B"

Q.11 State True or False.

1) The number of chromosomes in each somatic cell is the same for all species.
2) Fish meal is the best source of protein supplement in poultry feed.
3) ARC feeding standard is based on DM, DCP and TDN requirements.
4) The sum of all organic digestible nutrients is known as digestible crude protein.

Q.12 Fill in the blanks.

1) Numbers of chromosomes in cattle are _____.
2) Mating of a crossbred animal back to one of the pure parent sire is called_____.
3) Gross energy in a feed can be determined by burning it in an instrument called ____.
4) Animal body contains _____ per cent carbohydrates.

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B.Sc. (Agri.)

Semester	: **IV (Old)**	**Term**	: **II**	**Academic Year**	: **2017-18**
Course No.	: BOT 245	**Title**	: **Breeding of Field and Horticultural Crops**		
Credits	: 3 (2+1)				
Day & Date	: Thursday, 03.05.2018	**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 What do you mean by combining ability? State its types and explain the role of combining ability in crop breeding.

Q.2 Define biotic stress. Explain the types of genetic resistance to disease and various sources of disease resistance.

Q.3 State the Hardy-Weinberg law. Explain the factors disturbing/affecting the equilibrium in Mendelian population.

Q.4 Complete the following table:

Sr. No.	Crop	Origin	Botanical Name	Family	Chromosome No	Wild relatives
1.	Wheat					
2.	Chickpea					
3.	Groundnut					
4.	Brinjal					

Q.5 Define plant genetic resources. Enlist various types of germplasm and explain different activities related to germplasm conservation.

Q.6 Explain major steps involved in ideotype breeding. Give the main features of Rice ideotype.

Q.7 What are Intellectual Property Rights? Enlist benefits of IPR and explain in detail plant breeders rights.

Q.8 Write breeding objectives, constrains encountered in hybridization and breeding achievements in mango.

Q.9 Define mutation. Explain causes and characteristics of mutation. Give the types of mutation with examples.

Q.10 Differentiate between (Any Two).

a) Drought avoidance and drought tolerance

b) Synthetic and composite varieties in maize

c) Additive variance and dominance variance

(P.T.O.)

SECTION "B"

Q.11 Fill in the blanks.

1) Proline and Betaine accumulation appears to be indicator of _____.

2) In_____ a large number of plants of similar phenotype are selected and their seeds are mixed together to constitute the new variety.

3) The full form of ICARDA is _____.

4) The botanical name of flax is _____.

5) The full form of NRCG located at Manjari _____.

6) AICMIP was the first All India coordinated project initiated in 1957 under the guidance and assistance of _____ foundation, USA.

7) _____ method allows equal survival of all segregants.

8) _____ research Institute formerly known as MACS, Pune.

Q.12 a) Define the following terms.

1) Allopolyploidy
2) Multiline varieties
3) Inbred
4) Isogenic lines

b) Give the contribution of following scientists:

1) Karpenchenko
2) Dr. C.A.Barber and T. S. Venkatraman
3) Thomas Fairchild
4) Hull, F.H. (1945)

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B.Sc. (Agri.)

Semester	: IV (Old)	**Term**	: II	**Academic Year**	: 2017-18
Course No.	: ECON 243	**Title**	: **Agricultural Finance and Cooperation**		
Credits	: 2 (1+1)				
Day & Date	: Thursday, 26.04.2018	**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 co-operation. Enlist different principles of Co-operation and explain any one of them.

Q.2 Enlist different types of loan repayment plans? Write in detail about amortized repayment plan?

Q.3 Define agricultural credit and classify the agricultural credit on the basis of security and time of repayment period.

Q.4 Enlist the names of different higher finance agencies and write in brief about IMF.

Q.5 Write short notes (Any Two).

a) Management and capital structure of Regional Rural Bank (RRBs).

b) Co-operative movement in pre-independence period in India.

c) Role of NABARD in rural credit.

Q.6 State and explain in short "Discounted measures of project appraisal".

Q.7 Enlist the principles of farm finance? Explain in detail any two of them.

Q.8 Enumerate different sources of Agricultural credit. Explain in short about "Co-operative credit structure in India".

Q.9 Define agricultural finance. Explain the scope and importance of agricultural finance.

Q.10 Define Crop Insurance. Give in detail salient features of "Comprehensive Crop Insurance Scheme".

SECTION "B"

Q.11 State True or False.

1) In amortized even repayment plan the annual installment over the entire loan period remains the same.

2) Landlords are the source of Institutional credit.

3) Crop loan is repaid in suitable equated installments.

4) The International Bank for Reconstruction and Development (IBRD) was also called World Bank.

Q.12 Give full form of the following.

1) AIRCSC 2) DIRS 3) PLDBS 4) DICGC

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B.Sc. (Agri.)

Semester	: **IV (Old)**	**Term**	: **II**	**Academic Year**	: **2017-18**
Course No.	: ENTO 242	**Title**	: **Insect Ecology, Integrated Pest Management and Beneficial Insects**		
Credits	: 3 (2+1)				
Day & Date	: Friday, 27.04.2018	**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 Define Integrated Pest Management (IPM). Discuss in brief concepts of IPM.

Q.2 Give classification of insecticide based on chemical composition along with any one example.

Q.3 Describe cultural methods of pest management with suitable examples.

Q.4 a) Describe any four causes of pest outbreak in agro-ecosystem.

b) Explain the effect of abiotic factors on insect population.

Q.5 a) Describe mass production technique of *Cryptolaemus montrouzieri.*

b) Explain the role of microorganisms in insect pest management.

Q.6 Explain mechanical methods of pest control.

Q.7 Write short notes (Any Two).

a) Species of honey bees b) Mass multiplication of *Ha*NPV

c) Rodent management

Q.8 a) Enumerate the characteristics of ideal parasitoid.

b) Discuss physical methods of insect pest management.

Q.9 Describe the importance of sericulture. Explain in brief rearing technique of mulberry silkworm for production of cocoons.

Q.10 Describe the insecticidal formulations along with their examples.

SECTION "B"

Q.11 Define the following terms.

1) LD_{50} 2) Apiculture 3) ETL 4) Systemic insecticide

5) Repellent 6) Antixenosis 7) Moriculture 8) Key pest

Q.12 Answer in one sentence.

1) What is pest surveillance?
2) Give any one example of insect predator.
3) State the alkaloid present in neem.
4) Name the antidotes for poisoning due to OP insecticides.
5) What is pheromone?
6) Give an example of chemosterilant.
7) Name the host crops *Rangini* strain of lac insect.
8) In which year the insecticides Act was passed in India?

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

Semester	: **IV (Old)**	**Term**	: **II**	**Academic Year**	: **2017-18**
Course No.	: HORT 243	**Title**	: **Production Technology of Spices, Aromatics, Medicinal and Plantation Crops**		
Credits	: 2 (1+1)				
Day & Date	: Friday, 04.05.2018	**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 Spices. Write in short about the importance of spices cultivation in India.

Q.2 Discuss about cultivation of *plantago ovate* (Isabgol) on following points.

a) Medicinal use b) Soil and Climate

c) Planting season and Seed rate/ha d) Varieties

Q.3 Describe the cultivation of turmeric on following points.

a) Propagation and planting b) Varieties

c) Harvesting and yield d) Curing and polishing

Q.4 Describe in brief the cultivation of coffee on following points.

a) Soil and Climatic requirement b) Propagation and planting

c) Varieties d) Processing

Q.5 Write cultivation practices of citronella grass on following points.

a) Soil and Climate b) Propagation and planting

c) Varieties d) Harvesting and yield

Q.6 Discuss the cultivation of black pepper on following aspects.

a) Soil and Climate b) Propagation and planting

c) Varieties d) Harvesting and yield

Q.7 Describe the cultivation of dioscoria on following points.

a) Medicinal uses b) Propagation

c) Planting season and spacing d) Harvesting

Q.8 Describe the cultivation of cashewnut on following points.

a) Soil and Climate b) Propagation and planting

c) Varieties d) Harvesting and yield

Q.9 Give the information pertaining to vetiver on following points.

a) Propagation b) Improved varieties

c) Planting season and spacing d) Harvesting and yield

(P.T.O.)

Q.10 Write short notes (Any Two).

a) Medicinal uses of Senna

b) Harvesting and processing of Cardamom

c) Trailing methods in Betel vine

SECTION "B"

Q.11 Fill in the blanks.

1) The National Research Centre for seed spices is located at _____.

2) *Rauvolfia serpentina* is propagated by vegetative means_____.

3) _____ is a shell-less fruit bearing variety of oil palm.

4) Pragati and CKP-25 are the improved varieties of _____.

Q.12 Match the following pairs.

"A"	"B"
1) Tea	a) Morphine
2) Palmarosa	b) Geraniol
3) Opium poppy	c) Caffeine
4) Fenugreek	d) Sapogenin

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

Semester	: **IV (Old)**	**Term**	: **II**	**Academic Year**	: **2017-18**
Course No.	: PATH 243	**Title**	: **Diseases of Field Crops and Their Management**		
Credits	: 3 (2+1)				
Day & Date	: Wednesday, 25.04.2018	**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 Write symptoms, causes and management of the following (Any Two).

a) Wilt of red gram b) Wilt of bengal gram

c) Wilt of safflower

Q.2 Give in short the causes, symptoms and management of following.

a) Angular leaf spot of cotton b) Tikka disease of groundnut

Q.3 Write causal organism, transmission and management of following disease.

a) Bud necrosis of groundnut b) Grassy shoot of sugarcane

Q.4 a) Write in brief about black stem rust of wheat.

b) Enlist important diseases of rice and describe the symptoms and management strategies for bacterial blight.

Q.5 Write in brief about following.

a) Hot water treatment b) Solar heat treatment

c) Fungicidal seed treatment d) Brine water treatment

Q.6 Write short notes (Any Two).

a) Powdery mildew of black gram b) Leaf blotch of turmeric

c) Ergot of bajra

Q.7 a) Enlist diseases of soybean. Enumerate symptoms and management strategies for rust of soybean.

b) Describe the symptoms and management of whip smut of sugarcane.

Q.8 a) Describe in detail about sesamum phyllody.

b) Enlist important ear head diseases of sorghum with causal pathogen and write in detail about grain smut of sorghum.

Q.9 Write primary and secondary source of infection of following diseases.

a) Downy mildew of maize b) Leaf blight of safflower

c) *Alternaria* leaf spot of castor d) Anthracnose of cotton

(P.T.O.)

Q.10 a) Write transmission, symptoms and management of pigeon pea sterility mosaic.

b) Write in brief about the symptoms and management of downy mildew of sunflower.

SECTION "B"

Q.11 State True or False.

1) Long smut of sorghum is internally seed borne.
2) Asci without ascocarp are produced in *Taphrina* infecting turmeric.
3) Reddening in cotton can be managed by $MgSo_4$ spray and proper drainage.
4) BPMR-145 is powdery mildew resistant variety of mung bean.
5) Evident symptoms of charcoal rot of sorghum are lodging and poor grain filling.
6) *Glomerella tucumanensis* is imperfect state of *Colletotrichum falcatum.*
7) Brinjal is alternate host of bajra rust.
8) Leaf curl of tobacco is transmitted by aphids.

Q.12 Fill in the blanks.

1) Broom rape *(Orobanche spp.)* is a flowering root parasite of _____.
2) _____ causes false smut disease in rice.
3) Yellow rust of wheat is caused by_____.
4) Yellow mosaic of green gram is spread through_____.
5) Botrytis squamosa causes _____ disease of garlic.
6) Wilt of linseed is caused by _____.
7) The sexual spore of ergot fungi is _____.
8) Secondary spread of ragi blast conidia occurs by_____.

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester	: **IV (Old)**	**Term**	: **II**	**Academic Year**	: **2017-18**
Course No.	: SSAC 243	**Title**	: **Manures, Fertilizers and Agrochemicals**		
Credits	: 3 (2+1)				
Day & Date	: Saturday, 05.05.2018	**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 organic recycling. State the significance of C: N ratio.

b) Differentiate between bulky and concentrated organic manures.

Q.2 Write short notes (Any Four).

a) Fish meal
b) Losses during handling and storage of FYM
c) Complex fertilizer
d) Vermicompost
e) Poudrette
f) Ammonium nitrate

Q.3 a) Define FYM. Explain Trench method of preparation of FYM.

b) Define composting. Describe Indore method of composting.

Q.4 a) Define green manuring. Explain decomposition of green manuring in soil.

b) Define fertilizers. Classify the nitrogenous fertilizers with one example each.

Q.5 a) Define micronutrient give the classification of micronutrient fertilizers.

b) Write in detail about handling and storage of N, P and K fertilizers.

Q.6 a) Define bio-fertilizers. Elaborate the symbiotic and non symbiotic nitrogen fixation.

b) Classify the phosphatic fertilizers. Describe the management of phosphatic fertilizers in soil.

Q.7 a) Explain in detail the plant originated insecticides.

b) Give the classification and mode of action of organochloride insecticides.

Q.8 a) Give the classification and properties of potassic fertilizers.

b) Define phytohormones and give the classification of phytohormones.

Q.9 a) Explain in detail the mode of action of herbicides.

b) Describe the insecticide Act.

Q.10 a) Define pesticide. Give the classification of pesticides along with examples.

b) State the reaction of micro-nutrient in soil.

(P.T.O.)

SECTION "B"

Q.11 Define the following terms.

1) Chelate
2) Sludge
3) Sewage
4) Fungicide
5) Chemosterilant
6) Inhibitor
7) Ammonification
8) Defoliant

Q.12 Do as directed.

1) State any two examples of herbicides.
2) Name two crops grown in situ under green manuring.
3) What is mineralization of organic matter?
4) State one example of amide fertilizer.
5) Give two examples of fungicides.
6) State two examples of carbamates.
7) Name two edible and non edible oil cakes.
8) Give C: N ratio of soil and saw dust.

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