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M.Sc. (Part – I) (Semester – I) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT
Paper – I : Chemistry of Pesticides and their Formulations – I

Day and Date : Wednesday, 15-4-2015

Max. Marks : 70

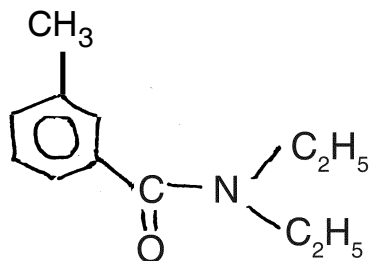
Time : 11.00 a.m. 2.00 p.m.

- N. B. :**
- 1) **All Sections are compulsory.**
 - 2) **All questions carry equal marks.**
 - 3) **Attempt any two questions from Section II and III.**
 - 4) **Draw neat labelled diagram wherever necessary.**
 - 5) **Figures to the right indicate full marks.**

SECTION – I

1. Select most correct alternative from the following (**each** carry 1 mark) : **14**

i) What is the use of following compound ?



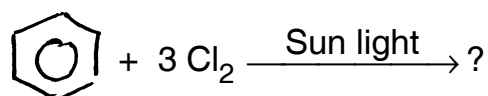
- a) Insect attractant
 - b) Insect repellent
 - c) Insect killer
 - d) None of these
- ii) Which of the following alkyl halide undergoes SN^2 -reaction _____
- a) Primary
 - b) Secondary
 - c) Tertiary
 - d) All the above
- iii) Which of the following is synthetic pyrethroid _____
- a) Cypermethrin
 - b) Pyrethrin
 - c) Jasmolin
 - d) Cyanrin
- iv) Natural pyrethroids cannot be used in field because of _____
- a) Poor stability
 - b) Toxicity
 - c) High cost
 - d) Low activity



v) Auxillary material, surface active, agents and diluents are present in _____

- | | |
|--------------|--------------------|
| a) Smokes | b) Wettable powder |
| c) Solutions | d) Concentrates |

vi) What is the product of following reaction ?



- | | |
|----------|----------------------|
| a) 2,4-D | b) BHC |
| c) DDVP | d) None of the above |

vii) DCNB is used as _____

- | | |
|-------------------------|-------------------|
| a) Herbicide | b) Insecticide |
| c) Plant growth hormone | d) Soil fungicide |

viii) Endosulphan is _____ insecticide.

- | | |
|------------------------|----------------|
| a) Fungicide | b) Herbicide |
| c) Stomach and contact | d) Bactericide |

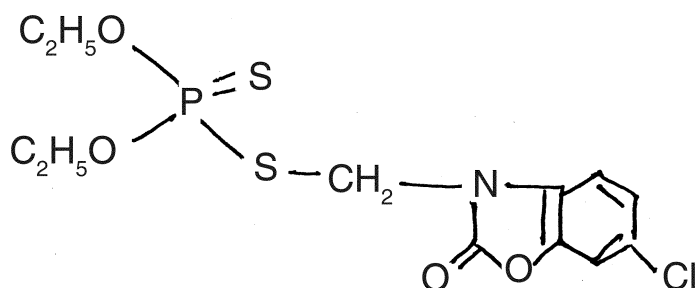
ix) Diel's-Alder reaction is involved in synthesis of _____

- | | |
|--------------|----------------|
| a) Butachlor | b) Endosulphan |
| c) Endrin | d) Aldrin |

x) Dime eron is trade name of _____

- | | |
|------------------|---------------|
| a) Phosphamidine | b) Phosaline |
| c) Phorate | d) Phenthoate |

xi) What is the name of following pesticide ?



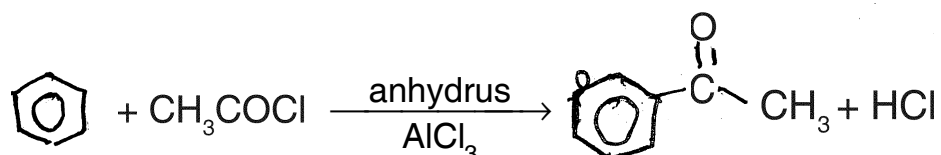
- | | |
|------------------|------------------|
| a) Edifenphos | b) Chloropyrifos |
| c) Menocrotophos | d) Phosalone |



xii) Perkins reaction is used for synthesis of

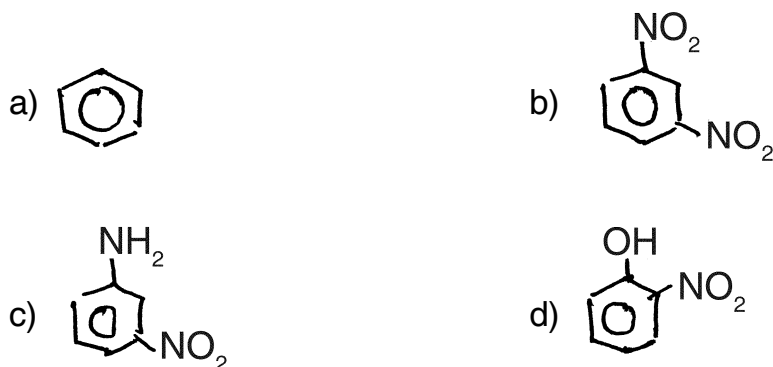
- a) Esters
- b) Unsaturated acids
- c) Ketones
- d) Aldehydes

xiii) Name the following reaction :



- a) Fridel-craft reaction
- b) Perkins reaction
- c) Hofmann's reaction
- d) Reformatsky reaction

xiv) Nitration of nitrobenzene gives _____



SECTION – II

2. Attempt **any two** questions :

- A) Give synthesis and properties of 2, 4-D and Butachlor. 7
- B) Discuss Benzoin condensation reaction with mechanism. 7

3. A) Give synthesis and uses of monocrotophus and ~~chlorpyrifos~~. 7
- B) Discuss the following pesticide formulations. 7
- a) Granules
 - b) Dusts

4. A) Give an account of natural and synthetic pyrethroids. Describe their advantages and disadvantages. 7
- B) Discuss Perkins reaction with mechanism. 7



SECTION – III

5. Attempt **any two** questions :
- A) Give addition reaction of $\text{>C}=\text{O}$ group. 5
 - B) Give synthesis and uses of Diazinon. 5
 - C) Discuss spray formulations. 4
6. A) Give synthesis and uses of quinol phos. 5
- B) Give synthesis and applications of BHC. 5
 - C) Discuss formulations of flowable powers. 4
7. A) Give synthesis and uses of Butachor. 5
- B) Discuss SN^2 reaction with mechanism and energy profile diagram. 5
 - C) Write notes on organochloropesticides. 4
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M.Sc. (Part– II) (Semester – III) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT (Paper – XI)
Analysis of Agrochemicals

Day and Date : Monday, 20-4-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **All** questions are **compulsory**.
2) **All** questions carry **equal** marks.
3) Solve **any two** questions from Section II
4) Solve **any two** questions from Section III.

SECTION – I

I. Choose correct answer from options given below :

14

- 1) The radioisotopes have
 - a) same atomic number and same mass number
 - b) same atomic number and different mass number
 - c) different atomic number and same mass number
 - d) different atomic number and different mass number
- 2) How many signals will be observed in NMR spectrum of ethanol ?
 - a) One
 - b) Two
 - c) Three
 - d) Four
- 3) Which of the following is not used as a detector in HPLC ?
 - a) Scintillation counter
 - b) Fluorescence detector
 - c) UV
 - d) Refractometer



- 4) Intensity of fluorescence depends upon _____ of solution.
- a) Volume
b) Pressure
c) Concentration
d) Polarity
- 5) How many fundamental vibrations can be observed in IR Spectrum of linear NO molecule ?
- a) 5
b) 1
c) 3
d) 4
- 6) _____ is used as polarizable indicator electrode in polarography.
- a) Glass electrode
b) Platinum electrode
c) Mercury pod
d) DME
- 7) Sulphur dioxide is analysed by _____ method.
- a) IR
b) Gas chromatography
c) Polarography
d) Spectrophotometry
- 8) Shift of absorption maxima (λ_{max}) to shorter wavelength is known as _____ shift.
- a) Bathochromic
b) Hypsochromic
c) Hyperchromic
d) Hypochromic
- 9) The column in HPLC is made from _____ material to withstand high pressure.
- a) Plastic
b) Stainless steel
c) Rubber
d) Silk
- 10) Which of the following solution is added as maximum suppressor in polarographic experiment ?
- a) Soap solution
b) Glucose solution
c) KCl solution
d) Gelatin solution
- 11) The intensity of base peak in the mass spectroscopy is
- a) 100 %
b) 90 %
c) 40 %
d) 60 %



- 12) UV spectroscopy is mainly useful in the determination of
- a) Conjugation
 - b) Functional group
 - c) Molecular weight
 - d) None of these
- 13) Which type of radiations are absorbed in NMR spectroscopy ?
- a) Radiofrequency
 - b) Visible
 - c) IR
 - d) Microwave
- 14) The method of separation of volatile substances by using gas as mobile phase is called as
- a) IR
 - b) GC
 - c) NMR
 - d) Mass

SECTION – II

Solve **any two** questions.

2. A) Draw schematic diagram of Mass Spectrometer and describe its working. **7**
B) Scintillation counter. **7**
3. A) What is SFC ? Explain the instrumentation of SFC with diagram. **7**
B) Explain the theory of PMR spectroscopy in details. **7**
4. A) Discuss the principle of Fluorescence spectroscopy and describe the instrument of Fluorescence spectroscopy with diagram. **7**
B) Discuss the principle of GC and describe the instrumentation of GC with diagram. **7**

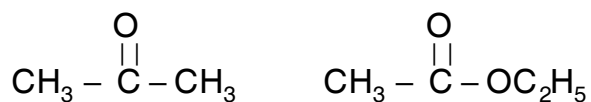
SECTION – III

Solve **any two** questions.

5. A) CO monitoring. **5**
B) Geiger Muller Counter. **5**
C) Different types of detectors used in UV spectroscopy. **4**



6. A) Explain the measurement of polarogram. **5**
- B) Give the principle of IR spectroscopy and explain different types of vibrations. **5**
- C) How will you distinguish the following pairs by IR spectroscopy? **4**



7. A) State and explain Lambert - Beer law. **5**
- B) SO₂ analysis. **5**
- C) How many number of NMR signals in the following Molecular structure **4**
- 1) Ethane
 - 2) Ethyl bromide
 - 3) Benzene
 - 4) Acetaldehyde.
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**M.Sc. (Part – II) (Semester – IV) Examination, 2015
(CGPA Pattern) (New)
AGROCHEMICALS AND PEST MANAGEMENT (Paper – XIII)
Agro Based Marketing Management**

Day and Date : Thursday, 16-4-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **All Sections are compulsory.**
2) Solve **any two** questions **each** from **Sec. II** and **Section III.**
3) Figures to the **right** indicate **full** marks.

SECTION – I

1. Choose the correct answer from options given below : **14**
- i) _____ part of product mix tools of marketing.
 - a) Product size
 - b) Product line
 - c) Product width
 - d) All
 - ii) RBI Nationalization in _____
 - a) 1949
 - b) 1948
 - c) 1947
 - d) 1961
 - iii) NABARD made for _____
 - a) Lending loan to Co-operative Bank
 - b) Education
 - c) Agriculture
 - d) Import-export
 - iv) WTO form in _____
 - a) 1995
 - b) 1994
 - c) 1998
 - d) 2000
 - v) _____ is first stage in PLC.
 - a) Introduction
 - b) Maturity
 - c) Growth
 - d) Decline



SECTION – II

Solve **any two** questions from Section – II.

- | | |
|---|---|
| 2. A) Importance of marketing. | 7 |
| B) Promotional tools use in 'Shah Seeds' to increase sales. | 7 |
| 3. A) Describe the importance of SCM. | 7 |
| B) Explain the function of NABARD. | 7 |
| 4. A) Explain the basis of market segmentation. | 7 |
| B) Describe concept of marketing. | 7 |

SECTION – III

Solve **any two** questions from Section – III :

- | | |
|--|---|
| 5. A) Problems of agri-business. | 5 |
| B) Product position. | 5 |
| C) Place mix. | 4 |
| 6. A) Explain the importance of supply chain management. | 5 |
| B) Target marketing for 'Patel Fertilizers'. | 5 |
| C) Explain importance Marketing research. | 4 |
| 7. A) Explain the stages PLC. | 5 |
| B) Describe factor affect on buying behaviour. | 5 |
| C) Define the role of agro-based marketing management. | 4 |
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**M.Sc. (Part – II) (Semester – IV) Examination, 2015
(New – CGPA Pattern)
AGROCHEMICALS AND PEST MANAGEMENT
Advances in Pest Control – II (Paper – XIV)**

Day and Date : Saturday, 18-4-2015

Max. Marks : 70

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) **All** questions are **compulsory**.
2) **All** questions carry **equal** marks.
3) Solve **any two** questions from Section – II.
4) Solve **any two** questions from Section – III.

SECTION – I

1. Choose correct answer from options given below : 14
- 1) Prothoracic glands secrete moulting hormones _____
 - a) Ecdyson
 - b) Choline
 - c) Acytocholein
 - d) Cholinesterase
 - 2) Bacteria and fungi are known to produce _____
 - a) Enzymes only
 - b) Exotoxins
 - c) Haemotoxins
 - d) None of the above
 - 3) Anabolic toxins are synthesized by _____
 - a) Viruses only
 - b) Insects
 - c) Pathogens
 - d) Mammals
 - 4) Mycoses in the condition of having _____ infection.
 - a) Insects
 - b) Bacterial
 - c) Viral
 - d) Fungal
 - 5) *Sesamia inferens* is known as _____
 - a) Pink borer
 - b) Stem borer
 - c) Shoot borer
 - d) Top borer



- 6) IGR-1055 have shown excellent larvicidal activity against _____
- a) *H. Armigera* b) *Spodoptera letura*
 c) *P. Armicana* d) None of the above
- 7) The substance produced by an insect to repel and disperse other insects in area are called _____
- a) Allomones b) Kariomones
 c) Synomone d) Alarm pheromone
- 8) The full form of CPV is _____
- a) Cytoplasmic Polyhydrosis Virus b) Cytophagous virus
 c) Cytochrome polished virus d) None of the above
- 9) What do you mean by HaNPVO _____
- a) *Heliothis armigera* Nuclear Polyhydrosis Virus
 b) *Helicoverpa armigera* Nuclear Polyhydrosis Virus
 c) *Helicopa army* Nuclear Polydimensional Virus
 d) *Helicomb army* Nuclear Polymorphic Virus
- 10) Genetic control of screw worm fly was initiated by _____
- a) E.F.Kinipling b) F.E.Edward
 c) C. Raymond d) None of the above
- 11) Quadrangular shape is of _____ virus.
- a) Nuclear Polyhydrosis Virus b) Yellow vein mosaic virus
 c) H₁N₁ virus d) None of the above
- 12) Due to Cytoplasmic incompatibility _____ type of insect control occurred.
- a) Mechanical b) Legal c) Genetic d) All the above
- 13) Ti plasmid used for _____ transfer process in rDNA technique.
- a) Bacterium b) Nucleus
 c) Gene d) None of the above
- 14) *Trichogramma chelonis* is _____ parasitoid.
- a) Egg b) Larval c) Pupal d) Adult



SECTION – II

- 2. A) What are the semiochemicals ? Discuss the importance of Pheromones. 7
- B) Define the biological control. Explain the different techniques used in biological control with suitable example. 7
- 3. A) Define predators and add a note role of parasitoid in insect pest management. 7
- B) Describe the importance of biotechnological applications in pest management. 7
- 4. A) Describe the concept and tools of IPM. 7
- B) Describe the methodology of Bt gene transfer in plants. 7

SECTION – III

- 5. A) Genetical method of pest control. 5
 - B) Sex pheromones. 5
 - C) Insect growth regulators. 4
 - 6. A) *Bacillus thuringiensis*. 5
 - B) Chemosterilants 5
 - C) Nuclear Polyhydrosis Virus. 4
 - 7. A) Attractants and repellants. 5
 - B) Hot water treatment for disease control. 5
 - C) Transgenic plants. 4
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M.Sc. (Part – II) (Semester – IV) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT
Manufacture of Agrochemicals (Paper – XV) (New) (CGPA Pattern)

Day and Date : Tuesday, 21-4-2015
 Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions:** i) **All Sections are compulsory.**
 ii) **Question 1 should be answered by choosing the correct answer.**
 iii) **Attempt any two questions from Section – II and any two questions from Section – III.**
 iv) **All questions carry equal marks.**

SECTION – I

1. Choose the correct answer (**one mark each**) : **(1×4=14)**

- 1) The reaction in which only one set of stereoisomers is formed predominantly is called _____ reaction.

a) Stereospecific	b) Stereoselective
c) Stichiometric	d) None of these
- 2) In triple effect evaporator highest temperature is maintained in _____ evaporator.

a) First	b) Second
c) Third	d) Both first and second
- 3) Carbaryl is synthesized from methyl isocyanate and _____

a) 1-Naphthol	b) Methyl amine
c) Methyl alcohol	d) Dimethyl amine
- 4) Diel's-Alder reaction is used to synthesize _____ of the following ?

a) Maneb	b) 2, 4 -D	c) Captan	d) Endosulphan
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- 5) Trade name of Phosphamidon is _____

a) Rogar	b) Sevin	c) Dimecron	d) Dithane
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P.T.O.



- 6) Recruitment and selection of employees come under jurisdiction of _____ manager .
a) Personnel b) Finance c) Production d) Market
- 7) In absorption tower packing the broken rock is generally not used due to _____
a) Easy availability b) Low cost
c) Great weight d) Unusual size and shape
- 8) For drying of milk and milk products _____ dryers are used.
a) Spray b) Turbo c) Tray d) Conveyor
- 9) A molecule whose synthesis is being planned is called _____
a) Reagent b) Target molecule
c) Intermediate d) None of these
- 10) Centrifuge is based on the principle _____
a) Separation of liquid from solid
b) Separation of liquid from liquid
c) Separation of solid from solid
d) None of these
- 11) The acute toxicity of dimethoate for rat is _____
a) 320 to 500 mg/kg b) 365 to 540 mg/kg
c) 60 to 120 mg/kg d) 30 to 45 mg/kg
- 12) According to SSI policy 1990, investment in plant and machinery is
a) Exceeding Rs. 60 lakh b) Not exceeding Rs. 60 lakh
c) Rs. 90 lakh d) Rs. 50 lakh
- 13) Solvent extraction involves distribution of solute between two solvents which are
a) Miscible b) Immiscible
c) Partially miscible d) All of these
- 14) A soluble constituent present either as a solid or a liquid is removed from a solid or a liquid by the use of solvent is called _____
a) Drying b) Extraction
c) Crystallization d) Filtration



SECTION – II

2. a) What is retrosynthetic approach ? Explain it w.r.t. carbaryl. 7
b) What is mean by synthon ? Explain it with two examples. 7
3. a) Describe R and D laboratory specifications. 7
b) Which factors are responsible for setting up a research laboratory ? 7
4. a) Write note on evaporation. 7
b) Describe the main features of industrial licensing policy. 7

SECTION – III

5. a) Write principle of centrifuge. 5
b) Explain the use of fractional distillation. 5
c) Write note on HRD. 4
6. a) Describe the chemical reactions and flow sheet diagram for dimethoate. 5
b) Why is batch inspection necessary ? 5
c) Write note on SSI. 4
7. a) Explain in brief technology transfer process. 5
b) Describe the manufacturing process of captan with flow sheet diagram. 5
c) Write note on chemoselectivity. 4
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**M.Sc. (Part – II) (Semester – IV) Examination, 2015
(New – CGPA Pattern)
AGROCHEMICALS AND PEST MANAGEMENT
Pests and Diseases of Crop Plants – II (Paper – XVI)**

Day and Date : Thursday, 23-4-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **All Sections are compulsory.**
2) **All questions carry equal marks.**
3) **Solve any two questions from Section – II.**
4) **Solve any two questions from Section – III.**

SECTION – I

1. Choose the correct answer from options given below :

14

- 1) *Bemisia tabaci* is scientific name of _____
 - a) the melon fruit fly
 - b) mealy bug
 - c) pollu beetle
 - d) cotton white fly
- 2) Pumpkin beetle belongs to the family _____
 - a) noctuidae
 - b) melolenthidae
 - c) gelechiidae
 - d) crysomelidae
- 3) _____ is important pest of sweet potato.
 - a) Weevil
 - b) Thrips
 - c) Aphids
 - d) None of the above
- 4) Tuber moth belongs to the order _____
 - a) coleoptera
 - b) orthoptera
 - c) hemiptera
 - d) lepidoptera
- 5) Diamond like back is the characteristic of _____
 - a) *Plutella xylostella*
 - b) *Aphis gossypae*
 - c) *Apis indica*
 - d) None of the above



- 3. A) Enlist pest of Onion. Give the control measures and life cycle of any one pest. 7
- B) Enlist fungal diseases of Apple and discuss the bitter rot of same. 7
- 4. A) Explain the mode of damage of different insect pests attacking fruit crops in your area and suggest the control measures of any one. 7
- B) Explain in detail powdery mildew of teak along with control measures. 7

SECTION – III

- 5. A) Classify and describe nature of damage and control measures of black fly. 5
 - B) Describe Potato tuber moth. 5
 - C) Describe nematode. 4
 - 6. A) Describe nature of damage and control measures of pollu beetle. 5
 - B) Rust disease of Crucifers. 5
 - C) Coconut bud rot disease. 4
 - 7. A) Black scurf of Potato. 5
 - B) Coconut wilt disease. 5
 - C) Powdery mildew disease Grapes. 4
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M.Sc. – I (Semester – I) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT (Paper – II)
Soil Science, Fertilizers, Micronutrients and Plant Growth Regulators

Day and Date : Friday, 17-4-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- N. B. :*** 1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Figures to the right indicate full marks.***
4) ***Attempt any two questions each from Section II and Section III.***

SECTION – I

1. Choose the correct answer :

14

- i) Water holding capacity of soil governed by _____
a) Type of soil
b) Organic matter of soil
c) Colour of soil
d) Alkalinity of soil
- ii) Ion exchange takes place in _____
a) Sand
b) Silt
c) Loam
d) Colloids
- iii) $[H^+]$ concentration is increased in soil, cause _____
a) Salinity
b) Active acidity
c) Active alkalinity
d) None of these
- iv) PH = 5, indicates that the solution reaction is _____
a) Basic
b) Neutral
c) Acidic
d) Alkaline
- v) If aluminium oxides are abundance in lateritic soil is called _____
a) Red soil
b) Bauxite
c) Khader
d) Basalt
- vi) _____ is by product of steel industry.
a) Bone meal
b) Basic slag
c) Blood meal
d) Rock-phosphate

P.T.O.



- vii) Biogas is composed of _____
- a) Ethane and CO₂
 - b) Methane and CO₂
 - c) Butane and CO₂
 - d) Isobutane and CO₂
- viii) Breaking of seed dormancy is made by the treatment of _____
- a) GA
 - b) Auxin
 - c) Ethylene
 - d) Cytokinin
- ix) Caw Pea (*Vigna Catjana*) is an example of _____
- a) Guano manure
 - b) Green manure
 - c) Bulky org. manure
 - d) Waste product of slaughter house
- x) Gibberellic acid is found in _____
- a) *Avena sativa*
 - b) Coconut water
 - c) *Raphanus sativa*
 - d) *Gibberella Fujikuosi*
- xi) Which of the following is not micronutrient ?
- a) Zn
 - b) K
 - c) Mo
 - d) Fe
- xii) _____ causes the fire hazard.
- a) Sodium nitrate
 - b) Calcium cyanide
 - c) Super phosphate
 - d) Rock phosphate
- xiii) _____ is an example of concentrated organic manure.
- a) Oil cake
 - b) FYM
 - c) Bonemeal
 - d) Sewage
- xiv) _____ is associated with root nodule of leguminous plant.
- a) *Rhizobium*
 - b) *Azolla*
 - c) *Bacillus*
 - d) *E. Coli*



SECTION – II
(Any two)

- | | |
|---|---|
| 2. A) What is soil ? Describe the chemical properties of soil. | 7 |
| B) Describe the functions of various components of soil. | 7 |
| 3. A) What are the fertilizers ? Describe the manufacture of Ammonium chloride. | 7 |
| B) Write note on 'specification of grades of ammonium phosphate.' | 7 |
| 4. A) Describe the role of cytokinin. | 7 |
| B) What are the practical applications of Gibberellic acid ? | 7 |

SECTION – III
(Any two)

- | | |
|--|---|
| 5. A) Describe the role of Mn and Mo. | 5 |
| B) What are the deficiency symptoms of Fe and Mg ? | 5 |
| C) Write note on FYM. | 4 |
| 6. A) Write short note on 'NPK' fertilizer. | 5 |
| B) Blue Green Algae (BGA) as a biofertilizer. | 5 |
| C) Bangalore method of composting. | 4 |
| 7. A) What are the plant growth hormones ? | 5 |
| B) Give the biosynthesis of IAA. | 5 |
| C) What are the practical applications of Auxins ? | 4 |
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**M.Sc. (Part – I) (Semester – I) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT
Introductory and Industrial Entomology (Paper – III)**

Day and Date : Monday, 20-4-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- Instructions:** 1) **All Sections are compulsory.**
2) **All questions carry equal marks.**
3) **Solve any two questions from Section-II.**
4) **Solve any two questions from Section-III.**

SECTION – I

1. Choose the correct answer from options given below. 14
- 1) Thorax of an insect is made up of _____ fused segments.
a) 4 b) 5 c) 3 d) 2
 - 2) _____ stage is lacking in the life cycle of white grub.
a) Adult b) Nymph
c) Larva d) None of the above
 - 3) Mouth parts of cockroach are of _____ type.
a) Chewing and biting b) Siphoning
c) Sponging d) None of the above
 - 4) In dipteran hind wings are modified into _____
a) Elytra b) Halter
c) Scutelum d) None of the above
 - 5) In insect _____ type of circulatory system occurs.
a) Open b) Closed
c) Both 'a' and 'b' d) None of the above



SECTION – II

- 2. A) Describe the morphological details of abdomen in insect. 7
- B) Describe the life cycle pattern of aphid. 7
- 3. A) Describe nervous system of Cockroach. 7
- B) Explain male reproductive of cockroach. 7
- 4. A) Define pest explain with example different types of pest. 7
- B) Describe life cycle pattern of white grub. 7

SECTION – III

- 5. A) Species of Honey bee. 5
 - B) Excretory system of Cockroach. 5
 - C) Control measures of Aphids. 4
 - 6. A) Leg of an insect. 5
 - B) Damages caused by Mealy bug. 5
 - C) Explain Thrips. 4
 - 7. A) Importance of lack culture. 5
 - B) Grasshopper. 5
 - C) Antennae of an insect. 4
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M.Sc. I (Semester – I) Examination, 2015
Agrochemicals and Pest Management (AGPM)
Plant Pathology and Weed Management (Paper – IV)

Day and Date : Wednesday, 22-4-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- N.B. :** 1) **All Sections are compulsory.**
2) Attempt **any two** questions from Section – II and III.
3) Draw **neat** and labelled diagrams **wherever** necessary.
4) Figures to the **right** indicate **full** marks.

SECTION – I

1. Rewrite the sentences by choosing correct answer from the given alternatives.

(1×14=14)

- 1) Any structural disorder associated with host plant is called
a) development b) virulence c) infectivity d) disease
- 2) _____ are the Prokaryotic microbes.
a) Mycoplasma b) Bacteria c) Fungi d) Both a) and b)
- 3) Mycoplasma are mostly found in _____ tissues of host plants.
a) xylem b) phloem c) epidermal d) all the above
- 4) Peritrichous bacteria have flagella attached
a) at one end b) at both ends
c) all over the surface d) none of these
- 5) Compound disease develops when the host plant is attacked by _____ pathogens at the same time.
a) fungal b) bacterial c) viral d) all the above



- 6) Airborne diseases can be controlled by
a) foliar applications b) seed dressing
c) herbicide applications d) both b) and c)
- 7) Soil borne diseases are disseminated by
a) water b) soil c) seeds d) both a) and b)
- 8) Bacteria Lacking flagella are called _____ bacteria.
a) monotrichous b) bitrichous c) peritrichous d) atrichous
- 9) Powdery mildew disease is a _____ disease.
a) foliar b) root c) wilt d) both b) and c)
- 10) _____ are pleuromorphic microbes.
a) Viruses b) Bacteria c) Nematodes d) MIBs
- 11) Cuscuta is the _____ stem parasite.
a) partial b) total c) impartial d) induced
- 12) Fungi involved in the control of insects are called _____ fungi.
a) nematophagus b) phytophagous
c) entomogenous d) all the above
- 13) Mistletoes is the common name for _____ sp.
a) cuscuta b) striaga c) orebanche d) loranthus
- 14) Death and decay of stem from tip towards the base is the symptom of _____ disease.
a) wilt b) blight c) die back d) smut

SECTION – II

2. A) Describe the plant disease classification based on symptoms. 7
B) Describe the microscopic methods of identification of plant diseases. 7
3. A) Describe the mechanism of infection by bacteria studied by you. 7
B) Describe the factors affecting the competitive ability of weeds. 7
4. A) Describe various types of parasitic needs with control measures. 7
B) Describe the dispersal mechanism of bacterial pathogens. 7



SECTION – III

- | | |
|---|---|
| 5. A) State the characters of viruses. | 5 |
| B) Write a note on assessment of yield losses. | 5 |
| C) Describe the dispersal of weeds by animals. | 4 |
| 6. A) Add a note on plant disease monitoring. | 5 |
| B) Describe in brief the chemical method of control of weeds. | 5 |
| C) Describe the symptomology of vires pathogens. | 4 |
| 7. A) Describe the molecular basis of disease diagnosis. | 5 |
| B) Add a note on microbial toxins. | 5 |
| C) Describe in brief the biological methods of weed control. | 4 |
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M.Sc. (Part – I) (Semester – II) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT
Paper – V : Chemistry of Pesticides and their Formulations – II

Day and Date : Thursday, 16-4-2015
Time : 11.00 a.m. to 2.00 p.m.

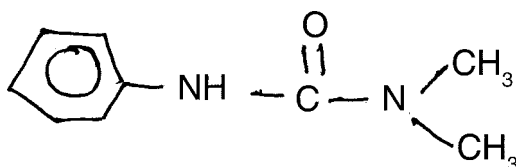
Total Marks : 70

- N. B. :** 1) **All Sections are compulsory.**
2) Attempt **any two** questions from Section II and III.
3) **All questions carry equal marks.**
4) Figures to the **right** indicate **full marks.**

SECTION – I

1. Choose the most correct answer of the followings. **Each** carries **1** mark. **14**

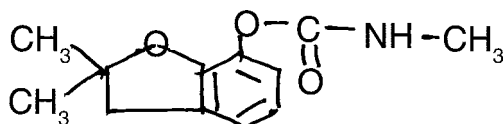
- 1) Reaction between phthalimide and perchlor gives _____
a) Captan b) Phthalan c) Propanil d) Mesaltan
- 2) Carbon disulphide on chlorination gives _____
a) Perchlor b) Parachlor c) Metachlor d) None of these
- 3) Calcium arsenate is used as _____
a) Acaricide b) Herbicide
c) Growth promoter d) Rodenticide
- 4) Mixture of 4.5 kg CuSO_4 and 5.6 kg Na_2CO_3 is known as _____
a) Baurdoux mixture b) Organic mixture
c) Burgundy mixture d) Pesticide mixture
- 5) What is the name of following Herbicide ?



- a) Fenuron b) Manuron
- c) Tenuron d) Fluometuron



- 6) Primicarb is an example of _____
- a) Thio carbamate b) Carbamate
c) Oxime carbamate d) Chloro carbamate
- 7) Which one of the following compound is used as stimulant for growth of root system ?
- a) PCNB b) HCN
c) HBr d) CCC
- 8) Methiuron is derivative of _____
- a) Thiourea b) Urea
c) Oxalic acid d) Naphthalene
- 9) Pentachlorophenol on oxidation gives _____
- a) Propanil b) Chloronil
c) Hexachlorophene d) Benifin
- 10) Copper 2 : 4 : 5 trichlorophenolate is used as _____
- a) Growth promoter b) Soil fungicide
c) Rodenticide d) Seed disinfectant
- 11) Maneb is prepared by reacting CS₂ with _____
- a) Ethylene diamine b) Methyl amine
c) Diethyl amine d) Triethyl amine
- 12) Sulphur is used in agriculture in the form of _____
- a) Smoke b) Dust
c) Aques solution d) Emulsive concentrate
- 13) Carbaryl is prepared by reaction between 1-naphthol and _____
- a) Methyl chloride b) Methyl bromide
c) Methyl isocyanate d) Methyl iodide
- 14) Name the following carbamate pesticide :



- a) Carbofuron b) Benzophenone
c) Carbaryl d) Baygon



SECTION – II

Solve **any two** questions :

2. A) Give synthesis and uses of fenuron and tenuron. 7
B) Explain the role of azo compounds and hydrazine compounds in agriculture. 7
3. A) Give synthesis of Dinoseb and Dinobuton. 7
B) Describe the role of zinc oxide and zinc phosphate as pest control. 7
4. A) Give synthesis and uses of following : 7
a) Maneb
b) Zineb.
- B) Discuss phenolic compounds as pesticide. 7

SECTION – III

Solve **any two** questions :

5. A) Give synthesis and uses of propanil. 5
B) Discuss controlled release formulation. 5
C) Write note on Inorganic pesticides. 4
6. A) Give synthesis of Baygon. 5
B) Describe the pesticides belonging to the class of thiourea. 5
C) Give an account of inorganic pesticides. 4
7. A) Explain the role of amino compounds as herbicides. Give synthesis of Nitralin. 5
B) Give synthesis of captan. 5
C) Write note on sulphur fungicides. 4
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M.Sc. (Part – I) (Semester – II) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT
Paper – VI : Analytical Techniques for Agrochemicals

Day and Date : Saturday, 18-4-2015

Total Marks : 70

Time: 11.00 a.m. to 2.00 p.m.

- Instructions :** 1) **All questions are compulsory.**
2) Attempt **any two** questions from Section II and III.
3) Figures to **right** indicate marks.
4) **Neat and labelled** diagrams should be drawn.

SECTION – I

1. Choose the most correct alternative and write the sentence : 14
- i) The process of extracting a small portion from large quantity of material representing its true composition is called
 - a) Extraction
 - b) Sampling
 - c) Qualitative analysis
 - d) Quantitative analysis.
 - ii) Silica gel is the _____ phase in TLC.
 - a) Stationary
 - b) Mobile
 - c) Reverse
 - d) Normal
 - iii) The fundamental requirement of an ion exchange resin is that it must be
 - a) hydrophilic
 - b) soluble in water
 - c) lighter than water
 - d) unstable
 - iv) The pH range of phenolphthalein indicator is
 - a) 7 – 10
 - b) 4 – 7
 - c) 8.3 – 10
 - d) 7.3 – 9.5
 - v) Name the reagent for titration of washing soda
 - a) sulphuric acid
 - b) hydrochloric acid
 - c) perchloric acid
 - d) nitric acid
 - vi) In gravimetric estimation of iron _____ hydroxide reagent is used.
 - a) Sodium
 - b) Barium
 - c) Ammonium
 - d) Potassium

P.T.O.



- vii) In gravimetric estimation of magnesium which reagent is used ?
a) Ammonia b) HCl
c) 8 – hydroxyquinoline d) Thiocyanate
- viii) The calomel electrodes are used in potentiometry as
a) reference b) working c) auxiliary d) indicator
- ix) The glass electrode used in _____ metric titrations.
a) complexo b) potentio c) pH d) conducto
- x) The conductance of an electrolyte solution is 1.0×10^{-3} mhos. If the cell constant is 1.0 its specific conductance _____ its conductance.
a) equal to b) half of c) one fourth d) one tenth
- xi) Which is the first step of stripping analysis ?
a) Concentration b) Stripping c) Oxidation d) Dissolution
- xii) In flame emission spectrometry which flame gives highest temperature ?
a) Acetylene/oxygen b) Hydrogen/oxygen
c) Hydrogen/Air d) Acetylene/Air
- xiii) In _____ the angle of the rotation of a plane polarized light is measured.
a) AAS b) TGA c) DTA d) Polarimetry
- xiv) The ability of substance to maintain its properties nearly unchanged on heating is known as
a) Thermal stability b) Oxidation stability
c) Acid stability d) Air stability

SECTION – II

2. a) Define and discuss the significance of distribution coefficient and separation factor often encountered in solvent extraction with a suitable example. 7
- b) Discuss the procedure of sample application and plate development of thin layer chromatography. 7



- 3. a) Explain in detail the significance of pH control, choice of indicator, masking and demasking in EDTA complexometric titrations. 7
- b) Explain the detailed procedure of redox titration of ferrous ion with ferric ion. 7
- 4. a) Discuss the method of pH metric analysis of ascorbic acid in fruit juices. 7
- b) Explain the conductometric method of determining salinity and halides present in a given sample of water. 7

SECTION – III

- 5. a) Describe with neat sketch the construction and working of total consumption burner used in atomic absorption spectrophotometer. 5
 - b) Describe the flame photometric method of determining alkali metals. 5
 - c) Write short note on paper chromatography. 4
 - 6. a) Describe the principle polarimetry with the procedure for measuring rotation of a plane polarised light passing through an optically active substance. 5
 - b) Give an account of experimental details of column chromatography. 5
 - c) Write short note on metallochromic indicators. 4
 - 7. a) What is complexometric titration ? Describe in brief. 5
 - b) Write short note on AAS estimation of sodium. 5
 - c) Describe in brief the potentiometric analysis of pesticides. 4
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**M.Sc. – I (Semester – II) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT
Paper – VII : Economic Entomology**

Day and Date : Tuesday, 21-4-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- N. B. :** 1) *All questions are compulsory.*
2) *All questions carry equal marks.*
3) *Solve any two questions from Section – II.*
4) *Solve any two questions from Section – III.*

SECTION – I

1. Choose the correct answer from options given below :

14

- 1) _____ mosquito sucks sap of plants.
a) Male Anopheles b) Female Anopheles
c) Both a) and b) d) Female Aedes
- 2) Scientific name of cockroach is _____
a) Holotrichia consangunia b) Periplaneta americana
c) Lipapis erysimi d) Musca domestica
- 3) _____ is house hold pest.
a) Thrips b) Nematode
c) Silverfish d) Mite
- 4) Housefly has _____ type of mouth parts.
a) Chewing b) Biting
c) Siphoning d) Sponging
- 5) Nematode belongs to phylum _____
a) Mollusca b) Arthropoda
c) Nematohelminthes d) Platyhelminthes

P.T.O.



- 6) _____ is poly house pest.
- a) Khapara beetle
 - b) Helicoverpa borer
 - c) Rat
 - d) Bed bug
- 7) _____ is polyphagous pest.
- a) Termites
 - b) Leaf minor
 - c) Leaf caterpillar
 - d) Cotton white fly
- 8) Chemicals used to control insects are known as _____
- a) pesticides
 - b) insecticides
 - c) sprayers
 - d) rodenticides
- 9) White grub completes _____ generation in year.
- a) one
 - b) two
 - c) three
 - d) four
- 10) Damaging stage of Khapara beetle is _____
- a) Adult
 - b) Grub and Adult
 - c) Grub
 - d) Maggot
- 11) Which one of the following is pest of livestock ?
- a) Rice weevil
 - b) Stable fly
 - c) Nematode
 - d) Pulse beetle
- 12) Slug is _____ pest of agricultural crop.
- a) Vertebrate
 - b) Insect
 - c) Molluscan
 - d) Nematode
- 13) _____ is the order of monkey.
- a) Rodentia
 - b) Diptera
 - c) Lepidoptera
 - d) Primate
- 14) Life cycle of sucking cattle louse completes by _____ stages.
- a) Egg – larva – pupa – adult
 - b) Egg – nymph – pupa – adult
 - c) Egg – nymph – adult
 - d) Nymph – adult



SECTION – II

2. A) Describe life cycle pattern of white grub.
B) Describe life cycle pattern of rat.
3. A) Describe cyst forming nematode.
B) Describe life cycle pattern of aphid.
4. A) Describe life cycle pattern of cotton white fly.
B) Explain snail as a molluscan pest of agricultural crops.

SECTION – III

5. A) Describe control measures of termites.
B) Explain damages caused by monkey.
C) Explain control measures of mosquitoes.
 6. A) Common green-bee eater.
B) Control measure of mealy bugs.
C) Explain control measures of thrips.
 7. A) Damages caused by cut-worm.
B) Locust.
C) Damages caused by sucking cattle louse.
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M.Sc. (Part – I) (Semester – II) Examination, 2015
AGROCHEMICALS AND PEST MANAGEMENT (Paper – VIII)
Biotechnological Aspects in Plant Protection

Day and Date : Thursday, 23-4-2015

Max. Marks : 70

Time : 11.00 a.m. to 2.00 p.m.

- N.B. :** 1) *All questions are compulsory.*
2) *All questions carry equal marks.*
3) *Attempt any two questions from Section – II and III.*
4) *Figures to right indicate full marks.*

SECTION – I

Objective type.

- N.B. :** I) Correct answer to **each** items carries **one** mark.
II) There are in **all 14** items for **14** marks.

1. Botanical name of cauliflower
a) *Brassica oleracea* Linn. Var. capitata
b) *Arachis hypogaea* Linn
c) *Brassica oleracea* Linn. Var. botrytis
d) *Triticum aestivum* Linn
2. Wheat crop should be sown in _____ direction for maximum interception of sunlight and promote vigorous growth.
a) North-south
b) East west
c) South-south east
d) West-north east
3. Moisture content of wheat grain should be _____ % for safe storage.
a) 18 to 20% b) 20% c) 18 to 22% d) 25 to 30%
4. Ambenohor-157 is one of the varieties of
a) Jowar b) Wheat c) Sugarcane d) Paddy
5. The term horizontal resistance was first used by
a) J.E. Vanderplank b) Raoul A Robinson
c) Gautheret d) Laibach



6. B.T. cotton is introduced to reduce the infestation of _____ pest.
 - a) boll worm
 - b) cotton jassid
 - c) cotton aphid
 - d) red cotton bug

7. Part of plant used for culture is called
 - a) Callus
 - b) Explant
 - c) Stock
 - d) Scion

8. Sterilization of nutrient medium is done in autoclave at _____ pressure for 20 minutes.
 - a) 16 lb/inch²
 - b) 18 lb/inch²
 - c) 15 lb/inch²
 - d) 17 lb/inch²

9. In nutrient medium agar-agar helps in providing
 - a) Solid medium
 - b) Soft medium
 - c) Liquid medium
 - d) Both (a) and (b)

10. An ability of a plant cell by virtue of which it can generate whole plant under suitable conditions is called
 - a) Micropopagation
 - b) Somatic hybridization
 - c) Organogenesis
 - d) Totipotency

11. PCR technique was developed by
 - a) Herbert Boyer
 - b) Stanley Cohen
 - c) K. Mullis
 - d) Twor and d' Herelle

12. The Ti plasmid is used to genetically engineer
 - a) Bacteria
 - b) Plants
 - c) Fungi
 - d) Animals

13. Genetic engineering has been used to do all of the following except
 - a) Make plants more resistant to disease
 - b) Make plants more resistant to frost
 - c) Improve the nutritional balance of plants
 - d) All of the above are correct

14. Bt in popular Bt. Cotton stand for
 - a) Biotechnology
 - b) Bacillus type
 - c) Bacillus tomentosa
 - d) *Bacillus thuringiensis*



SECTION – II

N.B. : i) Answer **any two** questions.
ii) **Each** question carries **14** marks.

2. A) Describe cultivation of coconut and cashewnut crop with respect to soil and climate, seed rate and sowing, fertilizer and plant protection measure. **7**
B) Describe cultivation of cashewnut crop with respect to soil and seed rate and sowing, fertilizer and plant protection measure. **7**
3. A) Explain the role of seed technology in the production of rust resistant variety in any crop. **7**
B) What is seed technology ? **7**
4. A) What is meant by genetic resistance to pest. **7**
B) Describe in detail horizontal and vertical resistance of plants. **7**

SECTION – III

5. A) What is plant tissue culture ? **5**
B) Explain in brief the technique of tissue culture. **5**
C) Application of tissue culture. **4**
6. A) Describe tools recombinant DNA technology. **5**
B) Explain in brief technique of recombinant DNA technology. **5**
C) Infection. **4**
7. A) Cultivation and requirements of fertilizer of cabbage. **5**
B) Plant protection measure of groundnut. **5**
C) Back cross method of breeding. **4**
-