

# ANDHRA UNIVERSITY



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All Official letters, packages etc, should be addressed to the Registrar by designation and not by name.

No. LI (1& 2)/U.G. SEC's Courses/ Syllabi & MQP/2020-21

Visakhapatnam,  
Dt: 22-12-2022

From: **THE REGISTRAR**

To

The Controller of Examinations,  
Andhra University,  
Visakhapatnam.

Sir,

Sub: Approval of Syllabus & Model Question Papers – Reg.  
Ref: B.A., B.Sc., BHM & CT, B. Vocational Courses Agriculture and  
Dairying & Animal Husbandry, Syllabus & Model Question Papers.

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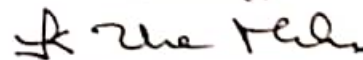
With reference to the above, I am by direction to inform you that the Choice Based Credit System, U.G. Skill Enhancement Courses (w.e.f. 2020-2021) Syllabus & Model Question Papers have been approved as detailed below:

S.No.	Subject/Email dated	Name & Designation	Name of the College	Syllabus & Model question paper	Name of the Paper
1.	Skill Enhancement course – B.Sc. Biochemistry / 19-11-2022	Chairperson	Dr. L.B. College, Visakhapatnam	V-Semester-Model Question Paper	1.Clinical Biochemistry 2.Hematological and Immunological Techniques 3.Food Technology 4.Food Microbiology 5.Genetic Engineering 6.Bioinformatics
2.	Skill Enhancement Course (Elective) B.A/B.Sc. – Mathematics / 22-11-2022	Chairman	Mrs. A.V.N College, Visakhapatnam	V-Semester-Model Question Paper	Numerical Methods
3.	B.Sc. Electronics / 26-11-2022	Chairman	-	V-Semester-Model Question Paper	Micro Controller and Interfacing
4.	B.Sc. Biotechnology / 29-11-2022	Chairperson	-	V-Semester-Model Question Paper	1.6A – Techniques in Nursery Development 2.6B – Organic Farming 3.7B – Bio fertilizers and Bio pesticides production. 4.6C – Apiculture 5.7C – Pearl Culture 6.6A – Techniques in Nursery Development 7.6B – Organic Farming 8.7B – Bio fertilizers and Bio pesticides production 9.6C – Apiculture

					10.7C – Pearl Culture
5.	Skill Enhancement Course (Elective) B.A. / B.Sc. Statistics / 30-11-2022	Chairman	Mrs. A.V.N College, Visakhapatnam	V-Semester-Model Question Paper	1.Course 6A Operation Research-I 2 .Course 7A – Operations Research-II
6.	BHM & CT	Chairman	Dept. of Commerce & Mgt. Studies, Andhra University, Visakhapatnam	V-Semester-Syllabus & Model Question Paper	1.Advance Food Production-1 (16-A) 2.Advance Room Division Management-II (17-C) 3.Bangueting and Buffet Management (16-B) 4.Food & Beverage Controls (17-B) 5.Advance Room Division Management-1 (16-C) 6.Advance Food Production-II (17-A)
7.	B. Vocational Course Agriculture / 30-11-2022	Chairman / Principal	AMAL College, Anakapalle	V-Semester-Syllabus & Model Question Paper	1.Weed & Water Management 2.Farm Power and Machinery 3.Rainfed Agriculture and Watershed Management 4.Pests of Horticultural Crops and Productive Entomology 5.Fungicides and Plant Disease Management 6.Production Technology for Fruits and Vegetables
8.	B. Vocational Course Dairying & Animal Husbandry / 30-11-2022				1.Veterinary Pharmacology 2.Dairy Plant Management 3.Fundamentals of Veterinary Medicine 4.Veterinary Clinical Practice 5.Basics of Veterinary Surgery 6.Veterinary Gynaecology, Obstetrics and AI

Hence, I request to arrange to circulate the same among the Teaching Staff and Students concerned and placed in A.U. website.

Yours faithfully,



(K. UMA MAHESWARI)  
DEPUTY REGISTRAR (ACADEMIC)

**Copies to:**

1. The Dean of Academic Affairs, A.U., VSP.
2. The Dean, U.G. & P.G, Professional Courses, A.U., Vsp.
3. The Dean, CDC, A.U., Vsp.
4. The Dean, Confidential, A.U., Vsp.
5. All Principals, A.U. Affiliated Colleges Offered in U.G. courses.
6. The Superintendent S.I Section for taking necessary further action.
7. The Secretary to V.C., Rector Table, P.A. to Registrar, A.U., Vsp.
8. The Director, Computer Centre, A.U., Vsp.
9. O.C. & O.O.F.

## **MODEL PAPER**

**B.Sc BIOCHEMISTRY revised syllabus under CBCS**

**Domain Subject: BIOCHEMISTRY**

**Skill Enhancement Courses (SECs) for Semester V from 2022-23**

**SEC Clinical Biochemistry**

**TIME : 3 HOURS**

**MAXIMUM :75M**

### **PART-A**

**ANSWER ANY FIVE OF THE FOLLOWING QUESTIONS.**

**EACH CARRIES FIVE MARKS**

**5x5=25 MARKS**

1. Types of specimens for Biochemical analysis
2. Quality Control
3. GFR
4. Diabetes Mellitus
5. Insulin resistance
6. PUFAS
7. Aspartate transaminase
8. Atherosclerosis

## **PART-B**

**ANSWER ALL QUESTIONS EACH CARRIES TEN MARKS**

**5X10=50 MARKS**

- 9 (a) Write briefly about automation in a clinical Biochemistry laboratory.  
OR  
9 (b) How are the different specimens collected for Biochemical analysis ?
- 10 (a) What are the different Liver function tests ?  
OR  
10 (b) Write briefly on Renal function tests.
- 11 (a) Write about Digestion, Absorption and Assimilation of carbohydrates.  
OR  
11(b) Discuss briefly about the role of Hormones in regulation of blood glucose levels.
- 12(a) Write about Digestion and Absorption of lipids.  
OR  
12 (b) Discuss the composition and functions of lipo proteins.
- 13 (a) What are the biochemical symptoms associated with Cardio vascular diseases and their evaluation.  
OR  
13 (b) Discuss about the isoenzymes of Creatine Kinase, Lactate Dehydrogenase and Troponin.



## **MODEL PAPER**

**B.Sc BIOCHEMISTRY revised syllabus under CBCS**

**Domain Subject: BIOCHEMISTRY**

**Skill Enhancement Courses (SECs) for Semester V from 2022-23**

**SEC Hematological and Immunological Techniques**

**TIME : 3 HOURS**

**MAXIMUM :75M**

### **PART-A**

**ANSWER ANY FIVE OF THE FOLLOWING QUESTIONS.**

**EACH CARRIES FIVE MARKS**

**5x5=25 MARKS**

1. Hazards in a Clinical Laboratory.
2. Normal Range
3. Plasma therapy
4. Lymph
5. Western Blot
6. Systemic lupus erythematosis
7. Adjuvants
8. Haptens

## **PART-B**

**ANSWER ALL QUESTIONS EACH CARRIES TEN MARKS**

**5X10=50 MARKS**

9 (a) How is a Clinical Immunology Laboratory organised ?

**OR**

9 (b) Write about Quality control in a laboratory .

10 (a) What are the different types of blood cells? Discuss their importance.

**OR**

10(b) Discuss about separation and applications of Plasma proteins.

11(a) What is ELISA? Discuss its principle and applications.

**OR**

11(b) What is meant by RT-PCR ? How is it done.

**OR**

12(a) Discuss briefly about the different classes of Auto immune diseases.

**OR**

12(b) How is Rheumatoid Arthritis caused? What are its symptoms, diagnosis and treatment.

13(a) Discuss about the nature and structure of Immunoglobulins.

**OR**

13(b) Discuss about Hybridoma technology for antibody production.

**MODEL PAPER**

**B.Sc BIOCHEMISTRY revised syllabus under CBCS**

**Domain Subject: BIOCHEMISTRY**

**Skill Enhancement Courses (SECs) for Semester V from 2022-23**

**SEC Food Technology**

**TIME : 3 HOURS**

**MAXIMUM :75M**

**PART-A**

**ANSWER ANY FIVE OF THE FOLLOWING QUESTIONS.**

**EACH CARRIES FIVE MARKS**

**5x5=25 MARKS**

1. Official methods of food analysis.
2. Dietary fiber.
3. Adulterants in food.
4. Determination of protein in foods.
5. Pasteurization.
6. Blanching.
7. Radioactive contaminants in foods.
8. Cheese preparation.

## **PART-B**

**ANSWER ALL QUESTIONS EACH CARRIES TEN MARKS**

**5X10=50 MARKS**

9(a) How can we determine moisture content in different foods.

**OR**

9(b) Discuss the significance of different ashes in different foods.

10(a) Write about analyses of Oils and Fats.

**OR**

10(b) Write briefly about the different methods for determination of total carbohydrates and starch in foods

11(a) Discuss briefly about the thermal methods for processing and preservation of foods.

**OR**

11(b) Write on the role of enzymes and micro organisms in processing and preservation of foods.

12(a) What are the commonly found fungicide and pesticide residues in foods.

**OR**

12(b) Discuss about heavy metals and their health impacts.

13(a) What are the different processes for preparation of fermented foods.

**OR**

13(b) How is wine produced from fruit juices.



## **MODEL PAPER**

**B.Sc BIOCHEMISTRY revised syllabus under CBCS**

**Domain Subject: BIOCHEMISTRY**

**Skill Enhancement Courses (SECs) for Semester V from 2022-23**

**SEC Food Microbiology**

**TIME : 3 HOURS**

**MAXIMUM :75M**

**PART-A .**

**ANSWER ANY FIVE OF THE FOLLOWING QUESTIONS.**

**EACH CARRIES FIVE MARKS**

**5x5=25 MARKS**

1. Commonly found micro organisms in food
2. Gram's stain
3. Acid fast staining
4. Canned food
5. Shigellosis
6. Aflatoxins
7. Mycotoxicoses
8. Ergotism

## **PART-B**

**ANSWER ALL QUESTIONS EACH CARRIES TEN MARKS**

**5X10=50 MARKS**

**9(a) Discuss the different stages in Bacterial growth curve**

**OR**

**9(b) Write about the different factors affecting the growth of micro organisms in food**

**10(a) What are the various microscopic methods for identification of micro organisms in foods**

**OR**

**10(b) Discuss the chemical and physical methods for identification of micro organisms in foods**

**11(a) Describe the methods used for radiation of foods**

**OR**

**11(b) How are water samples analysed for micro organisms**

**12(a) How are milk and milk products spoiled**

**OR**

**12(b) How are Vegetables and Fruits spoiled**

**13(a) Discuss some Bacterial borne diseases**

**OR**

**13(b) Explain the phenomena and mechanism of Drug resistance**

## **MODEL PAPER**

**B.Sc BIOCHEMISTRY revised syllabus under CBCS**

**Domain Subject: BIOCHEMISTRY**

**Skill Enhancement Courses (SECs) for Semester V from 2022-23**

**SEC Genetic Engineering**

**TIME : 3 HOURS**

**MAXIMUM :75M**

### **PART-A**

**ANSWER ANY FIVE OF THE FOLLOWING QUESTIONS.**

**EACH CARRIES FIVE MARKS**

**5x5=25 MARKS**

- 1. PUC vector**
- 2. Cosmids**
- 3. YAC**
- 4. Micro injection**
- 5. Genetically Engineered foods**
- 6. RAPD**
- 7. Bio fuels**
- 8. Bio plastics**

## **PART-B**

**ANSWER ALL QUESTIONS EACH CARRIES TEN MARKS**

**5X10=50 MARKS**

9(a) What are the different types of Restriction Enzymes

**OR**

9(b) How do we construct a cDNA library

10(a) What are different methods to create transgenic animals

**OR**

10(b) Write about the Applications of transgenic animals in agriculture, medicine and pharmaceuticals.

11(a) What are the different ways to modify genes in plants

**OR**

11(b) How is Genetic Engineering useful in crop improvement

12(a) Write about the different gene transfer methods in micro organisms

**OR**

12(a) Explain Transposons

13(a) What is Bioremediation and Biodegradation

**OR**

13(b) Write about the Principle and Applications of Biosensors



**MODEL PAPER**

**B.Sc BIOCHEMISTRY revised syllabus under CBCS**

**Domain Subject: BIOCHEMISTRY**

**Skill Enhancement Courses (SECs) for Semester V from 2022-23**

**SEC Bioinformatics**

**TIME : 3 HOURS**

**MAXIMUM :75M**

**PART-A**

**ANSWER ANY FIVE OF THE FOLLOWING QUESTIONS.**

**EACH CARRIES FIVE MARKS**

**5x5=25 MARKS**

1. DNA Microarray
2. NCBI
3. KEGG
4. PAM 250
5. BLAST
6. CLUSTAL W
7. 2-D database
8. Gel Analysis

## **PART-B**

**ANSWER ALL QUESTIONS EACH CARRIES TEN MARKS**

**5X10=50 MARKS**

**9(a) What are the different methods of Genome Annotation**

**OR**

**9(b) What is Computer aided drug design in Bioinformatics**

**10(a) What are the different Nucleotide data bases**

**OR**

**10(b) Briefly discuss about the different Protein databases**

**11(a) Discuss about the concept of pairwise sequence alignment**

**OR**

**11(b) Write about Multiple sequence alignment and its applications**

**12(a) What do you know about Human Genome Project**

**OR**

**12(b) Discuss about the Mycobacterium Genome project**

**13(a) What is a MALDITOF used for**

**OR**

**13(b) Discuss about the Significance and applications of proteomics in modern biology.**

# Andhra University

IV Year B.A/B.SC (Hons) - Semester-V

Domain Subject: Mathematics

Course - 6A: Numerical Methods

(Skill Enhancement course (Elective))

Max. Marks: 75

Time: 3 hrs

## SECTION - A (Total: 10 Marks)

Very short Answer questions (10 Marks:  $5 \times 2$ )

1. prove that  $\sqrt{1 + \delta^2 u^2} = 1 + \frac{1}{2} \delta$ .
2. show that  $(1 - \nabla)(1 + \Delta) = 1$ .
3. write down Newton's Gregory formula for forward interpolation with equal intervals.
4. write down Stirling's difference formula.
5. write down the trapezoidal rule.

## SECTION - B (Total: $5 \times 5 = 25$ Marks)

(Answer any five questions. Each answer carries 5 marks)

6. Evaluate  $\frac{\Delta^2}{E} \sin(x+h) + \frac{\Delta^2 \sin(x+h)}{E \cdot \sin(x+h)}$

7. Find the missing term of the following data.

$x$	1	2	3	4	5	6	7
$y$	2	4	8	?	32	64	128

8. obtained the polynomial which takes the following values

$x$	0	1	2	3
$y$	1	0	1	10

Hence find  $y(4)$ .

9. Using Lagrange's formula find  $f(2)$  from the given data

$x$	0	1	3	4
$f(x)$	5	6	50	105

10. If  $y(1) = 4$ ,  $y(3) = 12$ ,  $y(4) = 19$  and

$y(x) = 7$  then find  $x$ .

11. Evaluate  $I = \int_0^1 x^3 dx$  with five subintervals by using trapezoidal rule.

12. Solve the equation  $y' = x + y^2$  with  $y_0 = 1$  when  $x = 0$ .

13. Solve  $\frac{dy}{dx} = 1 + y^2$ ,  $y(0) = 0$  by using Picard's method.



# SECTION-C (Total: $5 \times 8 = 40$ Marks)

(Answer All the questions. Each question carries 8 Marks)

14. (a) state and prove fundamental theorem on difference calculus.

(8)

(b) Form a table of differences from the function

$f(x) = x^3 + 5x - 7$  for  $x = -1, 0, 1, 2, 3, 4, 5$  and continues the table to obtained  $f(6)$  and  $f(7)$ .

15. (a) state and prove Newton's Gregory backward interpolation formula with equal intervals.

(8)

(b) Find the value  $\sin 52^\circ$  from the given table.

$\theta$	$45^\circ$	$50^\circ$	$55^\circ$	$60^\circ$
$\sin \theta$	0.7071	0.7660	0.8192	0.8660

16. (a) state and prove Newton's divided difference formula.

(8)

(b) Using Newton's divided difference formula calculate the value of  $f(6)$  from the following data

$x$	1	2	7	8
$f(x)$	1	5	5	4

17. (a) From the following table find the values of  $\frac{dy}{dx}$  and  $\frac{d^2y}{dx^2}$  at  $x = 2.03$ .

$x$	1.96	1.98	2.00	2.02	2.04
$y$	0.7825	0.7739	0.7651	0.7563	0.7473

(३१)

(b) using Stirling formula find  $f'(1.22)$  from the following data.

$x$	1.0	1.1	1.2	1.3	1.4
$f(x)$	2	12	36	56	94

18. (a) Evaluate  $\int_0^1 \frac{1}{1+x} \cdot dx$  by trapezoidal rule.

(३)

(b) Using Taylor's series for  $y(x)$ , find  $y(0.1)$  correct to four decimal places. If  $y(x)$  satisfies  $y' = x - y^2$ ,  $y_0 = 1$  when  $x_0 = 0$ .

Cslw  
2.2 || 22

Prof. Ch. Srinivasa Rao (HOD)  
Dept. of Statistics  
Ch. Srinivasa Rao  
K. Srinivasa Rao

**ANDHRA UNIVERSITY**  
**2<sup>nd</sup> YEAR B.Sc., V SEMESTER**  
**CBSC SEMESTER SYSTEM WITH EFFECT FROM 2020-2021**

**Subject: ELECTRONICS**

**Paper: MICRO CONTROLLER AND INTERFACING**

**Time: Three Hours**

**Maximum Marks: 75**

**Section A,**

**Answer ANY FIVE questions,**

**5 × 5 = 25 Marks**

1. List any four features of microcontrollers.
2. Draw the Von-Neumann CPU Architecture.
3. State the need of instruction set.
4. List the difference between RISC and CISC CPU Architectures.
5. What is debugging?
6. Draw the pin diagram of 8051 micro troller.
7. List the any six features of microcontrollers.
8. What is the use of stepper motor?

**Section B,     Answer ALL questions (Internal Choice),**

**5 × 10 = 50 Marks**

9. (a) (a) Explain the following terms  
(i) Assembler            (ii) Compiler    (iii) Simulator/Debugger  
(or)
9. (b) List the difference between Microprocessors and Microcontrollers.
10. (a) Draw the functional block diagram of 8051 microcontroller and explain the function of each block.  
(or)
10. (b) Explain Memory Organization.
11. (a) State and explain the various addressing modes of 8051.  
(or)
11. (b) Explain the logical instructions of 8051 with examples.
12. (a) Write a Assemble language programming to arranging a given set of numbers in Ascending order.  
(or)
12. (b) Write a Assemble language programming to find the cube of an 8-bit number.
13. (a) Draw and explain the interfacing of a driver circuit required to run a Stepper Motor using 8051 Microcontroller.  
(or)
13. (b) Draw the interfacing diagram of 16X2 LCD module with 8051.

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**6 A – Techniques in Nursery Development**

**Max Marks: 75**

**Time: 3 hrs**

**SECTION A (Total Marks: 15 Marks)**  
**Very Short Answer Questions (5x2= 10 Marks)**  
**Answer ALL questions**

1. Importance of Nursery
2. Define Nursery media
3. What are the different sowing methods
4. Supply of water to Nurseries
5. Types of Grafting

**SECTION B (Total Marks: 25 Marks)**  
**Short Answer Questions (5x5= 25 Marks)**  
**Answer any FIVE questions**

1. What are the basic requirement for a Nursery
2. Name the container tools used in Nursery
3. Write about the different sowing methods
4. Name the techniques in Vegetative Propagation
5. Mention the methods of Removal of seeds
6. Write a note on the Steps involved in simple grafting
7. What are the different types of Nursery beds
8. Explain the Seasonal operation in Nurseries

**SECTION C (Total Marks: 40 Marks)**  
**Essay Answer Questions (4x10= 40 Marks)**  
**Answer any FOUR questions**

1. Write about types of Nurseries and BIS-2008 related to Nursery
2. Describe the types of Nursery beds and their preparation
3. Explain the different techniques of vegetative propagation
4. Elaborate the process of identification of Pests and Diseases
5. Write about the steps involved in different types of grafting
6. Describe the electrical equipment and tools utilized in Nurseries

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**7 A – Hydroponics Cultivation**

**Max Marks: 75**

**Time: 3 hrs**





**SECTION A (Total Marks: 15 Marks)**  
**Very Short Answer Questions (5x2= 10 Marks)**  
**Answer ALL questions**

1. Status of hydroponics
2. Define essential minerals
3. Define static solution
4. Micro nutrients
5. Define passive sub irrigation

**SECTION B (Total Marks: 15 Marks)**  
**Short Answer Questions (5x5= 25 Marks)**  
**Answer any FIVE questions**

1. Write about the origin of Soilless culture
2. Explain pest management
3. Selection procedure for fertilizers
4. Write the composition of Vermiculite media
5. Write a note on Chain irrigation method
6. What are the applications of Soilless cultivation
7. Mention the deficiency symptoms of S, Fe, Mn, Cu, Zn & Mo
8. Write a note on the technique Continuous solution culture

**SECTION C (Total Marks: 40 Marks)**  
**Essay Answer Questions (4x10= 40 Marks)**  
**Answer any FOUR questions**

1. Write a note on the present status of hydroponics and list the differences with soil based culture.
2. Describe the effect of physical factors, light, temperature, Humidity, CO<sub>2</sub>, ppm, pH and TDS on Hydroponics cultivation.
3. Explain the different types of media used for Hydroponics cultivation.
4. Describe the techniques in hydroponics.
5. Explain the Deep water protocols for the cultivation of Tomato, Chilly and Spinach. Write a note the measurement of yield.
6. Define Essential Minerals and Write down about functions & deficiency symptoms in plants

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**6 B – Organic Farming**

**Max Marks: 75**

**Time: 3 hrs**

**SECTION A (Total Marks: 10 Marks)**  
**Very Short Answer Questions (5x2= 10 Marks)**  
**Answer ALL questions**

1. Methods of Reclamation



2. Micro nutrients
3. Mixed farming system
4. Bio fertilizer
5. Compost

**SECTION B (Total Marks: 15 Marks)**  
**Short Answer Questions (5x5= 25 Marks)**  
 Answer any FIVE questions

1. Explain the composition of Soil
2. Write about functions of Micro nutrients
3. Explain the Concept of Organic farming
4. What are the Types of Compost
5. Write about Breeding Goals
6. Ecto Mycorrhizae
7. Describe the role of microorganisms in organic farming
8. Chemical Fertilizers

**SECTION C (Total Marks: 40 Marks)**  
**Essay Answer Questions (4x10= 40 Marks)**  
 Answer any FOUR questions

1. Describe the Types of Soils and their characteristics.
2. Explain the Methods of Reclamation
3. Elaborate on the Importance of Organic and Biofertilizers
4. Write a note on Crop nutrients and Effects of microorganisms in Organic Farming
5. Define compost and explain the Types of compost
6. Describe the Mechanism of  $N_2$  Fixation

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**7 B – Bio fertilizers and Bio pesticides production**

**Max Marks: 75**

**Time: 3 hrs**

**SECTION A (Total Marks: 10 Marks)**  
**Very Short Answer Questions (5x2= 10 Marks)**  
 Answer ALL questions

1. Define Biofertilizer
2. Types of mycorrhizae
3. *Bacillus Thurengensis*
4. Biopesticide



**SECTION B (Total Marks: 15 Marks)**  
Short Answer Questions (5x5= 25 Marks)  
Answer any FIVE questions

1. Write about Concept of Biofertilizer in India
2. Explain the mechanism of Phosphorous Solubilization
3. What is the significance of Biopesticide
4. Dosage Standardization of seed
5. Algal Biofertilizers
6. Write a note on types of media
7. Inoculum carriers
8. Packing techniques of Biofertilizers

**SECTION C (Total Marks: 40 Marks)**  
Essay Answer Questions (4x10= 40 Marks)  
Answer any FOUR questions

1. Describe the mechanism of Nitrogen Fixation
2. Define Biopesticide and Write the importance of biopesticides
3. Describe the mechanism of action of Viral Biopesticide as Biocontrol Agents
4. Write a note on Mass production of Biofertilizers and Packing Techniques
5. Write about the different types of inoculum carriers and add a note on dose standardization
6. Describe the types of biofertilizers and their significance.

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**6 C – Apiculture**

**Max Marks: 75**

**Time: 3 hrs**

**SECTION A (Total Marks: 10 Marks)**  
Very Short Answer Questions (5x2= 10 Marks)  
Answer ALL questions

1. Bee colony
2. Apiary
3. Bee wax
4. Bee enemies
5. Honey

**SECTION B (Total Marks: 15 Marks)**  
Short Answer Questions (5x5= 25 Marks)  
Answer any FIVE questions

1. Mention the Classification of Honey bees
2. Write about the Enemies of Honey bee
3. What are the future prospects of Apiculture
4. Elucidate the life cycle of bee
5. List out the present and future perspectives of Bee keeping industry
6. Explain the types of beehives
7. Pollen as a byproduct of apiculture
8. Significance of bee keeping industry

**SECTION C (Total Marks: 40 Marks)**  
**Essay Answer Questions (4x10= 40 Marks)**  
**Answer any FOUR questions**

1. Describe the classification and the social organization of Bee colony
2. Explain Artificial Bee rearing process
3. What are the Control and Preventive Measures of bee diseases & Enemies
4. Describe the products of Apiculture. Add a note on their uses
5. Explain the role of bees in cross pollination in horticulture and agriculture
6. Explain the different types of Beehives

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**7 C – Pearl Culture**

**Max Marks: 75**

**10**

**Time: 3 hrs**

**SECTION A (Total Marks: 10 Marks)**  
**Very Short Answer Questions (5x2= 10 Marks)**  
**Answer ALL questions**

1. Define pearl culture
2. Chemical composition of Pearl
3. Selection of Oysters
4. Name the disease of Pearl oyster
5. Mother Oyster Collection

**SECTION B (Total Marks: 25 Marks)**  
**Short Answer Questions (5x5= 25 Marks)**  
**Answer any FIVE questions**

1. Elucidate the History of Mantle
2. Write the composition of Pearl producing Molasses
3. Explain Pearl Oyster Baskets
4. Describe the Environmental Parameters effecting oyster culture



5. Describe the procedure for Harvesting of Pearl
6. Predator of Pearl Oyster
7. Describe the Nucleus insertion procedure in oyster surgery
8. Explain the Morphology of Pearl Oyster

**SECTION C (Total Marks: 40 Marks)**  
**Essay Answer Questions (4x10= 40 Marks)**  
**Answer any FOUR questions**

1. Explain Lifecycle of Pearl Oyster
2. Describe Natural Formation of Pearl
3. Explain the Techniques of Pearl Oyster Culture
4. Describe the Collection and Rearing of Oysters
5. Elucidate Prospects and Problems of Pearl Industry in India

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**6 A – Techniques in Nursery Development**

**Max Marks: 75**

**Time: 3 hrs**

10  
**SECTION A (Total Marks: 15 Marks)**  
**Very Short Answer Questions (5x2= 10 Marks)**  
**Answer ALL questions**

1. Objectives of Nursery
2. Name types of Nursery beds
3. Seasonal operation in Nurseries
4. Define Vegetative Propagation
5. Define Grafting

✓  
**SECTION B (Total Marks: 15 Marks)**  
**Short Answer Questions (5x5= 25 Marks)**  
**Answer any FIVE questions**

1. Write about objectives and importance of Nursery
2. Write about the electrical equipments used in Nursery
3. What is the procedure involved in Selection of Seeds
4. Name of the types of Nutrition in Nursery
5. What are the different methods for Supply of water and Nutrients
6. List the Tools used for Grafting
7. Name the techniques in Vegetative Propagation
8. Explain the types of Grafting

**SECTION C (Total Marks: 40 Marks)**  
**Essay Answer Questions (4x10= 40 Marks)**  
**Answer any FOUR questions**

1. Explain about the layout & components of a good Nursery
2. Write about the electricity equipment and Nursery machinery management
3. Elaborate the use of different plant parts for vegetative propagation
4. Explain the Control and prevention methods for Pests and Diseases
5. Explain the grafting of Horticulture and floriculture crops and their applications
6. Describe the different sowing methods

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**7 A – Hydroponics Cultivation**

**Max Marks: 75**

**Time: 3 hrs**



**SECTION A (Total Marks: 10 Marks)**  
Very Short Answer Questions (5x2= 10 Marks)  
Answer ALL questions

1. Define hydroponics
2. Photoperiodism
3. Define aeroponics
4. Define media
5. Macro nutrients

**SECTION B (Total Marks: 25 Marks)**  
Short Answer Questions (5x5= 25 Marks)  
Answer any FIVE questions

1. Explain Soilless Culture
2. Write about weed management
3. Explain EBB
4. What are the physical factors that effect Hydroponics cultivation
5. Write a note on the technique Static solution culture
6. Explain the future developments in Soilless culture
7. Mention the deficiency symptoms of N, P, Mg, Ca & K
8. Write the protocol for Spinach cultivation through raft system

**SECTION C (Total Marks: 40 Marks)**  
Essay Answer Questions (4x10= 40 Marks)  
Answer any FOUR questions

1. Write a note on Application and future development of Hydroponics
2. Define Essential Minerals and Write down about functions & deficiency symptoms in plants
3. Elaborate the selection procedure of Fertilizers and Medicine used in Hydroponics
4. Explain the Continuous flow solution culture and Aeroponics
5. Describe the procedure of cultivation of crop plants by hydroponics
6. Write the history, origin and applications of Soilless culture.

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**6 B – Organic Farming**

**Max Marks: 75**

**SECTION A (Total Marks: 10 Marks)**  
Very Short Answer Questions (5x2= 10 Marks)  
Answer ALL questions

**Time: 3 hrs**



1. Define soil
2. Macro nutrients
3. Definition for organic farming
4. Vermicompost
5. Rhizobium

**SECTION B (Total Marks: 15 Marks)**  
 Short Answer Questions (5x5= 25 Marks)  
 Answer any FIVE questions

1. Write about Soil formation
2. What is the significance of Biofertilizers
3. Explain the Benefits of Organic Farming
4. Cyanobacteria
5. Write a note on Inter cropping
6. Field application methods of Vermicompost
7. Explain the mechanism of Phosphorous Solubilization
8. Effect of Chemical dependent farming on yield and soil health

**SECTION C (Total Marks: 40 Marks)**  
 Essay Answer Questions (4x10= 40 Marks)  
 Answer any FOUR questions

1. Describe the Distribution of soil groups in India
2. Explain the Types of fertilizers
3. Define Organic farming and List the Benefits of Integrated Farming System
4. Explain about Vermicompost Procedure and its Field application
5. Write the Characteristic features of Bacterial Biofertilizers
6. What are the different types of compost and their effect on animal health and breeding goals.

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**7 B – Bio fertilizers and Bio pesticides production**

**Max Marks: 75**

**10**

**Time: 3 hrs**

**SECTION A (Total Marks: 10 Marks)**  
 Very Short Answer Questions (5x2= 10 Marks)  
 Answer ALL questions

1. Nodule (Root)
2. Consortium
3. Define Biopesticide
4. Carrier based on inoculums
5. Trichoderma viridae



✓  
**SECTION B (Total Marks: 15 Marks)**  
Short Answer Questions (5x5= 25 Marks)  
Answer any FIVE questions

1. Write a note on Mechanism of Nodulation
2. Ectomycorrhiza
3. Mass production of Biofertilizer
4. Describe the Storage and maintenance of Inoculum
5. Describe the methods of isolation of microorganisms
6. Viral based Biopesticides
7. Explain the process of uptake of phosphates by roots
8. Write a note on Symbiotic and Asymbiotic microorganisms

**SECTION C (Total Marks: 40 Marks)**  
Essay Answer Questions (4x10= 40 Marks)  
Answer any FOUR questions

1. Define Biofertilizer and write the Classification of Microorganisms used as Biofertilizer
2. Explain the role of Mycorrhizae as Biofertilizer
3. Describe Consortium Based Inoculum and its Significance
4. Explain the methods of Inoculum of Microorganisms
5. What are the different types of Seed treatment and soil application techniques
6. Write the classification of Biopesticides and describe the mechanism of action of Bacillus thuringensis

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**6 C – Apiculture**

**Max Marks: 75**

**Time: 3 hrs**

✓  
**SECTION A (Total Marks: 10 Marks)**  
Very Short Answer Questions (5x2= 10 Marks)  
Answer ALL questions

1. Define Apiculture
2. Bee Diseases
3. Cross Pollination
4. Propolis
5. Queen Bee

✓  
**SECTION B (Total Marks: 3 Marks)**  
Short Answer Questions (5x5= 25 Marks)





Answer any FIVE questions

1. Write a note on Newton Beehives
2. Beewax composition and uses
3. Explain the indigenous method of honey extraction
4. What are the present status of Bee keeping industry
5. List the control and preventive measures of bee disease
6. Elucidate the social organization of Bee colony
7. Honey composition and uses
8. Explain the modern method of honey extraction

**SECTION C (Total Marks: 40 Marks)**  
**Essay Answer Questions (4x10= 40 Marks)**  
Answer any FOUR questions

1. Explain the Lifecycle of honey bees
2. Describe the methods of extraction of honey (Indigenous & Modern)
3. Explain the Control and Preventive Measures of bee diseases & Enemies
4. Describe the products of Apiculture. Add a note on their uses
5. Elucidate Present and Future role of bees in Horticulture & Apiculture
6. Explain the Prospects of apiculture as self-employment venture

**Four Year B. Sc.**  
**Domain Subject: Biotechnology**  
**IV year B.Sc. – Semester V**  
**7 C – Pearl Culture**

**Max Marks: 75**

**SECTION A (Total Marks: <sup>10</sup>15 Marks)**  
**Very Short Answer Questions (5x2= 10 Marks)**

**Time: 3 hrs**

1. Structure of Mantle
2. Collection of Oysters
3. Graft tissue
4. Biology of pearl oyster
5. Pearl producing Molluscs
6. Post-operative culture

**SECTION B (Total Marks: <sup>26</sup>25 Marks)**  
**Short Answer Questions (5x5= 25 Marks)**



Answer any FIVE questions

1. Elucidate the Anatomy of Pearl oyster
2. Explain the natural process of pearl formation
3. Mention the conditioning for oyster surgery
4. Diseases of pearl oyster
5. Describe the procedure for Rearing of Pearl
6. Fresh Water Pearl culture
7. Describe the post operative culture in oyster surgery
8. Mention the problems of pearl industry in India

**SECTION C (Total Marks: 40 Marks)**

Essay Answer Questions (4x10= 40 Marks)

Answer any FOUR questions

1. Explain morphology and anatomy of Pearl oyster
2. Describe Economic importance of pearls
3. Explain the Techniques of Pearl Culture
4. Describe the steps involved in Pearl Oyster surgery
5. Write a note on the present status, prospects and problems of Pearl industry in India

MODEL PAPER  
ANDHRA UNIVERSITY  
Four- year B A/B Sc  
Domain subject Statistics  
Course 7A OPERATIONS RESEARCH-II  
Skill Enhancement Course (Elective)

Time 3 Hours

Max marks 75

Section-A

Answer all the questions

(5x2=10 Marks)

1. What is loop in transportation problem
2. Define unbalanced assignment problem.
3. What is sequencing problem.
4. Define the nodal activity
5. Define two person zero-sum game

Section-B

Answer any five of the following questions

(5x5=25 Marks )

6. Explain North-West Corner rule method.
7. Explain the transshipment problem
8. Explain the travelling salesman problem.
9. Define an assignment problem and explain assignment problem as a particular case of LPP
10. Explain sequential procedure for solving a 'k' machines to 'n' jobs problem.
11. Distinguish between PERT and CPM
12. Explain the principals of maximin and minimax in game theory
13. How do you solve a game when (a) saddle point exist and (b) saddle point does not exist

### Section-C

Answer all the questions Each carrying equal marks

(5x8=40 Marks )

#### UNIT-1

14 (a) Define transportation problem and explain Vogel's approximation method.

Or

(b) obtain an initial basic feasible solution by using lowest cost method

	D1	D2	D3	Availability
O1	23	14	31	50
O2	17	9	24	20
O3	16	28	19	40
requirement	25	35	50	

#### UNIT-II

15 (a) Explain the algorithm for Hungarian method.

Or

(b) Solve the following assignment problem.

machines

		1	2	3	4
Jobs	A	12	30	45	21
	B	25	15	36	29
	C	19	9	21	35
	D	29	45	19	17

#### UNIT-III

16 (a) Obtain an optimum job sequence and calculate total elapsed time.

Jobs	A	B	C	D	E	F	G
Machine I	3	8	7	4	9	8	7
Machine II	4	3	2	5	1	4	3
Machine III	6	7	5	11	5	6	13

Or

- (b) Explain Johnson's algorithm to obtain optimum sequence for  $n$  jobs two Machines

#### UNIT-IV

17. (a) A small project consists of seven activities for which the relevant data are Given below.

Activity	Preceding activities	Activity duration(days)
A	-	4
B	-	7
C	-	6
D	A,B	5
E	A,B	7
F	C,D,E	6
G	C,D,E	5

- (i) Draw the CPM network and find the project completion time.  
(ii) Calculate total float for each of the activities.

Or

- (b) A small project consists of eight activities with the following relevant Information.

Activity	Immediate predecessor	Optimistic time	Most likely time	Pessimistic time
A	-	1	1	7
B	-	1	4	7
C	-	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D,E	3	6	15
H	F,G	1	2	3

- (i) Draw the PERT network and find out the expected projected completion time.  
(ii) What duration will have 95% confidence for project completion.



## UNIT-V

18 (a) Solve the game by using dominance property

$$\begin{array}{c} \text{Player-B} \\ \text{player-A} \end{array} \begin{bmatrix} 3 & -2 & \dots & 4 \\ -1 & 4 & \dots & 2 \\ 2 & 2 & \dots & 6 \end{bmatrix}$$

Or

(b) solve the following game by using graphical method.

$$\begin{array}{c} \text{Player-B} \\ \text{Player-A} \end{array} \begin{bmatrix} 1 & 2 \\ 5 & 4 \\ -7 & 9 \\ -4 & -3 \end{bmatrix}$$

*P. Gandhi*  
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**MODEL PAPER**  
**ANDHRA UNIVERSITY**  
Four- year B A/B Sc  
Domain subject **Statistics**  
**Course 6A OPERATIONS RESEARCH-I**  
Skill Enhancement Course (Elective)

Time: 3 Hours

Max marks: 75

**Section-A**

Answer all the questions:

(5x2=10 Marks)

1. Define slack variable
2. Define unbounded solution.
3. Define optimal solution
4. Define pivotal element.
5. Define primal problem.

**Section-B**

Answer any five of the following questions

(5x5=25 Marks )

6. Define operations research and write its advantages and limitations. Explain the formulation of LPP.
7. Define feasible solution, objective function, constraints, and non-negative restrictions.
8. Explain the graphical solution for solving a LPP.
9. Explain the standard of LPP.
10. Explain the degeneracy in LPP.
11. Distinguish between primal and dual problem in LPP.
12. Explain the concept of duality.
13. Write a short on post optimality analysis.

**Section-C**

Answer all the questions. Each carrying equal marks

(5x8=40 Marks )

**UNIT-I**

- 14 (a) Explain the origin and development of O R

Or

(b) Solve the following LPP using graphical method.

$$\text{Minimize } Z = 20x_1 + 10x_2$$

Subject to  $x_1 + x_2 \leq 40$

$$x_1 + x_2 \geq 30$$

$$x_1 + x_2 \geq 60$$

$$x_1, x_2 \geq 0$$

#### UNIT-II

15 (a) Explain the simplex method to solve LPP.

Or

(b) Solve the following LPP using simplex method

$$\text{Maximize } Z = 3x_1 + 2x_2$$

Subject to  $x_1 + x_2 \leq 4$

$$x_1 - x_2 \leq 2$$

$$x_1, x_2 \geq 0$$

#### UNIT-III

16. (a) Solve the following LPP using two-phase method.

$$\text{Maximize } Z = x_1 + 2x_2$$

Subject to  $2x_1 + 5x_2 \geq 6$

$$x_1 + x_2 \geq 2$$

$$x_1, x_2 \geq 0$$

Or

(b) Explain Big-M method to solve LPP.

#### UNIT-IV

17. (a) Write dual simplex algorithm

Or

(b) Obtain the dual problem of the following LPP

$$\text{Maximize } Z = x_1 - 3x_2$$

Subject to  $2x_1 - 5x_2 \leq 7$

$$3x_1 + 2x_2 \leq 6$$

$$x_1, x_2 \geq 0$$

## UNIT-V

18 (a) Explain the procedure for variation in the cost vector  $C$

Or

(b) consider the LPP

$$\text{Maximize } Z = -x_1 + 2x_2 - x_3$$

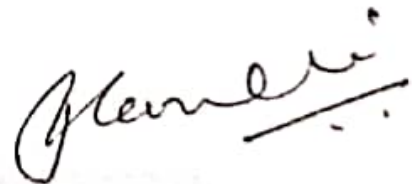
$$\text{Subject to } 3x_1 + x_2 - x_3 \geq 6$$

$$-x_1 + 4x_2 + x_3 \geq 2$$

$$x_2 + x_3 \leq 4$$

$$x_j \geq 0 \text{ for } j=1,2,3$$

determine the ranges for discrete changes in the components  $b$  and  $b$  of the requirement vector, so as to maintain the feasibility of the current optimum solution



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## BHM &amp; CT SEMESTER V

Prof. Indira



**BHM&CT Degree Examinations**  
**Fifth Semester (Under CBCS)**  
**ADVANCE FOOD PRODUCTION-1 (16-A)**  
**(Effective from 2020-2021 Admission Batches)**  
**Time: 3Hrs Maximum: 75marks**

**Section -A**

**Answer any five of the following**

**(5X5=25)**

1. What is Garde Manager?
2. What is Un Conventional Garnishes?
3. Explain about Non-edible Components?
4. What all are the curing agents?
5. Name few Salad dressings?
6. What does it mean by staple food?
7. What all are the Special Ingredients used in European cuisine?
8. Name of the Technology involved in Asian Cuisine?

**SECTION-B**

**Answer all of the following**

**(5X10=50)**

**9 a) Explain briefly about Chinese Cuisine?**

Or

**9 b) Explain briefly about French Cuisine?**

**10 a) Explain about Equipments used in Germany & Italy Cuisines?**

Or

**10 b) What all the Traditional things involved in Japan and Thai Cuisine?**

**11 a) Explain Oriental Cuisine and its historical backgrounds?**

Or

**11 b) Draw Layout of Cold Kitchen, Control of Cold Kitchen & Equipments Used?**

**12 a) Explain about Charcuterie Products briefly?**

Or

**12 b) Write a note on Composition of Salads and its Types ?**

**13a) What is Modern Presentation of Food and its vital role in Industry?**

Or

**13 b) What are the Duties and Responsibilities of a Larder Chef ?**

*BAI*



**BHM&CT Degree Examinations**  
**Fifth Semester (Under CBCS)**  
**ADVANCE ROOM DIVISION MANAGEMENT-II (17-C)**  
**(Effective from 2020-2021 Admission Batches)**  
**Time: 3Hrs Maximum: 75marks**

**Section -A**

**Answer any five of the following**

**(5X5=25)**

1. Training for room division?
2. What is employee development?
3. Define service quality and guest satisfaction?
4. Briefly explain guest satisfaction?
5. Explain guest loyalty
6. What is new setup operations
7. Write about noise control
8. Explain about Odour control?

**SECTION-B**

**Answer all of the following**

**(5X10=50)**

9A) Definition of training? Explain training need analysis

Or

9B) Briefly explain training for new and old employees

10A) Define service quality? Explain about guest retention

Or

10B) Describe the functions of guest satisfaction and guest retention?

11A) Briefly explain guest Loyalty and Culture?

Or

11B) Discuss the importance of guest loyalty in hotels

12A) Explain the importance of housekeeper in new setup operations

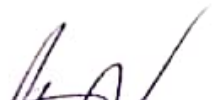
Or

12B) Write down the importance of checklist for new setup operations

13A) Explain about hotel design process

Or

13B) Write about energy management in hotels?



**BHM&CT Degree Examinations**  
**Fifth Semester (Under CBCS)**  
**BANQUETING AND BUFFET MANAGEMENT (16-B)**  
**(Effective from 2020-2021 Admission Batches)**  
**Time: 3Hrs Maximum: 75marks**

**Section -A**

**Answer any five of the following**

**(5X5=25)**

1. Describe the layout and functional of ancillary areas?
2. What are all the different methods of service in function catering?
3. Explain the procedure of toastmaster?
4. Differentiate the equipments and various supplies used in buffet?
5. Write a short note on par stock?
6. Explain the garbage disposal in detail?
7. What is the concept of MICE?
8. Write a short note on service contractors?

**SECTION-B**

**Answer all of the following**

**(5X10=50)**

9A) Briefly explain indenting and maintaining par stocks?

Or

9B) Describe how MICE is important in hospitality industry?

10A) what are the factors to consider while planning an f&b outlet?

Or

10B) Explain the organizational structure of banquet department and draw the format of function prospectus?

11A) How to plan the buffet and explain different types of buffet?

Or

11B) Mention different techniques of selling and how to handle food complaints?

12A) Define off-premises catering in detail and describe informal banquet with different types?

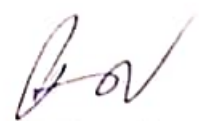
Or

12B) differentiate various kinds of setups in f&b outlets and prepare a list of equipments and do staffing?

13A) Explain the process of booking banquet and write down the required documents?

Or

13B) Explain the budgeting and financial analysis for mice?

  
**Prof. Jaladi Ravi**  
Chairman, BOS  
Bachelor of Hotel Mgt. & Catering Technology



**BHM&CT Degree Examinations**  
**Fifth Semester (Under CBCS)**  
**FOOD & BEVERAGE CONTROLS (17-B)**  
**(Effective from 2020-2021 Admission Batches)**  
**Time: 3Hrs Maximum: 75marks**

**Section -A**

**Answer any five of the following**

**(5X5=25)**

1. Inventory turnover rate?
2. Purchase order form?
3. Blind receiving
4. Bin Card and its objective?
5. Explain modes of storage?
6. Explain FIFO & LIFO
7. What are the various equipments used in receiving department?
8. What are the objectives of inventory management?

**SECTION-B**

**Answer all of the following**

**(5X10=50)**

9A) Write the procedure of control cycle in a Hotel?

Or

9B) Explain the importance of controls in Hotels and write about cycles of a Hotel?

10A) Discuss the factors to be considered in the selection of a supplier?

Or

10B) Discuss about purchasing specification and receiving procedures?

11A) What are duties and responsibilities of a receiving officer?

Or

11B) What are the frauds expected in receiving department?

12A) Explain the storing and issues of suppliers?

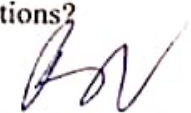
Or

12B) What are the different records maintained by the store department?

13A) Discuss the various prime techniques and methods of inventory control in food and beverage establishment?

Or

13B) What is variance analysis explain the various variance in food service operations?

  
**Prof. Jaladi Ravi**  
Chairman, BOC





**BHM&CT Degree Examinations**  
**Fifth Semester (Under CBCS)**  
**ADVANCE ROOM DIVISION MANAGEMENT-1 (16-C)**  
**(Effective from 2020-2021 Admission Batches)**  
**Time: 3Hrs Maximum: 75marks**

**Section -A**

**Answer any five of the following**

**(5X5=25)**

1. Write the job description for front office staff
2. What is skill training?
3. What is rule of thumb approach
4. Briefly explain about housekeeping inventories?
5. Explain what are guest supplies
6. What are guest loan items
7. Write the concept of revenue management
8. Explain about capacity management?

**SECTION-B**

**Answer all of the following**

**(5X10=50)**

9A) Write the source of internal and external recruiting

Or

9B) Write down the role of executive housekeeper in selecting staff orientation process

10A) Explain about developing job breakdowns for the Housekeeping and Front office job positions

Or

10B) Describe the functions of management with relation to front office and housekeeping department?

11A) Briefly explain about Hubbart formula?

Or

11B) Discuss the role of the housekeeper in planning operating and capital budgets

12A) Explain the importance and calculation of operational statistics

Or

12B) Write down the concept of revenue management for hotel industry applications

13A) Explain developing staffing guides for room attendants, supervisors

Or

13B) Write down the elements of revenue management group room sales ?

  
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Dept. of Commerce and Mgt. Studies





**BHM&CT Degree Examinations**  
**Fifth Semester (Under CBCS)**  
**ADVANCE FOOD PRODUCTION-II ( 17-A)**  
**(Effective from 2020-2021 Admission Batches)**  
**Time: 3Hrs Maximum: 75marks**

**Section -A**

**Answer any five of the following**

**(5X5=25)**

1. Pumpernickel
2. Steak
3. Glaze
4. Flat icing
5. Gateaux
6. Soufflé
7. Mousse
8. Organic Food

**SECTION- B**

**Answer all of the following**

**(5X10=50)**

9A) Describe the procedure for preparation of Sandwich?

Or

9B) Explain any 5 popular Sandwiches?

10A) Define Meringue? Explain the method of preparation of any 3 meringues?

Or

10B) Classify Icings? Explain the process of preparation of butter cream icing?

11A) Explain the faults, remedies, care and precautions for preparation of cakes?

Or

11B) write a brief note on different methods of cake making?

12A) what are frozen desserts? What kind of ingredients necessary for preparation of frozen desserts?


Or

12B) Explain the role of chocolate in Bakery and confectionary?

13A) what are sustainable culinary practices?

Or

13B) Describe the waste disposable systems in hotels?

  
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Dept. of Commerce and Management



**Semester-V**

S. No	Courses	Name of the subject	Total marks	Mid sem exam	Sem end exam	Teaching hours	Credits
1	Core subject	Weed & Water Management (Theory)	100	25	75	4	4
		Weed & Water Management (Practicals)	50	—	50	2	2
2	Core subject	Farm power & Machinery (Theory)	100	25	75	4	4
		Farm power & Machinery (Practicals)	50	—	50	2	2
3	Core subject	Rain fed Agriculture & Water shed Management (Theory)	100	25	75	4	4
		Rain fed Agriculture & Water shed Management (Practicals)	50	—	50	2	2
4	Core subject	Pests of Horticultural Crops & Productive Entomology (Theory)	100	25	75	4	4
		Pests of Horticultural Crops & Productive Entomology (Practicals)	50	—	50	2	2
5	Core subject	Fungicides & Plant disease Management (Theory)	100	25	75	4	4
		Fungicides & Plant disease Management (Practicals)	50	—	50	2	2
6	Core subject	Production Technology for Fruits & Vegetables (Theory)	100	25	75	4	4
		Production Technology for Fruits & Vegetables (Practicals)	50	—	50	2	2
Total			900	150	750	36	36

**ANDHRA UNIVERSITY**  
**B. Vocational course**  
**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year – Semester V**  
**WEED AND WATER MANAGEMENT**  
**(CREDITS 4+2=6)**

**UNIT-I : Weed Biology and Ecology Weeds:**

Introduction, Definitions; harmful and beneficial effects, classification, propagation, dissemination and weed seed dormancy; Weed biology and ecology; Critical periods of crop weed competition and allelopathy. Principles of Weed Management Concepts of weed prevention, control and eradication; Methods of weed management: cultural, mechanical, chemical, biological and biotechnological methods; Integrated weed management.

**UNIT-II : Herbicides**

Herbicides: Definition – advantages and limitation of herbicide usage in India; Herbicide classification, formulations, methods of application; Introduction to Adjuvants and their use in herbicides. Weed management in field crops; aquatic, problematic, invasive alien weeds and their management.

**UNIT-III : Importance and History of Irrigation**

Role of water in plant growth – Importance of irrigation – Water resources and irrigation potential of India – History and development of irrigation in India – Irrigation systems of India. Soil – water– plant relationship – Soil Plant Atmospheric Continuum (SPAC) – Hydrological cycle – Absorption of water – Evapotranspiration  
– Plant water stress and its effect and methods to overcome stress.

**UNIT-IV : Crop Water Requirement and Management**

Crop water requirement – Potential evapotranspiration (PET) and consumptive use – Definition and estimation – Factors affecting water requirement – Effective rainfall – Critical stages for irrigation – Water requirement of crops – Water management for major field crops.

**UNIT-V : Methods of Irrigation**

Scheduling of irrigation – Different approaches – Methods of irrigation: surface, sub – surface, sprinkler and drip irrigation – Micro irrigation: layout, suitability, merits and demerits – Fertigation – Water use efficiency – Methods to improve WUE – Conjunctive use of surface and ground water. Quality of irrigation water – Agronomic practices for use of poor quality water (saline, effluent and sewage water) for irrigation.

## **WEED AND WATER MANAGEMENT (PRACTICAL)**

1. Identification, classification and characterization of terrestrial weeds.
2. Identification, classification and characterization of aquatic weeds and parasitic weeds.
3. Estimation of soil weed seed bank.
4. Identification, classification and characterization of herbicides.
5. Herbicide application techniques and spray equipment.
6. Land leveling and land shaping – Beds and channels – check basin – ridges and furrows-border strips – broad bed furrow method of irrigation.
7. Operation and maintenance of sprinkler irrigation systems and drip irrigation systems.
8. Scheduling of irrigation based on simple techniques and devices.
9. Weed herbarium collection.



**ANDHRA UNIVERSITY**  
**B. VOCATIONAL COURSE**  
**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year Semester- V**  
**Weed & Water Management**  
**MODEL QUESTION PAPER**

**SECTION - A**

Answer any FIVE questions. Each question carries equal marks.

(5\*5=25)

1. Explain briefly about weed seed dormancy.
2. Explain about the different modification structures adopted for dispersal by wind.
3. Explain briefly the role of water in plant growth.
4. Explain the critical period of crop weed competition.
5. Explain plant water stress and its effect and methods to overcome stress.
6. Explain briefly about allelopathy.
7. Explain briefly about the importance of irrigation and explain soil plant atmospheric continuum (SPAC).
8. Mention some critical stages of irrigation in major crops.

**SECTION - B**

Answer all the questions. Each question carries TEN marks.

(5\*10=50)

1. a) explain briefly the principles of weed management.  
(OR)  
b) Explain the different methods of weed control.
2. a) Explain briefly the herbicide classification and its formulation.  
(OR)  
b) Explain the different methods of herbicide application.
3. a) Explain with a neat diagram about the hydrological cycle.  
(OR)  
b) Explain the different irrigation systems of India.
4. a) Mention the water management practices for major crops.  
(OR)  
b) What is water use efficiency? Explain different methods to improve water use efficiency.
5. a) Mention the different methods of irrigation and explain them.  
b) Explain briefly about the agronomic practices for use of poor quality water for irrigation.



**ANDHRA UNIVERSITY**  
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**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year – Semester V**  
**FARM POWER AND MACHINERY**  
**(CREDITS 4+2=6)**

**UNIT I:**

Farm Power in INDIA – Introduction- Different sources of farm power- Merits and demerits of farm sources- status of farm power in India. Farm mechanization- Scope- Concept of farm mechanization Classifications of energy sources- Renewable- Non- renewable- Need of renewable energy sources- Types of renewable energy sources- Solar energy- Wind energy- Biogas

**UNIT II:**

Heat engines- Introduction- Types- External combustion engine- Internal combustion engine- Classification of IC engine - Two stroke and Four stroke engine- Diesel engine- Petrol engine, Components of IC engine. Valve working and valve timing diagram.

**UNIT III:**

Tillage- Objectives- Classification- Primary Tillage and Secondary tillage implements, Types of tillage. Primary tillage implements- Mould board Plough, Disc Plough, Chisel Plough, Subsoiler, Components and Functions, Types, Advantages and Disadvantages.

**UNIT IV:**

Secondary Tillage implement– Harrows- Types- Animal drawn harrow- Tractor drawn harrow, cultivators- Types Land Forming Equipment-Wetland Equipment –Puddlers and Green Manure Trampers - cage wheels.

**UNIT V:**

Planting and fertilizing equipments- Methods of sowing- study of animal drawn seed cum ferti drill- study of tractor drawn seed cum ferti drill. Planters- potato, sugarcane planter, study of intercultivation equipments- weeders.

**FARM POWER AND MACHINERY (PRACTICALS)**

Study of different components of I.C. engine - To study air cleaning and cooling system of engine - Familiarization with clutch – Transmission - Differential and final drive of a tractor - Familiarization with operation of power tiller - Familiarization with different types of primary and secondary tillage implements - Mould plough - Disc plough and disc harrow - Familiarization with seedcum-fertilizer drills their seed metering mechanism and calibration - Planters and transplanter - Familiarization with different types of sprayers and dusters - Familiarization with different inter-cultivation equipment - Familiarization with harvesting and threshing machinery.

**TEXT BOOKS:**

1. Jagdishwar Sahay (1977), Elements of Agricultural Engineering, Standard Publications, New Delhi.
2. Pakirappa and Naresh V (2014), Energy sources and power plant engineering, radiant Publishing House, Hyderabad.
3. Michel A.M, and Ojha T.P, Principles of Agricultural Engineering, Vol.I, Jain Brothers, New Delhi

**ANDHRA UNIVERSITY**  
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**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year Semester- V**  
**FARM POWER AND MACHINERY**

**MODEL QUESTION PAPER**

**SECTION - A**

Answer any FIVE questions. Each question carries equal marks.

(5\*5=25)

1. Write about the concept of Farm mechanisation and its scope in India.
2. Write about the Valve working and draw Valve timing Diagram.
3. What is Tillage? Write about its Objectives and types.
4. Write about Chisel plough and its salient features.
5. Write about the structure of Sub soil plough with Diagram.
6. What is Puddler and write about Open blade type.
7. Write about the structure of Blade harrow with Diagram.
8. Write about Paddy weeder with Diagram

**SECTION - B**

Answer all the questions. Each question carries TEN marks.

(5\*10=50)

1. a) Write about different sources of Farm Power and their merits and De merits.  
(OR)  
b) Write about Renewable sources of energy, its need and elaborate its Types.
2. a) Write about the components of Internal combustion engine with diagrams.  
(OR)  
b) What is Four stroke engine and write about its working with Diagrams.
3. a) What are the components of Mould Board plough? Write about Share and its types  
(OR)  
b) What are the components of Disc Plough and Write about types of Disc plough
4. a) What are the components of Tractor drawn Disc harrow and write about its penetration.  
(OR)  
b) Write about the types of cultivators with Diagrams.
5. a) What is a Seed drill, write about its components and Elaborate the Fluted Feed seed metering mechanism.  
(OR)  
b) Write about the types of Potato planters and Breif about Sugar cane Planter.



**ANDHRA UNIVERSITY**

**B. Vocational course**

**AGRICULTURE**

**2020-21 Admitted Batch**

**III Year – Semester V**

**RAIN FED AGRICULTURE AND WATERSHED MANAGEMENT**

**(CREDITS 4+2=6)**

**UNIT - I**

1. Rainfed agriculture – introduction and definition – dimensions of the problem – area and production from dry lands in India and Andhra Pradesh –History of rainfed agriculture and watersheds in India.
2. Problems and prospects of rainfed agriculture in India – climate – rainfall pattern – distribution – variabilities of rainfall – short rainy season – high intensity rainfall
3. Problems and prospects of rainfed agriculture in India - soil characteristics – soil fertility status –soil moisture storage and retention capacity – heavy weed infestation-soil crust and their effect on crop growth and soils-its management.

**UNIT - II**

4. Drought – definition – types of drought – effect of water deficits on physio- morphological characteristics of the plants- mechanism of crop adaptation under moisture deficit condition - management strategies for drought.
5. Tillage for rainfed crops – off-season tillage – primary tillage –secondary tillage – year round tillage – sub soiling – setline cultivation – modern concepts of tillage- minimum tillage and zero tillage.
6. Soil erosion – definition – losses due to erosion – types of water and wind erosion – nature and extent of wind and water erosion – factors affecting erosion – universal soil loss equation

**UNIT - III**

7. Management of crops in rainfed areas - Agronomic measures of soil and water conservation – choice of crop – crop geometry – tillage – contour cultivation – strip cropping – cover cropping – mulching – cropping systems and weed control - Mechanical measures of soil and water management.
8. Watershed – definition – concept— objectives and principles of water shed management components of watershed development programme – factors affecting watershed management.
9. Water harvesting – importance, its techniques- Water harvesting structures – arid region – runoff farming – water spreading – micro catchments – semi arid region – farm ponds, check dams – percolation tank – dug wells – life saving irrigation

**UNIT - IV**

10. *In-situ* moisture conservation measures – bund forming – bunding, ridge and furrow system – conservation furrows- inter plot water harvesting, mulching – Broad Bed and Furrow (BBF) and leveling.
11. Fertilizer use in rainfed areas – use of organic manures – introduction of legumes in crop rotation– organic recycling and bio-fertilizer use in rainfed agriculture – time and method of fertilizer application
12. Efficient crops and varieties – cropping systems in rainfed areas – intercropping – advantages – efficient inter cropping systems in different rainfed regions of Andhra Pradesh

## UNIT - V

13. Contingent crop planning for aberrant weather conditions in red and black soils.
14. Evapotranspiration – measures to reduce evapotranspiration – weeding, use of mulches, chemicals, windbreaks and shelterbelts
15. Land capability classification – alternate land use system
16. Efficient utilization of water through soil and crop management practices - agronomic measures - mechanical measures for soil and water conservation – gully control – bench terraces – contour terracing – graded bund

## RAIN FED AGRICULTURE AND WATERSHED MANAGEMENT (PRACTICAL)

1. Climate classification.
2. Rainfall analysis - Mean, standard deviation, variance and CV.
3. Onset and withdrawal of monsoons and determination of length of growing crop season.
4. Study on cropping pattern of different dryland areas.
5. Mapping of dryland areas in India.
6. Interpretation of meteorological data for rainfall variability.
7. Scheduling of supplemental irrigation based on crop ET demand.
8. Calculation of effective rainfall.
9. Determination of moisture availability index.
10. Study of cultural practices for mitigating moisture stress ( mulching, plant density, depth of sowing, thinning and leaf removal).
11. Field demonstration on soil & moisture conservation measures.
12. Study of farm ponds as a source of supplemental irrigation.

### References

1. Reddy, S. R. and Prabhakar Reddy, G. 2015. Dryland Agriculture. Kalyani Publishers.
2. Arnon, I. 1972. Crop Production in Dry Regions (Vol.I), Leonard Hill Pub. Co, London.
3. Dhruva Narayana, V.V., Sastry, G.S. and Patnaiak, V.S. 1999. Watershed Management in India. ICAR, New Delhi.
4. Jeevananda Reddy, S. 2002. Dryland Agriculture in India: An agro-climatological and agro-meteorological perspective. B S publications.



**ANDHRA UNIVERSITY**  
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**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year Semester- V**  
**Rainfed Agriculture And Watershed Management**

**MODEL QUESTION PAPER**

**SECTION - A**

**Answer any FIVE questions. Each question carries equal marks (5\*5=25)**

1. Explain about the effect of drought on physio -morphological characteristics of plants.
2. Explain the mechanism of crop adaptation under moisture stress conditions.
3. Explain briefly the management strategies for drought conditions.
4. What is water erosion? Explain the types of water erosion.
5. What is wind erosion? Explain briefly the 3 stages of wind erosion.
6. Explain the principles and objective of watershed management.
7. Explain about the water harvesting structures in arid-region.
8. Explain briefly about mechanical measures of soil and water management.

**SECTION - B**

**Answer all the questions. Each question carries TEN marks. (5\*10=50)**

1. a) What is watershed management? Explain the components of watershed development Programme.  
(OR)  
b) Write briefly about the mechanism of wind and water erosion and write down the universal soil loss equation.
2. a) Explain briefly about crop management practices under rainfed areas.  
(OR)  
b) Explain briefly about the different methods of water harvesting in semi arid regions
3. a) Explain briefly about the different in-situ moisture conservation techniques.  
(OR)  
b) Explain briefly about organic recycling and bio fertilizer use in rainfed areas.
4. a) Explain briefly about tillage operations carried out in rainfed conditions.  
(OR)  
b) Briefly elaborate about the modern concept of tillage.
5. a) Time and method of fertilizer application in rainfed areas.  
(OR)  
b) Briefly explain about the problems and prospects of rainfed agriculture in India.

**ANDHRA UNIVERSITY**  
**B. Vocational course**  
**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year Semester – V**  
**PESTS OF HORTICULTURAL CROPS & PRODUCTIVE ENTOMOLOGY**  
**(CREDITS 4+2=6)**

**UNIT I**

Importance and history of sericulture – organizations involved in sericulture – silkworm types-mulberry cultivation – varieties - morphology of mulberry plant – identification of popular mulberry genotypes – methods of propagation – nursery and main field preparation – planting methods – identification of nutrient deficiency symptoms – identification of weeds – herbicide application methods – irrigation methods and management practices

**UNIT II**

Rearing house – types – disinfection – room and bed disinfectants – egg incubation methods – chawki rearing- rearing of late age worms – spinning – Mounting, mountages – harvesting. Physical and commercial characteristics of Cocoons- Defective cocoons Pests and diseases of silkworm and their management – post cocoon technology – stifling to weaving. By products of sericulture - non –mulberry silkworm

**UNIT III**

Apiculture - Bee species – comparison- castes of bees, Morphology, Biology, bee behaviour and bee dance; Apiary management practices – bee pasturage, foraging, seasonal variations; Bee products, properties and uses; Effect of agricultural inputs on bee activity – pesticide poisoning;

Lac insect- biology- Biology, Behaviour, Host Plants and strains-Inoculation, Harvesting and Processing, natural enemies of lac insect and lac products;

**UNIT IV**

Pests of vegetable crops – Distribution, bionomics, symptoms of damage and management strategies for insect, pest and integrated management of solanaceous, cucurbits, crucifers, root crops, leafy vegetables and bhendi

**UNIT IV**

Pests of fruit crops and Plantation crops– Distribution, bionomics, symptoms of damage and management strategies for insect, pest and integrated management of mango, citrus, banana, guava, sapota, papaya, pomegranate, Coconut and Cashew

**PESTS OF HORTICULTURAL CROPS & PRODUCTIVE ENTOMOLOGY (PRACTICAL)**

1. Identification of Insect Pests, Diseases and Nutrient deficiencies in Mulberry Garden
2. Rearing house and appliances of Silk worm
3. Study of Silk Glands of Silk worm
4. Pests and Diseases of Silk Worm
5. Silk worm Cocoons- Mounting, Harvesting and Stifling
6. Honey bee- Types of Bee Hives, Bee Rearing Equipment and Honey Extraction
7. Insect Pests, Predators and Diseases of Honey Bee
8. Lac- inoculation, Harvesting and Processing
9. Identification of Pests on Solanaceous Vegetable Crops and Bhendi
10. Identification of Pests on Cruciferous and Cucurbit Vegetable crops
11. Identification of Pests on Fruit Crops- mango, citrus, banana, guava and papaya
12. Identification of Pests on Fruit Crops- sapota, pomegranate, Coconut and Cashew nut



**ANDHRA UNIVERSITY**  
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**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year Semester- V**  
**Pests of Horticultural Crops and Productive Entomology**

**MODEL QUESTION PAPER**

**SECTION - A**

**Answer any FIVE questions. Each question carries equal marks.**

**(5\*5=25)**

1. Write about the Planting systems of Mulberry.
2. Write about Nutrient deficiencies and their symptoms in Mulberry.
3. Write about the Pebrine disease of Silk worm.
4. Write about the defective cocoons due to mistakes in rearing and Handling.
5. What is Bee Pasturing and Foraging?
6. Write about the inoculation methods of Lac and its precautions.
7. Write the differences between Chilli upward and downward curl.
8. What are the symptoms and control of Guava T Mosquito Bug and Mealy Bug.

**SECTION - B**

**Answer all the questions. Each question carries TEN marks.**

**(5\*10=50)**

1. a) Write about the Objectives, Precautions and Different types of Pruning in Mulberry.  
(OR)  
b) Write about the Chawki Rearing of Young Silk worms.
2. a) Write about the Physical and Commercial characteristics of Cocoons.  
(OR)  
b) Write about different Species of Honey bee and their characters.
3. a) What are the different types of Lac Harvesting and write briefly about Lac Processing.  
(OR)  
b) Write about the method of injury and Damage symptoms of the following pests.  
1. Brinjal Shoot and Fruit Borer    2. Cucurbit Fruit Fly    3. Cabbage Diamond Back Moth
4. a) Write about the Identification, Method of Injury, Symptoms of damage and the control of Mango Hoppers.  
(OR)  
b) and List out the Major Pests of Bhendi and write about the symptoms of damage and control of fruit borer and whitefly.
5. a) List out the Major Pests of Coconut and Write about the symptoms and control of Black Headed Caterpillar.  
(OR)  
b) Write about the identification marks of the citrus fruit sucking moths, their symptoms of damage and Management.

**ANDHRA UNIVERSITY**  
**B. Vocational course**  
**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year Semester – V**  
**FUNGICIDES AND PLANT DISEASE MANAGEMENT**  
**(CREDITS 4+2=6)**

**UNIT I**

Survival of Plant Pathogen- Dispersal of Pathogen- Active and Passive- Infection process – pre-penetration, penetration and post-penetration. Defense mechanism in plants – structural, induced defense in plants. Host plant resistance.

**UNIT II**

Principles of plant disease management. Physical methods and biological methods. Protection – Classification of fungicides based on chemical nature and method of application. Integrated disease management.

**UNIT III**

Diseases of Cereals, Millets and their Management- Rice, Maize, Sorghum, Bajra and Ragi.

Diseases of Pulses and their Management- Red Gram, Bengal Gram, Black Gram and Green Gram.

**UNIT IV**

Diseases of Oil seeds, Cash crops and their Management- Ground nut, Sun Flower, Castor, Sesamum, Cotton, Sugar cane and Coconut.

**UNIT V**

Diseases of Fruits and Vegetables and their Management- Mango, Papaya, Banana, Citrus, Brinjal, Chilli, Tomato, Bhendi, Cruciferous Crops and Cucurbits.

**FUNGICIDES AND PLANT DISEASE MANAGEMENT (PRACTICAL)**

1. Survey and assessment of important plant diseases
2. Methods of application of fungicides
3. Special methods of application – acid delinting, pseudostem injection, root feeding, pairing and pralinage, trunk injection
4. Mass multiplication of *Trichoderma* spp and method of application
5. Identification of Rice and Millets Diseases
6. Identification of Diseases on Pulses
7. Identification of Diseases on Oil Seeds
8. Identification of Diseases on Commercial Crops
9. Identification of Diseases on Vegetables
10. Identification of Diseases on Fruits



**ANDHRA UNIVERSITY**  
**B. VOCATIONAL COURSE**  
**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year Semester- V**  
**Fungicides and Plant Disease Management**

**MODEL QUESTION PAPER**

**SECTION - A**

Answer any FIVE questions. Each question carries equal marks.

(5\*5=25)

1. Write briefly about Passive dispersal of Plant Pathogen by Insects.
2. What are Phytoalexins, write about their characters with examples.
3. Write about Antibiosis and its types.
4. What is disease resistance and write about types of resistance.
5. Write the Symptoms of Ergot and Downy Mildew of Sorghum.
6. Differentiate Early and late Tikka diseases in Ground nut and give their management.
7. Write about the symptoms, Disease cycle, favourable conditions and management of YMV in Black and Green gram.
8. Write about the symptoms and management of Banana Panama wilt.

**SECTION - B**

Answer all the questions. Each question carries TEN marks.

(5\*10=50)

1. a) Write about the source of survival of pathogens.  
(OR)  
b) Elaborate the 3 stages of Disease Infection Process.
2. a) Write about the Eradication methods in Plant disease management.  
(OR)  
b) Write about classification of fungicides based on chemical nature.
3. a) List out the diseases of Rice with causal organism and write about the symptoms, spread and management of Rice Blast.  
(OR)  
b) List out the diseases of Red gram and write about the symptoms and management of wilt and sterility mosaic diseases.
4. a) List out the diseases of Sugarcane with causal organism and write about the symptoms, spread and management of Red Rot.  
(OR)  
b) List out the diseases of Coconut with causal organism and write about the symptoms, spread and management of Ganoderma Stem rot.
5. a) Write about the symptoms and Management of Chilli Die back and Little leaf of brinjal.  
(OR)  
b) Write about the symptoms and management of Mango Anthracnose and Malformation diseases.

**ANDHRA UNIVERSITY**  
**B. Vocational course**  
**AGRICULTURE**  
**2020-21 Admitted Batch**  
**III Year Semester – V**  
**PRODUCTION TECHNOLOGY FOR FRUITS AND VEGETABLES**  
**(CREDITS 4+2=6)**

Botanical Name – Family – Origin – Area – Production- Improved varieties and cultivation practices such as time of sowing - Sowing - Transplanting techniques - Planting distance - Fertilizer requirements - Irrigation - Weed management - Harvesting - Yield - Storage - Physiological disorders of following crops.

**UNIT – I**

Fruits- Mango, Banana, Citrus, Grape, Guava, Sapota, Papaya and Pomegranate

**UNIT – II**

Importance of vegetables and spices in human nutrition and national economy – Classification of vegetables - 1) Botanical 2) Based on Hardiness 3) Parts Used 4) Method of culture 5) Season.

Tomato, Brinjal, Chilli, Okra and Leafy vegetables (Amaranthus and Gogu)

**UNIT – III**

Cucurbits – Flowering, sex expression, sex ratio - Cucumber, Ridge gourd, Bitter gourd, Bottle gourd  
Melons – Watermelon and Muskmelon

**UNIT – V**

Cole crops- Cabbage and Cauliflower  
Peas and beans (Cluster bean, French bean, Dolichos)  
Root crops (Carrot and Radish)

**UNIT – VI**

Perennial vegetables – Drumstick and Curry Leaf  
Bulb crops – Onion and Garlic

**PRODUCTION TECHNOLOGY FOR FRUITS AND VEGETABLES**  
**(PRACTICAL)**

1. Identification of vegetables and their seeds.
2. Identification of Fruit crops and their seeds.
3. Nursery raising techniques of vegetable crops.
4. Direct seed sowing and transplanting.
5. Study of morphological characters of different vegetables.
6. Study of morphological characters of different Fruits.
7. Intercultural operations in vegetable crops.
8. Fertilizers application methods.
9. Seed extraction methods in vegetables.

10. Seed extraction methods in Fruits.
11. Harvest indices and maturity standards of vegetable crops.
12. Harvesting and preparation for market.

## References

1. Pranab Hazra, A. Chattopadhyay, K. Karmakar and S. Dutta. 2010. *Modern Technology in Vegetable Production*. New India Publishing Agency, New Delhi.
2. Neeraj Pratap Singh, .2007. *Basic Concepts of Vegetable Science*. International Book Distributing Co. New Delhi. Academic Press, New Delhi.
3. Nempal Singh, Singh, D.K., Singh, Y.K. and Virendra Kumar. 2006. *Vegetable Seed Production Technology*. International Book Distributing Co. Lucknow.
4. Prem Singh Arya and S. Prakash 2002. *Vegetables Growing in India*. Kalyani publishers, New Delhi



**ANDHRA UNIVERSITY**  
**B. VOCATIONAL COURSE**  
**AGRICULTURE**

**2020-21 Admitted Batch**

**III Year Semester- V**

**Production Technology for Fruits and Vegetables**

**MODEL QUESTION PAPER**

**SECTION - A**

(5\*5=25)

Answer any FIVE questions. Each question carries equal marks.

1. What is Alternate bearing in Mango and its control measures?
2. Write about the Propagation methods in Banana.
3. What is Papain and write about Papain Extraction..
4. Give the botanical classification of Vegetables.
5. Write about the varieties of Brinjal based on colour and shape of fruit.
6. Write about the flowering and Sex expression in Cucurbits.
7. Write about the Interculture practice in Bitter Gourd.
8. Write about the importance and after care of Drum Stick.

**SECTION - B**

(5\*10=50)

Answer all the questions. Each question carries TEN marks.

1. a) Write briefly about Hybrid varieties of Mango.  
(OR)  
b) Write about the Intercultural operations in Banana.
2. a) Write about different types of propagations in Citrus.  
(OR)  
b) Write about different Training systems in Grapes.
3. a) Write about the Importance of Vegetables in Human Nutrition.  
(OR)  
b) Write about Physiological disorders in Tomato.
4. a) Write about the Harvesting and Physiological Disorders in Cauliflower.  
(OR)  
b) Differentiate between the types of Carrot and Write about the Importance and Classification of Dolichos Bean.
5. a) Write about Cucurbits and List out all the Cucurbitaceous vegetables with Scientific names.  
(OR)  
b) Answer the following
  1. Harvesting, Curing, Storage and Bolting in Onion
  2. Importance of Garlic



**Dairying & Animal Husbandry**  
**3<sup>rd</sup> Year 5<sup>th</sup> Semester**

	Courses	Name of the subject	Total marks	Mid Sem exam	Sem end exam	Teaching hours	Credits
	Core subject	Veterinary Pharmacology (Theory)	100	25	75	4	4
		Veterinary Pharmacology (Practical)	50	--	50	2	2
	Core subject	Dairy Plant Management (Theory)	100	25	75	4	4
		Dairy Plant Management (Practical)	50	--	50	2	2
3	Core subject	Fundamentals of Veterinary Medicine (Theory)	100	25	75	4	4
		Fundamentals of Veterinary Medicine (Practical)	50	--	50	2	2
4	Core subject	Veterinary Clinical Practice (Theory)	100	25	75	4	4
		Veterinary Clinical Practice (Practical)	50	--	50	2	2
5	Core subject	Basics of Veterinary Surgery (Theory)	100	25	75	4	4
		Basics of Veterinary Surgery (Practical)	50	--	50	2	2
6	Core subject	Veterinary Gynaecology, Obstetrics and AI (Theory)	100	25	75	4	4
		Veterinary Gynaecology, Obstetrics and AI (Practical)	50	--	50	2	2
Total			900	150	750	36	36

**ANDHRA UNIVERSITY**  
**B.Vocational course**  
**Dairying & Animal husbandry**  
**III Year – Semester V**  
**2020-21 Admitted batch**  
**VETERINARY PHARMACOLOGY**  
**Credits(4+2=6)**

**UNIT - 1**

Introduction, historical development, branches and scope of Pharmacology. Sources and nature of drugs. Pharmacological terms and definitions, nomenclature of drugs.

**UNIT - 2**

Principles of drug activity: Pharmacokinetics - Routes of drug administration, absorption, distribution, biotransformation and excretion of drugs.

**UNIT - 3**

Pharmacodynamics - Concept of drug and receptor, dose-response relationship, terms related to drug activity and factors modifying the drug effect and dosage. Adverse drug reactions, drug interactions

**UNIT - 4**

Classification of drugs. History, mechanism and stages of general anaesthesia. Inhalant, intravenous and dissociative anaesthetics.

**UNIT - 5**

Hypnotics and sedatives; psychotropic drugs, anticonvulsants, opioid analgesics, non-steroidal anti-inflammatory drugs, analeptics and other CNS stimulants. Local anaesthetics, muscle relaxants. Euthanizing agents. Fluid therapy.

**PRACTICALS**

Handling and washing of laboratory wares.

Handling and operation of commonly used laboratory instruments. Concept of good laboratory practices (GLP).

Pharmacy appliances. Principles of compounding and dispensing.

Metrology, systems of weights and measures, pharmacy calculations.

Pharmaceutical processes. Pharmaceutical dosage forms.

Prescription writing, incompatibilities.

**Reference books:**

1. Veterinary Pharmacology

Vallachira  
Aravindan

2. Essentials Of Veterinary Pharmacology And Therapeutics

H S  
Sandhu

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**VETERINARY PHARMACOLOGY**  
**Credits(4+2=6)**

**Model paper**

Time: 3hrs

Maximum: 75marks

**SECTION – A**

Answer any **FIVE** questions. Each question carries equal marks. (5X5 = 25)

1. Write about muscle relaxants.
2. Describe in detail about different stages of general anaesthesia.
3. Write in brief about euthanizing agents .
4. Write a short notes on anti tussives.
5. Describe in detail about antidiarrhoeal drugs.
6. Write a short note about bronchodilators
7. Write about non steroid anti- inflammatory drugs in detail.
8. Classify antiparasitic drugs.

**SECTION – B**

Answer **All** the questions. Each question carries **TEN** marks (5X10 = 50)

1. a. Write about different routes of drug administration.  
(or)  
b. write about different factors which effect drug action.
2. a. classify intravenous anaesthetics, local anaesthetics  
(or)  
b. write about fluid therapy.
3. a. Explain in detail about adverse drug reactions.  
(or)  
b. classify different types of purgatives.
- 4 a. Give classification of pencillins in detail.  
(or)  
b. classify aminoglycosides in detail.
- 5 a. write in detail about biotransformation and excretion of drugs.  
(or)  
b. write in detail about drug and receptor, drug - dose response



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**DAIRY PLANT MANAGEMENT**  
**(Credits 4+2=6)**

**UNIT - 1**

Dairy equipment for fluid milk processing – Introduction - The Dairy Plant - Milk Collection or Chilling Centre - Milk Reception and Storage - Pasteurizer and Sterilizer - Homogenizer and Centrifuges - Packaging and Filling - Clean-in-place (CIP) - Cleaning System.

**UNIT - 2**

Dairy equipment for products processing - Objectives – Introduction - Butter and Cheese Making Equipment - Ice-Cream Making Equipment - Evaporators and Dryers.

**UNIT - 3**

Ghee Making Equipment - Khoa Making Equipment - Dahi and Lassi Making Equipment - Paneer, Chana & Casein Making Equipment

**UNIT - 4**

Materials their characteristics and selection of equipment – Objectives – Introduction - Types of Materials - Properties of Materials - Corrosion and its Prevention - Choice of Materials - Milk Handling and Processing Equipment - Selection of Utilities

**UNIT - 5**

Preventive maintenance of dairy plants and machineries - Principles of Preventive Maintenance Development of Plant Maintenance Programme - Guidelines for Effective Lubrication - Care and Cleaning of SS Surface - Care of Pipes and Fittings - Maintenance of Rubber and Gaskets Dairy Building Sanitation Dairy effluent management.

**PRACTICALS:**

Visit to milk collection centre  
Visit to milk chilling centre.  
Visit to various units of dairy plant.  
Hands on training in preparation of various milk products.  
Handling of defferent dairy equipment

**REFERENCE BOOKS:**

Ahmad Tufail. (1990). Dairy Plant Systems Engineering. Kitab Mahal Publisher, Allahabad.  
Anantakrishnan. C.P. and Simha N.N. (1987). Dairy Engineering Technology and Engineering of Dairy Plant operation



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**DAIRY PLANT MANAGEMENT**  
**(Credits 4+2=6)**  
**Model paper**

Time: 3hrs

Maximum: 75marks

**Section - A**

Answer any FIVE questions. Each question carries equal marks. (5x5=25)

1. Describe factors for establishing a dairy plant.
2. Name the facilities available at the collection centre?
3. What are the time and temperature combinations of sterilization process?
4. What is the principle of centrifugation?
5. Explain the operation of churn.
6. Explain process difference in dahi and lassi making.
7. How do we prevent corrosion of metals?
8. Write in detail about Dairy effluent management?

**Section – B**

Answer all the questions. Each question carries TEN marks. (5x10=50)

1. A) What are the basic equipment used in a dairy plant?  
(or)  
B) Write various sections of a dairy plant.
2. A) Describe the differences between a separator and a clarifier.  
(or)  
B) Explain the working of a continuous freezer.
3. A) Explain the working of spray dryer used for milk.  
(or)  
B) Give the working of a homogenizer and explain what are the advantages of homogenization.
4. A) Explain the working of multipurpose process vat used for dahi making.  
(or)  
B) Explain the equipment used for making ghee and khoa.
5. A) Distinguish between internal check up and major overhaul.  
(or)  
B) Describe the importance of proper selection of dairy equipment.

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**III Year – Semester V**  
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**FUNDAMENTALS OF VETERINARY MEDICINE**  
**Credits (4+2=6)**

**UNIT – 1**

History and scope of Veterinary Medicine, concept of animal diseases. Concepts of diagnosis, differential diagnosis, treatment and prognosis.

**UNIT – 2**

General systemic states, hyperthermia, hypothermia, fever, shock, allergy, oedema, coma.

**UNIT – 3**

Etiology, clinical manifestations, diagnosis, treatment of diseases of digestive system, respiratory system, cardiovascular system and urinary system

**UNIT – 4**

Etiology, clinical manifestations, diagnosis, treatment of diseases of nervous, musculoskeletal, haemopoietic system and skin.

**UNIT – 5**

Deficiency diseases caused by deficiency of iron, copper, cobalt, zinc, manganese, selenium, calcium, phosphorus, magnesium, iodine, vitamin A, D, E, B complex, K and C.

**PRACTICALS**

Collection of history and general clinical examination.  
Collection, preservation, packing and dispatch of samples from clinical cases.  
Nasogastric and orogastric intubation in animals.  
Gastric and peritoneal lavage.  
Collection and examination of cerebrospinal fluid. Blood transfusion  
Methods of medication

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**FUNDAMENTALS OF VETERINARY MEDICINE**  
(Credits 4+2=6)  
**Model paper**

Time: 3hrs

Maximum: 75marks

**SECTION – A**

Answer any **FIVE** questions. Each question carries equal marks. (5\*5 =25)

1. Define fever and list out common causes of fever in livestock.
2. Write a note on etiology, symptoms and treatment of anaemia?
3. Write about causes of vomitings and its treatment
4. Write a note on shock in animals
5. Write about pica -causes, symptoms and treatment.
6. Write about rickets and Osteomalacia.
7. Write about common causes of itching/pruritis in dogs?
8. Describe clinical signs of aspiration pneumonia and its treatment?

**SECTION – B**

Answer **All** the questions. Each question carries **TEN** marks(5\*10 =50)

1. Write a detailed note on pericarditis in cattle.

(or)

Write a detailed note on congestive heart failure in buffaloes.

2. Write a detailed note on causes of colic?

(or)

Write a detailed note on blood transfusions?

3. Write in detail about Acute renal failure?

(or)

Write about Haematuria and urinary incontinence in bovines?

4. Write a detailed note on Simple indigestion and its treatment in bovines?

(or)

Write a note on causes, Symptoms and treatment of allergic dermatitis?

5. Enlist the deficiency diseases caused by deficiency of vitamins and discuss in detail of any two?

(or)

Write about concept of diagnosis, differential diagnosis, & treatment?



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**VETERINARY CLINICAL PRACTICE**  
**Credits (4+2=6)**

**UNIT -1**

History and scope of veterinary medicine. Case history  
Dehydration, Fluid therapy

**UNIT -2**

Acid indigestion, Alkaline indigestion, Impaction  
Bloat  
Bovine ketosis  
Mastitis  
Milk fever  
White scours  
Poisoning

**UNIT - 3**

Repeat breeding  
Pyometra  
Dystocia  
Prolapse  
Retention of placental membranes

**UNIT -4**

Wound management  
Abscess  
Maggot wound  
Evisceration of eye balls  
Medial patellar desmotomy  
Horn amputation  
Rumenotomy  
C- section

**UNIT -5**

Preparation of animal for surgery  
Post surgical management

**PRACTICALS**

Disinfection  
Sterilization  
Diagnosis  
Differential diagnosis  
Systemic diseases in large animals  
Metabolic diseases in large animals



### **Reference books:**

1. Text book of clinical veterinary medicine Dr.Amalendu chakravarthi
2. Small animal internal medicine Ettinger
3. Large animal internal medicine Bradford and Smith
4. Hand book for veterinary clinicians Dr.A.U.Bhikane and Dr.S.B.Kawitkar
5. A hand book for veterinary physician V.P. Sapre

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**VETERINARY CLINICAL PRACTICE**  
**(Credits 4+2=6)**  
**Model paper**

Time: 3hrs

Maximum: 75marks

**SECTION – A**

Answer any **FIVE** questions. Each question carries equal marks. (5\*5 =25)

1. Write in detail about scope of veterinary medicine..
2. Write in detail about bloat.
3. Write about case history.
4. Write about poisoning in animals.
5. Discuss in detail about abscess.
6. Write about preparation of animal for surgery.
7. Discuss post surgical management.
8. Write in detail about maggot wound in large animals.

**SECTION – B**

Answer **All** the questions. Each question carries **TEN** marks(5\*10 =50)

1. Write in detail about fluid therapy

(or)

Discuss about history of veterinary medicine

2. Write about mastitis, causes, clinical symptoms, diagnosis, treatment and prevention?

(or)

Write about acid digestion, causes, clinical symptoms, diagnosis, treatment?

3. Write about repeat breeding, causes, clinical symptoms, diagnosis, treatment?

(or)

Write about pyometra, causes, clinical symptoms, diagnosis, treatment

4. Write about milk fever, causes, clinical symptoms, diagnosis, treatment

(or)

Write about horn amputation in large animals

5. Write about prolapse, causes, clinical symptoms, diagnosis, treatment

(or)

Write about various types of wounds in animals

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**III Year – Semester V**  
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**BASICS OF VETERINARY SURGERY**  
**Credits(4+2=6)**

**UNIT - 1**

Introduction: Historical perspective, Definitions. classification of surgery.  
Tenets of Halsted.

**UNIT - 2**

History taking, physical examination. Pre-operative, intra-operative  
and post-operative considerations

**UNIT - 3**

Sterilization and disinfection: Definitions, surgical sterilization, various  
methods of sterilization (Heat, chemical and radiations etc.), disinfections.

**UNIT - 4**

Sutures: Definitions, suturing, factors influencing suturing, characteristics of  
an ideal suture material, types of suture material-absorbable and non-  
absorbable, surgical knots, various suture patterns-apposition, eversion,  
inversion and special.

**UNIT - 5**

Basic surgical affections: Definitions, classification, diagnosis and treatment  
of abscess, tumour, cyst, hernia, haematoma, necrosis, gangrene, burn and  
scald, frost bite. Haemorrhage and hemostasis.

Fractures.

Major surgeries of cattle and dogs.

**PRACTICALS**

Introduction to layout of operation theatre and surgical unit.

Introduction of common surgical equipment and instruments.

Suture materials, surgical knots and suture patterns.

General examination of surgical patients. Preparation of surgical patients.

Other operation theatre routines like sterilization, preparation of theatre,

Surgeon and surgical pack.

Bandaging and basic wound management Demonstration (or Audio visual  
aids) of surgery, control of haemorrhage and suturing

**Reference books:**

A Textbook On Veterinary Surgery and Radiology

Essentials of Veterinary surgery

Dollor's Veterinary surgery

Veterinary surgery

Veterinary Surgery

S.K NANDI

Venugopalan S

Oconnor JJ

E R Frank

Spencer A Johnston

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**BASICS OF VETERINARY SURGERY**  
**Credits(4+2=6)**

**Model paper**

Time: 3hrs

Maximum: 75marks

**SECTION – A**

Answer any **FIVE** questions. Each question carries equal marks. (5\*5 =25)

1. Halsted principles of surgery
2. What is an abscess and how it is differentiated from Cyst, Haematoma, Tumour and hernia.
3. Write in detail about preparation of patient before surgery ?
4. Define sterilization? Write in detail about various methods of sterilization .
5. Write in detail about post operative care of animal.
6. Classify wounds? List out the factors responsible for delayed wound healing.
7. Explain various types of surgeries in animal practice.

**SECTION – B**

Answer All the questions. Each question carries TEN marks (5\*10 = 50)

- 1.a. Non absorbable synthetic suture materials  
(or)  
b. Explain the four phases of wound healing.
  2. a. Different methods of haemostasis  
(or)  
b. write in detail about fractures and also classify them.
- 3.a Treatment for Burns  
(or)  
b. List out various surgical instruments and their uses.
- 4.a write down various surgical affections of pelvic cavity of dog  
(or)  
b. What is hernia? Explain the procedure for operation of umbilical hernia.
- 5.a. write down various surgical affections of abdominal cavity of cattle  
(or)  
b. write in detail about absorbable suturing material



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**III Year – Semester V**  
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**VETERINARY GYNAECOLOGY, OBSTETRICS AND AI**  
**Credits(4+2=6)**

**UNIT -1**

Anatomy of female and male reproductive tract of live stock.  
Puberty and sexual maturity.

**UNIT - 2**

Oestrous cycle and factors affecting the length of the oestrous cycle, problems in oestrus detection and oestrus detection aids.

**UNIT -3**

Pathological affections of ovary, uterine tubes, uterus, cervix, vagina and external genitalia.

**UNIT -4**

Pregnancy diagnosis- Duration of pregnancy -Factors affecting gestation length.

**UNIT -5**

Care and management of pregnant animals. Stages of parturition.  
Forms of female and male infertility in bovines.  
Artificial insemination techniques in farm and pet animals

**PRACTICALS**

Study of female and male genital organs using slaughter house specimens  
Oestrus detection in farm animals  
Techniques of rectal palpation of female reproductive tract  
Gynaecological equipment and instruments  
Vaginal exfoliative cytology and vaginoscopy  
AI equipment and technique  
Vasectomy and castration  
Handling and maintenance of LN2 containers

**Reference books:**

- |  |                          |
|--|--------------------------|
| 1. Veterinary obstetrics and genital diseases<br>J.Roberts             | Stephen                  |
| 2. Applied veterinary gynaecology and obstetrics<br>kumar              | Dr.Pradeep               |
| 3. Veterinary reproduction and obstetrics<br>Arthur                    | Geoffrey H.              |
| 4. Veterinary Reproduction and Obstetrics<br>J. Parkinson & Gary C. W. | David E. Noakes, Timothy |

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**VETERINARY GYNAECOLOGY, OBSTETRICS AND AI**  
(Credits 4+2=6)  
**Model paper**

Maximum: 75marks

Time: 3hrs

**SECTION – A**

- Answer any **FIVE** questions. Each question carries equal marks. (5\*5 =25)
1. Write in detail regarding factors effecting gestational length.
  2. Explain regarding factors that influence puberty and sexual maturity.
  3. Write about different techniques used for pregnancy diagnosis in animals.
  4. Discuss in detail about estrus cycle in bovines.
  5. Write about the pathological affections of ovary in cow?
  6. Draw the diagram of buffalo's female reproductive tract.
  7. Discuss about procedure of artificial insemination in cattle.
  8. Enumerate gestational periods in different species and define the term Gestation

**SECTION – B**

Answer **All** the questions. Each question carries **TEN** marks (5\*10 =50)

1. A) Write in detail about factors effecting gestation lenth.  
(or)  
B) Write about technique of vaginal exfoliative cytology in bitches.
2. A) Discuss about care and management of Pregnant animals  
B) Explain about stages of parturition in cattle.
3. A) Discuss about estrus detection aids used for cattle.  
(or)  
B) Write about handling and maintenance of LN2 containers.
4. A) Discuss in detail regarding Impotentia generandi  
(or)  
B) Discuss in detail about the estrous cycle in bitches.
5. A) Discuss in detail about pathological affections of uterus?  
(or)  
B) Draw diagrams of different cells exposed during vaginal cytology in bitches.