

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE
(AUTONOMOUS)
KAKINADA
(Affiliated to Adikavi Nannaya University)**



BOARD OF STUDIES

**DEPARTMENT OF
FOOD SCIENCE
(2021 – 22)**

(CHOICE BASED CREDIT SYSTEM)

P.R.GOV.T. COLLEGE (AUTONOMOUS) KAKINADA

2021 -2022

BOARD OF STUDIES MEETING –Dt.02-12-2021

DEPARTMENT OF FOOD SCIENCE

The members present have discussed the syllabi and model question papers (Theory and Practical) related to I to VI semesters in Food Science and made the following resolutions.

Resolution I : Resolved to continue CBCS System as instructed by (Commissioner of Collegiate Education) CCE, Vijayawada.

Resolution II: It is resolved to implement 50% external & 50% internal marks from the academic year 2020-2021 for first year students only. 60% external and 40% internal from the academic year 2020-2021 for second- & third-year students.

Resolution III: Resolved to reduce 40 marks of Theory internal to 20 marks for mid exams and 20 marks for co-curricular activities (Seminar / Assignment / Quiz / Group Discussion) and reduce 50 marks of theory internal to 25 marks for mid exams and 25 marks for co-curricular activities (Seminar / Assignment / Quiz / Group Discussion).

Resolution IV: Resolved to conduct Practical Examination also at the end of each semester even for I year II year students.

Resolution V : Resolved to follow the same syllabus and exam pattern for the coming II and III year students.

Resolution VI: Resolved to follow the same syllabus for I year which is prescribed by APSCHE in the near future.

Resolution VII: Resolved to continue two subject electives in Fifth Semester as Advanced Electives (Elective 1-Food Processing and Preservation and elective -2 – Principles of Human nutrition) and in Sixth Semester two Skill Based Electives (Elective 1 – Food product development and quality evaluation and Elective 2 – (Clinical and therapeutic nutrition).

Resolution VIII: Resolved to continue the same paper setters and examiners for all Semesters.(List of Paper setters and Examiner is appended)

Resolution IX: Resolved to include Blue Prints for model question papers for all semesters.

Resolution X: Resolved to encourage the students enroll in credit based online courses in Food Science

Resolution XI: Resolved to initiate certificate course in food science for III year students

P.R. GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
DEPARTMENT OF FOOD SCIENCE

BOARD OF STUDIES MEETING 2021 – 22
CHOICE BASED CREDIT SYSTEM
(WITH EFFECTIVE FROM 2014 – 15)

Time: 2:00 pm to 5:00 pm
Venue: LCD Hall -1

Date: 02-12-2021

The BOARD OF STUDIES Meeting of the Department of Food Science took place at 2:00 P.M. in offline mode in the Department of Food Science P.R.Govt. College (A) Kakinada for the year 2021 – 22.

The following members attended

SI No	Name and affiliation	Designation	Signature
01	Smt.M. Suvarchala Lecturer in Home Science, A.S.D. Govt. Degree College (W), Kakinada	University Nominee	
02	V. Anantha Lakshmi Lecturer in Chemistry G.D.C Pithapuram	Subject Expert	
03	Sri V. Mallikarjuna Sarma Lecturer in Chemistry A.S.D Women's degree college, Kakinada.	Subject Expert	
04	Dr. D. RamaRao Lecture in charge Department of Chemistry P.R.Govt. College, Kakinada	Member	
05	Sri T.V.V Satyanarayana Lecturer in Charge Department of Biochemistry P.R.Govt.College, Kakinada.	Member	
06	Ms. Y. Laxmi Sai Ramya Guest Faculty in Food Science P.R. Govt College, Kakinada	Member	
07	Ms .B.Vineela devi Guest Faculty in Bio Chemistry P.R.Govt College, Kakinada	Member	
08	M.B.S.S. Guru dev B. Sc (FBC) Third year Regd. No. 2201504	Student member	
09	K. Prem sekhar B. Sc (FBC) Third year Regd. No. 2201503	Student member	

P.R.GOV.T. COLLEGE (AUTONOMOUS) KAKINADA
DEPARTMENT OF FOOD SCIENCE
BOARD OF STUDIES MEETING 2021– 22
LIST OF EXAMINERS

S.No.	Name of the Examiner	Subject	Name of the College
1	D.Kalyani	Assistant professor in Biosciences	Adikavi Nannaya University RAJAHMAHENDRAVARM.
2	Dr.P.Jyothi Kumari	Lecturer in Biosciences	St.Theressa Degree College, Eluru
3	Dr.Srirangam	Lecturer in Food Technology	Layola College, Vijayawada
4	G.V.Sowmya	Lecturer in Biosciences	Dr.V.S.Krishna Degree college , Visakhapatnam
5	Dr.Sandeep	Assistant Professor in Biosciences	Gitam University, Visakhapatnam

**ACTION PLAN BOS MEETING -LCD HALL -1 HELD ON 02 -12 -
2021.**

Department activities for the academic year 2021-2022.

Annexure I

**1. Organizing National/ State level seminars/Workshops/
Conferences/ Training Programmes etc., with topics and
other details.**

(Mandatory for each Department)

- i) National Nutrition week- First week of September
- ii) Awareness on FOOD ADULTRATION
- iii) World Nutrition Day – Last week of May
- iv) Food Fest
- v) National Science Day 2021- Last week of February
- vi) Guest lectures
- vii) National seminar in food Nutrition.
- viii) World Vegetarian Day – First week of October

**P.R.GOV.T. COLLEGE (AUTONOMOUS)KAKINADA
DEPARTMENT OF FOOD SCIENCE**

Course Objectives

Objectives:

1. To understand the basic commodities both raw and processed food in food industries and various aspects of their production and distribution.
2. To discuss the qualities and standards of available commodities and their suitability for different purpose.

Objectives:

To enable the students to:

1. Acquire knowledge on the macro and micro constituents of the food.
2. Know the structure and chemical & biological characteristics of constituents of food.

Objectives:

1. To enable the students to understand the necessity of energy and its production in the body.
2. To understand the relationship between nutrition and human well being

Objectives:

1. To help the students to acquire an elementary knowledge about microorganisms, develop an understanding of industry and in maintenance of health
2. To acquire knowledge about the adulterants of food, food born diseases and health hazards.

Objectives:

1. To help the students to acquire an elementary knowledge about Food processing of different foods.
2. To acquire knowledge about the preservation of foods and different techniques of preservation.

Objectives:

1. To enable the students to understand the importance of nutrition in different stages of life cycle
2. To enable the students to understand the nutritional requirements in pregnancy, preschool age, and old age

Objectives:

1. To enable students to develop new food products which are marketable and nutritionally and economically viable.
2. To develop entrepreneurial abilities for small scale food industries.

B. Sc Food Science, Biochemistry and Chemistry Course

PROGRAMME OUTCOMES

For Every degree program expectations are listed out by the institution under the Program Outcomes. For B. Sc Biochemistry, Food Science and Chemistry Stream the following are set as Programme Outcomes.

PO1. Knowledge and understanding of:

1. Students will be able design, conduct experiments, analyze and interpret data for investigating problems in Biotechnology and allied fields.
2. Describe how scientific methodologies are used to conduct experiments products.
3. The students understood the concept of cell and their activities.

PO2. Intellectual skills - be able to:

1. Think logically and organize tasks into a structured form.
2. Assimilate knowledge and ideas based on wide reading and through the internet.
3. Transfer of appropriate knowledge and methods from one topic to another within the subject.
4. Understand the evolving state of knowledge in a rapidly developing field.
5. Construct and test hypothesis.
6. Plan, conduct and write a report on an independent term project.

PO3. Practical skills:

1. Understand the importance of laboratory security as it applies to working with hazardous chemicals, biohazards, recombinant material, and general biotechnology security precautions.
2. Students will evaluate the accuracy of different types of measuring devices to accurately measure a solution. They will statistically analyze their data to determine the best measuring device to use.
3. Characterize isolated DNA and RNA using agarose gel electrophoresis and analyze agarose gel data.
4. Perform basic microbiological techniques such as sterile plating and isolation of single colonies, culturing bacteria in liquid broth.
5. PCR amplify target genomic DNA and ligate into vector and transform bacteria with rDNA.

PO4. Transferable skills:

1. Use of IT (word-processing, use of internet, statistical packages and databases).
2. Communication of scientific ideas in writing and orally.
3. Ability to work as part of a team.
4. Ability to use library resources/Equipment.
5. Time management.

PO5. Problem analysis

1. Identify the taxonomic position of animals
2. Design solutions from medicinal animals for health problems, disorders and disease of human beings /animals which meet the specified needs.
3. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data.

PO6. Environment and sustainability:

1. Understanding of the causes, types and control methods for Environmental Pollution.
2. Application of different life forms in Environmental Remediation.

PO7. Ethics:

1. Apply ethical principles and commit to environmental ethics and responsibilities and norms of the environment

PO8. Individual and team work:

1. Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
2. Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO9. Communication:

1. Communicate effectively on complex group activities and with society at large. Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language Manage projects and in multidisciplinary environments.

PO10. Critical Thinking:

1. Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO11. Effective Citizenship:

1. Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Outcomes

- By the end of 1 year student will acquire the knowledge on raw and processed food in food industries and also know the basics of macro and micro constituents of the food. The student will know the about different constituents of food.
- By the end of I year student will acquire the knowledge understand the necessity of energy and its production in the body and also know the about the adulterants of food, and food born diseases including health hazards.
- By the end of IIIyear student will acquire the complete knowledge of different food products and their processing. He/ She will gain knowledge on the nutritional requirements of different age groups. The student will also acquire the basic knowledge of different applications of food science.

The student finally by the end of the 3rd year course will gain enough knowledge on the food science and will be able to pursue his higher education in the relevant field.

P.R.GOV.T. COLLEGE (AUTONOMOUS) KAKINADA
DEPARTMENT OF FOOD SCIENCE
BOARD OF STUDY MEETING 2021-22
CHOICE BASED CREDIT SYSTEM FOR
ADMITTED BATCH 2021-2022
I YEAR FBC

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
I	I	I	Raw and processed commodities in Food Science	4	2	50	50	100
			Practical – I	2	1	-	50	50
	II	II	Food Biochemistry	4	2	50	50	50
			Practical – II	2	1	-	50	50

P.R.GOVT. COLLEGE (AUTONOMOUS) KAKINADA
DEPARTMENT OF FOOD SCIENCE
BOARD OF STUDY MEETING 2021-22
CHOICE BASED CREDIT SYSTEM
ADMITTED BATCH 2020-2021
II YEAR FBC

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
II	III	III	Human Physiology	4	4	40	60	100
			Practical – III	2	1	15	35	50
	IV	IV	Food Microbiology	4	4	40	60	50
			Practical – IV	2	1	15	35	50
		V	Principles of Human Nutrition	4	4	40	60	100
			Practical – V	2	1	15	35	50

P.R.GOVT. COLLEGE (AUTONOMOUS) KAKINADA
DEPARTMENT OF FOOD SCIENCE
BOARD OF STUDY MEETING 2021-22
CHOICE BASED CREDIT SYSTEM
ADMITTED BATCH 2019-2022
III YEAR FBC SEMESTER -V

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
III	V	V	Food Processing and preservation	3	4	40	60	50
			Practical – V	2	2	15	35	50
		VI	Principles of Human Nutrition	3	4	40	60	100
			Practical – VI	2	2	15	35	50

P.R.GOVT. COLLEGE (AUTONOMOUS) KAKINADA

DEPARTMENT OF FOOD SCIENCE

BOARD OF STUDY MEETING 2021-22

CHOICE BASED CREDIT SYSTEM

ADMITTED BATCH 2019-2022

III YEAR FBC

SEMESTER VI

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
III	VI	Any One paper from VII A or VII B	Product development and Quality Evaluation	3	4	40	60	100
			Practical – VII A	2	2	15	35	50
			Food Safety and Quality control	3	4	40	60	100
			Practical – VII B	2	2	15	35	50
		CLUSTER VIII A	I. Food Biotechnology	3	4	40	60	100
			Practical – VIII-I	2	2	15	35	50
			II. Clinical and Therapeutic Nutrition	3	4	40	60	100
			Practical – VIII-II	2	2	15	35	50
			III. Food analysis and food manufacture	3	4	40	60	100
			PROJECT	2	2	-	50	50

Details of Online courses proposed for the year 2021 – 22

S.No	Name of Online Course	Conducted by	No. of credits
1	Food formulation by fortification (or) Nutrient fortification of foods	UGC	3
2	Food Chemistry	UGC	4
3	Functional foods and Nutraceuticals	UGC	3
4	Bakery and Confectionery	UGC	2
5	Public health nutrition	UGC	2

Details of projects proposed to be undertaken for the year 2021 - 22

Projects:

1. Food Enrichment by formulation (Comparative study with commercialized product)
2. Food adulteration tests of various foods
3. Preparation of natural food colours
4. Nutritional survey of expectant mothers/infants/school children

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GUIDELINES FOR ALLOTMENT OF EXTRA CREDITS

S.No.	Activity	Details of achievement	Credits
1	MOOC Course	SWAYAM /NPTEL /CEC etc., (Course Completion certificate with credits should be produced for the claim of extra credits) 1.Food Nutrition 2.Food Preservation technology 3.Food Microbiology 4.Food Chemistry	Total credits achieved will be considered
2	NCC	B CERTIFICATE	2
		Participation in National Camp after 'B' certificate	3
		C certificate	4
		Adventure camp/RD parade along with 'B'	5
		Failed in B certificate Examination	1
3	Sports	Intercollegiate selection	2
		South zone selection	3
		All India participation	4
		Winning medals in all India competitions	5
4	NSS	40% attendance in regular NSS activities	1
		50% attendance with Community Service	2
		Conduct of survey/Youth exchange/RD	3
5	JKC	Enrollment and training	1
		Campus recruitment local level	2
		MNCs/reputed companies	3
6	Community service	Participation in community service by departments (outreach Programmes)	2
7	Cultural activity	Winning medals at state level-2,	2
		District level-1	1
8	COP/Add on Course	Pass in Certificate Exam-1,	1
		Diploma-2	2
9	Support services	Lead India, Health club, RC and Eco Club etc., participation in various Programmes	1

P.R.GOV.T. COLLEGE (AUTONOMOUS) KAKINADA
FOOD SCIENCE – SYLLABUS
(Raw and processed commodities in Food Science)
SEMESTER – I (PAPER-I)
CHOICE BASED CREDIT SYSTEM
ADMITTED BATCH 2021-2022

Hrs.: 4

CREDITS

– 2

Objectives:

1. To understand the basic commodities both raw and processed in food industries and various aspects of their production and distribution.
2. To discuss the qualities and standards of available commodities and their suitability for different purpose.

Module – I

Cereal and cereal products: Structure of wheat and rice, composition and nutritive value uses in variety of preparations, milling of wheat, milling of rice and parboiled rice, products of cereals.

Pulses and legumes: Composition and nutritive value, processing of pulses, uses in variety of preparations, effect of cooking.

Module – II

Milk and milk products: Composition, quality, uses nutritional aspects. Products: processed milk, curd, buttermilk, paneer, cheese and ice cream.

Egg: Production, nutritive value, structure, composition, evaluation of egg quality, grading effect of heat on egg proteins.

Module – III

Fish, meat and Poultry: Classification, composition and nutritive values, changes during cooking

Vegetables and fruits: Vegetables- Classification, composition, nutritive value, cole crops – Cabbage, cauliflower, root vegetables, leafy vegetables. Fruits: composition, classification, tropical and subtropical fruits- amla, avocado, banana, dates, guava, jackfruit, jambu fruit, mango, papaya, passion fruit, pineapple, pomegranate, sapota dry fruits, fruit products – jams, gels, marmalade.

Module – IV

Sugars and Sugar products: Nutritive value, khandasari sugar, raw sugar, boiled sugar, sugar related products, liquid sweetness, and sugar boiled confectionary.

Spices and condiments: Classification, flavoring extracts, major spices of India and its uses (pepper, cardamom, ginger, chillies, coriander, cumin, cinnamon, fenugreek, garlic, mace and nutmeg, mustard, saffron, cloves, asafetida and uses. Flavor constituents of spices.

Tea and coffee: Classification, composition, preparation of tea products. Coffee making, Soluble coffee.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
I SEMESTER (PAPER-I)
MODEL QUESTION PAPER
ADMITTED BATCH 2021-2022

Time : 2 Hours.

Marks:50M

PART – I

Answer any THREE questions choosing at least ONE question from each section. 10x3=30M

SECTION – A

1. Describe the uses of rice and wheat in variety of preparations. Write their nutritional values.
2. Write an account on various products of milk.
3. Write the nutritive value and structure of egg.

SECTION – A

4. Classify various types of vegetables giving examples and mention the nutrient values.
5. Describe the role of sugar and sugar products in food.
6. Explain uses of major spices of India.

PART – II

Answer any FOUR questions. (Short answer questions)

Marks: 4x5=20M

7. Write a note on nutritional aspects of pulses?
8. Write about milling of wheat and rice?
9. How do you evaluate the quality of egg?
10. Write a brief note on poultry?
11. Give the importance of fruit in food for the maintenance of health.
12. Write about sugar boiled confectionary.
13. Write the composition of Tea and Coffee?

P.R.GOVT. COLLEGE (a), KAKINADA
CHOICE BASED CREDIT SYSTEM
Raw and processed commodities in Food Science
BLUE PRINT FOR QUESTION PAPER SETTER

Time : 2 Hours.

Marks:50M

MODULENO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	20
MODULE – II	02	01	25
MODULE – III	01	02	20
MODULE – IV	02	02	30
Total no. of questions	06	07	
Total marks including choice			95

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (Qualitative and Quantitative Analysis)
PRACTICAL SYLLABUS
AT THE END OF I - SEMESTER (PAPER-I)

Hrs.: 2

Credits : 1

1. Standardization of Sodium hydroxide.
2. Standardization of Hydrochloric acid
3. Standardization of Sodium thiosulphate
4. Standardization of Potassium permanganate
5. Standardization of EDTA solution
6. Standardization of Fehling's solution

P.R.GOV.T. COLLEGE (A), KAKINADA

CHOICE BASED CREDIT SYSTEM

I SEMESTER (PAPER-I)

Raw and processed commodities in Food Science

Question Bank

Essay Questions (10M)

Module –I

1. Describe the uses of rice and wheat in variety of preparations. Write their nutritional values?
2. Describe the composition, nutritive values and processing of pulses?

Module - II

1. Write an account on various products of milk?
2. Write the nutritive value and structure of egg.
3. Describe the structure and evaluation of egg quality?

Module - III

1. Write an account on composition and nutritive value of fish?
2. Write an account on classification, composition, and nutritive values of meat?
3. Classify various types of vegetables giving examples and mention the nutrient values?

Module - IV

1. Describe the role of sugar and sugar products in food?
2. Describe the classification, composition, and preparation of tea products?
3. Write about the nutritive value of different sugar products?
4. Explain the uses of major spices in India?

Short Answer Questions (5M)

Module - I

1. Write a note on nutritional aspects of pulses?
2. Write a note on nutritional aspects of legumes?
3. Write a note on processing of pulses?
4. Write about milling of wheat and rice?

Module - II

1. How do you evaluate the quality of egg?
2. Write about the grading effect of heat on egg proteins?
3. Write a note on nutritional aspects of milk.

Module - III

1. Write a brief note on poultry?
2. Give the importance of fruit in food for maintenance of health?
3. Write a note on cole crops?
4. Write a note on tropical fruits?
5. Write a note on subtropical fruits?

Module - IV

1. Write about sugar boiled confectionary?
2. Write the composition of tea and coffee?
3. Write a note on khandasari sugar and boiled sugar?
4. Write about the uses of different spices in India?
5. Write about the flavor constituents of spices?

P.R.GOV.T. COLLEGE (A) KAKINADA
FOOD SCIENCE – SYLLABUS (FOOD BIOCHEMISTRY)
CHOICE BASED CREDIT SYSTEM
SEMESTER – II (PAPER-II)
ADMITTED BATCH 2021-2022

Hrs.: 4

Credits : 2

OBJECTIVES:

To enable the students to:

- a. Acquire knowledge on the macro and micro constituents of the food.
- b. Know the structure and chemical & biological characteristics of constituents of food.

Module – I

CARBOHYDRATES

Classification with examples, nomenclature briefly, study of important properties of Glucose, Fructose, Sucrose, Lactose & Galactose – sources, functions, deficiency, and toxicity. Industrial laboratory preparation of glucose and fructose. Inversion of sucrose. Structure of starch, cellulose, glycogen, pectin. Gelatinization of starch.

Module – II

PROTEINS

Amino acids, peptides and proteins classification of amino acids, structure, zwitter ion, isoelectric point, amphoteric property. Peptide bond, naming of peptide chain, biological roles. Classification of proteins according to shape, composition and solubility structure with examples. Chemical bonds involved in protein structure. General properties of proteins, sources, biological functions, deficiency and toxicity. Estimation of protein by paper electrophoresis and paper chromatography.

Module – III

LIPIDS

Definition, classification with examples, composition, fatty acids; saturated and unsaturated & essential fatty acids, flavor changes in fats and oils, hydrolytic and oxidative rancidity; mechanism of auto oxidation of fat; reversion, antioxidants – natural and synthetic, technology of edible fats and oils – hardening of fat, hydrogenation and inter – esterification, structure – phospholipids, glycolipids, sphingo lipids, cholesterol. Emulsion and emulsifiers.

Module – IV

VITAMINS, MINERALS AND WATER

Vitamins – Fat soluble – A, D, E, K; Water soluble – thiamine, riboflavin, niacin, B12, pyridoxine, Vitamin – C: sources, functions, deficiency diseases and hypervitaminosis. Minerals – Ca, Fe, K, Na, P, I, F – sources, functions, deficiency diseases and excess. (Absorption of calcium and Iron)

Water – Sources, functions, deficiency diseases

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD BIOCHEMISTRY
II SEMESTER (PAPER-II)

MODEL QUESTION PAPER
ADMITTED BATCH 2021-2022

Time : 2 ½ Hours.

Marks:50M

PART – I

Answer any **THREE** questions choosing at least **ONE** question from each section. **10x3=30M**

SECTION – A

1. Write the important properties of glucose and fructose.
2. What are Amino acids? Give the classification of amino acids.
3. Explain biological functions, deficiency and excess of proteins.

SECTION – A

4. Explain composition and classification of fatty acids.
5. Mention about water soluble vitamins.
6. Discuss the sources, functions, diseases of calcium, iron and phosphorous.

PART – II

Answer any **FOUR** questions. (Short answer questions)

4x5=20M

7. Write the sources of glucose.
8. Explain inversion of sugar.
9. Write a note on zwitter ion.
10. Write a note on paper chromatography?
11. Write about saturated, unsaturated and essential fatty acids.
12. Write about flavor changes in fat and oils.
13. Mention fat soluble vitamins and write their functions.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
Raw and processed commodities in Food Science
BLUE PRINT FOR QUESTION PAPER SETTER

Time : 2 Hours.

Marks:50M

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	30
MODULE – II	02	02	30
MODULE – III	01	02	20
MODULE – IV	02	01	25
Total no. of questions	06	07	
Total marks including choice			95

Note : The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (Qualitative and Quantitative Analysis)
PRACTICAL SYLLABUS
AT THE END OF II SEMESTER

Hrs.: 3

Credits : 1

1. Qualitative tests for carbohydrates
2. Qualitative tests for proteins
3. Moisture assay by oven drying method
4. Estimation of starch
5. Estimation of Crude fiber

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
II SEMESTER (PAPER-II)
FOOD BIOCHEMISTRY

Question Bank

Essay Questions (10M)

Module – I

1. Write the important properties of glucose and fructose?
2. Write about the structure of any three polysaccharides?
3. Write the classification of carbohydrates with examples?
4. Write the important properties of sucrose and lactose?
5. Write about the industrial laboratory preparation of glucose and fructose?

Module – II

1. What are amino acids? Give the classification of amino acids?
2. Write a note on structure of proteins?
3. Explain the biological functions, deficiency, and excess of proteins?
4. Write a note on classification of proteins based on shape and solubility?
5. Write about the structure and properties of amino acids?

Module – III

1. Explain the composition and classification of amino acids?
2. Explain the structure of phospholipids and glycolipids?
3. Write about mechanism of auto oxidation of fat?

Module – IV

1. Mention about water soluble vitamins?
2. Write a brief note on fat soluble vitamins?
3. Discuss the sources, functions, diseases of calcium and phosphorous?
4. Discuss the sources, functions and deficiency diseases of water?

Short Answer Questions (5M)

Module – I

1. Write the sources of glucose?
2. Explain the inversion of sugar?
3. Write a note on gelatinization of starch?
4. Write about the structure of glycogen?
5. Write about the structure of starch?
6. Write about functions of lactose?

Module – II

1. Write a note on zwitter ion?
2. Write a note on paper chromatography?
3. Write about the estimation of protein by paper electrophoresis?
4. Write a note on chemical bonds involved in protein structure?
5. Explain the properties of proteins?
6. Write about essential and non essential amino acids?

Module – III

1. Write a note on saturated and unsaturated fatty acids?
2. Write about flavor changes in fats and oils?
3. Write about natural and synthetic antioxidants?
4. Write a note on structure of cholesterol?
5. Write a note on structure of spingolipids?

Module - IV

1. Write about the functions of fat soluble vitamins?
2. Write about the functions of water soluble vitamins?
3. Write a note on sources, functions and deficiency diseases of vitamin C?
4. Write a note on minerals?

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (HUMAN PHYSIOLOGY)
SEMESTER – III (PAPER-III)
ADMITTED BATCH 2020-2021

Hrs.: 4

CREDITS :4

OBJECTIVES:

To enable the students to understand the necessity of energy and its production in the body.
To understand the relationship between nutrition and human well being.

Module – I

Sensation of smell: Olfactory receptors, olfactory pathway, generator potential in olfactory receptor, classification of odour, threshold for olfactory sensation, adaptation, applied physiology-abnormalities of olfactory sensation.

Sensation of taste: Taste buds-situation, structure, taste pathway, primary sensations, discrimination of different taste sensation, taste sensations and chemical constitutions, mechanism of stimulation of taste receptors – generator potential in taste receptor cells, applied physiology – abnormalities of taste sensation.

Module – II

Digestive system: Structure of digestive track, digestion and absorption of carbohydrates, fats and protein. Role of liver, pancreas and gall bladder. Regulation of food intake – role of hunger and satiety centres, effect of nutrients.

Nervous system: Review of structure and function of neuron – conduction of nerve impulse, synapses, role in various body functions-obesity, sleep, memory.

Module – III

Blood: Composition and functions of blood, plasma proteins, Hemoglobin, hematopoiesis, coagulation of blood, blood groups, erythroblastosis foetalis.

Heart: Structure and function of heart and blood vessels – Regulation of cardiac output and blood pressure, heart failure, hypertension.

Module – IV

Excretory system: structure and function of kidney, nephron – Urine formation – Role of kidney in maintaining pH of blood – water, electrolyte and acid base balance – diuretics, renal function tests – properties and composition of normal urine, renal function tests – by examination of urine, blood, blood and urine, renal disorders, Dialysis.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (HUMAN PHYSIOLOGY)
III SEMESTER (PAPER-III)
MODEL QUESTION PAPER
ADMITTED BATCH 2020-2021

Time : 2.30 Hours.

Marks:60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section. 10x3=30M

SECTION – A

1. Write the mechanism of stimulation of taste receptors?
2. Explain biological functions, deficiency and excess of proteins.
3. Describe the conduction of nerve impulse and synapses.

SECTION – A

4. Explain composition of blood?
5. Write the mechanism of urine formation?
6. Describe the role of kidneys in maintaining acid-base balance.

PART – II

Answer any FOUR questions. (Short answer questions)

4x5=20M

7. Write about Olfactory receptors and pathway?
8. Write the structure of tongue?
9. Explain about digestion of proteins?
10. Write the structure of digestive track?
11. Write the functions of blood?
12. Write the coagulation of blood?
13. Write the functions of kidneys?

PART – III

Answer any FIVE questions. (Very short answer questions)

5x2=10M

14. Write the classification of odor?
15. What are taste buds?
16. Write about taste sensation?
17. Absorption of fats
18. What are bolus?
19. What is obesity?

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
Food Science (Human Physiology)
SEMESTER – III (PAPER-III)
BLUE PRINT FOR QUESTION PAPER SETTER

Time : 3 Hours.

Marks:60M

MODULENO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	02	24
MODULE – II	02	02	01	34
MODULE – III	01	02	02	24
MODULE – IV	02	01	01	34
Total no. of questions	06	07	06	
Total marks including choice				107

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
Food Science (Human Physiology)
SEMESTER – III (PAPER-III)

Hrs.: 3

Credits :1

Laboratory course

1. Sensory evaluation
2. Selection of Panel
3. Determination of A, B, O and Rh blood groups
4. Urine test
5. Amylase enzyme activity

P.R.GOV'T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
III SEMESTER (PAPER-III)
Human Physiology
Question Bank
Essay Questions (10M)

Module - I

1. Write the mechanism and stimulation of taste receptors?
2. Describe the situation, structure, taste pathway of taste
3. Write about the abnormalities of olfactory sensation?

Module - II

1. Describe the conduction of nerve impulse and synapse?
2. Describe the structure of digestive system with labeled diagram?
3. Write about the digestion and absorption of carbohydrates?
4. Write about the digestion and absorption of proteins?
5. Write about the digestion and absorption of fats?

Module - III

1. Explain the composition of blood?
2. Write about the structure and function of heart?
3. Write about the regulation of cardiac output?

Module – IV

1. Write the mechanism of urine formation?
2. Describe the role of kidneys in maintaining acid-base balance?
3. Write about renal function tests?

Short Answer Questions (5M)

Module - I

1. Write about olfactory receptors and pathway?
2. Write the structure of tongue?
3. Write about the abnormalities of taste sensation?
4. Describe the threshold for olfactory sensation?

Module - II

1. Write about the structure of digestive track?
2. Describe the role of liver in digestion?
3. Write a note on regulation of food intake?
4. Describe the structure of neuron?

Module - III

1. Write the functions of blood?
2. Write about coagulation of blood?
3. Write about different blood groups?
4. Write about Erythroblastosis Foetalis?
5. Write about regulation of blood pressure?

Module - IV

1. Write about structure of kidney?
2. Write about structure and function of nephron?
3. Write a note on composition of urine?
4. What are types of nephrolithiasis?
5. Write a note on renal disorders?

Very Short Answer Questions (2M)

Module - I

1. Write the classification of odor?
2. What are taste buds?
3. Write about taste sensation?
4. Write about taste receptor cells?

Module - II

1. Role of pancreas in digestion
2. Role of gall bladder in digestion
3. What is bolus?
4. What is obesity?
5. Write about function of neuron?

Module - III

1. Write different blood groups?
2. What is hemoglobin?
3. What is hypertension?
4. What is hematopoiesis?
5. Pancreas
5. WBC

Module - IV

1. Renal function tests
2. Write about dialysis
3. Draw the diagram of nephron
4. Composition of urine
5. Diuretics
6. Electrolyte balance

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (FOOD MICROBIOLOGY)
SEMESTER – IV (PAPER-IV)
ADMITTED BATCH 2020-2021

Hrs.: 4

CREDITS :4

OBJECTIVES :

To help the students to acquire an elementary knowledge about micro organisms, develop an understanding of industry and in maintenance of health, to acquire knowledge about the adulterants of food, food born diseases and health hazards.

Module – I

Basic concepts of microbiology: Introduction to microbiology. Microbiology in daily life. Classification of prokaryotic and eukaryotic microorganisms. Characteristics and morphology of bacteria, fungi, virus, protozoa.

Module – II

Control of microorganisms: Bacterial growth curve and kinetics of growth, effect of i) P ii) Water activity iii) O₂ availability iv) temperature on the growth of microorganisms. Indicator Microorganisms: sources, method of detection, growth and survival of a) coliform b) fecal streptococci c) Enterobacteriaceae, Micro-organisms importance in food – factors affecting the growth of micro organisms in food – Intrinsic and Extrinsic parameters that affect microbial growth.

Module – III

Cultures & Media: Methods of sterilization. Types of media. Preparation of culture media, isolation and cultivation of microorganisms, methods of preservation of microbes, gram staining.

Module – IV

Food spoilage : Contamination and spoilage of different foods, spoilage of different groups of foods: Cereal and cereal products, vegetables and fruits, meat and meat products, eggs and poultry, fish and other sea foods, milk and milk products, canned food. Food poisoning, food infection.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (FOOD MICROBIOLOGY)
IV SEMESTER (PAPER-IV)
ADMITTED BATCH 2020-2021
MODEL QUESTION PAPER

Time : 3 Hours.

Marks:60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section. 10x3=30M

SECTION – A

1. How bacteria are classified on the basis of morphology?
2. Write about growth curve and explain the phases of growth curve?
3. What are the Intrinsic and extrinsic parameters of microbial growth?

SECTION – A

4. What are the different types of culture media?
5. Write the contamination and microbial spoilage of vegetables?
6. Write the contamination and microbial spoilage of milk and milk products?

PART – II

Answer any FOUR questions. (Short answer questions)

Marks : 4x5=20M

7. Write the morphology of TMV?
8. Briefly describe the structure of bacterial cell?
9. Write the effect of pH and temperature on growth?
10. Write about faecal streptococci?
11. Write about culture techniques?
12. Write the methods of isolation of micro organisms?
13. Write the contamination and spoilage of fish?

PART – III

Answer any FIVE questions. (Very short answer questions)

Marks : 5x2=10M

14. Yeast
15. Microbiology
16. Bacteriophage
17. O₂ availability
18. Water activity
19. Sterilization

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
SEMESTER – IV (PAPER-IV)
ADMITTED BATCH 2020-2021
BLUE PRINT FOR QUESTION PAPER SETTER

Time : 3 Hours.

Marks:60M

MODULENO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	02	24
MODULE – II	02	02	02	34
MODULE – III	01	02	01	22
MODULE – IV	02	01	01	27
Total no. of questions	06	07	06	
Total marks including choice				107

Note : The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (FOOD MICROBIOLOGY)
PRACTICAL SYLLABUS
AT THE END OF SEMESTER – IV (PAPER-IV)
ADMITTED BATCH 2020-2021

Hrs.: 3

Credits : 1

1. Study of compound microscope
2. Working and handling of common microbiological laboratory equipments and materials; preparation of microscopic examination.
3. Monochrome staining
4. Differential staining
5. Capsule staining
6. Spore staining
7. Microscopic examination of living organisms – Hanging Drop Mount method for the demonstration of bacterial motility
8. Negative staining of bacteria
9. Composition, preparation and sterilization of media nutrient agar, potato dextrose agar, McConkey agar, EMB agar.
10. Isolation, enumeration and characteristics of microorganisms.
11. Microbiology of air and surface isolation of microorganisms.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
IV SEMESTER (PAPER-IV)
Food Microbiology
Question Bank
Essay Questions (10M)

Module -I

1. How bacteria are classified on the bases of morphology?
2. Discuss the classification of prokaryotic and eukaryotic microorganisms.
3. Discuss the role of microbiology in daily life with reference to foods?
4. Write a note on classification of eukaryotic microorganisms?

Module - II

1. Write about growth curve and explain the phases of growth curve?
2. Discuss the factors affecting the growth of microorganisms in food?
3. What is bacterial growth curve and write about the factors effecting the growth curve?
4. What are intrinsic and extrinsic parameters of microbial growth?

Module - III

1. What are different types of culture media?
2. Explain the preparation of different culture media?
3. Write a note on different methods of sterilization?

Module - IV

1. Write a note on contamination and microbial spoilage of vegetables?
2. Write a note on contamination and microbial spoilage of milk and milk products?
3. Describe the spoilage of meat and meat products?
4. What is the role of mycotoxins in causing food poisoning?

Short Answer Questions (5M)

Module - I

1. Explain the morphology of fungi
2. Explain the morphology of virus
3. What are characteristics of protozoa?
4. What are characteristics of bacteria?

Module - II

1. What is the effect of pH on bacterial growth curve?
2. Write a note on coliform bacteria.
3. What are the sources and methods of detection of fecal streptococci?
4. What is the effect of temperature on bacterial growth curve?
5. Write about kinetics of growth curve?

Module - III

1. Write a note on isolation and cultivation of microorganisms?
2. Write a note on gram staining?

3. Write a note on preparation of culture media.
4. Explain any two methods of sterilization?

Module - IV

1. Write a note on food poisoning?
2. Write a note on spoilage of fruits?
3. Write a note on spoilage of poultry?
4. Write a note on spoilage of fish?

Very Short Answer Questions (2M)

Module - I

1. Yeast
2. Microbiology
3. Bacteriophage
4. Prokaryotic microorganism
5. Morphology
6. Protozoa
7. Virus

Module - II

1. Water activity
2. O₂ availability
3. Enterobacteria
4. Intrinsic factors
5. Extrinsic factors

Module - III

1. Isolation
2. Culture media
3. Staining
4. Sterilization
5. Serial dilution .

Module - IV

1. Spoilage of cereals
2. Canned foods
3. Food infection
4. Irradiation
5. Ropiness of bread
6. Contamination of sea foods

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Principles of human nutrition)
SEMESTER – IV (PAPER-V)
ADMITTED BATCH 2020-2021

Hrs: 3

Credits:

Module – I

Nutrition through life cycle: Basic five food groups, balanced diet, food guide pyramid, dietary guidelines for Indians.

Nutrition in infancy: Growth and development, nutritional requirements, breast feeding, weaning and supplementary foods.

Module – II

Nutrition in preschool age: Physiology development and food intake, development of food habits, diet plan.

Nutrition in adolescence: Growth and development, nutritional requirement, factors influencing dietary pattern of the adolescence.

Module – III

Nutrition in pregnancy: Physiological changes during pregnancy, importance of nutrition in pregnancy, diet for the pregnant mother, complications in pregnancy – gestational diabetes, toxemia, infections and effect of maternal malnutrition on fetus.

Module – IV

Nutrition in lactations: Nutrition requirements, human milk composition and importance, lactogogues, diet planning.

Nutrition in old age: Changes during old age, nutritional requirements, diet planning.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Principles of human nutrition)
SEMESTER – IV (PAPER V)
ADMITTED BATCH 2020-2021

MODEL QUESTION PAPER

Time : 3 Hours.

Marks:60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section.

10x3=30M

SECTION – A

1. Explain the nutrition in infancy of growth development and nutritional requirements
2. Explain the development of food habits, diet plan in preschool age
3. Write about factors influencing dietary pattern of the adolescences.

SECTION – B

4. Write about importance of nutrition in pregnancy
5. Explain the human milk composition and importance lactogogues
6. Write the nutritional requirements of old age

PART – II

Answer any FOUR questions. (Short answer questions)

4x5=20M

7. Write about dietary guidelines for Indians
8. Explain the food guide pyramid
9. Explain the physiological development and food intake of preschool age
10. Nutritional requirement of adolescence
11. Physiological changes in pregnancy
12. Plan and prepare a diet for old age.
13. Nutritional requirement of lactating women.

PART – III

Answer any FIVE questions. (Very short answer questions)

Marks : 5x2=10M

14. Balance diet
15. Weaning
16. Breast feeding
17. Food intake
18. Adolescence
19. Nutritional requirements

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Principles of human nutrition)
SEMESTER – IV (PAPER V)
ADMITTED BATCH 2020-2021

BLUE PRINT FOR QUESTION PAPER SETTERS

Time : 3 hours

Max.marks:60

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	01	22
MODULE – II	02	02	02	34
MODULE – III	01	01	02	19
MODULE – IV	02	02	01	32
Total no. of questions	06	07	06	
Total marks including choice				107

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Principles of human nutrition)
SEMESTER – IV (PAPER-V)
ADMITTED BATCH 2020-2021

PRACTICAL SYLLABUS

Hrs: 3

credits: 2

Planning, preparing and serving normal diets for

- Infants
- Preschool age
- School going age
- Adolescence
- Adult / Laborer
- Pregnancy
- Lactation
- Old age

P.R.GOV'T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
IV SEMESTER (PAPER-V)
Principles of Human nutrition
Question Bank
Essay Questions (10M)

Module - I

1. Explain the nutrition, growth, development, and nutritional requirements in infants?
2. Write a note on dietary guidelines for Indians?

Module - II

1. Explain the development and diet plan in preschool age?
2. Write a note on factors influencing dietary patterns of adolescence.
3. Explain growth and development during adolescence and nutritional requirements of an adolescent.

Module - III

1. Write a note on importance of nutrition in pregnancy.
2. What are the complications during pregnancy?
3. Write a note on physiological changes during pregnancy?

Module - IV

1. Write a note on human milk composition and importance of lactogogues.
2. Explain the nutritional requirements during old age.

Short Answer Questions (5M)

Module - I

1. Write a note on five basic food groups?
2. Explain food guide pyramid?
3. Write about breast feeding.

Module - II

1. Write briefly about the physiological development during preschool.
2. Nutritional requirement in adolescence
3. Write a note on dietary pattern of adolescence.
4. Write a diet plan for preschool age.

Module - III

1. Physiological changes during pregnancy.
2. Maternal malnutrition in fetus.

3. Write a note on diet for pregnant woman.
4. Gestational diabetes.

Module - IV

1. Plan and prepare a diet for old age.
2. Nutritional requirement of lactating women.
3. Write a diet plan for lactating women.

Very Short Answer Questions (2M)

Module -I

1. Balanced diet
2. Weaning
3. Supplementary foods.

Module – II

1. Food intake
2. Adolescence
3. Development in adolescence

Module - III

1. Toxemia
2. Infections
3. Malnutrition

Module - IV

1. Human milk
2. Changes during old age
3. Lactogogues
4. Lactation
5. Fetus
6. Protein content

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (Food processing and preservation)
SEMESTER – V (PAPER-V)
ADMITTED BATCH 2019-2022

Hrs: 3

Credits : 4

Module I

Food Processing: Processing technology Cereals, legumes and oilseeds: Milling of wheat, rice, compare boiling of rice, advantages and disadvantages. Corn-corn flakes, Legumes – processing, Oilseeds – extraction, refining, and hardening of fat – hydrogenation and inter esterification. Fruits and Vegetables. Ready to serve beverages – formulation, general steps involved in the processing, FPO specification. Tomato puree, tomato ketchup-general steps involved in processing. Preservatives used in fruit and vegetables processing.

Module II

Milk & Milk products: Pasteurized milk-general steps involved in Processing calculation of standardization of milk – application of Pearson Square method of manufacture of sterilized milk, toned milk. Butter – theories of churning. Ice – cream – hardening Dried milks – definition, method of manufacture of whole milk powder and skim milk powder. Meat and Fish Processing – general steps involved in block and IQF freezing. Poultry Processing – general steps involved. Egg processing – freezing and drying of egg products.

Module III

Food Preservation:

Introduction to food preservation, basic principles of food preservation and methods of food preservation by use of high temperature Pasteurization, sterilization, canning, steps involved types of cans and bottles. Preservation by use of low temperature: Refrigeration – Preservation by use of very low temperature, Freezing, difference between refrigeration and freezing, methods of freezing, Preservation by removal of moisture.

Module IV

Principles and types of concentrated foods. Drying and dehydration - merits and demerits. Freeze drying, dehydrofreezing – advantages. Preservation by using sugar: Sugars concentration, principles of gel formation, preparation of jam, jelly, marmalades, candy, glazed, crystallized fruits. Pickling – principles involved and types of pickles. Fermentation - wine, beer, distilled liquors, vinegar and cheese. Irradiation properties of foods.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (Food processing and preservation)
SEMESTER – V (PAPER -V)
MODEL QUESTION PAPER
ADMITTED BATCH 2019-2022

Time : 3 Hours.

Marks:60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section. 10x3=30M

SECTION – A

1. Write about food processing technology.
2. Explain the pasteurized milk general properties.
3. Describe the meat and fish processing general steps involved in block in IQF freezing.

SECTION – A

4. Explain the food preservation and methods.
5. Write about principles and types of concentrated foods.
6. Explain the sugar concentration, principles of gel preparation.

PART – II

Answer any FOUR questions. (Short answer questions) 4x5=20M

7. Write about hydrogenation and inter estrification.
8. Explain the tomato ketchup general steps involved in processing.
9. Definition method of manufacture of whole milk powder.
10. Explain the egg processing.
11. Explain the irradiation properties.
12. Explain the preparation of jam.
13. Explain the preservation by removal of moisture

PART – III

Answer any FIVE questions. (Very short answer questions) Marks : 5x2=10M

14. Milling of wheat
15. Legumes processing
16. Oil seed
17. Skim milk powder
18. Freezing
19. Egg products

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (Food processing and preservation)
SEMESTER - V
BLUE PRINT FOR QUESTION PAPER SETTERS
ADMITTED BATCH 2019-2022

Time : 3 Hours.

Marks:60M

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	02	24
MODULE – II	02	02	02	34
MODULE – III	01	02	01	22
MODULE – IV	02	01	01	27
Total no. of questions	06	07	06	
Total marks including choice				107

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE (Food processing and preservation)
SEMESTER - V
PRACTICAL SYLLABUS
ADMITTED BATCH 2019-2022

Hrs: 3

credits: 2

LIST OF EXPERIMENTS:

1. Blanching and browning control
2. Preparation of fruit preserves (jam, jelly)
3. Preparation of vegetable preserves (pickle)
4. Dehydrated products – vegetables dices tray drying, osmotic dehydration of seasonal fruit.
5. Tomato processing
6. Fruit pulping / juice / beverage preparation
7. Preparation and standardization of traditional Indian fermented food (idly udid and rice, dhokla – horse gram, dahi – milk) – lactic acid fermentations. – solid state – rise in batter, softness on cooking, weight gain / loss – bulk density)
8. Bread making – texture

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
V SEMESTER (PAPER-V)
Food Processing and Preservation
Question Bank
Essay Questions (10M)

Module – I

1. Write about food processing technology?
2. What is para boiling? Write its advantages and disadvantages?
3. Write about the preservatives used in fruit and vegetable processing?
4. Give a brief note on steps involved in the processing of beverages?

Module - II

1. Explain the pasteurized milk general properties?
2. Describe the meat and fish processing general steps involved in block in IQF freezing.
3. Explain the steps involved in poultry processing?
4. Explain the processing of egg?

Module - III

1. Explain the food preservation methods?
2. Explain the steps involved in canning?
3. Explain different methods of freezing?

Module - IV

1. Write about the principles and types of concentrated foods?
2. Explain the sugar concentration and principles of gel preparation?
3. Discuss the merits and demerits of dehydration?
4. Explain the principles involved in pickling?
5. What is fermentation? Explain the production of wine by fermentation?

Short Answer Questions (5M)

Module - 1

1. Write about hydrogenation and inter esterification?
2. Explain the general steps involved in processing of tomato ketchup?
3. Explain the process of milling of wheat?
4. Explain the processing of legumes?
5. Explain the process of extraction of oilseeds?

Module - II

1. Define the method of manufacture of whole milk powder?
2. Explain the method of manufacture of skim milk powder?

3. Write a note on theories of churning of butter.
4. Explain the Pearson square method

Module - III

1. Explain irradiation properties?
2. Write any two methods of food preservation.
3. Write a note on refrigeration.
4. Explain the process of preservation by removal of moisture?
5. Write the differences between refrigeration and freezing.

Module - IV

1. Explain the preparation of jam.
2. Explain the advantages of ionizing radiation.
3. Write a note on freeze drying.
4. Preparation of cheese.
5. Advantages of De hydro freezing.

Very Short Answer Questions (2M)

Module - I

1. Milling of rice
2. Refining
3. Preservation
4. Canning
5. Drying

Module - II

1. IQF freezing
2. Dried milk
3. Pasteurized milk
4. Milk powder
5. Egg production
6. Oil seeds

Module - III

1. Freezing
2. Refrigeration
3. Sterilization

Module - IV

1. Dehydration
2. Irradiation
3. Pickling
4. Fermentation
5. De hydro freezing

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Principles of human nutrition)
SEMESTER – V (PAPER-VI)
ADMITTED BATCH 2019-2022

Hrs: 3

Credits: 4

Module – I

Nutrition through life cycle: Basic five food groups, balanced diet, food guide pyramid, dietary guidelines for Indians.

Nutrition in infancy: Growth and development, nutritional requirements, breast feeding, weaning and supplementary foods.

Module – II

Nutrition in preschool age: Physiology development and food intake, development of food habits, diet plan.

Nutrition in adolescence: Growth and development, nutritional requirement, factors influencing dietary pattern of the adolescence.

Module – III

Nutrition in pregnancy: Physiological changes during pregnancy, importance of nutrition in pregnancy, diet for the pregnant mother, complications in pregnancy – gestational diabetes, toxemia, infections and effect of maternal malnutrition on fetus.

Module – IV

Nutrition in lactations: Nutrition requirements, human milk composition and importance, lactogogues, diet planning.

Nutrition in old age: Changes during old age, nutritional requirements, diet planning.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Principles of human nutrition)
SEMESTER – V (PAPER- VI)
ADMITTED BATCH 2019-2022

MODEL QUESTION PAPER

Time : 3 Hours.

Marks:60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section.

10x3=30M

SECTION – A

20. Explain the nutrition in infancy of growth development and nutritional requirements
21. Explain the development of food habits, diet plan in preschool age
22. Write about factors influencing dietary pattern of the adolescences.

SECTION – B

23. Write about importance of nutrition in pregnancy
24. Explain the human milk composition and importance lactogogues
25. Write the nutritional requirements of old age

PART – II

Answer any FOUR questions. (Short answer questions)

4x5=20M

26. Write about dietary guidelines for Indians
27. Explain the food guide pyramid
28. Explain the physiological development and food intake of preschool age
29. Nutritional requirement of adolescence
30. Physiological changes in pregnancy
31. Plan and prepare a diet for old age.
32. Nutritional requirement of lactating women.

PART – III

Answer any FIVE questions. (Very short answer questions)

Marks : 5x2=10M

33. Balance diet
34. Weaning
35. Breast feeding
36. Food intake
37. Adolescence
38. Nutritional requirements

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Principles of human nutrition)
SEMESTER – V (PAPER- VI)
ADMITTED BATCH 2019-2022
BLUE PRINT FOR QUESTION PAPER SETTERS

Time : 3 hours

Max.marks:60

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	01	22
MODULE – II	02	02	02	34
MODULE – III	01	01	02	19
MODULE – IV	02	02	01	32
Total no. of questions	06	07	06	
Total marks including choice				107

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Principles of human nutrition)
SEMESTER – V (PAPER-VI)
ADMITTED BATCH 2019-2022
PRACTICAL SYLLABUS

Hrs: 3

credits: 2

Planning, preparing and serving normal diets for

1. Infants
2. Preschool age
3. School going age
4. Adolescence
5. Adult / Laborer
6. Pregnancy
7. Lactation
8. Old age

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
V SEMESTER (PAPER-VI)
Principles of Human nutrition
Question Bank
Essay Questions (10M)

Module - I

1. Explain the nutrition, growth, development, and nutritional requirements in infants?
2. Write a note on dietary guidelines for Indians?

Module - II

1. Explain the development and diet plan in preschool age?
2. Write a note on factors influencing dietary patterns of adolescence.
3. Explain growth and development during adolescence and nutritional requirements of an adolescent.

Module - III

1. Write a note on importance of nutrition in pregnancy.
2. What are the complications during pregnancy?
3. Write a note on physiological changes during pregnancy?

Module - IV

1. Write a note on human milk composition and importance of lactogogues.
2. Explain the nutritional requirements during old age.

Short Answer Questions (5M)

Module - I

1. Write a note on five basic food groups?
2. Explain food guide pyramid?
3. Write about breast feeding.

Module - II

1. Write briefly about the physiological development during preschool.
2. Nutritional requirement in adolescence
3. Write a note on dietary pattern of adolescence.
4. Write a diet plan for preschool age.

Module - III

1. Physiological changes during pregnancy.
2. Maternal malnutrition in fetus.
3. Write a note on diet for pregnant woman.
4. Gestational diabetes.

Module - IV

1. Plan and prepare a diet for old age.
2. Nutritional requirement of lactating women.
3. Write a diet plan for lactating women.

Very Short Answer Questions (2M)

Module -I

1. Balanced diet
2. Weaning
3. Supplementary foods.

Module – II

1. Food intake
2. Adolescence
3. Development in adolescence

Module - III

1. Toxemia
2. Infections
3. Malnutrition

Module - IV

1. Human milk
2. Changes during old age
3. Lactogogues
4. Lactation
5. Fetus
6. Protein content

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Product development and quality evaluation)
SEMESTER – VI (PAPER-VIIA)
ADMITTED BATCH 2019-2022

Hrs.: 3

Credits : 4

Module – I

Method of Food Product development, product design, food innovation case studies, Recipe development; advance technological applications for traditional recipe recent development in food ingredients / additives, flavorings, colorings, emulsifiers, stabilizer and sweeteners. Selection of materials / ingredients for specific purpose; modifications for production on large scale, cost effectiveness, nutritional needs or uniqueness; use of novel food ingredients and novel processing technologies.

Module – II

Stability of products; evaluation of shelf life; changes in quality attributes - sensory, nutritional, technological, microbial, statistical and packaging. Food regulation Act. Food sampling method: sampling and sample preparation: samplers, storage materials, preservatives, products analysis.

Module – III

Introduction to sensory evaluation – Type of sensory tests: Detection, threshold and dilution tests; Different tests for sensory evaluation – discrimination, descriptive, affective, flavor profile and ranking tests; Methods of sensory evaluation of different food products: Sensory and instrumental methods.

Module – IV

Selection of sensory panelists - general testing conditions - factors influencing sensory measurements - sensory quality parameters: size and shape, texture, aroma, taste, colour and gloss; designing of questionnaire and/or evaluation scorecard; consumer acceptability using sensory evaluation.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Product development and quality evaluation)
SEMESTER – VI (PAPER-VIIA)
ADMITTED BATCH 2019-2022
MODEL QUESTION PAPER

Time : 3 Hours.

Marks:60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section.

10x3=30M

SECTION – A

1. Describe the food product, development and product design
2. Explain the changes in quality attributes.
3. Explain about the stability of products

SECTION – A

4. Write the different types sensory evaluation tests
5. Explain the sensory evaluation of different food products
6. Classify various sensory panelists.

PART – II

Answer any FOUR questions. (Short answer questions)

4x5=20M

7. Traditional recipes recent development
8. Novel food ingredients
9. Food regulation Act
10. Quality attributes
11. Threshold dilution tests
12. Evaluation of score card
13. Write a note on factors influencing sensory measurements.

PART – III

Answer any FIVE questions. (Very short answer questions)

Marks :

5x2=10M

14. Food additives
15. Emulsifiers
16. Cost effectiveness
17. Stability of products
18. Packaging
19. Preservatives

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Product development and quality evaluation)
SEMESTER – VI (PAPER-VIIA)
ADMITTED BATCH 2019-2022
BLUDE PRINT FOR QUESTION PAPER SETTERS

Hrs.: 3

Marks: 60

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	01	22
MODULE – II	02	02	01	32
MODULE – III	02	01	02	29
MODULE – IV	01	02	02	24
Total no. of questions	06	07	06	
Total marks including choice				107

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Product development and quality evaluation)
SEMESTER – VI (PAPER-VIIB)
ADMITTED BATCH 2019-2022
PRACTICAL SYLLABUS

Hrs: 3

credits: 2

LIST OF EXPERIMENTS:

Product development

1. Permutation combination method
2. Response surface methodology evaluation of product
3. Analysis of physical properties
4. Analysis of chemical properties sensory evaluation
5. Selection of panel
6. Threshold test collection and analysis of sensory data

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
VI SEMESTER (PAPER-VII A)
Product development and Quality evaluation
Question Bank
Essay Questions (10M)

Module -I

1. Explain food product development and food design?
2. Explain advance technological applications for traditional recipe development?
3. Write a note on novel processing technologies.

Module - II

1. Explain the changes in quality attributes?
2. Explain about stability of products.
3. Write a note on food sampling methods.

Module - III

1. Write a note on different types of sensory evaluation tests.
2. Explain the sensory evaluation of different food products.
3. Write a note on sensory and instrumental methods.

Module - IV

1. Classify various sensory panelists.
2. Write a note on sensory measurements.
3. Write a note on sensory quality parameters
4. Write a note on selection of sensory panelists.

Short Answer Questions (5M)

Module - I

1. Traditional recipes recent development.
2. Development of food ingredients.
3. Cost effectiveness
4. Novel food ingredients
5. Nutritional needs or unique sequences

Module - II

1. Evaluation of shelf life
2. Food regulation act
3. Preservatives

Module - III

1. Threshold dilution test
2. Sensory evaluation
3. Descriptive
4. Sensory and instrumental methods

Module - IV

1. Evaluation of score card
2. Write a note on factors influencing sensory measurements.
3. Write a note on designing a questionnaire

Very Short Answer Questions (2M)

Module - I

1. Food additives
2. Emulsifier
3. Stabilizer
4. Sweeteners
5. Food coloring

Module - II

1. Cost effectiveness
2. Stability of products
3. Packaging
4. Preservatives
5. Sampling

Module - III

1. Ranking test
2. Descriptive test
3. Flavor profile
4. Sensory evaluation

Module - IV

1. Testing conditions
2. Scorecard
3. Sensory panelists
4. Quality parameter

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Food Safety and Quality control)
SEMESTER – VI (PAPER-VII(B))
ADMITTED BATCH 2019-2022

Hrs : 3

Credits : 4

Module – I

Hazards – microbiological, nutritional, environmental, natural toxicants, pesticide residues and food additives.

Sanitary and hygienic practices; HACCP; Quality manuals, documentation and audits; Indian and international quality stems and standards like ISO and Food codex; export, import policy, export documentation, laboratory quality procedures and assessment of laboratory performance; applications in different food industries; food adulteration and food safety – IPR and patent.

Module – II

Introduction to quality control and quality assurance, Food safety measures, Current concepts of quality control.

Module – III

Quality assurance programme: Quality plan, documentation of records, product standards product and purchase specifications, process control, hygiene and housekeeping, corrective action.

Module – IV

Concepts of quality management: objectives, importance and functions of quality control; quality management systems in India; sampling procedures and plans; food safety and Standards Act 2006; domestic regulations; global food safety initiative; various organization dealing with inspections, traceability and authentication, certification and quality assurance (PFA, FPO, MMPO, MPO, AGMARK, BIS), labeling issues, international scenario international food standards.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Food Safety and Quality control)
SEMESTER – VI (PAPER-VII(B))
ADMITTED BATCH 2019-2022
MODEL QUESTION PAPER

Time : 3 Hours.

Marks:60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section. 10x3=30M

SECTION – A

1. Explain the laboratory quality procedures and assessment of laboratory performance.
2. Explain the application in different food industries.
3. Write about quality control and quality assurance.

SECTION – A

4. Explain the products standards and purchase specification.
5. Describe the importance and function of quality control
6. Explain the sampling procedures and plans.

PART – II

Answer any FOUR questions. (Short answer questions)

4X5=20M

7. Explain the food adulteration and food safety.
8. Write about nutritional hazards and natural toxicants.
9. Write the food safety measures.
10. Explain about current concept of quality control.
11. Write the documentation of records.
12. Explain the hygiene and housekeeping.

PART – III

Answer any FIVE questions. (Very short answer questions)

Marks : 5x2=10M

13. Pesticide residues
14. Food additives
15. HACCP
16. Quality control
17. Food safety
18. Assurance

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Food Safety and Quality control)
SEMESTER – VI (PAPER-VII(B))
ADMITTED BATCH 2019-2022
BLUE PRINT FOR QUESTION PAPER SETTERS

Time : 3 hours

Max.marks:60

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	02	02	02	34
MODULE – II	01	02	01	22
MODULE – III	02	01	01	27
MODULE – IV	01	02	02	24
Total no. of questions	06	07	06	
Total marks including choice				107

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Food Safety and Quality control)
SEMESTER – VI (PAPER VII B)
PRACTICAL SYLLABUS
ADMITTED BATCH 2019-2022

Hrs: 3

credits: 2

Market sample evaluation and statistical application of:

1. Qualitative tests for detection of adulterants
2. Test for assessment of purity of water
3. Test for assessment of quality of milk and milk products
4. Test for assessment of quality of cereals / millets
5. Test for assessment of quality of pulses
6. Test for assessment of quality of fats and oils
7. Test for assessment of quality of meat / fish products
8. Test for assessment of quality of canned / bottle fruits and vegetables
9. Test for assessment of quality of baked foods

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
VI SEMESTER (PAPER-VII B)
Food Safety and Quality control
Question Bank
Essay Questions (10M)

Module - 1

1. Explain the laboratory quality procedures and assessment of laboratory performance?
2. Explain the application in different food industries?
3. Write a note on food adulteration and food safety - IPR and patent?

Module - II

1. Write about quality control and quality assurance?
2. Write a note on food safety measures?

Module - III

1. Explain the products standards and purchase specification?
2. Describe the importance and function of quality control?

Module - IV

1. Explain the sampling procedures and plans?
2. Write a note on various organizations dealing with inspections and quality assurance?

Short Answer Questions (5M)

Module - I

1. Explain the food adulteration and food safety
2. Write about hazards nutritional, natural toxicants
3. Write a note on laboratory quality procedures?

Module - II

1. Write the food safety measures
2. Explain about current concept of quality control

Module - III

1. Write the documentation of records
2. Explain the hygiene and house keeping
3. Write a note on purchase specification.

Module - IV

1. Explain the quality management?
2. Write the international food standards?
3. Write a note on food safety and standards Act, 2006?
4. Write a note on objectives and importance of quality control?

Very Short Answer Questions (2M)

Module - I

1. Pesticide residues
2. Food additives
3. HACCP
4. Export and import
5. ISO
6. Patent

Module - II

1. Quality control
2. Food safety
3. Assurance

Module - III

1. Documentation
2. Product standards
3. Process control
4. Quality plan

Module - IV

1. Labeling
2. MMPO
3. Regulation
4. AGMARK
5. International food standards
6. Domestic regulations
7. BIS

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Food Biotechnology)
SEMESTER – VI (CLUSTER-VIII A1)
ADMITTED BATCH 2019-2022

Hrs.:3

Credits :4

MODULE – I

Traditional applications of food biotechnology – Fermented foods: eg: dairy product, oriental fermentations, alcoholic beverages, and food ingredients. The role of biotechnology in fermented food products (dairy, meat, vegetable). Starter culture development, process development. Enzymes in the dairy industry: cheese making and whey processing, impact of enzyme technology. Enzymatic processing of fruit juices. Role of enzymes in baking, meat and meat processing.

MODULE – II

Prospectus of biotechnology – Definition, scope and applications. Application of biotechnology in food. Introduction to Genetics, Mendelian genetics, population & Evolutionary genetics, Gene Mapping, Microbial gene transfer mechanisms. Mutation, types of mutations, molecular mechanism of mutations, practical applications, DNA repair mechanisms, recombinant DNA technology. Cell and tissue culture, micro – propagation. Nutrigenomics and nutraceuticals. Pre and probiotics.

MODULE – III

Genetic engineering in microbial cell. Concept of molecular cloning, plant and animal culture, transgenic plants, application of genetic engineering, biological role of DNA in cell metabolism, molecular genetics – fundamentals of molecular biology with special reference to chemistry and biology and DNA (primary, secondary and tertiary) structure. Application to produce genetically modified foods.

MODULE – IV

Ethical issues concerning GM foods; testing for GMOs; current guidelines for the production, release and movement of GMOs; labeling and traceability; trade related aspects, biosafety, risk assessment and risk management. Public perception of GM foods. IPR – GMO Act – 2004.

P.R.GOVT. COLLEGE (A), KAKINADA

CHOICE BASED CREDIT SYSTEM

FOOD SCIENCE SYLLABUS (Food Biotechnology)

SEMESTER – VI (CLUSTER-VIII A1)

ADMITTED BATCH 2019-2022

Laboratory course

1. Alcohol production
2. Estimation of alcohols
3. Preparation of curd
4. DNA isolation
5. Genetic problems (mono hybrid and di hybrid)
6. Restriction digestion of DNA
7. Ligation of DNA
8. Bacterial transformation
9. Amylase enzyme activity

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Food Biotechnology)
SEMESTER – VI (CLUSTER-VIII A1)
ADMITTED BATCH 2019-2022
MODEL QUESTION PAPER

Time : 3 Hours.

Marks:60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section.

10x3=30M

SECTION – A

1. Write the role of biotechnology in fermented food products
2. Explain the starter culture development & process development
3. Explain the Mendelein genetics? Write about population of genetics.

SECTION – A

4. Explain the concept of molecular cloning
5. Write about application of genetic engineering
6. What are the genetically modified foods?

PART – II

Answer any FOUR questions. (Short answer questions)

4x5=20M

7. Cheese making processing
8. Enzyme baking
9. Types of mutations
10. Recombinant DNA Technology
11. Genetic engineering in microbial cell
12. Public preparation of GMO foods.
13. IPR-GMO act - 2004

PART – III

Answer any FIVE questions. (Very short answer questions)

5x2=10M

14. Fermentation
15. Food ingredients
16. Meat processing
17. Probiotics
18. Genetics
19. Gene mapping

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Food Biotechnology)
SEMESTER – VI (CLUSTER-VIII A1)
ADMITTED BATCH 2019-2022
BLUDE PRINT FOR QUESTION PAPER SETTERS

Hrs.: 3

Marks: 60

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	02	24
MODULE – II	02	01	01	34
MODULE – III	02	02	02	34
MODULE – IV	01	02	01	26
Total no. of questions	06	07	06	
Total marks including choice				107

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
VI SEMESTER (PAPER-VIII A1)
Food Biotechnology
Question Bank

Essay Questions (10M)

Module - I

1. Write the role of biotechnology in fermented food products?
2. Explain the starter culture development & process development?
3. Write a note on enzymes in cheese making and whey processing?

Module - II

1. Explain the Mendelian genetics? Write about population of genetics.
2. What is rDNA technology? Describe briefly steps involved in the rDNA technology?
3. What is tissue culture? Write a note on cell and tissue culture technique?

Module - III

1. Explain the concept of molecular cloning
2. Write about application of genetic engineering
3. What are the genetically modified foods? Write a note on application to produce genetically modified foods?

Module - IV

1. Write a note on Ethical issues concerning GM foods?
2. Write a note on current guidelines for production, release and movement of GMOs.

Short Answer Questions (5M)

Module - I

1. Cheese making process.
2. Write a note on enzyme making?
3. Discuss briefly role of enzymes in baking?
4. Write a note on enzymatic processing of fruit juices?

Module - II

1. Types of mutations.
2. Write a note on microbial gene transfer mechanism?
3. Write a note on pre and Probiotics.
4. Write a note on nutrigenomics
5. Write a note on DNA repair mechanisms/

Module - III

1. Discuss briefly genetic engineering in microbial cell.
2. Write a note on DNA structure
3. Write a note on role of DNA in cell metabolism.
4. Write a note on applications of genetic engineering.
5. Write a note on plant and animal culture.

Module - IV

1. Public preparation of GMO foods.
2. Release and movement
3. IPR-GMO act - 2004

Very Short Answer Questions (2M)

Module - I

1. Fermentation
2. Food ingredients
3. Meat processing
4. Alcoholic beverages
5. Starter culture

Module - II

1. Nutraceuticals
2. Gene mapping
3. Evolutionary genetics
4. Micro propagation
5. Mutations

Module – III

1. Genetic engineering
2. Molecular cloning
3. Transgenic plants
4. DNA
5. Molecular genetics

Module - IV

1. GM foods
2. Labeling
3. Traceability
4. Risk management
5. Risk assessment

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Clinical and Therapeutic Nutrition)
SEMESTER – VI (CLUSTER-VIII A 2)
ADMITTED BATCH 2019-2022

Hrs.:3

Credits :3

MODULE – I

Introduction to Dietetics and types of diets

Meaning and scope of dietetics, role of dietitian, nutrition care process (NCP) types of dietary adaptations for therapeutic needs. Types of diets – normal / general, soft and liquid diets mode of feeding – oral, enteral and parenteral feeding. Nutritional Management of infections and fevers: classification and etiology of fever / infection. Medical nutrition therapy in: Typhoid, Tuberculosis, HIV/AIDS.

MODULE – II

Nutritional management of Cancer, Diabetes Mellitus, Coronary Heart Diseases (CHD) and Hypertension.

MODULE – III

Gastro Intestinal disorders: Etiology, symptoms and dietary management of peptic ulcer, constipation, diarrhea.

Liver Diseases: Etiology, symptoms and dietary management of Hepatitis, Cirrhosis, Hepatic coma.
Nutritional Management of Renal Disorders: Common Renal Diseases, General Principles of dietary Management in Renal Diseases, Etiology, clinical symptoms and Dietary management of Acute and chronic Nephritis, Nephrotic syndrome.

MODULE – IV

Nutritional care in weight management: Weight imbalance, prevalence and classification; Guidelines for calculating ideal body weight, etiology, clinical manifestations, consequences and dietary management of obesity, underweight.

Nutritional problems of the community: Prevalence, causes, consequences, prevention and control of protein energy Malnutrition (PEM), Vitamin A deficiency, Iodine Deficiency Disorders, Iron Deficiency Anemia

P.R.GOVT. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
(FOOD SCIENCE SYLLABUS (Clinical and Therapeutic Nutrition))
SEMESTER – VI (CLUSTER-VIII A2)
ADMITTED BATCH 2019-2022
MODEL QUESTION PAPER

Time: 3 Hours.

Marks: 60M

PART – I

Answer any **THREE** questions choosing at least ONE question from each section.

10x3=30M

SECTION – A

1. Describe the role of dietitian and scope of dietetics
2. Write the symptoms of cancer and explain the nutritional managements
3. Explain the causes of CHD and nutritional management

SECTION – B

4. Write the general principle and dietary management of renal diseases
5. Writ the etiology symptoms &Dietary management of peptic ulcer
6. Write the clinical manifestation consequence and dietary management of obesity

PART – II

Answer any FOUR questions. (Short answer questions)

5x4=20M

7. Normal diet
8. Parenteral feeding
9. Nutritional management of diabetics
10. Nutritional management of hyper tension
11. Symptoms and dietary management of diarrhea

PART – III

Answer any FIVE questions. (Very short answer questions)

Marks : 5x2=10M

12. Soft diet
13. HIV
14. Hypertension
15. Cirrhosis
16. Coma
17. Acute nephritis

P.R. GOVT.COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Clinical and Therapeutic Nutrition)
SEMESTER – VI (CLUSTER-VIII A2)
ADMITTED BATCH 2019-2022
BLUE PRINT FOR QUESTION PAPER SETTERS

Time : 3 hours

Marks : 60

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 4 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	02	02	22
MODULE – II	02	02	03	34
MODULE – III	02	02	03	34
MODULE – IV	01	02	04	26
Total no. of questions	06	08	12	
Total marks including choice				116

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (Clinical and Therapeutic Nutrition)
SEMESTER – VI (CLUSTER-VIII A2)
ADMITTED BATCH 2019-2022
PRACTICAL SYLLABUS

Hrs: 3

credits: 2

LIST OF EXPERIMENTS:

1. Planning and preparation of rehabilitation diets
2. Planning and preparation of diet for obesity and underweight conditions
3. Planning and preparation of diet for insulin and non insulin dependent diabetes mellitus
4. Planning and preparation of diet for gastrointestinal disorders
5. Planning and preparation of diet for cardiovascular disorders
6. Planning and preparation of diet for hepatic disorders
7. Planning and preparation of diet for pancreatic disorders
8. Planning and preparation of diet for renal disorders
9. Preparation of diet counseling aids for common disorders

P.R.GOV.T. COLLEGE (A), KAKINADA
CHOICE BASED CREDIT SYSTEM
VI SEMESTER (PAPER-VIII A2)
Clinical and Therapeutic Nutrition
Question Bank

Essay Questions (10M)

Module - I

1. Describe the role of dietitian and scope of dietetics?
2. Write a note on nutritional management of infections and fever.
3. Write a note on types of diets and mode of feeding?

Module - II

1. Write the symptoms of cancer and explain the nutritional management?
2. Explain the causes of CHD and nutritional management?

Module - III

1. Write the general principle and dietary management of renal diseases?
2. Write the etiology symptoms & Dietary management of peptic ulcer?
3. Write the etiology symptoms & Dietary management of liver diseases?

Module - IV

1. Write the clinical manifestation consequence and dietary management of obesity?
2. Write a note on Iodine and iron deficiency disorders?

Short Answer Questions (5M)

Module - I

1. Normal diet
2. Parenteral feeding
3. Medical nutrition therapy in HIV/AIDS
4. Write a note on nutritional therapy in tuberculosis

Module - II

1. Nutritional management of diabetics
2. Nutritional management of hypertension

Module - III

1. Symptoms and dietary management of diarrhea
2. Write a note on Nephrotic syndrome
3. Write a note on acute and chronic nephritis?
4. Discuss briefly the common renal diseases.

Module - IV

1. Write a note on ideal body weight?

2. Write a note on vitamin A?
3. Write a note on protein energy malnutrition (PEM)?
4. Discuss the nutritional management in underweight?

Very Short Answer Questions (2M)

Module - I

1. Soft diet
2. HIV
3. Typhoid
4. Enteral feeding
5. Liquid diet

Module - II

1. Hypertension
2. Cancer
3. Diabetes
4. Coronary heart diseases (CHD)

Module - III

1. Coma
2. Acute nephritis
3. Constipation
4. Cirrhosis
5. Hepatitis

Module - IV

1. Weight imbalance
2. Obesity Anemia
3. Anemia
4. Ideal body weight

P.R.GOV.T. COLLEGE (A). KAKINADA
CHOICE BATED CREDIT SYSTEM
FOOD SCIENCE SYLLABUS (FOOD ANALYSIS & FOOD MANUFACTURE)
SEMESTER VI (PAPER-VIII A 3)
ADMITTED BATCH 2019-2022

Hrs: 3

credits: 4

Module-I

1. Composition and factors affecting food composition.
2. Sampling techniques
3. Preparation of sample.
4. General physical methods of analysis of foods-Lactrometric determination.
Refractrometry, Polarimatory & Polarography Food Rheology, Viscosity, Surface tension, Freezing point.

Module-III

1. General Chemical methods of analysis in Food
 - a. Proximate principles
 - b. Moisture in spices
 - c. specific gravity
 - d. Ash and types
 - e. Total protein non-protein nitrogen and specific protein in Foods
 - f. Total fat and different types of lipids.
 - g. Total Carbohydrates, starch, mono and disaccharides.
 - h. Crude fibre and dietary fibre.
 - i. Macro nutrients: Sodium, K, Mg, I, Fe
 - J. Vitamins A, D, E
 - k. Trace Elements-Cu, Zn. As

Module III

1. Spectrophotometer-Estimation of phosphorus and ascorbic acid.
2. Radioactive tracer techniques, radioactive counter-liquid scintillation and Geiger Muller counter.
3. Fluorimeter -Estimation of Thiamin and Riboflavin

Module-IV

1. Principles and techniques of separation methods-Chromatography (TLC. GLC), electrophoresis (paper, moving boundary and gel)
2. Atomic Absorption Estimation of Iron and calcium/any trace element.
3. Measurement of enzyme activity and its principles, any one enzyme (amylase) to be estimated.

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SEMESTER - VI (PAPER-VIII A 3)

ADMITTED BATCH 2019-2022

Laboratory course

Hrs: 3

credits: 2

Experimentation by using of any one method and demonstration of the test:

1. Proteins

- Kjeldahl
- Calorimetric

2. FAT

- Physical
- Calorimetric process of different fats
- TLC

3. Fiber

- Crude fiber

4. Minerals

- Calorimetric
- Atomic absorption spectroscopy

5. Vitamins

- Calorimetric
- Flourimetric

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SEMESTER VI (PAPER-VIII A3)
ADMITTED BATCH 2019-2022
BLUDE PRINT FOR QUESTION PAPER SETTERS

Hrs.: 3

Marks : 60

MODULE NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 4 MARKS	VERY SHORT ANSWER QUESTIONS 2 MARKS	MARKS ALLOTTED TO THE UNIT
MODULE – I	01	01	02	19
MODULE – II	02	02	02	34
MODULE – III	01	02	01	22
MODULE – IV	02	02	01	32
Total no. of questions	06	07	06	
Total marks including choice				107

Note: The question paper setters are requested to kindly adhere to the format given in the above table.

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ADMITTED BATCH 2019-2022
MODEL QUESTION PAPER

Time: 2:30 Hours.

PART-I

Marks: 60M

Answer any THREE questions choosing at least ONE question from each section.

3x10 = 30M

SECTION – A

1. Write a note on physical methods of analysis of food?
2. Write a note on chemical methods of analysis of food?
3. Discuss the analysis of Vitamins - A, D, E and Trace Elements - Cu, Zn, As.

SECTION - B

4. Write an assay on Spectrophotometer?
5. Write a note on Principles and techniques of chromatography?
6. Write a note on Measurement of enzyme activity and its principles with one example?

PART-II

Answer any FOUR questions.

(Short answer questions)

4 x5 = 20M

7. Composition and factors affecting food composition
8. Crude fiber and dietary fiber
9. Write a note on different types of lipids
10. Write a note on radioactive tracer techniques
11. Write a note on Fluorometric estimation of thymine?
12. Write a note on Fluorometric radioactive counting?
13. Discuss the estimation of iron by atomic absorption?

PART - III

Answer any FIVE questions. (Very short answer questions)

14. Specific gravity
15. Polarography
16. Proximate principles
17. Liquid scintillation
18. Geiger Muller counter
19. Electrophoresis