B.Sc., Nutrition and Dietetics

1. SCOPE OF THE COURSE

The course of Nutrition and Dietetics is intended to prepare the students not only to be knowledgeable in the science of Nutrition and Dietetics, but also to be useful in the upliftment of the social and economic well being. Courses offered cover all areas of basic and applied are easy and these prepare students for a Bachelor of Science degree in Nutrition and Dietetics.

The degree is a three-year full time programme. The programme is not only a specialist programme, but it is also designed to be relevant to the social and economic needs of the nation. In reflection to the specialized nature of the programme, emphasis is given to practical and acquisition of practical skills.

The Programme has been involved in teaching basic and applied Nutrition as well as making findings on local problems of Nutrition and Dietetics interest. The vision of the programme is therefore, to produce graduates who are not only knowledgeable in the science of Nutrition and Dietetics, but who can make significant contributions to the development the human society.

The programme is aimed at training undergraduate graduate students who would have adequate background knowledge and practical skills for application in postgraduate research, teaching, industrial production, medical, hospital and environmental management.

2. SALIENT FEATURES

- Course is specially designed for a higher level career placement.
- Special guest lecture from industries will be arranged.
- Enables students to gain a job oriented degree.
- Special industry orientations and training are parts of the degree course.

3. OBJECTIVES OF THE COURSE

The specific objectives of the programme are:

- To equip the undergraduate students with a sound knowledge of the fundamental principles involved in the study of Nutrition and Dietetics.
- To produce graduates that would make impact in the diverse fields of human endeavor considering the ubiquitous nature of food and the wide – ranging applications of the knowledge of Nutrition and Dietetics.
- To provide focus for a career in various fields of applied science including medicine, pharmacy, bio-mining, biotechnology, industrial production, environmental manage teaching, industrial production, medical, hospital and environmental management ment, agriculture.

4. ELIGIBILITY FOR ADMISSION

Candidates seeking admission to the first year degree course for **B.Sc., Nutrition and Dietetics** shall be required to have passed

a) Higher secondary examination with biology as major subjects conducted by the Government of Tamil Nadu (or)
b) These regulations shall take effect from the academic year 2017-2018 i.e. for the students who are to be admitted to the first year of the course during the academic year 2017-2018 and thereafter
c) Any examination with biology as major subjects of any other University or Board accepted as equivalent there to by Periyar University.
d) Academic and vocational stream candidates are eligible.

5. DURATION OF THE COURSE

- The course shall extend over a period of three academic years consisting of six semesters. Each academic year will be divided into two semesters. The first semester will consist of the period from July to November and the second semester from December to March.
- The subjects of the study shall be in accordance with the syllabus prescribed from time to time by the Board of Studies of Vivekanandha College of Arts and Sciences for Women (Autonomous) with the approval of Periyar University.
- Each subject will have six hours of lecture per week apart from practical at the end of even semester.

6. CONTINUOUS INTERNAL ASSESSMENT

The performance of the students will be assessed continuously and the Internal Assessment Marks will be as under:

Theory

1. Average of two tests	-	15 Marks
2. Assignment	-	5 Marks
3. Attendance	-	5 Marks
Total		**25 Marks**

Practical

1. Practical best average of two tests	- 30 Marks
2. Attendance	- 5 Marks
3. Observation note	- 5 Marks

Total **40 Marks**

Break-up Details for Attendance

Below 75%	- No Marks
76 to 80%	- 1 Mark
81 to 85%	- 2 Marks
86 to 90%	- 3 Marks
91 to 95%	- 4 Marks
96 to 100%	- 5 Marks

PASSING MINIMUM

INTERNAL

There shall be no passing minimum for internal

EXTERNAL

In the end semester examinations, the passing minimum shall be 40 % out of 75 Marks (30 Marks)

7. ELIGIBILITY FOR EXAMINATION

A candidate will be permitted to appear for the end semester examination only on earning 75 % of attendance and only when his/her conduct has been satisfactory. It shall be open to grant exemption to a candidate for valid reasons subject to conditions prescribed.

8. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Successful candidates passing the examination of language, core, allied, elective, skill based elective and non major elective courses and securing marks

a) 75% and above shall be declared to have passed the examination in first class with Distinction provided they pass all the examinations prescribed for the course at first appearance itself.
b) 60% and above but below 75% shall be declared to have passed the examinations in first class without distinction.
c) 50% and above but below 60% shall be declared to have passed the examinations in second class.

d) All the remaining successful candidates shall be declared to have passed the examinations in third class.

e) Candidates who pass all the examinations prescribed for the course at the first appearance itself and within a period of three consecutive academic years from the year of admission only will be eligible for University rank.

9. ELIGIBILITY FOR AWARD OF THE DEGREE

A candidate shall be eligible for the award of the degree only if she has undergone the above degree for a period of not less than three academic years comprising of six semesters and passed the examinations prescribed and fulfilled such conditions has have been prescribed therefore.

10. PATTERN OF QUESTION PAPER

PART- A (Objective)	Answer all Questions	20 x 1 = 20 Marks
PART- B (500 words)	Answer all 5 Questions (either or type)	5 x 5 = 25 Marks
PART - C (1000 words)	Answer any 3 Questions (three out of five)	3 x 10 = 30 Marks

11. PROCEDURE IN THE EVENT OF FAILURE

If a candidate fails in a particular subject, she may reappear for the university examination in the concerned subject in subsequent semesters and shall pass the examination.

12. COMMENCEMENT OF THESE REGULATIONS

These regulations shall take effect from the academic year 2017 - 2018 i.e. for the students who are to be admitted to the first year of the course during the academic year 2017 - 2018 and thereafter.

13. TRANSITORY PROVISION

Candidates who were admitted to the UG course of Nutrition and dietetics before 2017 – 2018 shall be permitted to appear for the examinations under those regulations for a period of three years *i.e.,* up to and inclusive of the examination of April/May 2020. Thereafter, they will be permitted to appear for the examination only under the regulations then in force.

Vivekanandha College

VISION

To evolve into a centre of excellence in higher education through creative and innovative practices to secure social equity for women.

MISSION

1. **To provide sufficient learning infrastructure to the students to pursue their studies**
2. **To provide good opportunity for higher education and conducive environment to the students to acquire education**
3. **To provide high quality academic programme, training activities and research facilities**
4. **To facilitate industry-institute interface**

VISION

Aspires to be a microbiologist committed to progress the quality of human lives by exploring environment, fighting with disease and to utilize microbes for healthy food.

MISSION

To educate the students to acquire the academic excellence with national and international recognition

To train the students to recognize, investigate and to resolve the myriad of microbiological problems affecting health and the environment through the programme designs

To contribute to the cutting edge in nutrition and dietetics by pursuing high quality research and other scholarly activities

To motivate the students to become a women entrepreneur by applying their knowledge in the field of nutrition and dietetics

To establish as an expert resource within the geographical areas regarding all issues related to medical and nutrition and dietetics

B.Sc., NUTRITION AND DIETETICS

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

1. To furnish the graduates with the ability to prepare to a varying situations by gaining strength to learn and apply the recent skills with competency.
2. To train the basic and vital knowledge in the field of Nutrition and Dietetics both practically and theoretically with the team setup with proper ethical practices.
3. To create the graduates to extend the spirit of empathy, humanity and commitment for Nation development.

PROGRAMME SPECIFIC OUTCOME (PSO)

B.Sc., NUTRITION AND DIETETICS

1. This program provides comprehensive knowledge and practical training in the human physiology, food science, basic nutrition and dietetics and basic biochemistry, disease and public health. **K2**
2. Students will acquire and demonstrate competency in laboratory safety and in routine and specialized microbiological laboratory skills applicable to microbiological research or clinical methods, including accurately reporting observations and analysis. **K3**
3. Students gain the knowledge of principles and practices in the main applications of microorganisms to the industrial production of foods, microbial metabolites, proteins and other useful products, including the use of genetically modified organisms **K3**

PROGRAMME OUTCOME (PO)

B.Sc.NUTRITION AND DIETETICS

POs	OUTCOME	CPD
PO-1	Students shall develop the ability of understanding the basic concepts and inter relating them within diverse life science domains for developing competitive skill metrics (CSM's)	K2
PO-2	Students shall able to comprehend the assorted knowledge of various streams of life science by revealing their views and suggestions with the impartment (or) exchange and explore in precise manner with life science professionals and public	K1
PO-3	Students shall develop the capability of decisive/crucial thoughts by forming experimental ideas and assessing them to meet out specific competences and expectations in different biological sectors	K3
PO-4	Students shall able to explain by effectively observing the condition and challenges existing in different biological systems	K4
PO-5	Students shall perform well consistently by evaluating various challenges, arguments and ending up with right and accurate decision by integrating clinical, immunological, pharmaceutical domains	K5
PO-6	Students shall able to define problems, formulate &test the hypotheses, analyse and interpret the data related to plant, animal, microbial and biochemical systems	K4

PO-7	Students shall map out the tasks of fellow mates, directing them to formulate the vision of life science by improvising their managerial skill set	K5
PO-8	Students shall develop the ability to explain and conclude by critically exploring the views and ideas with qualitative and quantitative biological data for developing logical and convincing arguments	K4
PO-9	Students shall develop an acute perception of a situation and knowledge values of multiple domains of life science with the capability of effective engagement in a multicultural society	K2
PO-10	Students shall able to work effectively and access the utility of ICT with biologically diversified teams with assistance, especially by complying readily and effectively use the relevant information resources for the knowledge	K3
PO-11	Students shall develop the habit of individual working environment and able to promote confidence level for executing, managing and completing a biological assignment with effective and reproducible solutions	K6
PO-12	Students shall able to meet out their own learning needs by appreciating environment and sustainability from a range of current research and development in all aspects of work	K5
PO-13	Students shall develop the habit of avoiding unethical behaviour in terms of misinterpretation of project/research data derived, committing plagiarism, non-adherence of Intellectual Property Rights (IPR) that are related to product development and marketing	K5
PO-14	Students shall apply the knowledge of basic life science and its specific transferable skills for identifying the issues and solving them with well defined solutions	K6
PO-15	Students shall able to acquire knowledge and technical skill set throughout their life by developing execution skills that meet outs the social, economic and cultural objectives which are relevant to life science related job trades	K6

SCHEME OF CURRICULUM – B.Sc., NUTRITION AND DIETETICS
(For the candidates admitted during the academic year 2018 – 2019 onwards)

Part	Paper Code	Subject Title	Hours /Week	Credits	University Examination			Exam Hrs.
					Internal(25%)	External(75%)	Total	
SEMESTER I								
I		Tamil I	6	3	25	75	100	3
II		English I	6	3	25	75	100	3
III		Core I	5	5	25	75	100	3
III		Core Practical I	3	-	-	-	-	
III		Allied I	4	4	25	75	100	3
III		Allied Practical I	3	-	-	-	-	
IV		Value Education	2	2	25	75	100	3
SEMESTER II								
I		Tamil II	6	3	25	75	100	3
II		English II	6	3	25	75	100	3
III		Core II	5	5	25	75	100	3
III		Core Practical I	2	4	40	60	100	3
III		Core Practical II	3	3	40	60	100	3
III		Allied II	4	4	25	75	100	3
III		Allied Practical I	3	2	40	60	100	3
IV		Environmental Studies	1	2	25	75	100	3

Part	Paper Code	Subject Title	Hours /Week	Credits	University Examination			Exam Hrs.
					Internal(25%)	External(75%)	Total	
SEMESTER III								
I		Tamil III	6	3	25	75	100	3
II		English III	6	3	25	75	100	3
III		Core III	5	5	25	75	100	3
III		Core Practical III	2	-	-	-	-	-
III		Allied III	4	3	25	75	100	3
III		Allied Practical II	3	-	-	-	-	-
IV		SBEC I	2	2	25	75	100	3
IV		NMEC I	2	2	25	75	100	3
SEMESTER IV								
I		Tamil IV	6	3	25	75	100	3
II		English IV	6	3	25	75	100	3
III		Core IV	5	5	25	75	100	3
III		Core Practical III	2	3	40	60	100	3
III		Allied IV	4	4	25	75	100	3
III		Allied Practical II	3	2	40	60	100	3
IV		SBEC II	2	2	25	75	100	3
IV		NMEC II	2	2	25	75	100	3

Part	Paper Code	Subject Title	Hours /Week	Credits	University Examination			Exam Hrs.
					Internal(25%)	External(75%)	Total	
SEMESTER V								
I		Core V	5	5	25	75	100	3
II		Core VI	6	5	25	75	100	3
III		Elective course I	6	5	25	75	100	3
III		Core Practical IV	3	-	-	-	-	-
III		Core Practical V	3	-	-	-	-	-
III		Elective II	5	5	25	75	100	3
IV		SBEC III	2	2	25	75	100	3
SEMESTER VI								
III		Core VII	6	5	25	75	100	3
III		Core Practical IV	3	5	40	60	100	3
III		Core Practical V	3	5	40	60	100	3
III		Core Practical III	2	3	40	60	100	3
III		Core VIII	6	5	25	75	100	3
III		Elective Paper III	5	5	25	75	100	3
IV		SBEC IV	2	2	25	75	100	3
IV		SBEC V	2	2	25	75	100	3
IV		SBECP I	3	2	400	60	100	3
		Extension Activities	-	1	-	-	-	-
		Total		**140**	**1135**	**2865**	**4000**	

LIST OF CORE PAPERS

I. Human Physiology

II. Food Science

III. Nutritional Biochemistry

IV. Principles of Human Nutrition

V. Nutrition in Life Cycle

VI Dietetics and Counseling

VII Food Nutrition and dietetics

VIII Advanced Dietetics

LIST OF PRACTICALS

I. Human Physiology

II. Food Science

III. Clinical Nutrition and Food Analysis

IV. Nutrition in Life Cycle and Dietetics

V. Assessment of Food Quality

Students have to choose either SET-I or SET-II for their Elective Courses and Skill Based Elective Courses. Papers from both the sets cannot be mingled. Those students who have selected SET-I for Elective Courses, will have to select SET-I for Skill Based Elective Courses also. Those students, who have selected SET-II for Elective Courses, will have to select SET-II for Skill Based Elective Courses also.

SET- I

LIST OF ELECTIVE COURSES FOR SET-I

I. Quantity Food Service and Physical Facilities

II. Food Product Development and Quality Control

III. Institutional Project

LIST OF SKILL BASED ELECTIVE COURSES (SBEC) FOR SET-I

I. Food Processing

II. Food Packaging

III. Bakery Science

IV. Sanitation and Hygiene in Food Industries

V. Entrepreneurship Development

VI. Food Preservation and Bakery (Practical)

SET-II

LIST OF ELECTIVE COURSES FOR SET- II

I. Nutraceuticals

II. Nutrition for Fitness and Sports

III. Institutional Project

LIST OF SKILL BASED ELECTIVE COURSES (SBEC) FOR SET-II

I. Food Processing

II. Food Chemistry

III. Bakery Science

IV. Food Biotechnology

V. Public Health Nutrition

VI. Food Preservation and Bakery (Practical)

Allied Courses for B.Sc. Nutrition and Dietetics

I Year - Allied Chemistry

II Year - Allied Computer Science

LIST OF NON MAJOR ELECTIVE COURSES (NMEC) OFFERED BY THE BOARD OF NUTRITION AND DIETETICS/ HOME SCIENCE TO OTHER MAJOR STUDENTS

I. Basic Food Science

II. Basic Nutrition

LIST OF ALLIED COURSES OFFERED BY THE BOARD OF NUTRITION AND DIETETICS/ HOME SCIENCE TO STUDENTS STUDYING DEGREE IN LIFE SCIENCES

SET-I	**SET-II**
Food Science-I	Human Nutrition-I
Food Science-II	Human Nutrition-II
Food Analysis Practical	Clinical Nutrition Practical

B.Sc. NUTRITION AND DIETTETICS
SEMESTER – I
CORE - I HUMAN PHYSIOLOGY

OUTCOME

The students will be able to

1. Summarize the structure of human systems and integrate their functions with human nutrition
2. Determine the blood parameters
3. Identify the microscopic structure of tissues in various systems

CO LEVEL	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	The students could understand the human body cells and tissues organizations	**K2**
CO2	The students could understand the human blood function and human enzymes, hormones	**K2**
CO3	The students could understand the human blood function and human enzymes, hormones	**K2**
CO4	The students could understand the human body functions	**K2**
CO5	The students could understand the human reproductive system functions	**K2**

UNIT - I

Cell – Structure of organelles and functions. Tissues – Structure, classification and functions.

UNIT-II

Blood – Composition, functions, coagulation, factors affecting coagulation, blood groups. Gastrointestinal and Hepato biliary system – Structure, physiology and functions for different organs and role of hormones and enzymes.

UNIT- III

Immune system – Innate, acquired and active immunity, cell mediated immunity, humoral immunity and complement system.

Heart and circulation – Structure, cardiac cycle, cardiac output, factors affecting cardiac output, normal ECG, heart failure, blood pressure, control and factors affecting blood pressure.

UNIT- IV

Respiratory system – Structure and functions, Lung volumes and lung capacities, Factors affecting efficacy of respiration.

Excretory system - (A) Urinary System: - Structure and functions of organs of urinary system (In brief),

Mechanism of urine formation.
(B) Skin:- Structure and functions, Regulation of body temperature.

UNIT- V

Reproductive system –(A)Female reproductive system -- Structure and functions, menstrual cycle, menarche and menopause.

(B) Male Reproductive system -- Structure and functions.

Endocrine system - Thyroid, Parathyroid, Adrenal gland, Pituitary and Sex glands – Structure and functions.

REFERENCES

1. Ross and Wilson: Anatomy and physiology in Health and Illness, 11th Edition, Church Hill Livingstone, 2011
2. West, J.B.: Best and Taylor's Physiological Basis of Medical Practice, 11th Edition,2007
3. Chatterjee, C.C., Human Physiology: Medical Allied Agency, Calcutta. 1980
4. Gyton: Test Book of Medical Physiology, 9th Edition, Prism Books Pvt. Ltd., W.B. Sanders Company, USA. 1996
5. Keel and Neil: Samson and Wright's Applied Physiology (12th edition), Oxford University Press. London.2004

B.Sc. NUTRITION AND DIETETICS

SEMESTER –I & II

CORE PRACTICAL – I HUMAN PHYSIOLOGY

1. Microscopic study of tissues- epithelial, connective and muscular.
2. Collection of blood sample- Capillary blood from finger tips and venous blood.
3. Separation of blood components (Centrifugation).
4. Estimation of hemoglobin- Sahli's Acid hematin method.
5. Determination of Hematocrit (Wintrobe method).
6. Preparation and examination of stained blood smear (Wedge or glass slide method).
7. Determination of Erythrocyte Sedimentation Rate (Wintrobe method).
8. Determination of blood group.
9. Determination of bleeding time (Duke method) and coagulation time (Capillary tube method).
10. Platelet count (Rees Ecker method by hemocytometry).
11. Clinical examination of radial pulse (pulse rate).
12. Measurement of blood pressure (Sphygmomanometry).
13. Effect of exercise on blood pressure and heart rate.
14. Microscopic structure of heart, digestive system and kidney.
15. Microscopic structure of reproductive organs- ovary, uterus, mammary glands and testis.
16. Microscopic structure of endocrine glands- thyroid, pituitary and adrenal.

REFERENCE

1. G.K.Pal and Pravati pal, Text book of practical physiology, Orient Longman Ltd. 2001.

B.Sc. NUTRITION AND DIETETICS SEMESTER – II

CORE II - FOOD SCIENCE

OUTCOME

The students will be able to

1. Understand the scientific principles underlying food preparation.
2. Develop skill and techniques in food preparation with conservation of nutrients and palatability using desirable cooking methods.

CO LEVEL	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	The knowledge on food and the classifications	**K1**
CO2	The handling and knowledge of nutritional valuable foods	**K2**
CO3	Preparation of diet foods in milk and poultry based foods	**K3**
CO4	To understanding and knowledge of vegetables, fruits and spices food and the classifications	**K3**
CO5	The efficacy of fat and sugar based foods	**K3**

UNIT-I

Food: Definition, functional classification, groups (4,5,7 and 11),food pyramid.

Cooking: Definition and objectives Methods-Moist heat methods, dry heat methods, combination of both and micro wave cooking; Effect of cooking on nutrients.
Beverages: Classification; Coffee beverage- Constituents and method of preparation; Tea-Types, preparation; Cocoa- Composition, nutritive value and preparation of cocoa beverage; Fruit beverages-Types: Introduction to vegetable juices, milk based beverages, malted beverages, carbonated non alcoholic beverages and alcoholic beverages.

UNIT-II

Cereals and millets: Structure, composition and nutritive value of rice, wheat and oats; Nutritive value of maize, jowar, ragi and bajra. Cereal cookery: Effect of moist heat- Hydrolysis, Gelatinisation and factors affecting gelatinization, gel formation, retrogradation and syneresis; Effect of dry heat; Role of cereals in cookery.

Pulses: Composition, nutritive value, toxic constituents; Pulse cookery- Effect of cooking, factors affecting cooking quality, role of pulses in cookery, germination and its advantages.

UNIT-III

Milk and milk products: Composition and nutritive value of milk; Milk cookery- Effect of heat, effect of acid and effect of enzymes; Milk products- Non fermented and fermented products (does not include preparation); Role of milk in cookery.
Egg: Structure, composition, nutritive value; Egg cookery- Effect of heat, factors affecting coagulation of egg proteins and effect of other ingredients on egg protein; Role of egg in cookery; Home scale method for detecting egg quality.

Meat: Classification, composition, nutritive value, rigor mortis, ageing and tenderizing; Meat cookery-Changes during cooking.

Poultry: Classification, composition and nutritive value.

Fish: Classification, composition, nutritive value, selection and principles of fish cookery.

UNIT-IV

Vegetables: Classification (nutritional), composition, nutritive value; Pigments in vegetables- Water soluble and water insoluble; Enzymes, flavor compounds and bitter compounds; Vegetable cookery- Preliminary preparation, changes during cooking, loss of nutrients during cooking, effect of cooking on pigments, role of vegetables in cookery.

Fruits: Classification, composition, nutritive value, ripening of fruits; Browning- Types and preventive measures.

Spices: General functions, role in cookery; Medicinal value of commonly used spices.

UNIT-V

Fats and oils: Composition and nutritive value, basic knowledge about commonly used fats and oils (lard, butter, margarine, cotton seed oil, ground nut oil, coconut oil, soya bean oil, olive oil, rice bran oil, sesame oil, rape seed oil, mustard oil and palm oil); Spoilage of fat- Types and prevention; Effect of heating, role of fats and oils in cookery.

Sugar and related products: Nutritive value, characteristics and uses of various types of sugars; Sugar cookery- Crystallization and factors affecting crystallization; Stages of sugar cookery; Role of sugar in cookery.

REFERENCES

1. Srilakshmi. B. Food Science, New Age International (P) Ltd. Publishers, Sixth edition.2016.
2. Manay Shakunthala, N and Shadaksharaswamy M. Food Facts and Principles, New Age International (P) Ltd Publishers, Reprint 2005.
3. Swaminathan M., Food Science, Chemistry and Experimental foods, Bappo Publishers company Ltd, 1997.
4. Usha Chandrasekar, Food Science in Indian Cookery, Phoenix publishers House Private Limited, 2002.

B.Sc. NUTRITION AND DIETETICS
SEMESTER – II
CORE PRACTICAL II FOOD SCIENCE

1. Grouping of foods according to ICMR classification.
2. Measurement of food materials using standard measuring cups, spoons and weighing.
3. Find the percentage of edible portion of foods.
4. Observe the microscopic structure of different starches before and after gelatinization (rice, wheat and corn).
5. Study the effect of temperature, time of heating, concentration, addition of sugar and acid on gelatinization of starch.
6. Prepare recipes using the following processes- Gelatinization, gluten formation and gel formation.
7. Demonstrate the best method of cooking rice.
8. Demonstrate the effect of soaking, hard water, sodium bi carbonate and papaya on cooking quality of pulses.
9. Prepare recipes using whole gram, dhal, pulse flours, sprouted pulses and cereal pulse combination.
10. Demonstrate the factors affecting coagulation of milk protein.
11. Prepare recipes using milk and its products.
12. Demonstrate the formation of ferrous sulphide in boiling egg and its preventive measures.
13. Demonstrate the effect of addition of acid, fat, salt, water and sugar on the texture of omelettes.
14. Prepare recipes where egg acts as – thickening agent, binding agent, emulsifying agent and enriching agent.
15. Demonstrate the effect of acid, alkali and over cooking on vegetables containing different pigments.
16. Demonstrate the effects of different amounts of water added to vegetables during cooking on flavor and appearance.
17. Demonstrate enzymatic browning in vegetables and fruits and any four methods of preventing it.

18. Prepare the following using fruits and vegetables- salads, soups and curries.
19. Determine the smoking point of any 4 cooking oils.
20. Prepare recipes using shallow fat and deep fat frying methods.
21. Demonstrate the stages of sugar cookery
22. Prepare recipes using various stages of sugar cookery and jaggery.
23. Preparation of any one beverage under the following types- refreshing, nourishing, stimulating, soothing and appetizing.

REFERENCE

1. Srilakshmi. B. Food Science, New Age International (P) Ltd. Publishers, Sixth edition. 2016.