

# FACULTY OF SCIENCES

## SYLLABUS

### FOR

## Bachelor of Vocation (B.Voc.) (FOOD PROCESSING & TECHNOLOGY)

(SEMESTER: I-II)

Examinations: 2019-20



---

# GURU NANAK DEV UNIVERSITY AMRITSAR

---

- Note: (i) Copy rights are reserved.  
Nobody is allowed to print it in any form.  
Defaulters will be prosecuted.
- (ii) Subject to change in the syllabi at any time.  
Please visit the University website time to time.

1  
B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER SYSTEM)

**SEMESTER-I**

| CODE                               | SUBJECTS  | Theory | Practical          | TOTAL MARKS |
|------------------------------------|---|--------|--------------------|-------------|
| <b>General Education Component</b> |   |        |                    |             |
| <b>Paper I</b>                     | Communication Skills in English-I   | 50     | -                  | 50          |
| <b>Paper II</b>                    | ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ <b>OR</b><br>*ਮੁੱਢਲੀ ਪੰਜਾਬੀ <b>OR</b><br>**Punjab History & Culture | 50     | -                  | 50          |
| <b>Paper III</b>                   | ***Drug Abuse – Problem : Management & Prevention (Compulsory)                    | 50     | -                  | -           |
| <b>Skill Component</b>             |   |        |                    |             |
| <b>Paper IV</b>                    | Basics of Food Processing   | 50     | 50                 | 100         |
| <b>Paper V</b>                     | Fundamentals of Food and Nutrition  | 50     | 50                 | 100         |
| <b>Paper VI</b>                    | Introduction to Fruits and Vegetables Processing                                  | 50     | 50                 | 100         |
|                                    |   |        | <b>TOTAL = 400</b> |             |

**Note:**

- \*Special Paper in lieu of Punjabi Compulsory.
- \*\*For those students who are not domicile of Punjab
- \*\*\*This paper marks will not be included in the total marks.

2  
B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER SYSTEM)

**SEMESTER-II**

| <b>PAPER</b>                       | <b>SUBJECTS</b>   | <b>THEORY</b> | <b>PRACTICAL</b>   | <b>TOTAL MARKS</b>                      |
|------------------------------------|---|---------------|--------------------|---|
| <b>General Education Component</b> |   |               |                    |   |
| <b>Paper I</b>                     | Communication Skills in English-II  | 50            | -                  | 50                                      |
| <b>Paper II</b>                    | ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ <b>OR</b><br>*ਮੁੱਢਲੀ ਪੰਜਾਬੀ <b>OR</b><br>**Punjab History & Culture | 50            | -                  | 50                                      |
| <b>Paper III</b>                   | ***Drug Abuse – Problem : Management & Prevention (Compulsory)                    | 50            | -                  | -                                       |
| <b>Skill Component</b>             |   |               |                    |   |
| <b>Paper IV</b>                    | Basics of Food Engineering  | 50            | 50                 | 100                                     |
| <b>Paper V</b>                     | Introduction to Dairy Processing  | 50            | 50                 | 100                                     |
| <b>Paper VI</b>                    | Basics of Food Safety   | 50            | 50                 | 100                                     |
| <b>Paper VII</b>                   | Industrial Training   |               | Grade              | <b>Satisfactory/<br/>Unsatisfactory</b> |
|                                    |   |               | <b>TOTAL = 400</b> |   |

**Note:**

1. \*Special Paper in lieu of Punjabi Compulsory.
- 2.\*\*For those students who are not domicile of Punjab
3. \*\*\*This paper marks will not be included in the total marks.

3  
B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-I)

**Paper-I: COMMUNICATION SKILLS IN ENGLISH-I**

**Time: 3 Hours**

**Max. Marks: 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**The syllabus is divided in four sections as mentioned below:**

**Section–A**

**Reading Skills:** Reading Tactics and strategies; Reading purposes–kinds of purposes and associated comprehension; Reading for direct meanings.

**Section–B**

Reading for understanding concepts, details, coherence, logical progression and meanings of phrases/ expressions.

**Activities:**

- Comprehension questions in multiple choice format
- Short comprehension questions based on content and development of ideas

**Section–C**

**Writing Skills:** Guidelines for effective writing; writing styles for application, personal letter, official/ business letter.

**Activities**

- Formatting personal and business letters.
- Organising the details in a sequential order

**Section–D**

Resume, memo, notices etc.; outline and revision.

**Activities:**

- Converting a biographical note into a sequenced resume or vice-versa
- Ordering and sub-dividing the contents while making notes.
- Writing notices for circulation/ boards

**Recommended Books:**

1. *Oxford Guide to Effective Writing and Speaking* by John Seely.
2. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP

**Paper-II: ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)**

ਸਮਾਂ : 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

**ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ**

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਚੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

**ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ**

**ਸੈਕਸ਼ਨ-ਏ**

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ),  
(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)  
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।  
(ਪ੍ਰਸ਼ਗ ਸਾਹਿਤ ਵਿਆਖਿਆ, ਸਾਰ )

**ਸੈਕਸ਼ਨ-ਬੀ**

ਇਤਿਹਾਸਕ ਯਾਦਾਂ (ਇਤਿਹਾਸਕ ਲੇਖ-ਸੰਗ੍ਰਹਿ)  
ਸੰਪਾ. ਸ.ਸ.ਅਮੋਲ,  
ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ। (ਲੇਖ 1 ਤੋਂ 6)  
(ਨਿਬੰਧ ਦਾ ਸਾਰ, ਲਿਖਣ-ਸ਼ੈਲੀ)

**ਸੈਕਸ਼ਨ-ਸੀ**

(ੳ) ਪੈਰਾ ਰਚਨਾ  
(ਅ) ਪੈਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ।

**ਸੈਕਸ਼ਨ-ਡੀ**

(ੳ) ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ : ਉਚਾਰਨ ਅੰਗ, ਉਚਾਰਨ ਸਥਾਨ ਤੇ ਵਿਧੀਆਂ, ਸਵਰ, ਵਿਅੰਜਨ,  
ਸੁਰ-ਪ੍ਰਕਾਸ਼।  
(ਅ) ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ : ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ-ਭਾਸ਼ਾ ਦਾ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ-ਚਿੰਨ੍ਹ।

5  
B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-I)

**Paper-II: ਮੁੱਢਲੀ ਪੰਜਾਬੀ**  
(In lieu of Compulsory Punjabi)

ਸਮਾਂ : 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ: 50

**ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ**

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

**ਪਾਠ-ਕ੍ਰਮ**

**ਸੈਕਸ਼ਨ-ਏ**

ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤ੍ਰਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ)  
ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ

**ਸੈਕਸ਼ਨ-ਬੀ**

ਪੰਜਾਬੀ ਸ਼ਬਦ-ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ  
(ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ)

**ਸੈਕਸ਼ਨ-ਸੀ**

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇ-ਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ।

**ਸੈਕਸ਼ਨ-ਡੀ**

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ।

6  
B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-I)

**Paper-II: Punjab History & Culture (From Earliest Times to C 320)**  
**(Special Paper in lieu of Punjabi compulsory)**  
**(For those students who are not domicile of Punjab)**

**Time: 3 Hours**

**Max. Marks: 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Section A**

1. Physical features of the Punjab and its impact on history.
2. Sources of the ancient history of Punjab

**Section B**

3. Harappan Civilization: Town planning; social, economic and religious life of the Indus Valley People.
4. The Indo-Aryans: Original home and settlements in Punjab.

**Section C**

5. Social, Religious and Economic life during *Rig* Vedic Age.
6. Social, Religious and Economic life during Later Vedic Age.

**Section D**

7. Teachings and impact of Buddhism
8. Jainism in the Punjab

**Suggested Readings**

1. L. M Joshi (ed.), *History and Culture of the Punjab*, Art-I, Patiala, 1989 (3<sup>rd</sup> edition)
2. L.M. Joshi and Fauja Singh (ed.), *History of Punjab*, Vol.I, Patiala 1977.
3. Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
4. B.N. Sharma, *Life in Northern India*, Delhi. 1966.
5. Chopra, P.N., Puri, B.N., & Das, M.N.(1974). *A Social, Cultural & Economic History of India*, Vol. I, New Delhi: Macmillan India.

**Paper-III: Drug Abuse: Problem, Management and Prevention  
(COMPULSORY PAPER)**

**PROBLEM OF DRUG ABUSE**

**Time: 3 Hours**

**Max. Marks: 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Section – A**

**Meaning of Drug Abuse:**

Meaning, Nature and Extent of Drug Abuse in India and Punjab.

**Section – B**

**Consequences of Drug Abuse for:**

|            |   |                                |
|------------|---|--------------------------------|
| Individual | : | Education, Employment, Income. |
| Family     | : | Violence.                      |
| Society    | : | Crime.                         |
| Nation     | : | Law and Order problem.         |

**Section – C**

**Management of Drug Abuse:**

Medical Management: Medication for treatment and to reduce withdrawal effects.

**Section – D**

Psychiatric Management: Counselling, Behavioural and Cognitive therapy.

Social Management: Family, Group therapy and Environmental Intervention.

**References:**

1. Ahuja, Ram (2003), *Social Problems in India*, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Inciardi, J.A. 1981. *The Drug Crime Connection*. Beverly Hills: Sage Publications.
4. Kapoor. T. (1985) *Drug epidemic among Indian Youth*, New Delhi: Mittal Pub.
5. Kessel, Neil and Henry Walton. 1982, *Alcoholism*. Harmond Worth: Penguin Books.
6. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.



B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-I)

7. National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
8. Ross Coomber and Others. 2013, *Key Concept in Drugs and Society*. New Delhi: Sage Publications.
9. Sain, Bhim 1991, *Drug Addiction Alcoholism, Smoking obscenity* New Delhi: Mittal Publications.
10. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab: A Sociological Study*. Amritsar: Guru Nanak Dev University.
11. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.
12. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation*, Cambridge University Press.
13. Verma, P.S. 2017, "*Punjab's Drug Problem: Contours and Characteristics*", Economic and Political Weekly, Vol. LII, No. 3, P.P. 40-43.
14. World Drug Report 2016, United Nations office of Drug and Crime.
15. World Drug Report 2017, United Nations office of Drug and Crime.

B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-I)

**Paper-IV : BASICS OF FOOD PROCESSING (THEORY)**

**Time : 3 Hrs.**  
**Pass Marks: 40 %**

**Max. Marks : 100**  
**Theory : 50**  
**Practical : 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

- Introduction to Food Processing: Definition, Advantages, Different processes employed in food processing viz. Milling, Cooking, Boiling, Steaming, Braising, Stewing, Roasting, Frying, Grilling, Baking, Microwave cooking, Fermentation, Refining.

**SECTION-B**

- Recent Trends in Food Processing - Microwave processing: Properties, Mechanism, Microwave food applications, Extrusion cooking, Ohmic Heating, Reverse Osmosis, Electro dialysis, Ultra-filtration, High Pressure Processing, Super critical fluid extraction

**SECTION-C**

- **Preservation:** Drying (Methods of drying – dehydration by Air drying, sun drying and freeze drying) Concentration Methods: (Intermediate Moisture Foods) Radiations: (Ultraviolet and ionizing irradiations. Their effect on microorganisms, use of radiations in the processing of various foods.

**SECTION-D**

- **Preservation:** Heat: (Heat resistance of microorganisms and their spores. Thermal death time, Heat treatments – boiling, steam under pressure, pasteurization, canning). Low Temperature: (Low temperature storage, refrigeration and freezing).

**Paper-IV : BASICS OF FOOD PROCESSING (PRACTICAL)**

**Marks : 50**

1. To blanch a seasonal fruit or vegetable & assess quality of blanching process.
2. To study the effect of browning on raw fruits & vegetables.
3. To study effect of heat and acidity on milk proteins.
4. To study the effectiveness of pasteurization by phosphates test.
5. To study Pasteurization of milk using microwave technique.
6. To study different methods of food processing i.e. by heat, low temperature & drying on a given food sample.
7. To check the shelf life of a given food at ambient temperature and under refrigeration.

**Paper-V : FUNDAMENTALS OF FOOD & NUTRITION (THEORY)**

**Time : 3 Hrs.**  
**Pass Marks: 40 %**

**Max. Marks : 100**  
**Theory : 50**  
**Practical : 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Food: Definition & classification and constituents of food :Carbohydrates, Fats , Proteins ,Fat soluble vitamins-A, D,E and K ,Water soluble vitamins – Thiamin, Riboflavin, Niacin, Pyridoxine, Folate, Vitamin B12 and Vitamin C, Minerals – Calcium, Iron, Zinc, Iodine and Flourine.

**SECTION-B**

2. Functions of food, Effect of deficiency & overconsumption of dietary sources on health, Basic Food Groups, Recommended dietary Allowance (RDA), Food guide pyramid, Dietary fibers, Functions of water in body.

**SECTION-C**

3. Nutrition: Basic terms used in Nutrition, relationship between food, health and nutrition, Bioavailability of nutrients. Basal Metabolic Rate (BMR). Protein quality, Dietary allowances and standards for different age groups: Adult man/woman, Preschool children, Adolescent children, pregnant woman. Geriatric nutrition, Nutrition for athletes

**SECTION-D**

4. Nutritional Concept in Food Design: Nutritive values of cereals, pulses, oil seeds, fruits, vegetables, fish, meat and eggs. Balanced Diet: Concept of Balanced Diet: Definition, food groups used in planning balanced diets.

12  
B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-I)

**Paper-V : FUNDAMENTALS OF FOOD & NUTRITION (PRACTICAL)**

**Marks : 50**

1. To study nutritional information in different packed foods available in the market.
2. Qualitative and quantitative determination of carbohydrates in food
3. Qualitative and quantitative determination of proteins in food
4. Qualitative and quantitative determination of different vitamins in different food products.
5. To plan diet chart for different age groups with special reference to different physiological conditions (Diabetic, high blood pressure, Geriatric group).
6. To prepare scrap file showing over consumption and deficiency of different food components

**Paper-VI : INTRODUCTION TO FRUITS AND VEGETABLES PROCESSING  
(THEORY)**

**Time : 3 Hrs.**  
**Pass Marks: 40 %**

**Max. Marks : 100**  
**Theory : 50**  
**Practical : 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

Chemical composition, post harvest changes, desirable characteristics of fruits & vegetables for processing. Preparing fruits for processing, washing, sorting, grading, peeling, bleaching, cutting, destonning, pitting.

**SECTION-B**

Quality Control and storage techniques in FVP. Types of storage: Natural, Ventilated and Low temperature storage (General methods of freezing of fruits & vegetables, their packaging & storage), Problems related to storage of dehydrated products Classification of fruits and vegetables for preservation. Fruit & vegetable product order and quality control measures.

**SECTION-C**

Canning of fruits and vegetables: basic requirements, process, machinery, operation. aseptic canning technology: Tin Cans, glass canners.  
Drying /Dehydration: types, Process, machinery, operation.

**SECTION-D**

Definitions, formulation and preparation of fruit juices, Jams, jelly, pickles, tomato products (sauce), potato chips: principle, processing techniques.

**Paper-VI : INTRODUCTION TO FRUITS AND VEGETABLES PROCESSING  
(PRACTICAL)**

1. Preparation of jams and jellies from different fruits.
2. Preparation of Fruit Juices.
3. To prepare different types of pickles (sweet & sour).
4. Organoleptic evaluation of fruit & vegetable products.
5. Estimation of Ascorbic Acid content spectrophotometrically.
6. Determine Brix : Acid ratio of fruits and vegetable products
7. To test Pectin in fruit juices and pulp.
8. Drying by different methods of fruits and vegetables.
9. To prepare tomato ketch-up, sauce & chutney.
10. Preparation of potato chips, finger chips.
11. Utilization of waste for preparation of different products like vinegar, starch, pectin.
12. Industrial visit to fruit & vegetable processing unit.

B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-II)

**PAPER-I: COMMUNICATION SKILLS IN ENGLISH-II**

**Time: 3 Hours**

**Max. Marks: 50**  
**Theory Marks: 35**  
**Practical Marks: 15**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Course Contents:**

**SECTION-A**

**Listening Skills:** Barriers to listening; effective listening skills; feedback skills.

**Activities:** Listening exercises – Listening to conversation, News and TV reports

**SECTION-B**

Attending telephone calls; note taking and note making.

**Activities:** Taking notes on a speech/lecture

**SECTION-C**

**Speaking and Conversational Skills:** Components of a meaningful and easy conversation; understanding the cue and making appropriate responses; forms of polite speech; asking and providing information on general topics.

**Activities:** 1) Making conversation and taking turns

2) Oral description or explanation of a common object, situation or concept

**SECTION-D**

The study of sounds of English,  
Stress and Intonation,  
Situation based Conversation in English,  
Essentials of Spoken English.

**Activities:** Giving Interviews

**PRACTICAL / ORAL TESTING**

**Marks: 15**

**Course Contents:-**

1. Oral Presentation with/without audio visual aids.
2. Group Discussion.
3. Listening to any recorded or live material and asking oral questions for listening comprehension.

**Questions:-**

1. Oral Presentation will be of 5 to 10 minutes duration (Topic can be given in advance or it can be student's own choice). Use of audio visual aids is desirable.
2. Group discussion comprising 8 to 10 students on a familiar topic. Time for each group will be 15 to 20 minutes.

**Note:** Oral test will be conducted by external examiner with the help of internal examiner.



**Paper-II: ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)**

ਸਮਾਂ : 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ

**ਸੈਕਸ਼ਨ-ਏ**

ਆਤਮ ਅਨਾਤਮ (ਕਹਾਣੀ ਭਾਗ),  
(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)  
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।  
(ਵਿਸ਼ਾ-ਵਸਤੂ, ਪਾਤਰ ਚਿਤਰਨ)

**ਸੈਕਸ਼ਨ-ਬੀ**

ਇਤਿਹਾਸਕ ਯਾਦਾਂ (ਇਤਿਹਾਸਕ ਲੇਖ-ਸੰਗ੍ਰਹਿ)  
ਸੰਪਾ. ਸ.ਸ.ਅਮੋਲ,  
ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ। (ਲੇਖ 7 ਤੋਂ 12)  
(ਸਾਰ, ਲਿਖਣ ਸ਼ੈਲੀ)

**ਸੈਕਸ਼ਨ-ਸੀ**

(ੳ) ਸ਼ਬਦ-ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ : ਪਰਿਭਾਸ਼ਾ, ਮੁੱਢਲੇ ਸੰਕਲਪ  
(ਅ) ਸ਼ਬਦ ਸੁਢਾਰ

**ਸੈਕਸ਼ਨ-ਡੀ**

(ੳ) ਸੰਖੇਪ ਰਚਨਾ  
(ਅ) ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ

**Paper-II: ਮੁੱਢਲੀ ਪੰਜਾਬੀ**  
**(In lieu of Compulsory Punjabi)**

ਸਮਾਂ: 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ: 50

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

**ਪਾਠ-ਕ੍ਰਮ**

**ਸੈਕਸ਼ਨ-ਏ**

ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ  
(ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ)

**ਸੈਕਸ਼ਨ-ਬੀ**

ਪੰਜਾਬੀ ਵਾਕ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ  
(ੳ) ਸਾਧਾਰਨ ਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ ਅਤੇ ਮਿਸ਼ਰਤ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)  
(ਅ) ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)

**ਸੈਕਸ਼ਨ-ਸੀ**

ਪੈਰ੍ਹਾ ਰਚਨਾ  
ਸੰਖੇਪ ਰਚਨਾ

**ਸੈਕਸ਼ਨ-ਡੀ**

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)  
ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ

**Paper-II: Punjab History & Culture (C 320 to 1000 B.C.)**  
**(Special Paper in lieu of Punjabi compulsory)**  
**(For those students who are not domicile of Punjab)**

**Time: 3 Hours**

**Max. Marks : 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Section A**

1. Alexander's Invasion and its Impact
2. Punjab under Chandragupta Maurya and Ashoka.

**Section B**

3. The Kushans and their Contribution to the Punjab.
4. The Panjab under the Gupta Empire.

**Section C**

5. The Punjab under the Vardhana Emperors
6. Socio-cultural History of Punjab from 7<sup>th</sup> to 1000 A.D.

**Section D**

7. Development of languages and Education with Special reference to Taxila
8. Development of Art & Architecture

**Suggested Readings**

1. L. M Joshi (ed), *History and Culture of the Punjab*, Art-I, Punjabi University, Patiala, 1989 (3<sup>rd</sup> edition)
2. L.M. Joshi and Fauja Singh (ed.), *History of Punjab* , Vol.I, Punjabi University, Patiala, 1977.
3. Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
4. B.N. Sharma: *Life in Northern India*, Delhi. 1966.

**Paper-III: Drug Abuse: Problem, Management and Prevention  
(COMPULSORY PAPER)**

**DRUG ABUSE: MANAGEMENT AND PREVENTION**

**Time: 3 Hours**

**Max. Marks: 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Section – A**

**Prevention of Drug abuse:**

Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.

**Section – B**

School: Counselling, Teacher as role-model. Parent-teacher-Health Professional Coordination, Random testing on students.

**Section – C**

**Controlling Drug Abuse:**

Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program

**Section – D**

Legislation: NDPs act, Statutory warnings, Policing of Borders, Checking Supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials.

**References:**

1. Ahuja, Ram (2003), *Social Problems in India*, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Inciardi, J.A. 1981. *The Drug Crime Connection*. Beverly Hills: Sage Publications.
4. Kapoor. T. (1985) *Drug epidemic among Indian Youth*, New Delhi: Mittal Pub.
5. Kessel, Neil and Henry Walton. 1982, *Alcoholism*. Harmond Worth: Penguin Books.
6. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.

B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-II)

7. National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
8. Ross Coomber and Others. 2013, *Key Concept in Drugs and Society*. New Delhi: Sage Publications.
9. Sain, Bhim 1991, *Drug Addiction Alcoholism, Smoking obscenity* New Delhi: Mittal Publications.
10. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab: A Sociological Study*. Amritsar: Guru Nanak Dev University.
11. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.
12. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation*, Cambridge University Press.
13. Verma, P.S. 2017, "*Punjab's Drug Problem: Contours and Characteristics*", Economic and Political Weekly, Vol. LII, No. 3, P.P. 40-43.
14. World Drug Report 2016, United Nations office of Drug and Crime.
15. World Drug Report 2017, United Nations office of Drug and Crime.

B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-II)

**Paper-IV : BASICS OF FOOD ENGINEERING (THEORY)**

**Time : 3 Hrs.**  
**Pass Marks: 40 %**

**Max. Marks : 100**  
**Theory : 50**  
**Practical : 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**UNITS AND MEASUREMENTS:** Brief introduction to dimensions, fundamental units and derived units. Systems of measurement-fps, cgs, mks, SI units.

**SECTION-B**

**DEHYDRATION:** Moisture-dry and wet basis, free and bound, critical moisture content and equilibrium moisture content, drying theory, mechanical drying by using tray dryer, conveyer dryer rotary dryer, drum dryer, fluidized bed dryer, spray dryer, vacuum dryer, and freeze dryer.

**EVAPORATION:** Parts of evaporator, single effect and multiple effect evaporator, different types of evaporators, design of evaporator. Evaporation of heat sensitive materials

**SECTION-C**

**SIZE REDUCTION:** Principles of size reduction, methods of size reduction.

**MIXING:** Principles, mixing equipment

**SECTION-D**

**SCREENING:** Types of screens-grizzly, trammels, vibrating screens, screen openings, and aperture, perforated metal screens and wire mesh screens, factors affecting screening.

**Paper-IV : BASICS OF FOOD ENGINEERING (PRACTICAL)**

**Marks : 50**

1. Study of dehydration characteristics of different food materials.
2. Determination of particle size of given flour sample using Sieve analysis.
3. Particle size analysis and energy requirement in communities
4. Homogenization of milk and measurement of size of fat globules before and after homogenization
5. Coefficient of viscosity of water, milk, juices etc. by flow through a capillary tube
6. Surface tension of water by Jaeger's method
7. Mechanical equivalent of heat by calendar and Borne's apparatus
8. Design of conveyor system for solids
9. Study of different types of Mixers
10. Food Plant Design and preparation of layout
11. Dehydration of typical food products in a drier.
12. To study different components of evaporator
13. To study thermal properties of foods.

**PAPER-V : INTRODUCTION TO DAIRY PROCESSING (THEORY)****Time : 3 Hrs.**  
**Pass Marks: 40 %****Max. Marks : 100**  
**Theory : 50**  
**Practical : 50****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

Status of dairy industries in Punjab. Definition of milk; Chemical composition of milk of different species i.e. Buffalo, Cow (foreign), Cow (sindhi), Goat, Murrah, Jersey.

**SECTION-B**

Principle and methods of milk processing (filtration, clarification, Pasteurization, Homogenization, Sterilization).

**SECTION-C**

Types of processed milk: pasteurized, toned, flavored & fermented milk, Quality of milk and its analysis. Milk plant hygiene and sanitation

**SECTION-D**

Preparation methods and principles of cheddar Cheese, Curd, *Acidophilus* and *Bulgaricus milk*, dry milk, concentrated milk cream, Ghee & ice cream.



**PAPER-V : INTRODUCTION TO DAIRY PROCESSING (PRACTICAL)**

**Marks : 50**

1. To check the heat stability of milk by COB and Alcohol tests.
2. Quantitative estimation of acidity of milk by Alizarin – Alcohol test.
3. Determination of specific gravity, SNF % and TS% of milk.
4. Estimate the milk fat by Gerber method.
5. To determine the Casein content of the milk.
6. To check the sterility of milk by Turbidity test.
7. Bacteriological estimation of milk by MBRT.
8. To estimate the purity of ghee by Baudouin test.
9. To prepare a chart of physico – chemical properties and microbiological standards of milk and milk products.
10. Preparation of Ghee by different methods
11. Preparation of,dahi, cream,buttermilk
12. To prepare ice cream, testing of its quality

B.VOC. (FOOD PROCESSING & TECHNOLOGY)  
(SEMESTER-II)

**PAPER-VI : BASICS OF FOOD SAFETY (THEORY)**

**Time : 3 Hrs.**  
**Pass Marks: 40 %**

**Max. Marks : 100**  
**Theory : 50**  
**Practical : 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

General principle of food hygiene, Hygiene in rural and urban areas in relation to food preparation, personal hygiene and food handling habits. Place of sanitation in food plants. Sanitary aspects of building and equipment: Plant layout and design.

**SECTION-B**

Sanitary aspects of waste disposal. Establishing and maintaining sanitary practices in food plants, role of sanitation, general sanitary consideration and sanitary evaluation of food plants.

**SECTION-C**

Introduction to concepts of food quality, food safety and food quality assurance. HACCP, Food adulteration, nature of adulterants, methods of evaluation of food adulterants and toxic constituents. Microbial quality control: determination of microorganisms in foods by cultural, microscopic, physical and chemical methods.

**SECTION-D**

Food Safety – Role of voluntary agencies & legal aspects of consumer protection. National & International food laws – PFA, FDA, BIS, AGMARK, Essential Commodity Act, Export (quality & inspection act, Consumer protection act), Nutritional labeling requirements of foods. Food adulteration.

**PAPER-VI : BASICS OF FOOD SAFETY (PRACTICAL)**

**Marks : 50**

1. Introduction and study of microbiological instruments.
2. Cleaning of glass wares, preparation of media, cotton plugging and Sterilization.
3. Different staining techniques for identification of microbes: simple staining, negative staining, gram staining, acid fast staining.
4. Personal hygiene- microbes from hands, tooth-Gums and other body parts.
5. Isolation of microorganisms from food samples
6. To analyze the quality of water.
7. Determine the Critical Control Points for production line of Milk, Fruits & Vegetables and Meat industry as per HACCP system.
8. To prepare a chart of specifications for different Food products as specified by BIS

**PAPER-VII : ONE MONTH INDUSTRIAL TRAINING**

**SATISFACTORY / UNSATISFACTORY**

**Note : Submission of report and certificate after completion**

**NOTE : TRAINING IN FOOD PROCESSING INDUSTRY IS MANDATORY**

Student shall prepare and submit report after completion of training to the concerned Head of Department along with certificate issued by the industry. The report will be evaluated as Satisfactory / Unsatisfactory.