AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNJAB

DESCRIPTION OF PROGRAMME OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology & Food Processing**

NAME OF THE PROGRAMME: **B.Sc. (Hons.) biotechnology**

P.O. No.	Description of Programme Outcome	Domain as per Bloom's Taxonomy	Level of Bloom Taxonomy*
PO-1	Possess knowledge and comprehension of the core and basic knowledge associated with the profession of biotechnology, including agricultural science, pharmaceutical science and food science	**Cognitive**	**1**
PO-2	Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills.	**Psychomotor**	**1,2,3**
PO-3	Utilize the principles of scientific enquiry and thinking analytically, clearly &critically while solving problems and making decisions during daily practices.	**Affective**	**1,2,3**
PO-4	Locate, select and apply appropriate methods and procedures, resources and modern biotechnology-related computing tools with an understanding of the limitations.	**Psychomotor**	**1,2,3,4,5,6**
PO-5	Communicate effectively with the biotechnology community and with society at large such as, being able to comprehend and write effective reports, make effective presentations-	**Cognitive**	**1**

		documentation and give and receive clear instructions.		
PO-6		Explainthe impact of professional biotechnology solutions in societal and environmental contexts and demonstrate the knowledge and need for sustainable development	**Cognitive**	**1**
PO-7		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. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs.	**Cognitive**	**1**
PO-8		Developing the processes and applications which will have profound impact on sectors such as agriculture, industry, healthcare and restoration of degraded environment to provide sustainable competitive edge to present society.	**Psychomotor**	**1,2,3,4,5,6**
PO-9		Recognize the solutions for complex biological-based problems and design the process that address to the specific needs for the public health, safety and environmental considerations	**Cognitive**	**1**
PO-10		Work effectively as an individual, member or the leader of diverse teams in multidisciplinary settings.	**Affective**	**1,2,3**
PO-11/PSO1		Explain knowledge in the field of biotechnology and applied sciences.	**Cognitive**	**1**
PO-12/PSO2		Design and conduct experiments in biotechnology as well as analyze and interpret data.	**Psychomotor**	**1,2,3,4,5,6**
PO-13/PSO3		Demonstrate current techniques, skills and modern tools necessary for modeling and design of bioprocesses	**Cognitive , Psychomotor**	**1,2,3**
PO-14/PSO4		Develop and implement plans and organize work to meet deadlines.	**Cognitive**	**1,2,3,4,5,6**
PO-15/PSO5		Recognize and attain an opportunity in Entrepreneurship sector.	**Cognitive**	**1, 2, 3**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNJAB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B. Sc. (HONS) Biotechnology**

NAME OF COURSE:**Molecular Biology (BHB17)**

NAME OF FACULTY:**Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Demonstrate knowledge and understanding of the molecular machinery of living cells.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-2	Analyze, interpret, and participate in reporting to their peers on the results of their laboratory experiments	**Exams, Oral Exams, Quizzes, Home Assignments, Class Assignments**
CO-3	Devise to implement experimental protocols and adapt them to plan and carry out simple investigations.	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving**
CO-4	Develop the understanding of the principles and basic mechanisms of metabolic control and molecular signaling	**Exams, Oral Exams, Quizzes, Home Assignments, Authentic Problem solving**

CO-5	Insight the participation in report orally on team work investigations of problem-based assignments	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-6	Comprehensive knowledge and understanding of the principles that govern the structures of macromolecules and their participation in molecular recognition.	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B. Sc. (HONS) Biotechnology**

NAME OF COURSE:**PRACTICALS PERTAINING TO (BHB17)**

NAME OF FACULTY:**Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Illustrate the method of agarose gel electrophoresis of plasmid DNA	Group discussion, Virtual Classes, Lab work, seminar
CO-2	Explain preparation of solutions for molecular biology experiments.	Group discussion, Virtual Classes, Lab work, seminar
CO-3	Describe isolation of chromosomal DNA from bacterial cells.	Group discussion, Virtual Classes, Lab work, seminar
CO-4	Demonstrate agarose gel electrophoresis of plasmid DNA	Group discussion, Virtual Classes, Lab work,

		seminar
CO-5	Devise method for isolation of Plasmid DNA by alkaline lysis method	**Group discussion, Virtual Classes, Lab work, seminar**
CO-6	Distinguish various methods of DNA isolation from different samples.	**Group discussion, Virtual Classes, Lab work, seminar**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B. Sc. Biotechnology**

NAME OF COURSE:**Tissue Culture Technology (Paper VII)**

NAME OF FACULTY:**Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Outline the knowledge and understanding regarding basics of animal and plant cell culture, their historical developments and major contribution.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-2	Analyze, interpret different methods of cellular totipotency, protoplast isolation and culture	**Exams, Oral Exams, Quizzes, Home Assignments, Class Assignments**
CO-3	Devise to implement industrial experimental and applications of plant and animal tissue culture.	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving**
CO-4	Illustrate the establishment of plant tissue culture and to set up a primary culture after mechanical disruption/enzymatic disruption of cells.	**Exams, Oral Exams, Quizzes, Home Assignments, Authentic Problem solving**

CO-5	Determine the viability and cell count by haemocytometer.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-6	Calculate the cell number by crystal violet staining.	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B.Sc. (Hons) Biotechnology**

NAME OF COURSE:**Biostatistics (BHB4)**

NAME OF FACULTY:**Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Apply basic statistical concepts commonly used in health and medical sciences	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-2	Use basic analytical techniques to generate results	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-3	Interpret results of commonly used statistical analyses in written summaries	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-4	Demonstrate statistical reasoning skills correctly and contextually	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-5	Compute statistical problems using computer graphical means	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs**

| CO-6 | Analyse data characteristics and form of distribution of data structure | Exams, Oral Exams, Quizzes, Home Assignments |

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B. Sc. (HONS) Biotechnology**

NAME OF COURSE:**PRACTICALS PERTAINING TO (BHB4)**

NAME OF FACULTY: **Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Practice question based on graphical representation	**Group discussion, Class Assignment**
CO-2	Enumerate the problems based on measures of central tendency & dispersion	**Group discussion, Class Assignment**
CO-3	Calculate the situations based on binomial distributions normal distributions	**Group discussion, Class Assignment**

CO-4	Solve problems based on t, f, z and Chi-square	**Group discussion, Class Assignment**
CO-5	Demonstrate poisson distributions with the help of examples	**Group discussion, Class Assignment**
CO-6	Calculate the problems based on measures of kurtosis.	**Group discussion, Class Assignment**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE PROGRAM : **B.Sc(BT)Hons. Ist (2nd SEM)**

NAME OF THE COURSE : **(English II)**

NAME OF FACULTY : **Mandeep Kaur (ASST. PROF.)**

CO No.	Description of Course Outcomes	Method/s of Assessment
CO 1	Develop critical and creative thinking skills by examine texts.	MST, Class tests, Class Assignment.
CO 2	Develop the ability to respond to a variety of situation and contexts by shifting voice, tone, level formality, design, medium and structure.	MST, Seminar, Class Assignment, Class tests.
CO 3	Demonstrate an appreciation of the literature through discussion and written analysis.	MST, Class assignments, class tests,
CO 4	Apply the LSRW skills.	MST, Seminar, GD, Role play examples.
CO 5	Practise English grammar to aware the students about the correct usage of it.	MST, Participation in class, Class assignments, Class tests.
CO 6	Develop the fluency of language, presentation skills and creative writing.	MST, Participation in class, Class assignments, Class tests.

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B. Sc. (HONS) Biotechnology**

NAME OF COURSE:**Genetics (BHB12)**

NAME OF FACULTY:**Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Describe advanced techniques in genome analysis, molecular phylogenetics.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-2	Analyse strategies of gene transfers, mutation, selection and migration, the chromosome structure, chromatin organization and variation.	**Exams, Oral Exams, Quizzes, Home Assignments, Class Assignments**
CO-3	Explore the applications of genetic engineering in plants and animals.	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving**
CO-4	Develop the understanding for management of inherited human diseases, genome evolution, population variation and speciation.	**Exams, Oral Exams, Quizzes, Home Assignments, Authentic Problem solving**

CO-5	Insight into the applications of bioinformatics, statistical analysis in genetics.	**Exams, Oral Exams, Quizzes, Home Assignments,**
CO-6	Comprehensive and detailed understanding of inbreeding and its effect on small/isolated population the principles of selection and breeding methods in plants and animals.	**Exams, Oral Exams, Quizzes, Home Assignments, Virtual Labs, Authentic Problem solving**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: **Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B. Sc. (HONS) Biotechnology**

NAME OF COURSE:**PRACTICALS PERTAINING TO (BHB12)**

NAME OF FACULTY:**Love Singla**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Illustrate permanent and temporary mount of mitosis.	**Group discussion, Virtual Classes, Class Assignment**
CO-2	Explain permanent and temporary mount of meiosis.	**Group discussion, Class Assignment, Virtual Classes**
CO-3	Describe mendelian deviations in di-hybrid crosses	**Group discussion, Class Assignment, Virtual Classes**
CO-4	Demonstrate Barr Body.	**Group discussion, Class Assignment, Virtual Classes**
CO-5	Devise karyotyping with the help of photographs	**Group discussion, Class Assignment, Virtual Classes**
CO-6	Distinguish Pedigree charts of some common characters like blood group, color blindness.	**Group discussion, Class Assignment, Virtual Classes**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B.Voc. Food Processing (B.VFP 214)**

NAME OF COURSE: **Introduction to Food Microbiology**

NAME OF FACULTY:**Parminder Kaur**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Describe Food microbiology, important terms, Safety regulations for food microbiology.	Group discussion, Presentation, Exam.
CO-2	Enlist the types of microorganisms, classification and nomenclature of micro organisms, structure & functions .	Exams, Class test, Presentation, Assignments.
CO-3	Demonstrate microscopy ant its uses.	Exams, Class test, Presentation,viva

CO-4	Discuss microbial growth in food, Characterstics, bacterial growth curve ,.	Exams, Class test, Presentation, Group discussion
CO-5	Define cultivation of microorganisms , methods, techniques, Hygienic handling of food.	Exams, Class test, Presentation
CO-6	Explain sources of microorgamisms in food, food spoilage bacteria	Presentation, Seminar, Class test, viva.

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE BELA ROPAR PUNAJB

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B.Voc. Food Processing (B.VFP 214)**

NAME OF COURSE: **Practical Pertaining theory B.VFP 214**

NAME OF FACULTY:**Parminder Kaur**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Introduce Food microbiology & Lab safety.	Lab Work
CO-2	Practice the use of laminar air flow, microscope,Autoclave.	Lab Work
CO-3	Perform Cultivation of microbes.	Lab Work

CO-4	Prepare slant ,media plates, slides oh bacteria.	Lab Work
CO-5	Demonstrate plate count methods .	Lab Work
CO-6	Practice and demonstrate various staining, microbial growth curve.	Lab Work

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME:B.Sc. Biotechnology (Hons.)

NAME OF COURSE: Industrial Fermentations (BHB 20)

NAME OF FACULTY: Parminder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Evaluate the production of industrial chemicals, biochemical & chemotherapeutic. Propionic acid, butyric acid, gluconic acids, itaconic acid ; Biofuels(Biogas, Ethanol, Butanol, Hydrogen, Biodiesel)	**Exams, Class tests, class assignment, group discussion, Seminars.**
CO-2	Define Microbial production pharmacological interest , steroids fermentations transformation , Secondary metabolism.	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Explain Enzyme & Cell immobilization techniques in industrial processing, enzyme in organic synthesis, proteolytic enzymes, hydrolytic enzymes, glucose isomerises, enzyme in food .	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-4	Demonstrate Purification & Characterization of proteins , upstream and downstream processing , solid and liquid handling.	**Exams, Class tests, class assignment, group discussion.**

CO-5	Discuss the distribution of microbial cells , centrifugation filtration of fermentation broth, ultra centrifugation , liquid extraction , ionic exchange recovery of biological products .Design model of fermentation system.	**Exams, Class tests, class assignment, group discussion.**
CO-6	Calculate Rate equation for enzyme kinetics, simple and complex reaction , Inhibition kinetics. Evaluate mathematical derivation of growth kinetics and metabolic engineering of antibiotic biosynthetic pathway.	**Exams, Class tests, class assignment Group discussions, group assignments.**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: B.Sc. Biotechnology (Hons.)

NAME OF COURSE: Practical Pertaining to theory BHB 20

NAME OF FACULTY: Parminder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Comparative analysis of design of a batch and continuous batch fermentor.	**Lab work**
CO-2	Calculate of mathematical derivation of growth kinetics .	**Lab work**
CO-3	Demonstrate solvent extraction of metabolite from bacterial culture.	**Lab work**
CO-4	Analysis of metabolite from bacterial culture.	**Lab work**
CO-5	Perform an enzyme assay and its hydrolytic activity	**Lab work**

CO-6	Communicate industrial fermentation related concepts and experimental results through effective written and oral communication.	Viva, quiz, class assignments

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B.Sc. (Hons) Biotechnology**

NAME OF COURSE:**Biochemistry (BHB1)**

NAME OF FACULTY: Parneet Kaur

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Describe the chemistry of carbohydrates, lipids, proteins and amino acids.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-2	Define the structure and function of nucleotides and nucleosides.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-3	Explain the structure, function and the mechanism of action of enzymes.	**Exams, Oral Exams, Quizzes, Home Assignments.**

CO-4	Enlist various classes of enymes.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-5	Express the concept of Metabolism	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-6	Describe the catabolic and anabolic reactions related to carbohydrates and Lipids.	**Exams, Oral Exams, Quizzes, Home Assignments**

AMAR SHAHEED BABA AJIT SINGH JUJHAR SINGH MEMORIAL COLLEGE, BELA, ROPAR, PUNJAB.

DESCRIPTION OF COURSE OUTCOMES

NAME OF THE PROGRAM : **B.Sc (BT) 1st(1stSEM)**

NAME OF THE COURSE : **(English Communication Skills I)**

NAME OF FACULTY : **Lovepreet Singh (ASST. PROF.)**

CO No.	Description of Course Outcomes	Method/s of Assessment
CO 1	Compare and contrast different genres of short stories.	MST, Class tests, Class Assignment.
CO 2	Explain major themes of short stories that will make students capable to raise significant question, to enhance their creative expressions and reach well reasoned conclusion.	MST, Class Assignment, Class tests.
CO 3	Designing letters for formal communication.	MST, Class assignments, Class tests,
CO 4	Apply the LSRW skills.	MST, PPTs.
CO 5	Practise English grammar to aware the students about the correct usage of it.	MST, Participation in class, Class assignments, Class tests.
CO 6	Develop the fluency of language, and presentation skills.	MST, Participation in class, Class assignments, Class tests.

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B.Sc. (Hons) Biotechnology**

NAME OF COURSE:**Biochemistry Practicals pertaining to BHB101**

NAME OF FACULTY: Parneet Kaur

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Analyze the activity of an Enzyme under optimum conditions.	**Virtual lab**
CO-2	Caliberate the effect of pH and Temperature on activity of salivary amylase enzyme.	**Virtual lab**

CO-3	Calculate the blood glucose by glucose oxidase method.	Vitual lab
CO-4	Analyze the quantitative estimation of proteins in unknown sample.	Virtual lab
CO-5	Identify the amino acids by paper chromatography.	Virtual lab
CO-6	Preparation of Buffers.	Virtual lab

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B.Sc. Biotechnology**

NAME OF COURSE:**Biochemical engineering(paper iv)**

NAME OF FACULTY: Parneet Kaur

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Explain Biochemical Engineering	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-2	Define Medium sterilization.	**Exams, Oral Exams, Quizzes, Home Assignments**

CO-3	Demonstrate different types of Bioreactor as well as Explain scale-up and Kinetics.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-4	Identify different control and monitoring instruments in bioprocess and Calculate the mass transfer coefficient (KLa) in different phases during Bioprocess.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-5	Classify different processes used in Downstream processing.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-6	Define different chromatographic techniques used in purification of bioproducts.	**Exams, Oral Exams, Quizzes, Home Assignments**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT**: Biotechnology and Food Processing**

NAME OF THE PROGRAMME: **B.voc Food processing**

NAME OF COURSE:**Practcal pertaining to Introduction to grain milling and machineries(BVFP-312)**

NAME OF FACULTY: **Parneet Kaur**

C.O. No.	Description of Course Outcome	Method/s of Assessment
CO-1	Demonstrate general principle of milling of Wheat through industrial visit.	**Exams, Oral Exams, Quizzes, Home Assignments**
CO-2	Identify adultration in wheat flour by NaHCo3 method.	**Virtual lab**
CO-3	Calculate alcoholic acidity in given sample of flour	**Virtual lab**

CO-4	Indentify Moisture content in wheat flour	**Virtual lab**
CO-5	Estimate ash value in given flour sample.	**Virtual lab**
CO-6	Demonstrate different types of mills used in grain miling process.	**Exams, Oral Exams, Quizzes, Home Assignments**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME:BSc Biotechnology(Hons).

NAME OF COURSE: General Microbiology (BHB-13)

NAME OF FACULTY: Parminder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Identify the various classification of microorganism .	**Exams, Class tests, presentations and Seminars.**
CO-2	Define morphology & cell structure of major groups of microorganisms.	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	List the varios methods of cultivation and maintenance of microorgamisms.	**Exams, Class tests, class assignment, presentations and**

		Seminars.
CO-4	Draw & demonstrate growth curve, generation time, sychronious batch & countionous culture.	**Exams, Class tests, class assignment, presentations and Seminars.**
CO-5	Determine the various methods based to control growth of mocroorganisms And define water microbiology , Food microbiology	**Viva, quiz, class assignments**
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group projects and group assignments.**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME:B.Sc (hons.) Biotechnology

NAME OF COURSE: Spectroscopic techniques BHB19

NAME OF FACULTY:Parneet kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Describe the concept of light interaction with matter and analyze quantitative chemical sample by using this technique.	**Exams, Class tests, class assignment, and Seminars.**
CO-2	Define the common tools used in spectroscopy.	**Exams, Class tests, class assignment, Presentations and Seminars.**
CO-3	Classify the different types of spectroscopy techniques .	**Exams, Class tests, class assignment, presentations and Seminars.**

CO-4	Demonstrate the basic concept of instrumentation, data acquisition and data processing.	**Exams, Class tests, class assignment, group discussion.**
CO-5	Enlist the photoelectric effect and different types of spectroscopy related to this concept such as UPES, XPES and ESCA.	**Group discussions, class assignments, Exams.**
CO-6	Describe the magnetic field spectra (NMR)	**Exams, group assignments .**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: B.Sc (Hons.) Biotechnology

NAME OF COURSE: Practical Pertaining to theory BHB19

NAME OF FACULTY: Parneet Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Analyze the chemical compounds by NMR spectroscopy.	**Lab work**
CO-2	Identify chemical compounds using emission spectroscopy	**Lab work**
CO-3	Classify 5 different chemical compounds by absorption spectroscopy.	**Lab work**
CO-4	Demonstrarte working principle of Electron spectroscopy	**Viva, quiz, class assignments**
CO-5	Enlist different tools required in photoelectron spectroscopy.	**Viva, quiz.**

| CO-6 | Communicate spectroscopy related concepts and experimental results through effective written and oral communication. | **Viva, quiz, class assignments** |

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME:B.Sc (Hons.)Biotechnology

NAME OF COURSE: Practical Pertaining to theory -BHB13

NAME OF FACULTY: Parminder Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Perform the experiments to isolation of bacteria.	**Lab work**
CO-2	Practice the different methods of staining.	**Lab work**
CO-3	Apply the various sterilization methods and prepare different types of media.	**Lab work**
CO-4	Estimate the amount of different bacterial cells.	**Lab work**
CO-5	Communicate microbiology related concepts and experimental results through effective	**Viva, quiz, class assignments**

	written and oral communication.	
CO-6	Work collaboratively with members of a team in classroom and /or laboratory activities.	**Group discussions, Group group assignments.**

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DESCRIPTION OF COURSE OUTCOMES

NAME OF THE DEAPRTMENT: BIOTECHNOLOGY & FOOD PROCESSING

NAME OF THE PROGRAMME: BscBiotechnology Hons. Ist sem

NAME OF COURSE: Plant anatomy and physiology

NAME OF FACULTY: Mrs. Jaspreet Kaur

C.O. No.	Description of Course Outcome	Methods of Assessment
CO-1	Demonstration of basic plant chemistry and physiology	Exams, Class tests, class assignment,.
CO-2	Explain photosynthesis,cellular respiration.	Exams, Class tests, class assignment, Seminars.
CO-3	Discuss plant water relationship, mechanism of stomatal opening and closing	Exams, Class tests, class assignment, presentations.
CO-4	Differentiate different phases of growth curve,growth hormones,concept of photoperiodisim,vernalisation.	Exams, Class tests, class assignment
CO-5	Describe micro and macro nutrient, mechanism of uptake	Viva, quiz, class assignments
CO-6	Illustrate histological organization of root and shoot	Group discussions, class assignments Exams, Class tests

<table>
<tr><td colspan="20" align="center">**Mapping of Po's and Co's**</td></tr>
<tr><td colspan="20" align="center">**NAME OF DEPARTMENT-- Biotechnology and Food Processing**</td></tr>
<tr><td colspan="20" align="center">**NAME OF PROGRAMME-- B.Sc Biotechnology**</td></tr>
<tr><td colspan="6">CORRELATION LEVEL:1,2, and 3;1-SLIGHT (LOW); 2-MODERATE (MEDIUM) 3- HIGH</td><td colspan="14" align="center">MENTION GAP ANALYSIS AT THE END</td></tr>
</table>

S.NO	Year	Semester	Name of Course/Code		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
1			Biochemistry & Metabolism / BHB1	CO1	2	1	2	1	3	3	1				3	3	1		1
				CO2	3	1	2	1	2	2	2	1	1		3	1	1		1
				C03	2	1	2		3	2	1	2	1	1	3	3	2	1	2
				CO4	3	2	3	3	1	1	1	2		1	2	3	3	1	3
				CO5	1	1	3	2	2	2	2	1	2	1	3	1	1	1	1
	2019 - 2020	1st		CO6	3	2	3	2	1	2	2	2	3	2	3	2	2	1	2
2			PRACTICALS PERTAINING TO (BHB1)	CO1	3	2	1	3	2	3		1	2	1	3	3	1	1	1
				CO2	2	1	1	1	1	2	1	2	1	1	3	1	1		1
				CO3	2	1	1	1	1	1	1	1	2	1	2	3	3	2	2
				CO4	1	2	1	2	1	1	1	1	2	2	2	3	3	2	3
				CO5	3	2	2	1	1	1	2	2	3	2	3	3	3	3	3
				CO6	2	1	2	1	1	1	1	2	3	1	2	3	3	1	1
3			Cell Biology / BHB2	CO1	1	1						1	1	1	1	1	1	1	1

#	Course	CO															
		CO2	1	1		1	1			2	1	1	1	1	1	1	
		C03	1	1			1			1	1	1	1	1	1	1	
		CO4	1	1		1	1		1	1	1	1	1	1	1	1	
		CO5	1	1	1	1	1	1	2	1	1	1	1	1		1	
		CO6	1	1	2	1	1	3	2	3	2	2	2	3	1	1	
4	PRACTICALS PERTAINING TO (BHB2)	CO1	1	1		1	1		1	1	1		1	1		1	
		CO2	3	1	1	1	1	2		1	1	1	2	1	2	1	2
		CO3	2	2	1	2	1		1	2	1	2	2	2	2	1	1
		CO4	1	1	1	2	1	1	1	2	1		2	1	2	1	1
		CO5	1	1	1	2			1	1	1	1	1	1		1	
		CO6	1	1	1	2		1	1	2	1	1	2	2	2	1	2
5	Biostatistics / BHB4	CO1	3	2	1	3	2			1	2		1	3	1		3
		CO2	3	1	1	1	1			1	3	1	2	3	3	1	
		C03	3	1		3			1	1	1		1	1	2		3
		CO4	3			1			2	1	1		1	1	2		3
		CO5	3	2	3	3	2	2		2	3		1	1	2		3
		CO6	3	2	3	3	3	3	3	3	3		1	1	2		3
6	PRACTICALS PERTAINING TO (BHB4)	CO1	1	1									1	1			
		CO2		2	1			1		2	2			1			
		CO3				2					1	2	3	1	1		
		CO4			1	2		1			3			1		1	
		CO5		1	1	1		1			2			2		1	
		CO6															
7	English / BHB3	CO1					1										
		CO2					1		1								
		C03					1		1								
		CO4					2										
		CO5					1										

Sr.		Sem	Course	CO															
				CO6				1											
8			Punjabi / BHB5	CO1		1		2	1										
				CO2							1	1			2				
				CO3		1	1	2											
				CO4		1	1	2											
				CO5				2				1							
				CO6		1	1	1	1										1
9			Mammalian Physiology / BHB6	CO1	2			2		1		2		1	3		1		
				CO2	2		1	1		1		2	1	1	2			1	
				CO3	1			1		1		1	1	1	1			1	1
				CO4	2		1	2		1		2		2	2	2	1		2
				CO5	2			2		1		1		2	3	1			1
				CO6	2			2		1		2	1	1	2	1			2
10		2nd	PRACTICALS PERTAINING TO (BHB6)	CO1	2	1	1	3	2		1	3	3	3	1	3	1	2	2
				CO2	3	2	1	3	2		1	3	3	3	1	3	1	2	3
				CO3	3	2	1	2	1		1	3	3	3	1	3	1	2	3
				CO4	3	2	1	3	1		1	3	3	3	1	3	1	2	2
				CO5	2	1	1	2	1			3	3	2	2	2	1	2	2
				CO6	2	1	1	2	2		1	3	3	2	1	3	1	2	2
11			Plant Anatomy & Physiology / BHB7	CO1	3	1	1	1	1	1	1	2	1	1	2	1	1		
				CO2	3	1	1	2	1	2	1	1	1	1	2	1	1		
				CO3	2	1	1	1			1	1	1		2	1	1		
				CO4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				CO5	2			1	1	1	1	2	1		2	1	1	1	1
				CO6	2						1	1	1	1	2	1	1	1	1
12			PRACTICALS PERTAINING TO (BHB7)	CO1	1	1		3				2	1	1	1	1		1	
				CO2	1	2				1	2	1		2	1	1		1	
				CO3	1	1			1	2	1	3		2	2	2		2	

#	Course / Code	CO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		CO4		1				2	1	2		1	2	1		1	
		CO5	1	1			1	1	1	1		1	1	1	1	1	
		CO6	1	1		1	1	1	1	1		1	1	1	1	1	1
13	English / BHB8	CO1					1										
		CO2					1		1								
		CO3					1		1								
		CO4					2										
		CO5					1										
		CO6					1										
14	Microbial Physiology / BHB9	CO1	1			1	2			3	1			2	2		2
		CO2	2	2	1	2	2	2	2	3	2		3	2	1	1	
		CO3	2					1		1				2			
		CO4	2		1		1			2			1	1	1	2	
		CO5	2	2			2				3	2	2	2	2		1
		CO6	2		2	2	2		3		1		2				
15	PRACTICALS PERTAINING TO (BHB9)	CO1	2	1		2	2	2		2				2			
		CO2	2	1	2	2	2	1	1	2				2	2		2
		CO3	2	1		1	2			1		3	2				
		CO4	2	2	2			1		2			1	3			
		CO5	2	3		3				1		2			2		
		CO6	3	2	2	3	3		2		2	3	3	2	1	2	1
16	Punjabi / BHB10	CO1		1			2	1									
		CO2								1	1				2		
		CO3		1	1		2										
		CO4		1	1		2										
		CO5					2						1				
		CO6		1	1	1	1										1
17	Drug Abuse / BHB11	CO1		1		1	1			1		1					

#		Sem	Course	CO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
				CO2		1		1	1			1		1					
				CO3		1		1	1			1		1					
				CO4		1		1	1			1		1					
				CO5		1		1	1			1		1					
				CO6															
18			GENETICS (BHB12)	CO1	2	1		3	2	2	2		2		1	3	3		3
				CO2	1			1					2	1	2				
				C03	1	2		1	3	3	3	1	2		1	3	3	2	1
				CO4	3	1							2	1	3				
				CO5		2	2	3			2	3	3		2	3	3	1	3
				CO6	1	3		1							1	3	1	1	
19		3rd	PRATICAL PERTAINING TO BHB12	CO1	1	1									3	3	1		2
				CO2		2	1			1		2	2		3	3	1		2
				C03				2					1		3	1			
				CO4			1	2		1			3		2		1		1
				CO5		1	1	1		1			2		3	1	2		1
				CO6											3	3	3		2
20			General Microbiology (BHB-13)	CO1	3				3			1			2				
				CO2	2				2	1	1	1	2		1	1	1	1	2
				CO3		1	2			2	1	2	2	2		1	2		2
				CO4		3	3	2				1			1	2	3	2	3
				CO5		3	3	1		1	3	3	2	1		3	3	2	3
				CO6		2					1		3	3			1	3	3
21			Pratical pertaining to BHB-13	CO1	3		2					2			1	2	2		
				CO2	3		1					2			1	2	2		
				CO3	2	2	3	2		2	2	2	3		1	1	2	1	1
				CO4		2	2					2	1			1	1		
				CO5	3	3	3	2	3	2	2		2	2	3	1		2	2

#	Course	CO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		CO6	3	1	1	1	2	1				3	2	1		2	2
22	Enzymology SEC-I BHB14	CO1	3	1	1	1	2	1		1	1		3	2	2	2	
		CO2	3	1	1	1	2	1		1	1		3	2	2	2	1
		CO3	3	1	1	2	1	3	2	3	3		3	2	1	2	1
		CO4	2	1	1	3	1	1	1	2	2	2	2	3	3	2	3
		CO5	2	1	1	1	3	3	2	1	1	1	2	1	2	1	1
		CO6	1	1	2	1	2	1	1	1	2	3	2	2	1	1	1
23	Pratical pertaining toSEC-I BHB14	CO1	2	2	2	3	2	1	1	3	3	2	2	3	3	2	1
		CO2	1	2	1	3	1	1	1	3	3	1	2	3	3	1	1
		CO3	2	2	2	3	2	1		3	3	2	2	3	3	2	1
		CO4	1	2	1	3	1	1	1	3	3	1	2	3	3	1	1
		CO5	2	1	1	1	3	3	2	1	1	1	2	1	2	1	1
		CO6	1	1	2	1	2	1	1	1	2	3	2	2	1	1	1
24	Sprctroscopic Techniques BHB15	CO1	2	2	3			2	3	2	2	3	3	2	2	2	2
		CO2	3	2	3	2			3	1			2	2	2		
		CO3	2	1	3			2	2	2	2		3	2	2	2	2
		CO4	1	1	2			2	3	1			2		2	2	
		CO5	2	1	3	2			3			2	3		2		
		CO6	2	1	3	1			3			2	3		2	2	2
25	Pratical pertaining toSEC-I BHB15	CO1	1	2	2	2	1				1		1	3	3	1	
		CO2	2	2	2	3			1	3	1		2	2	3	2	1
		CO3	2	2	2	3			1	3			2	2	3	2	1
		CO4		2	1	3	2		2	3	1	2	1	1	3	2	1
		CO5		2		1	2		2	1		1	2	2	2		
		CO6	3	2	1	3		2	1		2	3	3			2	
26	Environmental Biotechnology BHB16	CO1	3		2		2	3	1		3		3	2		1	
		CO2	2	2		1	3	3		1	2	1	3	3	2		
		CO3		3	2	3	2	2		2	1	2	2	3	2		

#		Sem	Course	CO															
				CO4	2	2	2	1	2	3	1	1	3		3	2	2		
				CO5	2	3	2	3	2	2		2	2		2	1	2	1	
				CO6	3		1	2	2	3	1		2		3	2	3		
27			Pratical pertaining to SEC-I BHB16	CO1	3	2	2	2	1	2	2	1	3	3	1	3		2	1
				CO2	3	2	2	1	1	2	2	1	3	3	1	3		2	1
				CO3	3	2	2	1		2	2	1	3	3	1	3	1	2	2
				CO4	2	2	2	2		1	3	2	3	3	2	3	1	1	3
				CO5	3	2	3	1		2	2	1	3	3	1	3	2	1	1
				CO6	3	2	2	2	1	2	3	2	3	2	2	3	2	2	2
28			Molecular Biology/ BHB17	CO1	3		3		2		1				3				1
				CO2	2	3		2		1		3	2		2	3	3	2	2
				CO3	1		3				3	1	3	3	1	3	3	2	1
				CO4	3	2	1	2		2		2	2		3	2	1	2	1
				CO5				1	3			3	2	2					1
				CO6	1			1	2						2				2
29		4th	Pratical pertaining to BHB17	CO1	1	1									1	1			
				CO2		2	1			1		2	2			1			
				CO3				2					1		2	3	1	1	
				CO4			1	2		1			3			1		1	
				CO5		1	1	1		1			2			2		1	
				CO6															
30			Immunology / BHB18	CO1	2			1	2	1		1	1		3	1			
				CO2	3			2	1	1		2	2		2	1			
				CO3	2			3	2	2		2	2		1	2			
				CO4	3		1	2	1	1		2	3		2	3			2
				CO5	3		2	1	2	2		1	1		1	1	2		1
				CO6	2		3	3	3	2		1	1		3	2	1		2
31			Pratical pertaining to	CO1	2	1	1	3	2		1	3	3	3	1	3	1	2	2

#	Course	CO															
	BHB18	CO2	3	2	1	3	2		1	3	3	3	1	3	1	2	3
		CO3	3	2	1	2	1		1	3	3	3	1	3	1	2	3
		CO4	3	2	1	3	1		1	3	3	3	1	3	1	2	2
		CO5	2	1	1	2	1			3	3	2	2	2	1	2	2
		CO6	2	1	1	2	2		1	3	3	2	1	3	1	2	2
32	Spectroscopic Techniues / BHB19	CO1	2	2	3			2	3	2	2	3	3	2	2	2	2
		CO2	3	2	3	2			3	1			2	2	2		
		CO3	2	1	3			2	2	2	2		3	2	2	2	2
		CO4	1	1	2			2	3	1			2		2	2	
		CO5	2	1	3	2			3			2	3		2		
		CO6	2	1	3	1			3			2	3		2	2	2
33	Pratical pertaining to BHB19	CO1	1	2	2	2	1				1		1	3	3	1	
		CO2	2	2	2	3			1	3	1		2	2	3	2	1
		CO3	2	2	2	3			1	3			2	2	3	2	1
		CO4		2	1	3	2		2	3	1	2	1	1	3	2	1
		CO5		2		1	2		2	1		1	2	2	2		
		CO6	3	2	1	3		2	1		2	3	3			2	
34	Industrial Fermentation / BHB20	CO1	2	2		2	3	1		1		2		2			1
		CO2	3	1		1		1	1		1		2		3		
		CO3	3	1			2	2			2		1		1	1	
		CO4	2	3		2	2		1			3		2		2	
		CO5	2	1	2	1		2	3		3		1	1		1	2
		CO6	1		1	2		3	3	2			1			1	
35	Pratical pertaining to BHB20	CO1	2	2			1	1	1	2		1		3		1	
		CO2	1			1	2		2		1	2	2		1	1	2
		CO3	2	2				1		1	2			1	2		
		CO4	3		2		2		1		3	2	1		1	1	1
		CO5	1	1		2		3		2		1		1		1	

#	Sem	Paper	CO															
			CO6	2		1	1		3		2		2	2		2		
36		Chemistry/ paper I	CO1	1	2	2				2	2	2	2	1	1			1
			CO2	2	2	1				1	1	2	2	2	1			1
			CO3		2		2		1		2	2	2		1			1
			CO4	2		1	2			2		1		2	1			1
			CO5	1	1			2	2		1	2	1		1			1
			CO6	2	2			2	2		2		1		1			1
37		Environmental Biotechnology / paper II	CO1	3		2		2	3	1		3		3	2		1	
			CO2	2	2		1	3	3		1	2	1	3	3	2		
			CO3		3	2	3	2	2		2	1	2	2	3	2		
	5th		CO4	2	2	2	1	2	3	1	1	3		3	2	2		
			CO5	2	3	2	3	2	2		2	2		2	1	2	1	
			CO6	3		1	2	2	3	1		2		3	2	3		
38		Immunology / Paper III	CO1	3	1		1	1		1	2	2	1	2	2		1	1
			CO2	2	2		2	1	1	1	2	2	2	2	2	2	2	1
			CO3	2	1	1	1	1	1	1	2	3	1	1	2	2	1	3
			CO4	1			2	1	1	1	2	2	1	1	2		2	1
			CO5	2	1	2	1	1	3	1	3	2	2	2	2	2	1	2
			CO6	2	2	1	2	2	3	1	3	3	2	2	2	2	2	2
39		Biochemical Engineering / Paper IV	CO1	2	1	2	1	3	3	1				3	3	1		1
			CO2	3	1	2	1	2	2	2	1	1		3	1	1		1
			CO3	2	1	2		3	2	1	2	1	1	3	3	2	1	2
			CO4	3	2	3	3	1	1	1	2		1	2	3	3	1	3
			CO5	1	1	3	2	2	2	2	1	2	1	3	1	1	1	1
			CO6	3	2	3	2	1	2	2	2	3	2	3	2	2	1	2
40	6th	Chemistry / Paper V	CO1	1	2		2		2	2	2	2	1	2	1			1
			CO2			1		2	2	1	2		1		1			1
			CO3	1	1	1	3			1	1	1		2	1			1

Sr No	Course	CO															
		CO4		2			1	2	1			1	2	1			1
		CO5	1		1	2		2	1	1	2		1	1			1
		CO6	1	1	1	2	1		1	2	2	1	2	1			2
41	Microbial Technology / Paper VI	CO1	1	3	1	3	1	1	1	1			3	3	1	1	1
		CO2	3	2	1	1	2	2	1	2	2		3	1	1		1
		CO3	1		2		1	1	3	2	1		2	3	3	2	2
		CO4	3	3	3	2	3	3	1	3	3	2	2	3	3	2	3
		CO5	3	3	3	2	1	1	2	1	3	3	3	3	3	3	3
		CO6	2	1		1	1	1	2	2	2	2	2	3	3	1	1
42	Tissue Culture Technology / Paper VII	CO1	3	2									3				1
		CO2	2	2	3	3	2		3	3	1		2	3	3	2	2
		CO3	1	1			3	3	1	3	2	2	1	3	3	2	1
		CO4				2	3		2	3	2			2	1	2	1
		CO5				1	2										1
		CO6				1	2										2
43	Fermentation Technology / Paper VIII	CO1	3	2	3			1	2			1	3	1		1	
		CO2	2	2	2	1	2	2	1	2	2		2	2	2		2
		CO3	2		1		2	1			2		3		2	2	2
		CO4	3	3	3	2	3	2			2	3	2	2	3	1	1
		CO5			1		2		2			2	3	2	1		
		CO6	3		2	2	3	3			3	2	2	2	2		1

Attainment of PO by Direct Method

Sr N o	Name	Ro ll no		Reg No	Th eor y	Int ern al	Pra ctic al	TOTA L (T+I+P)	Th eor y	Int ern al	Pra ctic al	TOTA L (T+I+P)	Th eor y	Int ern al	Pra ctic al	TOTA L (T+I+P)	The ory-A	The ory-B	The ory-C	Int ern al	Pra ctic al	TOTA L (T+I+P)			
1	Simranj eet Kaur	15 01	37 52 1	814-16-452	26	15	25	66	35	16	25	76	26	16	25	67	20	15	12	26	38	111	3 2 0	71.11 1111 1	Lev el 3
2	Arshpre et Kaur	15 02	37 52 5	814-16-433	29	15	24	68	37	16	25	78	32	16	25	73	20	14	14	24	36	108	3 2 7	72.66 6666 7	Lev el 3
3	Sukhpre et Saini	15 03	37 52 9	814-16-436	37	15	27	79	37	17	27	81	40	16	26	82	22	18	16	22	37	115	3 5 7	79.33 3333 3	Lev el 3
4	Harjinde r Kaur	15 04	37 52 7	814-16-435	27	14	25	66	36	16	26	78	37	16	27	80	20	17	13	22	34	106	3 3 0	73.33 3333 3	Lev el 3
5	Jashanpr eet Kaur	15 05	37 53 0	814-16-437	18	15	25	58	32	16	24	72	34	16	24	74	18	19	13	21	35	106	3 1 0	68.88 8888 9	Lev el 3
6	Japinder Kaur	15 06	37 53 2	814-16-439	29	16	28	73	34	17	27	78	35	17	26	78	19	18	14	23	38	112	3 4 1	75.77 7777 8	Lev el 3
7	Harpreet Kaur	15 07	37 53 3	814-16-440	30	16	26	72	34	17	26	77	25	16	27	68	18	17	14	22	38	109	3 2 6	72.44 4444 4	Lev el 3
8	Pallvi Sharma	15 08	37 53 6	814-16-455	31	14	27	72	40	16	27	83	40	16	26	82	20	18	16	21	39	114	3 5 1	78	Lev el 3
9	Parneet Kaur	15 09	37 53 5	814-16-441	21	14	26	61	37	16	25	78	29	16	24	69	14	18	8	21	38	99	3 0 7	68.22 2222 2	Lev el 3

#	Name			Code																						Level
10	Sonia Devi	15 10	37 54 8	814-16-444	20	15	25	60	32	16	25	73	28	16	25	69	17	12	14	21	35	99	301	66.888889	Level 3
11	Jashanpreet Kaur	15 11	37 53 8	814-16-456	30	15	26	71	40	16	25	81	41	17	25	83	22	17	17	21	41	118	353	78.444444	Level 3
12	Amanjot Kaur	15 12	37 52 2	814-16-430	30	17	28	75	33	17	28	78	28	17	28	73	18	20	16	26	40	120	346	76.888889	Level 3
13	Harmanpreet Kaur	15 13	37 52 3	814-16-431	26	17	27	70	38	17	28	83	35	18	28	81	20	18	17	26	40	121	355	78.888889	Level 3
14	Gurpreet Kaur	15 14	37 53 4	814-16-454	36	17	28	81	35	17	28	80	35	18	28	81	20	19	16	26	41	122	364	80.888889	Level 3
15	Neha Banwal	15 15	37 53 7	814-16-442	36	17	28	81	41	17	28	86	37	18	28	83	22	19	18	26	41	126	376	83.555556	Level 3
16	Navneet Kaur	15 16	37 52 6	814-16-434	25	14	23	62	37	16	24	77	37	17	25	79	20	18	9	21	35	103	321	71.333333	Level 3
17	Manpreet Kaur	15 17	37 52 4	814-16-432	31	15	25	71	40	16	26	82	42	17	26	85	20	20	18	22	40	120	358	79.555556	Level 3
18	Gurinder Singh	15 51	37 54 2	814-16-446	13	13	23	49	27	15	24	66	18	16	24	58	13	10	6	18	34	81	254	56.444444	Level 2
19	Jaswinder Singh	15 52	37 54 3	814-16-447	18	13	22	53	18	15	24	57	18	16	24	58	13	11	3	18	34	79	247	54.888889	Level 2
20	Gurkirat Singh	15 53	37 54 4	814-16-457	18	14	23	55	25	16	25	66	22	17	23	62	16	16	11	18	31	92	275	61.111111	Level 3

21	Gaurav Pal	15 54	37 54 5	814-16-449	18	14	22	54	22	16	25	63	20	16	23	59	13	13	4	18	31	80	2 5 6	56.88 8888 9	Lev el 2
22	Kulbir Kaur	15 18	37 53 9	814-16-443	13	13	27	53	28	15	23	66	22	15	27	64	11	12	7	15	29	74	2 5 7	57.11 1111 1	Lev el 2
	%																							79.89	

Average PO attainment by direct method=**79.89** %

POs	Attainment of PO by Indirect Method (Exit Survey)						Level of attainment
	No. of 1	No. of 2	No. of 3	No. of 4	No. of 5		
1				13		80	level 3
2			1	11	1	80	level 3
3			1	11	1	80	level 3
4		2	3	6	2	72.31	level 3
5		3		7	3	75.38	level 3
6			3	8	2	78.46	level 3
7			1	9	3	83	level 3
8			1	10	2	81.54	level 3
9			1	8	4	84.62	level 3
10			1	7	5	86.15	level 3

Average PO attainment by indirect method is 80.14 %

Total PO attainment (%) = (weightage: 80 %) X (Average attainment in direct method) + (weightage: 20 %) X (Average attainment in indirect method)

= (80%) X 79.89 + (20%) X 80.14

= **79.94 %**

Level of Attainment = **Level 3**