V.S.R GOVERNMENT DEGREE & P.G COLLEGE
MOVVA-521 135 KRISHNA DISTRICT, ANDHRA PRADESH
NAAC Accredited With "A" Grade (3.01 CGPA)
ISO 9001:2015, 14001:2015, 5001:2011 Certified Institution
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EXPERIENTIAL LEARNING

V.S.R. GOVT.DEGREE & PG COLLEGE, MOVVA

DEPARTMENT OF BIOTECHNOLOGY

PRACTICALS LIST

S.No.	Class	Sem	Paper	Name of the Experiment
1	I B.Sc	I	**Paper 1:** Bio-molecules & Analytical TechniquesLab	1. Introduction to basic instruments (Principle standard operation procedure) demonstration and record 2. Calculation of molarity, normality and molecular weight of compounds. 3. Qualitative analysis of carbohydrates (sugars) 4.**Quantitative estimation of Carbohydrates** **5.** Quantitative estimation of Protein - Lowery method/ **Biuret method** 6. Estimation of DNA by diphenylamine reagent 7. Estimation of RNA by orcinol reagent 8. Assay of protease activity 9. Preparation of starch from potato and its hydrolyze by salivary amylase 10. Preparation of standard buffer and pH determination 11. Separation of amino acids by paper chromatography 12. Separation of lipids of TLC 13. Agarose gel electrophoresis 14. Calculation of mean, median and mode

2	I B.Sc	I	**Paper 2:** Microbiology, Cell and Molecular Biology Lab	1. Cleaning and preparation of glassware **2. Sterilization techniques (autoclave, hot air oven, filter)** 3. Preparation of nutrient agar medium for bacteria 4. Preparation of PDA medium for fungi **5. Preparation of pure culture by slab, slant, streak culture** 6. Isolation of bacteria from soil 7. Simple staining technique 8. Differential staining technique 9. Identification of different bacteria 10. Microbial counting by Haemocytometer 11. Motility test by hanging drop 12. Biochemical identification of bacteria 13. Study of stages of mitotic cell division 14. Study of stages of meiotic cell division 15. Isolation of Chloroplast 16. Extraction and isolation of DNA from bacteria.
3	II B.Sc	III	**Paper 3:** Immunology and rDNA technologyLab	1. Determination of Blood Groups 2. Pregnancy test 3. Widal test 4. **Ouchterlony** immunodiffusion 5. Radial immune diffusion 6. ELISA 7. Production of antibodies (theory exercise) 8. Bleeding, separation of serum and storage 9. Lymphoid organs (theory exercise) 10. Isolation of plasmid DNA (alkaline lysis method) 11. Analysis of plasmid DNA by Agarose gel

				electrophoresis 12. Southern blotting (theory exercise) 13. PCR Amplification (theory exercise)
4	II B.Sc	IV	**Paper 4:** Plant and Animal Biotechnology Lab	1. plant culture media and composition of MS media 2. Raising of aseptic seedlings 3. Induction of callus from different explants 4. Plant propagation through Tissue culture (shoot tip and Nodal culture) 4. Establishing a plant cell culture (both in solid and liquid media) 6. suspension cell culture 7. Cell count by haemocytometer. 8. Establishing primary cell culture of chicken embryo fibroblasts. 9. Animal tissue culture – maintenance of established cell lines. 10. Animal tissue culture – virus cultivation. 11. Estimation of cell viability by dye exclusion (Trypan blue). 12. ELISA – Demonstration
5	II B.Sc	IV	**Paper 5:** Environmental and Industrial Biotechnology Lab	1. Detection of Coliforms for determination of the purity of potable water. 2. Determination of total dissolved solids of water 3. Determination of Hardness and alkalinity of water sample. 5. Determination of dissolved oxygen concentration of water sample 6. Determination of biological oxygen demand of sewage sample 7. Determination of chemical oxygen demand (COD) of sewage sample. 8. Isolation of industrially important microorganisms from soil. 9. Isolation of amylase producing organisms from soil. 10. Production of α – amylase from Bacillus sp. by shake flask culture. 11. Production of alcohol or wine using different substrates. 11. Estimation of citric acid by titrimetry
6	III B.Sc	VI	**Paper 6B:** Organic Farming Lab	**1.** Collection of different soilsamples **2.** Qualitative estimation of nitrogen, phosphorus and potassium in soilsamples **3.** Collection of fruit, vegetable and other domesticwaste **4.** Preparation of compost beds and introducingearthworms **5.** Collection of vermin castings

				6. Sieving, drying and packing of vermin compost **7.** Visit to animal shed and observing farm yard manureproduction **8.** Preparation of media and isolation of biofertilizers
7	III B.Sc	VI	**Paper 7B:** Biofertilizers and Biopesticides production Lab	1. Preparation of Nutrient agar 2. Isolation& identification of *Rhizobium* from root nodules 3. Isolation of *Azatobacter* from soil samples *4.* Isolation of*Trichoderma* 5. Gram staining ofbacteria 6. Methods of application of biofertilizers 7. Standards for commercial production of biofertilizers- Quality control of biofertilizers 8. VAM rootstaining 9. Raising of legume seedlings with *Rhizobium*treatment 10. Visit to commercial bio control units and Krishiseva Kendra

DEPARTMENT OF PHYSICS
PRACTICAL LIST

S.No.	Class	Sem	Paper	Name of the Experiment
1	I B.SC	I	Practical Course 1: Mechanics, Waves and Oscillations	1. Young's modulus of the material of a bar (scale) by uniform bending 2. Young's modulus of the material a bar (scale) by non- uniform bending 3. Surface tension of a liquid by capillary rise method 4. Viscosity of liquid by the flow method (Poiseuille's method) 5. Bifilar suspension –Moment of inertia of a regular rectangular body. 6. Fly-wheel -Determination of moment of inertia 7. Rigidity modulus of material of a wire- Dynamic method (Torsional pendulum) 8. Volume resonator experiment 9. Determination of 'g' by compound/bar pendulum 10. Simple pendulum- normal distribution of errors-estimation of time period and the error of

				the mean by statistical analysis 11. Determination of the force constant of a spring by static and dynamic method. 12. Coupled oscillators 13. Verification of laws of vibrations of stretched string –Sonometer 14. Determination of frequency of a bar –Melde's experiment. 15. Study of a damped oscillation using the torsional pendulum immersed in liquid-decay constant and damping correction of the amplitude.
2	I B.SC	II	Practical Course II: Wave Optics	1. Determination of radius of curvature of a given convex lens-Newton's rings. 2. Resolving power of grating. 3. Study of optical rotation –polarimeter. 4. Dispersive power of a prism. 5. Determination of wavelength of light using diffraction grating-minimum deviation method. 6. Determination of wavelength of light using diffraction grating-normal incidence method. 7. Resolving power of a telescope. 8. Refractive index of a liquid-hallow prism 9. Determination of thickness of a thin wire by wedge method 10. Determination of refractive index of liquid-Boy's method.
3	II B.SC	III	Practical Course-III: Heat and Thermodynamics	1. Specific heat of a liquid –Joule's calorimeter – Barton's radiation correction 2. Thermal conductivity of bad conductor-Lee's method 3. Thermal conductivity of rubber. 4. Measurement of Stefan's constant. 5. Specific heat of a liquid by applying Newton's law of cooling correction. 6. Heating efficiency of electrical kettle with varying voltages. 7. Thermoemf- thermo couple - Potentiometer 8. Thermal behavior of an electric bulb (filament/torch light bulb) 9. Measurement of Stefan's constant- emissive method 10. Study of variation of resistance with temperature - Thermistor.
4	II B.SC	IV	Practical Course IV: Electricity, Magnetism and Electronics	1. Figure of merit of a moving coil galvanometer. 2. LCR circuit series/parallel resonance, Q factor. 3. Determination of ac-frequency –Sonometer. 4. Verification of Kirchoff's laws and Maximum Power Transfer theorem. 5. Field along the axis of a circular coil carrying current-Stewart & Gee's apparatus.

				6. PN Junction Diode Characteristics 7. Zener Diode –V-I Characteristics 8. Zener Diode as a voltage regulator 9. Transistor CE Characteristics- Determination of hybrid parameters 10. Logic Gates- OR,AND,NOT and NAND gates. Verification of Truth Tables. 11. Verification of De Morgan's Theorems. 12. Construction of Half adder and Full adders- Verification of truth tables
5	II B.SC	IV	Practical Course V: Modern Physics	1. e/m of an electron by Thomson method. 2. Determination of Planck's Constant (photocell). 3. Verification of inverse square law of light using photovoltaic cell. 4. Determination of the Planck's constant using LEDs of at least 4 different colours. 5. Determination of work function of material of filament of directly heated vacuum diode. 6. Study of absorption of α-rays. 7. Study of absorption of β-rays. 8. Determination of Range of β-particles. 9. Determination of M & H. 10. Analysis of powder X-ray diffraction pattern to determine properties of crystals. 11. Energy gap of a semiconductor using junction diode. 12. Energy gap of a semiconductor using thermistor 13. GM counter characteristics
6	III B.SC	VI	Course 6B: Low Temperature Physics & Refrigeration	1. Record the Principles and applications of Refrigerators and Freezers. 2. Measure the temperatures below Melting point of Ice using a thermometer available in the Lab. 3. Make a freezing mixture by adding different salts viz., Sodium chloride, Potassium Hydrate (KOH), Calcium chloride to ice in different proportions and observe the temperature changes. 4. Study the operation of a refrigerator and understand the working of different parts. 5. Study the properties of refrigerants like chlorofluorocarbons-hydrochlorofluoro- carbons and record the lowest temperatures obtained. 6. Consider a simple faulty refrigerator and try to troubleshoot the simple problems by understanding its working. 7. Understand the practical problem of filling the Freon Gas into the Refrigerator. 8. Get the Liquid Nitrogen or Liquid Helium from nearby Veterinary Hospital and measure their temperatures using chromel-alumel thermocouple or mercury thermometer and

				observe their physical properties like colour, smell etc and precautions to be taken for their safe handling. 9. Preparation of freeze drying food with Dry ice and liquid nitrogen 10. Preparation of freeze drying food with liquid nitrogen
7	III B.SC	VI	Course 6B: Solar Energy and Applications – Practical (lab) work	1. Measurement of direct radiation using pyrheliometer. 2. Measurement of global and diffuse radiation using pyranometer. 3. Evaluation of performance of a flat plate collector 4. Evaluation of solar cell / module efficiency by studying the I – V measurements. 5. Determination of series and shunt resistance of a solar cell / module. 6. Determination of efficiency of two solar cells / modules connected in series. 7. Determination of efficiency of two solar cells / modules connected in parallel. 8. Study the effect of input intensity on the performance of solar cell / module. 9. Study the influence of cell / module temperature on the efficiency. 10. Study the effect of cell / module inclination on the efficiency.

Department of Computer Science MPWET

PRACTICAL LIST

S.No.	Class	Sem	Paper	Name of the Experiment
1	I B.SC	I	Practical Course 1: Python Programming Lab	1. Write a Python program to convert temperatures to and from Celsius, Fahrenheit. 2. Write a Python program that accepts a word from the user and reverse it 3. Write a Python program to get the Fibonacci series between 0 to 50. 4. Write a Python program which takes two digits m (row) and n (column) as input and generates a two-dimensional array. The element value in the i-th row

				and j-th column of the array should be i*j. 5. Write a Python program that accepts a string and calculate the number of digits and letters 6. Write a Python program to check whether an alphabet is a vowel or consonant 7. Write a Python program to calculate the sum and average of n integer numbers 8. Write a Python program to create the multiplication table (from 1 to 10) of a number 9. Write a Python function to find the Max of three numbers. 10. Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument. 11. Write a Python function that takes a number as a parameter and check the number is prime or not. 12. Write a Python function to check whether a number is perfect or not. 13. Write a Python function that checks whether a passed string is palindrome or not. 14. Write a Python program for sequential search. 15. Write a Python program to sort a list of elements using the selection sort algorithm
2	I B.SC	II	Practical Course II: Graphic designing and web designing lab	PHOTOSHOP: Commercial Work: Photo base multi color visiting card – Multi color wedding cards – Paper adds (Photo base) Pomp lets (Photo base) Broachers (Photo base) – Advertisement designing – Pomp lets (Photo base) – Broachers (Photo base). Digital Work: Pass port designing , Maxi Modeling , Digital Modeling - Black and White Photo Color conversation , Marriage album designing. Flex Modeling: Front light board designing , Back

				light board designing. Illustrator: Cartoon drawing-logo creation – 3D objects creation – move title creation – brush effects based title-filter effects backgrounds. WordPress: 1. Installation and configuration of word press. 2. Create a site and add a theme to it.
3	II B.SC	III	Practical Course-III: OOP's Through JAVA Lab	1. Write a program to perform various String Operations 2. Write a program on class and object in java 3. Write a program to illustrate Function Overloading & Function Overriding methods in Java 4. Write a program to illustrate the implementation of abstract class 5. Write a program to implement Exception handling 6. Write a program to create packages in Java 7. Write a program on interface in java 8. Write a program to Create Multiple Threads in Java 9. Write a program to Write Applets to draw the various polygons 10. Write a program which illustrates the implementation of multiple Inheritance using interfaces in Java 11. Write a program to assign priorities to threads in java
4	II B.SC	IV	Practical Course IV: HTML, CSS and JavaScript lab	1. Write a HTML program illustrating text formatting. 2. Illustrate font variations in your HTML code. 3. Prepare a sample code to illustrate links between different sections of the page. 4. Create a simple HTML program to illustrate three types of lists. 5. Embed a real player in your web page. 6. Embed a calendar object in your web page. 7. Create an applet that accepts two numbers and

				perform all the arithmetic operations on them. 8. Create nested table to store your curriculum. 9. Create a form that accepts the information from the subscriber of a mailing system. 10. Write a Program in Java Script to add two numbers. 11. Write a script to find the factorial of a given number using functions. 12. Write a script to print all primes with in the given range. 13. Write a program to sort the array elements using "Bubble Sort" technique. 14. Write a program in Java Script to implement "Binary Search" technique. 15. Write a script to print all perfect numbers with in the given range. 16. Using DHTML, invert the behavior of tags. 17. Create an inline style sheet for your web page. 18. Create an external style sheet for creating a font family. 19. Illustrate the creation of embedded style sheet.
5	II B.SC	IV	Practical Course V: PHP & MySql LAB	MySQL Lab Cycle Cycle -1 An Enterprise wishes to maintain the details about his suppliers and other corresponding details. For that he uses the following details. Suppliers (sid: Integer, sname: string, address: string) Parts (pid: Integer, pname: string, color: string) Catalog (sid: integer, pid: integer, cost: real) The catalog relation lists the prices charged for parts by suppliers. Write the following queries in SQL: 1. Find the pnames of parts for which there is some supplier. 2. Find the snames of suppliers who supply every part.

				3. Find the snames of supplier who supply every red part. 4. Find the pnames of parts supplied by London Supplier abd by no one else. 5. Find the sid's of suppliers who charge more for some part than the average cost of that part. 6. For each part, find the sname of the supplier who charges the most for that part. 7. Find the sid's of suppliers who supply only red parts. 8. Find the sid's of suppliers who supply a red and a green part. 9. Find the sid's of suppliers who supply a red or green part. 10. Find the total amount has to pay for that suppler by part located from London. Cycle – 2 An organisation wishes to maintain the status about the working hours made by his employees. For that he uses the following tables. Emp (eid: integer, ename: string, age: integer, salary: real) Works (eid: integer, did: integer, pct_time: integer) Dept (did: integer, budget: real, managerid: integer) An employee can work in more than one department; the pct_time field of the works relation shows the percentage of time that a given employee works in a given department. Resolve the following queries. Print the names and ages of each employee who works in both Hardware and Software departments. 1. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many fulltime employees), print the did's together with the number of employees that work in that department. 2. Print the name of each employee whose salary

				exceeds the budget of all of the departments that he or she work in. 3. Find the managerid's of managers who manage only departments with budgets greater than 1,000,000. 4. Find the enames of managers who manage the departments with largest budget. 5. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerid's of managers who control more than 5,000,000. 6. Find the managerid's of managers who control the highest amount. 7. Find the average manager salary. PHP Lab Cycle 1. Write a PHP program to Display "Hello" 2. Write a PHP Program to display the today's date. 3. Write a PHP Program to read the employee details. 4. Write a PHP Program to display the 5. Write a PHP program to prepare the student marks list. 6. Write a PHP program to generate the multiplication of two matrices. 7. Write a PHP Application to perform demonstrate the college website. 8. Write a PHP application to add new Rows in a Table. 9. Write a PHP application to modify the Rows in a Table. 10. Write a PHP application to delete the Rows from a Table. 11. Write a PHP application to fetch the Rows in a Table. 12. Develop an PHP application to make following Operations i. Registration of Users. ii. Insert the details of the Users. iii. Modify the Details. iv. Transaction Maintenance. a) No of times Logged in b) Time Spent on each login. c) Restrict the user for three trials only. d) Delete the user if he spent more than 100 Hrs of transaction.

6	III B.SC	VI	Course 6A: Advanced Java Script- JQUERY,AJAX , JSON	1. Using jQuery find all text areas, and makes a border. Then adds all paragraphs to the jQuery object to set their borders red. 2. Using jQuery add the class "w3r_font_color" and w3r_background to the last paragraph element. 3. Using jQuery add a new class to an element that already has a class. 4. Using jQuery insert some HTML after all paragraphs. 5. Using jQuery insert a DOM element after all paragraphs. 6. Convert three headers and content panels into an accordion. Initialize the accordion and specify the animate option 7. Convert three headers and content panels into an accordion. Initialize the accordion and specify the height. 8. Create a pre-populated list of values and delay in milliseconds between a keystroke occurs and a search is performed. 9. Initialize the button and specify the disable option. 10. Initialize the button and specify an icon on the button. 11. Initialize the button and do not show the label. 12. Create a simple jQuery UI Datepicker. Now pick a date and store it in a textbox. 13. Initialize the date picker and specify a text to display for the week of the year column Heading
7	III B.SC	VI	Course 7A: ReactJS	1. Design and Implement simple ReactJS program to display “Hello wolrd!” 2. Design and Implement Search filter in ReactJS? 3. Design and Implement Simple counter using ReactJS? 4. Design and Implement a List in ReactJS and iterate over all the elements in the list using ReactJS?

				5. Design and Implement Accordion in ReactJS? 6. Design and implement Datapicker in ReactJS? 7. Design and Implement Image Slider using ReactJS? 8. Create a check list in ReactJS and implement onchange() event handler? 9. Design and implement simple login form using ReactJS? 10. Design and implement ReactJS program to print data from REST API? 11. Design and implement Multi-Page navigation using React Router
8	III B.SC	VI	Course 6B: Java Servlets	1. Write a program to demonstrate Basic Servlet to display the date and time.? 2.Write a Servlet program to generate simple text? 3.Write a Servlet program to display cookie ID? 4.Write a Servlet program to handle user form? 5. Write a program To convert the static web pages into dynamic web pages using servlets and cookies?. 6. Write a program using Servlet to write persistent and non-persistent cookies on client side.? 7.Write a program to design the login form using servlet.? 8. Write a servlet program for customer registration.? 9.Develop sample application for session management using Servlet? 10.Develop sample application with database connectivity using Servlet?

Department of Computer Science: MPCS/MECS

PRACTICAL LIST

S.No	Class	Sem	Paper	Name of the Experiment
1	I B.SC	I	Practical Course 1: PROBLEM	1. Write a program to check whether the given number is Armstrong or not.

			SOLVING IN C LAB	2. Write a program to find the sum of individual digits of a positive integer. 3. Write a program to generate the first n terms of the Fibonacci sequence. 4. Write a program to find both the largest and smallest number in a list of integer values 5. Write a program to demonstrate refection of parameters in swapping of two integer values using Call by Value & Call by Address 6. Write a program that uses functions to add two matrices. 7. Write a program to calculate factorial of given integer value using recursive functions 8. Write a program for multiplication of two N X N matrices. 9. Write a program to perform various string operations. 10. Write a program to search an element in a given list of values. 11. Write a program to sort a given list of integers in ascending order. 12. Write a program to calculate the salaries of all employees using Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary) structure. a. DA is 30 % of Basic Pay b. HRA is 15% of Basic Pay c. Deduction is 10% of (Basic Pay + DA) d. Gross Salary = Basic Pay + DA+ HRA e. Net Salary = Gross Salary - Deduction 13. Write a program to illustrate pointer arithmetic. 14. Write a program to read the data character by character from a file. 15. Write a program to createBook (ISBN,Title, Author, Price, Pages, Publisher)structureand store book details in a file and perform the following

				operations a. Add book details b. Search a book details for a given ISBN and display book details, if available c. Update a book details using ISBN d. Delete book details for a given ISBN and display list of remaining Books
2	I B.SC	II	Practical Course II: DATA STRUCTURES USING C LAB	1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array a. Add an element at the begging of an array b. Insert an element at given index of array c. Update a element using a values and index d. Delete an existing element 2. Write a program using stacks to convert a given a. postfix expression to prefix b. prefix expression to postfix c. infix expression to postfix 3. Write Programs to implement the Stack operations using an array 4. Write Programs to implement the Stack operations using Liked List. 5. Write Programs to implement the Queue operations using an array. 6. Write Programs to implement the Queue operations using Liked List. 7. Write a program for arithmetic expression evaluation. 8. Write a program for Binary Search Tree Traversals 9. Write a program to implement dequeue using a doubly linked list. 10. Write a program to search an item in a given list using the following Searching Algorithms a. Linear Search b. Binary Search. 11. Write a program for implementation of the following Sorting Algorithms a. Bubble Sort b. Insertion Sort c. Quick Sort 12. Write a program for polynomial addition using

				single linked list 13. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstrar's algorithm. 14. Write a program to implement Depth First Search graph traversals algorithm 15. Write a program to implement Breadth First Search graph traversals algorithm
3	II B.SC	III	Practical Course-III: DATABASE MANAGEMENT SYSTEMS LAB	1. Draw ER diagram for hospital administration 2. Creation of college database and establish relationships between tables 3. Relational database schema of a company is given in the following figure. Relational Database Schema - COMPANY Questions to be performed on above schema 1. Create above tables with relevant Primary Key, Foreign Key and other constraints 2. Populate the tables with data 3. Display all the details of all employees working in the company. 4. Display ssn, lname, fname, address of employees who work in department no 7. 5. Retrieve the Birthdate and Address of the employee whose name is 'Franklin T. Wong' 6. Retrieve the name and salary of every employee 7. Retrieve all distinct salary values 8. Retrieve all employee names whose address is in 'Bellaire' 9. Retrieve all employees who were born during the 1950s 10. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive) 11. Retrieve the names of all employees who do not have supervisors 12. Retrieve SSN and department name for all

				employees 13. Retrieve the name and address of all employees who work for the 'Research' department 14. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date. 15. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor. 16. Retrieve all combinations of Employee Name and Department Name 17. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan' either as a worker or as a manager of the department that controls the project. 18. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees. 19. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name. 20. Select the names of employees whose salary does not match with salary of any employee in department 10. 21. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford. 22. Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings. 23. Find the sum of the salaries and number of employees of all employees of the 'Marketing' department, as well as the maximum salary, the minimum salary, and the average salary in this

				department. 24. Select the names of employees whose salary is greater than the average salary of all employees in department 10. 25. Delete all dependents of employee whose ssn is '123456789'. 26. Perform a query using alter command to drop/add field and a constraint in Employee table.
4	II B.SC	IV	Practical Course IV: OBJECT ORIENTATED PROGRAMMING THROUGH JAVA LAB	1. Write a program to read Student Name, Reg.No, Marks[5] and calculate Total, Percentage, Result. Display all the details of students 2. Write a program to perform the following String Operations a. Read a string b. Find out whether there is a given substring or not c. Compare existing string by another string and display status d. Replace existing string character with another character e. Count number of works in a string 3. Java program to implements Addition and Multiplication of two N X N matrices. 4. Java program to demonstrate the use of Constructor. 5. Calculate area of the following shapes using method overloading. a. Triangle b. Rectangle c. Circle d. Square 6. Implement inheritance between Person (Aadhar, Surname, Name, DOB, and Age) and Student (Admission Number, College, Course, Year)classes where ReadData(), DisplayData() are overriding methods. 7. Java program for implementing Interfaces 8. Java program on Multiple Inheritance. 9. Java program for to display Serial Number from 1 to N by creating two Threads 10. Java program to demonstrate the following

				exception handlings a. Divided by Zero b. Array Index Out of Bound c. File Not Found d. Arithmetic Exception e. User Defined Exception 11. Create an Applet to display different shapes such as Circle, Oval, Rectangle, Square and Triangle. 12. Write a program to create Book (ISBN,Title, Author, Price, Pages, Publisher)structure and store book details in a file and perform the following operations a. Add book details b. Search a book details for a given ISBN and display book details, if available c. Update a book details using ISBN d. Delete book details for a given ISBN and display list of remaining Books
5	II B.SC	IV	Practical Course V: OPERATING SYSTEMS LAB USING C/Java	1. Write a program to implement Round Robin CPU Scheduling algorithm 2. Simulate SJF CPU Scheduling algorithm 3. Write a program the FCFS CPU Scheduling algorithm 4. Write a program to Priority CPU Scheduling algorithm 5. Simulate Sequential file allocation strategies 6. Simulate Indexed file allocation strategies 7. Simulate Linked file allocation strategies 8. Simulate MVT and MFT memory management techniques 9. Simulate Single level directory File organization techniques 10. Simulate Two level File organization techniques 11. Simulate Hierarchical File organization techniques 12. Write a program for Bankers Algorithm for Dead Lock Avoidance 13. Implement Bankers Algorithm Dead Lock Prevention. 14. Simulate all Page replacement algorithms. a) FIFO b) LRU c) LFU

				15. Simulate Paging Techniques of memory management
6	III B.SC	VI	Course 6A: Web Interface Designing Technologies	HTML and CSS: 1. Create an HTML document with the following formatting options: (a)Bold, (b) Italics, (c) Underline, (d) Headings (Using H1 to H6 heading styles), (e) Font (Type, Size and Color), (f) Background (Colored background/Image in background), (g) Paragraph, (h) Line Break, (i) Horizontal Rule, (j) Pre tag 2. Create an HTML document which consists of: (a) Ordered List (b) Unordered List (c) Nested List (d) Image 3. Create a Table with four rows and five columns. Place an image in one column 4. Using “table” tag, align the images as follows: 5. Create a menu form using html. 6. Style the menu buttons using css. 7. Create a form using HTML which has the following types of controls: (a) Text Box (b) Option/radio buttons (c) Check boxes (d) Reset and Submit buttons 8. Embed a calendar object in your web page. 5 9. Create an applet that accepts two numbers and perform all the arithmetic operations on them. 10. Create nested table to store your curriculum. 11. Create a form that accepts the information from the subscriber of a mailing system. 14. Create a webpage containing your bio data (assume the form and fields). 15. Write a html program including style sheets. 16. Write a html program to layers of information in web page. Word press:

				18. Installation and configuration of word press. 19. Create a site and add a theme to it. 20 Create a child theme 21. Create five pages on COVID – 19 and link them to the home page. . 22. Create a simple post with featured image. 23. Add an external video link with size 640 X 360. 24. Create a user and assign a role to him. 25. Create a login page to word press using custom links 26. Create a website for your college.
7	III B.SC	VI	Course 7A: Web Applications Development using PHP & MYSQL	1. Write a PHP program to Display "Hello" 2. Write a PHP Program to display the today's date. 3. Write a PHP program to display Fibonacci series. 4. Write a PHP Program to read the employee details. 5. Write a PHP program to prepare the student marks list. 6. Write a PHP program to generate the multiplication of two matrices. 7. Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page. 8. Create Website Registration Form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page. 9. Write PHP script to demonstrate passing variables with cookies. 10. Write a program to keep track of how many times a visitor has loaded the page. 11. Write a PHP application to add new Rows in a Table. 12. Write a PHP application to modify the Rows in a Table. 13. Write a PHP application to delete the Rows from a Table. 14. Write a PHP application to fetch the Rows in a Table. 15. Develop an PHP application to implement

				the following Operations i. Registration of Users. ii. Insert the details of the Users. iii. Modify the Details. iv. Transaction Maintenance. a) No of times Logged in b) Time Spent on each login. c) Restrict the user for three trials only. d) Delete the user if he spent more than 100 Hrs of transaction. 16. Write a PHP script to connect MySQL server from your website. 17. Write a program to read customer information like cust-no, cust-name, itempurchased, and mob-no, from customer table and display all these information in table format on output screen. 18. Write a program to edit name of customer to "Kiran" with cust-no =1, and to delete record with cust-no=3. 19. Write a program to read employee information like emp-no, emp-name, designation and salary from EMP table and display all this information using table format in your website. 20. Create a dynamic web site using PHP and MySQL.
8	III B.SC	VI	Course 6B: INTERNET OF THINGS	1. Understanding Arduino UNO Board and Components 2. Installing and work with Arduino IDE 3. Blinking LED sketch with Arduino 4. Simulation of 4-Way Traffic Light with Arduino 5. Using Pulse Width Modulation 6. LED Fade Sketch and Button Sketch 7. Analog Input Sketch (Bar Graph with LEDs and

				Potentiometre) 8. Digital Read Serial Sketch (Working with DHT/IR/Gas or Any other Sensor) 9. Working with Adafruit Libraries in Arduino 10. Spinning a DC Motor and Motor Speed Control Sketch 11. Working with Shields 12. Design APP using Blink App or Things peak API and connect it LED bulb. 13. Design APP Using Blynk App and Connect to Temperature, magnetic Sensors.
9	III B.SC	VI	Course 7B: APPLICATION DEVELOPMENT USING PYTHON	1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice. 2. Write a python program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria : Grade A: Percentage >=80 Grade B: Percentage>=70 and =60 and =40 and =0. 11. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows: P (t) = (15000(1+t))/ (15+ e) 12. Where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval. 13. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion: I. velocity wrt time (v=u+at) II. distance wrt time (s=u*t+0.5*a*t*t) 17 III. distance wrt velocity (s=(v*v-u*u)/2*a) 14. Write a program that takes two lists and returns

				True if they have at least one common member. 15. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements. 16. Write a program to implement exception handling. 17. Try to configure the widget with various options like: bg=”green”, family=”times”, size=20. 18. Write a Python program to read last 5 lines of a file. 19. Design a simple database application that stores the records and retrieve the same 20. Design a database application to search the specified record from the database. 21. Design a database application to that allows the user to add, delete and modify the records.

DEPARTMENT OF ELECTRONICS

PRACTICAL LIST

S.No.	Class	Sem	Paper	Name of the Experiment
1	I B.SC	I	**Paper 1:** Circuit Theory and Electronic Devices Lab	1.Thevenin’s Theorem-verification. 2. Norton's Theorem-verification. 3.Maximum Power Transfer Theorem-verification. 4. LCR series resonance circuit. 5. BJT input and output characteristics. 6. FET Output and transfer characteristics. 7. UJT V-I characteristics. 8. LDR characteristics. 9. IC regulated power supply (IC-7805). 10. IC regulated power supply (IC-7905).
2	I B.SC	II	**Paper 2:** Digital Electronics Lab	1. Verification of IC-logic gates. 2. Realization of basic gates using discrete Components (resistor,diodes & transistor). 3. Realization of basic gates using Universal gates (NAND & NOR gates). 4. Verify Half adder and full adder using gates. 5. Verify Half subtractor and full subtractor using gates. 6. Verify the truth table Multiplexer and

				Demultiplexer. 7. Verify the truth table Encoder and decoder. 8. Verify the truth table of RS, JK, T-F/F using NAND gates. 9. 4-bit binary parallel adder and subtractor using IC 7483. 10. BCD to Seven Segment Decoder using IC – 7447/7448.
3	II B.SC	III	**Paper 3:** Analog Circuits and Communication Lab	1. Op-Amp as inverting and non-inverting. 2. Op-Amp Voltage follower and current follower. 3. Op-Amp as integrator and differentiator. 4. Op-Amp as adder & subtractor. 5. Op-Amp as voltage to current converter. 6. Op-Amp as square wave generator. 7. Astable Multivibrator using IC- 555. 8. AM Modulation and Demodulation. 9. FM Modulation and Demodulation. 10. PM Modulation and Demodulation.
4	II B.SC	IV	**Paper 4:** Microprocessor Systems Lab	1. Addition and Subtraction (8 bit). 2. Addition and Subtraction (16-bit). 3. Multiplication and Division (8-bit) 4. Largest number in an array. 5. Smallest number in an array. 6. BCD to ASCII and ASCII to BCD. 7. Program to Convert Two BCD Numbers into Hex. 8. Program to Convert Hex Number into BCD Number. 9. Program to Find the Square Root of A Given Number. 10. Interfacing Experiments Using 8086 Microprocessor (Demo): i) Traffic Light Controller ii) Elevator iii) 7-Segment Display
5	II B.SC	IV	**Paper 5:** Microcontroller and Interfacing Lab	1. Addition and Subtraction of Two 8-Bit Numbers. 2. Multiplication and Division of Two 8-Bit Numbers. 3. Largest number /smallest in an array. 4. Addition Of Two 8-Bit Numbers (Keil Software). 5. Addition Of Two 16-Bt Numbers (Keil Software). 6. Subtraction Of Two 8-Bit Numbers (Keil Software). 7. Subtraction Of Two 16-Bit Numbers (Keil Software). 8. Multiplication Of Two 8-Bit Numbers (Keil Software).

				9. Interfacing Led To 8051 Microcontroller (Keil Software). 10.Interfacing Seven Segments To 8051 Microcontroller (Keil Software).
6	III B.SC	VI	**Paper 6A:** Industrial ElectronicsLab	1. D.C Power supply and filters. 2. Transistor series regulator. 3. Transistor as a shunt regulator. 4. Voltage regulator using IC-7805and IC-7905. 5. Voltage doubler using diodes. 6. Voltage Tripler using diodes. 7. SCR VI characteristics. 8. SCR Series inverter. 9. SCR parallel inverter.
7	III B.SC	VI	**Paper 7A:** Electronic InstrumentationLab	1. Familiarisation of digital multimeter and its usage in the measurements of (i) resistance, (ii) current, (iii) AC & DC voltages and for (i) continuity test (ii)diode test and (iii) transistor test. 2.Measure the AC and DC voltages, frequency using a CRO and compare the values Measured with other instruments like Digital Multi meter. 3. Formation of Sine, Square wave signals on the CRO using Function Generator and measure their frequencies. Compare the measured values with actual values. 4. Display the numbers from 0 to 9 on a single Seven Segment Display module by Applying voltages. 5. Display the letters a to h on a single Seven Segment Display module by applying voltages. 6. Measurement of body temperature using a digital thermometer and list out the error and corrections. 7. Measurement of Blood Pressure of a person using a B.P. meter and record the values and analyze them. 8. Get acquainted with an available ECG machine and study the ECG pattern to understand the meaning of various peaks. 9. Observe and understand the operation of a Digital Pulse oxymeter and measure the pulse rate of different people and understand the working of the meter.

DEPARTMENT OF BOTANY

PRACTICAL LIST

S.No.	Class	Sem	Paper	Name of the Experiment
1	I B.SC	I	**Practical Course 1: Fundamentals of Microbes and Non-vascular Plants**	1.Knowledge of Microbiology laboratory practices and safety rules. 2. Knowledge of different equipment for Microbiology laboratory (Spirit lamp, Inoculation loop, Hot-air oven, Autoclave/Pressure cooker, Laminar air flow chamber and Incubator) and their working principles. (In case of the nonavailability of the laboratory equipment the students can be taken to the local college/clinical lab. with required infrastructural facilities or they can enter a linkage with the college/lab for future developments and it will fetch creditsduring the accreditation by NAAC). 3. Demonstration of Gram's staining technique for Bacteria. 4. Study of Viruses (Corona, Gemini and TMV) using electron micrographs/ models. 5. Study of Archaebacteriaand Actinomycetes using permanent slides/ electron micrographs/diagrams. 6. Study of Anabaena and Oscillatoriausing permanent/temporary slides. 7. Study of different bacteria (Cocci, Bacillus, Vibrio and Spirillum) using permanent or temporary slides/ electron micrographs/ diagrams. 8. Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts : a. Fungi : Rhizopus,PenicilliumandPuccinia b. Lichens: Crustose, foliose and fruiticose c. Algae :Volvox, Spirogyra, EctocarpusandPolysiphonia d. Bryophyta : Marchantiaand Funaria 9. Study of specimens of Tobacco mosaic disease,

				Citrus canker and Blast of Rice.
2	I B.SC	II	**Practical Course II: Basics of Vascular plants and Phytogeography**	1.Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts : a. Pteridophyta : Lycopodium and Marselia b. Gymnosperms :CycasandGnetum 2. Study of fossil specimens of Cycadeoidea and Pentoxylon(photographs /diagrams can be shown if specimens are not available). 3. Demonstration of herbarium techniques. 4. Systematic / taxonomicstudy of locally available plants belonging to the families prescribed in theory syllabus. (Submission of 30 number of Herbarium sheets of wild plants with the standard system is mandatory). 5. Mapping of phytogeographical regions of the globe and India.
3	II B.SC	III	**Practical Course-III:Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity**	1.Tissue organization in root and shoot apices using permanent slides. 2. Anomalous secondary growth in stemsofBoerhavia and Dracaena. 3. Study of anther and ovule using permanent slides/photographs. 4. Study of pollen germination and pollen viability. 5. Dissection and observation of Embryo sac haustoria in SantalumorArgemone. 6. Structure of endosperm (nuclear and cellular) using permanent slides / Photographs. 7. Dissection and observation of Endosperm haustoria in Crotalaria or Coccinia. 8. Developmental stages of dicot and monocot embryos using permanent slides / photographs. 9. Study of instruments used to measure microclimatic variables; soil thermometer, maximum and minimum thermometer, anemometer, rain gauze, and lux meter. (visit to the nearest/local meteorology station where the data is being collected regularly and record the field visit summary for the submission in the practical). 10. Study of morphological and anatomical adaptations of hydrophytes and xerophytes (02 each). 11. Quantitative analysis of herbaceous vegetation in

				the college campus forfrequency, density and abundance. 12. Identification of vegetation/various plants in college campus and comparison with Raunkiaer's frequency distribution law. 13. Find out the alpha-diversity of plants in the area 14. Mapping of biodiversity hotspots of the world and India
4	II B.SC	IV	**Practical Course IV:Plant Physiology and Metabolism**	1.Determination of osmotic potential of plant cell sap by plasmolytic method using Rhoeo/ Tradescantia leaves. 2. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte. 3. Determination of rate of transpiration using Cobalt chloride method / Ganong's potometer (at least for a dicot and a monocot). 4. Effect of Temperature on membrane permeability by colorimetric method. 5. Study of mineral deficiency symptoms using plant material/photographs. 6. Demonstration of amylase enzyme activity and study the effect of substrate and Enzymeconcentration. 7. Separation of chloroplast pigments using paper chromatography technique. 8. Demonstration of Polyphenol oxidase enzyme activity (Potato tuber or Apple fruit) 9. Anatomy of C3, C4 and CAM leaves 10. Estimation of protein by biuret method/Lowry method 11. Minor experiments – Osmosis, Arc-auxonometer, ascent of sap through xylem, cytoplasmic streaming
5	II B.SC	IV	**Practical Course V: Cell Biology, Genetics and Plant Breeding**	1,Study of ultra structureof plant cell and its organelles using Electron microscopic Photographs/models. 2. Demonstration of Mitosis in Allium cepa/Aloe vera roots using squashtechnique; observation of various stages of mitosis in permanent slides. 4. Demonstration of Meiosis in P.M.C.s of Allium cepaflower buds using squash technique; observation of various stages of meiosis in permanent slides. 4. Study of structure of DNA and RNA molecules using models. 5. Solving problems monohybrid, dihybrid, back and

				test crosses. 6.Solving problems on gene interactions (atleast one problem for each of the gene interactions in the syllabus). 7. Chromosome mapping using 3- point test cross data. 8. Demonstration of emasculation, bagging, artificial pollination techniques for hybridization.
6	III B.SC	VI	**Course 6C: Plant Tissue Culture**	1. Principles and applications of- Autoclave, Laminar Airflow, Hot Air Oven. 2. Sterilization techniques for glass ware, tools etc., 3. MS medium - Preparation of different stock solutions; media preparation 4. Explant preparation, inoculation and initiation of callus from carrot. 5. Callus formation, growth measurements. 6. Induction of somatic embryos, preparation of synthetic seeds. 7. Multiplication of callus and organogenesis. 8. Hardening and acclimatization in green house.
7	III B.SC	VI	**Course 7C: Mushroom Cultivation**	1.Identification of different types of mushrooms. 2. Preparation of pure culture of an edible mushroom. 3. Preparation of mother spawn. 24 4. Production of planting spawn and storage. 5. Preparation of compost and casing mixture. 6. Demonstration of spawning and casing. 7. Hands on experience on cropping and harvesting. 8. Demonstration of storage methods. 9. Preparation of value-added products.

DEPARTMENT OF CHEMISTRY

PRACTICAL LIST

S.No.	Class	Sem	Paper	Name of the Experiment
1	**I B.SC**	**I**	**Paper 1: Qualitative inorganic analysis (Minimum of Six mixtures should be analyzed)**	**Analysis of mixture salt containing two anions and two cations (From two different groups) from the following:** **Anions: Carbonate, Sulphate, Chloride, Bromide, Acetate, Nitrate, Borate, Phosphate.** **Cations: Lead, Copper, Iron, Aluminium,**

				Zinc, Nickel, Manganese, Calcium, Strontium, Barium, Potassium and Ammonia
2	**I B.SC**	**II**	**Paper 2: 1Volumetric analysis**	**1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.** **2. Determination of Fe (II) using KMnO4 with oxalic acid as primary standard.** **3. Determination of Cu (II) using Na2S2O3 with K2Cr2O7 as primary standard.** **4. Estimation of water of crystallization in Mohr's salt by titrating with KMnO4**
3	**II B.SC**	**III**	**Paper 3: Organic preparations:**	**i. Acetylation of one of the following compounds: amines (aniline, o-, m-, ptoluidines and o-, m-, p-anisidine) and phenols (β-naphthol, vanillin, salicylic acid) by any one method:a. Using conventional method. b. Using green approach** **ii. ii. Benzolyation of one of the following amines (aniline, o-, m-, p-toluidines and o-, m-, p-anisidine)** **iii. iii. Nitration of any one of the following:a. Acetanilide/nitrobenzene by conventional method** **iv. b. Salicylic acid by green approach (using ceric ammonium nitrate).** **v. IR Spectral Analysis : IR Spectral Analysis of the following functional groups with examples** **vi. a) Hydroxyl groups b) Carbonyl groups c) Amino groups d) Aromatic groups.**
4	**II B.SC**	**IV**	**Paper 4: Organic Qualitative analysis**	**Analysis of an organic compound through systematic qualitative procedure for functional group identification including the determination of melting point and boiling point with suitable derivatives. Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids, Aromatic primary amines, amides and simple sugars**
5	**II B.SC**	**IV**	**Paper 5: Conductometric and Potentiometric Titrimetry**	**1. Conductometric titration- Determination of concentration of HCl solution using standard NaOH solution.** **2. Conductometric titration- Determination of concentration of CH3COOH Solution using standard NaOH solution.** **3. Conductometric titration- Determination of concentration of CH3COOH and HCl in a mixture using standard NaOH solution.**

				4. Potentiometric titration- Determination of Fe (II) using standard K2Cr2O7 solution. **5. Determination of rate constant for acid catalyzed ester hydrolysis.**
6	**III B.SC**	**VI**	**Paper 6B:Analytical Methods in Chemistry**	**1. Estimation of Iron(II) using standard Potassium dichromate solution (using DPA indicator** **2. Estimation of total hardness of water using EDTA** **3. Determination of chloride ion by Mohr's method** **4. Study the effect on pH of addition of HCl/NaOH to solutions of acetic acid, sodium acetate and their mixtures.** **5. Preparation of buffer solutions of different pH (i) Sodium acetate-acetic acid, (ii) Ammonium chloride Ammonium hydroxide.** **6. pH metric titration of (i) strong acid vs. strong base, (ii) weak acid vs. strong base.** **7. Determination of dissociation constant of a weak acid.**
7	**III B.SC**	**VI**	**Paper 7B: Analytical Methods in Chemistry**	**1. Separation of a given dye mixture (methyl orange and methylene blue) using TLC (using alumina as adsorbent).** **2. Separation of mixture of methyl orange and methylene blue by column chromatography** **. 3. Separation of given mixture of amino acids (glycine and phenyl alanine) using ascending paper chromatography.** **4. Separation of food dyes using Column Chromatography** **5. Separation of triglycerides using TLC** **6. Verification of Beer lambert's law. (Using potassium permanganate solution) using colorimeter /spectrophotometer**

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DEPARTMENT OF ZOOLOGY

PRACTICAL LIST

S.No.	Class	Sem	Paper	Name of the Experiment
1	**I B.SC**	**I**	**Paper 1: Animal Diversity - Biology**	**1.Protozoa - Amoeba, paramecium, Brinary fission and conjugation, vorticella, Entamoeba**

			of non chordates	**histolytica, plasmodium vivax.** **2.Porifera - Sycon, Spongilla, Euspongia.** **3.Coelanterata - Aurelia, Physalia, velella.**
2	**I B.SC**	**II**	**Paper 2: Animal Diversity - Biology of Chordates**	**Observation of the following slides :** **1.Protochordata - Herdminia, Amphioxius.** **2.Pisces - Pristis, Tarpedo, Hippacoampus, Exocoetus.** **3.Reptilia - Draco, Chameleon, Uromastix, Testudo.**
3	**II B.SC**	**III**	**Paper 3:** **Cell biology, Genetics, Molecular biology and Evolution**	**1.Preparation of Temporary slides of Mitotic Division with onion root tips.** **2.Mounting of salivary gland chromosomes of Chiranomous.** **3.Study of Mendelian Inheritance using suitable Examples and problems.** **4.Study of Genetics Drift by using examples of Darwin's finches.** **5.Study of fossil evidence.**
4	**II B.SC**	**IV**	**Paper 4:** **Animal physiology, Cellular Metabolism and embryology**	**1.Estimation of Total proteins in given solutions by Lowery's Method.** **2.Differential count of Human blood.** **3.Study of T.S of testis, ovary of a mammal.**
5	**II B.SC**	**IV**	**Paper 5:** **Immunology and animal biotechnology**	**1. Blood group Determination.** **2. Demonstration of** **a. ELISA** **b. Immunoelectrophoresis** **3.Preparation of Culture media.**
6	**III B.SC**	**VI**	**Paper 6B:Sustainable Aquaculture Management**	**1. Freshwater cultivable species any (Fin & shell Fish) observations of marphological characters and drawings.** **2. Brackishwater cultivable species (Fin & shell fish) observation of morphological characters by observing drawing.** **3. Viral diseases of Fin & Shell fish observation of his to pathological slides / charts models of viral pathogen in Fin & shell fish .**