Directorate of Higher Secondary Education

Guidelines for Lab Work and Practical Evaluation of Computer Science 2014 – 15 Admission onwards

We follow outcome focussed assessment approach in the evaluation process in the Kerala School Curriculum 2013. Term-end evaluation is an important aspect of assessment. Along with term-end evaluation at the end of an academic year, practical evaluation (PE) is to be conducted. PE is the term-end assessment of the lab work done in the academic year. Lab work is an integral part of the Continuous and Comprehensive Evaluation (CCE). Hence, it should be considered for the process assessment and portfolio assessment which are the components of Continuous Evaluation (CE) score.

A. Syllabus for Practical

Lab work is a part of the transaction of certain contents in the syllabus. Students can attain the learning outcomes associated with some of the concepts/content only through the lab work. Hence the practical should begin in Class XI itself and it should go on with the respective theoretical aspects. Areas to be covered for the lab work and the minimum number of problems in the three subjects are given below:

Computer Science (25 problems)

1. Programming in C++ (10 problems)

- if – else statements (1 problem)
- switch statement (1 problem)
- Looping statements (2 problems)
- Array manipulation (2 problems)
- Functions (2 problems)
- Structures (1 problem)
- Pointers (1 problem)

2. Developing HTML documents (5 problems)

- Basic tags, <IMG> tag (1 problem)
- Lists (1problem)
- Hyper-linking (1 problem)
- Table / Frame (1 problem)
- Form (1 problem)

3. Client side programming with JavaScript in HTML codes (2 problems)

- Control structure (1 problem)
- Data validation (1 problem)

4. Server side scripting with PHP (3 problems)

- PHP script using Forms (2 problems)
- Database connectivity (1 problem)

5. Database queries using MySQL (5 problems)

- Five tables should be identified and queries should be designed in such a way that all clauses, operators and aggregate functions are to be covered.

B. Lab Work

This is an activity by which, the concepts acquired and observations noted are practically implemented in the lab, and thereby, more clarity about the concepts and operational skills are achieved. The students should also be convinced about the use of computer for problem solving with the help of user developed programs. This activity makes the students utilise the computer to develop applications in various fields. The active participation and involvement of the students are to be ensured.

A minimum of 25 problems, as specified above, are to be solved through the lab work. Sample questions from each area are given as Appendix-1 of this document. The questions are grouped into three for each area, based on the difficulty level. While selecting the minimum required questions, we should ensure that, questions are chosen from all the three groups. The number of questions from each group should be in the ratio 5:3:2 for each area of the syllabus. A sample list of 25 problems as per the foresaid criteria is given as Appendix-2.

Practical Log Book

Practical Log Book (PLB) is a standard record book in which all the activities related to lab work are recorded. A PLB is opened in Class XI for the lab work and the same is used in Class XII. Lab work is a continuous process. The PLB should contain a minimum of 25 works as specified in the practical syllabus. The format of recording in Practical Log Book may be as follows:

Programming in C++

LHS page	RHS page
• Algorithm / Flowchart • Sample Input and Output	• Problem number and Date of practical work • Problem statement • Source Code

Web Applications (HTML documents, JavaScript, PHP)

LHS page	RHS page
• Tags and attributes required • Printout of resultant web page	• Problem number and Date of practical work • Problem statement • HTML Code

Database queries using MySQL

LHS page	RHS page
• Table with sample records • Output of queries	• Problem number and Date of practical work • Table structure and queries • SQL statements

The teacher should verify the correctness of each work and affix his/her signature along with date and remarks, if any.

Procedure

The lab work consists of threefold procedure – preparatory work, tryout and reporting. Teachers should ensure that the students pass through all these three stages sequentially throughout the academic year.

Preparatory work: The student who comes to the computer lab to do practical work should be clear about the work he/she intends to do. He/She should also know the steps for doing the job using a computer, the software to be used, how it has to be operated, what the product should be, what should be its specifications and program code. All students should have their Practical Log Book while attending the lab period with the following details:

- Program number and date
- Problem statement
- Algorithm / Flowchart / Tags and attributes
- C++ source code/ HTML code / SQL statements

Tryout: In the case of C++ programming and web applications, the source code is typed, compiled and executed in the lab. During the debugging process, the corrections, if any, are noted down in the PLB also. When the output is obtained, it should be intimated to the teacher. Teacher performs process assessment and makes necessary recordings in both the PLB and Teacher's manual. Students record sample output in the PLB or take the printout of the output.

Reporting: The PLB with the final code and sample output (pasted printout in the case of web applications and office packages) is submitted and get it signed by the teacher before the next lab period.

The programs discussed in the class room are to be tried out in the lab. More problems are also available in the text book. Teacher is expected to ensure a minimum number of problems in the Practical Log Book covering all the areas suggested for practical evaluation. The prescribed proportion among the three groups should be strictly followed in the selection of questions.

C. Practical Evaluation (PE)

The problem solving skills and the competency in using various software packages are to be assessed through PE. The following are the guidelines to be followed while conducting PE:

- The questions should strictly be from the prescribed syllabus.
- Examination will be of 3 hours duration and maximum score will be 40.
- Practical evaluation will be conducted in batches. The maximum number of students in each batch is limited to 15.
- Students must attend the PE with Practical Log Book. It should contain a minimum of 25 programs covering the practical syllabus as described earlier. Only one notebook is enough for the Practical Log Book (*no rough – fair separation*). Practical Log Book should be certified by the teacher-in-charge. The same should be verified and signed by the external examiner.
- The questions are to be finalised from the pool issued by the DHSE referring to the PLB.
- There will be three parts in the question paper. Part A contains questions from C++ programming area for Computer Science and Computer Applications (Commerce), and from Office packages in the case of Computer Applications (Humanities). Part B contains questions for web applications from the respective syllabus and Part C includes questions for database queries. A candidate has to attend two questions – one from Part A and the other from either Part B or C whichever is assigned.
- There should be a minimum of 16 question papers for each batch of 15 students. Each Question paper should contain a question from Part A and another Question from Part B or C. While framing questions for each question paper, it should be noted that if the question from Part A requires more time due to its higher level, the second question from Part B or C should be of lower level and vice versa.
- One question paper will be selected by the student at random from a set of 16 Question papers. Appropriate strategy may be adopted by the examiner to ensure the fair conduct of examination.
- Once the learner is assigned the questions, he/she should write the source code/ procedure/statements for any one of the questions and submit it to the examiner. The examiner checks the correctness of the logic or procedure and allows doing it on the computer if found correct. If the logic or procedure is approximately 70% correct, some clues or hints may be given and the student is allowed to try on the computer. If the logic (or procedure) is wrong, the examiner can give another problem from the same area with the same level. The student may be allowed to change the question within half an hour, if the question is found unanswerable. In such cases, score should be deducted appropriately.
- The debugging skills are to be assessed and credit should be given.

- The accuracy in the output is to be tested with proper sample data.
- Teacher should ensure that the programs developed as part of lab work and by the previous candidates are deleted before the commencement of the examination.
- The students are not allowed to use the help files of the software.
- The score distribution for each question in C++ should be as follows:
    - Logic of the solution (Program coding) – 8 score
    - Debugging skills (Error correction and execution) – 6 score
    - Dynamic problem solving skills – 2 score

    } 16 score
- The score distribution for each question in web application should be as follows:
    - Proper tags and attributes (Script if required) – 8 score
    - Debugging skills (Error correction and execution) – 6 score
    - Dynamic problem solving skills – 2 score

    } 16 score
- The score distribution for each question in SQL should be as follows:
    - Proper commands, clauses, operators, etc. – 8 score
    - Debugging skills (Error correction and execution) – 6 score
    - Dynamic problem solving skills – 2 score

    } 16 score
- The score distribution for each question in Office packages should be as follows:
    - Procedure/Formula/Menus & Commands/Tools – 10 score
    - Creativity and formatting ability – 4 score
    - Dynamic skill in using the software – 2 score

    } 16 score
- Total score for 2 questions – 32 score
- Practical Log Book – 4 scores
- Viva voce – 4 scores

  } **40 score**
- Viva voce should not create sense of fear among the students. It should not be formal in the form of an interview. It should be a casual interaction with the students during the evaluation **to check whether he/she has conceptual/process clarity in the given two questions only**. The examiner may ask 4 to 6 questions to award the scores for viva voce.
- The mark-list of the students should be prepared, reflecting the split scores along with the total score.
- The scores of the students are to be recorded in the mark sheet issued by the DHSE and send it to the DHSE as per the instructions given by the directorate.

Dynamic problem solving skills may be tested as follows:

- *After completing the program, a slight modification in the problem can be made and let the learner modify the code to effect the change.*
- *The ability of the learner can be credited by awarding the 2 scores suitably.*
- *E.g.: If the original question is to find the largest among three numbers, ask to modify the code to find the smallest.*

D. Format of Score Sheet for Practical Evaluation

Sl. No.	Register Number	Qn. No.	Score Distribution						Total Score (40)
			Logic/ Procedure (8 or 10)	*Execution/ Output (6 or 4)*	*Dynamic Skills (2)*	Total for 2 Qns. (32)	Practical Log Book (4)	Viva Voce (4)	
1									
2									
3									
: : : : : : : : : : : : : : :									
15									

Name and Designation of Examiner

……

……

……

Date of Exam: ……..

Signature: ……..

APPENDIX – 1

Pool of Questions - Computer Science

Programming in C++ (10 x 3 = 30 questions)

Level 1

1. Input the three coefficients of a quadratic equation and find the roots.
2. Input a group code and display the corresponding group name based on the following:
   5, 7 – Science (Computer Science)
   33, 34 – Humanities (Computer Applications)
   39 – Commerce (Computer Applications)
   Other codes – Non Computer groups
3. Find the sum of the digits of an integer number.
4. Find the sum of the squares of the first N natural numbers.
5. Find the length of a string without using strlen() function.
6. Read admission number of N students in a class and search for a given admission number in the list. Use linear search method of searching.
7. Find the factorial of a number with the help of a user-defined function.
8. Define a function to swap the contents of the two variables. Using this function, interchange the values of three variables. E.g. A→B→C→A.
9. Find the net salary of an employee by defining a structure with the details Employee Code, Name, Basic Pay, DA, HRA and PF.
10. Create two pointers, initialise with two numbers and find the sum and average of these numbers.

Level 2

1. Input three numbers and find the difference between the smallest and the largest numbers.
2. Assume that January 1 is Monday. Write a program using switch to display the name of the day in that month when we input day number.
3. Input a number and check whether it is palindrome or not.
4. Find all prime numbers below 100.
5. Display Pascal's triangle having N rows.
6. Read N numbers into an array and display the numbers larger than the average value.
7. Define a function to find the factorial of a number. Using this function find the value of nCr.
8. Input an integer number and display its binary equivalent with the help of a user-defined function.

9. With the help of a structure, develop a C++ program to read register number, name, and Scores obtained (out of 200) in English, second language, chemistry, physics, computer science and mathematics by 5 students. Calculate total score, average score and grade obtained by them. Grade is calculated based on the average as given in the table. Display register number, name, average score and grade of these students.
10. Input string into a character pointer and count the vowels in the string.

Average Score	Grade
>=180	A+
>=160	A
>=140	B+
>=120	B
>=100	C+
>=80	C
>=60	D+
<60	No Grade

Level 3

1. Find the amount to be paid for the consumption of electricity when the previous and current meter-readings are given as input based on the conditions given in the table.

Units consumed	Amount per Unit
Up to 100	Rs. 0.50/-
101 – 150	Rs. 0.75/-
151 – 200	Rs. 1.00/-
201 – 250	Rs. 1.50/-
Above 250	Rs. 2.00/-

2. Find area of a rectangle, a circle and a triangle. Use **`switch`** statement for selecting an option from a menu.
3. Display the first N terms of Fibonacci series.
4. Input two years (e.g. 1000, 2000) and display all leap years between them.
5. Create an array to store the heights of some students and sort the values.
6. Create a square matrix and display the same in matrix form. Find the sum of leading diagonal elements (from top left to bottom right) and off diagonal elements (top right to bottom left) separately.
7. Find the sum of the first N natural numbers using recursive function.
8. Define a function to accept an integer number and return its reverse (e.g. if the argument is 123 the return-value should be 321). Using this function display all palindrome numbers between a given range.
9. Define a structure to store the details of books such as Book Code, Book Title, Date of Purchase, Author, Publisher and Price. Write a program with this structure to store the details of 10 books and display the details.
10. Create a dynamic array to store the names of a group of students and prepare a roll list according to the alphabetical order of the names.

Web Applications (10 x 3 = 30 Questions)

(HTML – 5, JavaScript – 2, PHP – 3)

Level 1

1. Design a simple and attractive webpage for Kerala Tourism. It should contain features like background colour/image, headings, text formatting and font tags, images, etc.
2. Design a webpage as shown below using appropriate list tags.

List of Nobel Laureates from India

Rabindra Nath Tagore

He was the first to get Nobel Prize from India. He received prize in literature in 1921. He got Nobel Prize for his collection of poems "Gitanjali".

C V Raman

He got Nobel for Physics in 1930. He received Nobel Prize for his contribution called Raman Effect.

Mother Teresa

Mother Teresa who founded Missionaries of Charity which is active in more than 100 countries received Nobel Prize in 1979.

Amartya Sen

Amartya Sen was awarded Nobel Prize in 1998 in Economics. He has made contributions to welfare economics, social choice theory etc.

Kailash Satyarthi

He is a child right activist who founded "Bachpan Bachao Andolan" in 1980. He shared Nobel prize for peace in 2014.

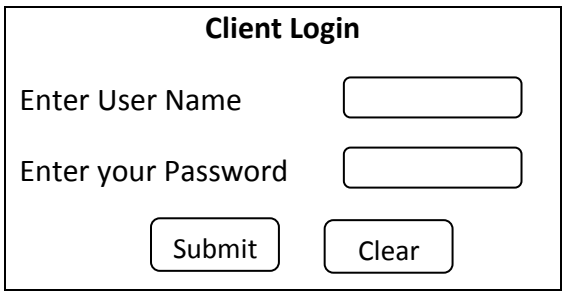
3. Design a personal webpage for your friend. It should have a link to his e-mail address.

4. Design a web page containing a table as shown below.

Terrestrial Planets (*Source: NASA*)

Planet	Day Length (In Earth hours)	Year Length (In Earth days)
Mercury	1408	88
Venus	5832	224.7
Earth	24	365.26
Mars	25	687

5. Design a simple webpage as shown below.



6. Develop a webpage with two text boxes and a button labelled "Show". The user can enter a number in the first text box. On clicking the button, the second text box should display the sum of all numbers up to the given number. Write the required JavaScript.
7. A webpage should contain one text box for entering a text. There should be two buttons labelled "To Upper Case" and "To Lower Case". On clicking each button, the content in the text box should be converted to upper case or lower case accordingly. Write the required JavaScript for these operations.
8. Write a PHP program to accept the total sales of a particular salesman and display commission. If the monthly sales amount is greater than 1 lakh - commission is 10%, if it is between 1 lakh and 1.5 lakh - commission is 12% and if it is greater than 1.5 lakh - commission is 15%.
9. Write a PHP program to accept a number and display it in the following format. If 5 is the given, then the output will be as follows:

```
1
1  2
1  2  3
1  2  3  4
1  2  3  4  5
```

10. Write a data entry program in PHP which accepts the details of students like register number, name, age, sex and group (Commerce, Science, and Humanities) and stores it in a database.

Level 2

1. Design a webpage for promoting vegetable cultivation at homes as shown in the figure. It should contain features like background colour/ image, headings and stylish fonts, images, marquee, etc.

2. Design an attractive webpage showing the following list.

   Graduate Level Courses in Leading Institutions in Kerala

   - Indian Institute of Technology, Palakkad
     - B.Tech.
   - National Institute of Technology, Calicut
     - B.Tech.
     - B.Arch.
   - Indian Institute of Science Education and Research, Thiruvananthapuram
     - BS-MS Dual Degree
   - National University of Advanced Legal Studies, Kochi
     - B.A. LL.B. (Hons.)
   - Indian Institute of Space Science and Technology
     - B.Tech. (Aerospace Engineering, Avionics)
     - Dual Degree (B.Tech. + M.S./M.Tech.)

3. Design a simple webpage about your school. Create another webpage named address.htm containing the school address. Give links from school page to address.htm.

4. Design a webpage containing frames that divide the screen vertically in the ratio 50:50. Design two web pages – one containing the list of Indian cricket team members and the second page containing a list of Indian football team members.

5. Consider that your school is hosting an inter-school IT fair. Design a form webpage that contains a form for accepting registrations. The form page should contain facility to enter school name, user name, password and a mobile phone number. It should also contain buttons for saving and clearing the data entered.

6. Develop a webpage with two text boxes and a button labelled “Show”. The user can enter a number in the first text box. One clicking the button, the second text box should display the day corresponding to the given number using switch statement in JavaScript. (1 – Sunday, 2 – Monday, ….., 7 – Saturday)

7. Develop a webpage for the inter-school IT fair conducted by your school. The webpage should contain facility to enter school name, user name, password and a mobile phone number. It should also contain buttons for saving and clearing the data entered. Ensure that the data is entered in all the text boxes and the text box for mobile phone number contains only numbers. Write JavaScript for this validation.

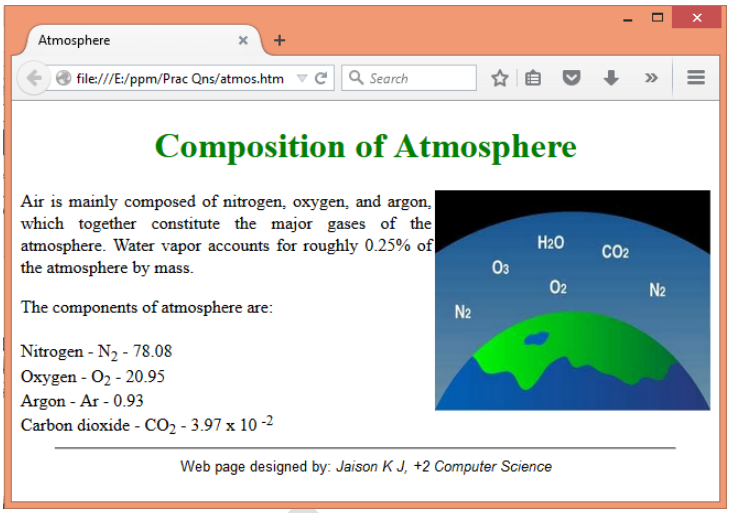
8. Write a PHP program to accept a string and display in a table format the (a) Total number of characters (b) Count of each vowel.

9. Write a PHP program to find the factorial of a given number after accepting the number through a form. The factorial should be calculated using a function named fact().

10. Write a PHP program to accept a product category and display the details of all products under that category in a table format. (The details of products are to be stored in a table in a database and accessed from the PHP program).

Level 3

1. Design a webpage about atmosphere as shown in the figure. It should contain features like background colour/image, headings and stylish fonts, images, etc.



2. Design a webpage showing tourist destinations in Kerala as shown below.

Department of Tourism

Government of Kerala

Tourist Destinations in Kerala

1. Beaches
   a. Kovalam
   b. Muzhuppilangad
   c. Kappad
2. Hill Stations
   i. Munnar
   ii. Wayanad
   iii. Gavi
3. Wildlife
   a. Iravikulam
   b. Muthanga
   c. Kadalundi

3. Design an attractive webpage about India. Provide details about the Indian freedom movement at the lower part of the webpage. Also create another webpage containing the list of states in India, named 'states.htm'. Create two links in the main webpage – one to link to the bottom of the webpage where details about freedom movement is given and another to the webpage 'states.htm'.

4. Design the following catalogue of products for an IT shop using HTML.

Laser Printer	
	Model: Canon LBP 2900 Price: Rs. 6500
Scanner	

	Model: HP Scanjet G2410 Price: Rs. 3800
Monitor	
	Model: LG 22MP67VQ Price: Rs. 10500
Keyboard & Mouse Combo	
	Model: Logitech MK200 USB Price: Rs. 950

5. Design an HTML form to accept the Curriculum Vita of a job applicant. The form should provide facility to accept name, address in multiple lines, gender using option button, nationality using a list box and hobbies using check boxes. The form should provide buttons to save and clear the contents of text boxes.

6. Develop a webpage with two text boxes and a button labelled “Show”. The user can enter a number in the first text box. One clicking the button, the second text box should display whether the number is prime or not. Write the required JavaScript.

7. Develop a webpage containing a two text boxes for entering User name and Password. There should be a login button also. On clicking the login button, it should check the followings.
   a) The user name should contain at least 10 characters and all the letters should be in lower cases.
   b) The password should contain at least 7 characters and should contain at least one lower case letter, one upper case letter and a digit.

8. Write a PHP program to accept a number and display its multiplication table up to 12 in a neat table format.

9. Write a PHP program to select a country from combo box and display its capital. (Country and capital may be stored in an associative array.)

10. Write a PHP program to accept User Id and password and check whether it is valid or not. If it is correct then display the message “Successfully Logged In” else display the message “Invalid User Id or Password”. (The User Id and password are to be stored in a table in a database and accessed from the PHP program.)

SQL (5 x 3 = 15 Questions)

Level 1

1. Create a table *Student* with the following fields and insert at least 5 records into the table except for the column Total.

Roll_Number	Integer	Primary key
Name	Varchar (25)	
Batch	Varchar (15)	
Mark1	Integer	
Mark2	Integer	
Mark3	Integer	
Total	Integer	

   a. Update the column Total with the sum of Mark1, Mark2 and Mark3.

   b. List the details of students in Commerce batch.

   c. Display the name and total marks of students who are failed (Total < 90).

   d. Display the name and batch of those students who scored 90 or more in Mark1 and Mark2.

   e. Delete the student who scored below 30 in Mark3.

2. Create a table *Employee* with the following fields and insert at least 5 records into the table except the column Gross_pay and DA.

Emp_code	Integer	Primary key
Emp_name	Varchar (20)	
Designation	Varchar (25)	
Department	Varchar (25)	
Basic	Decimal (10,2)	
DA	Decimal (10,2)	
Gross_pay	Decimal (10,2)	

   a) Update DA with 75% of Basic.

   b) Display the details of employees in Purchase, Sales and HR departments.

   c) Update the Gross_pay with the sum of Basic and DA.

   d) Display the details of employee with gross pay below 10000.

   e) Delete all the clerks from the table.

3. Create a table *Stock,* which stores daily sales of items in a shop, with the following fields and insert at least 10 records into the table.

Item_code	Integer	Primary key
Item_name	Varchar (20)	
Manufacturer_Code	Varchar (5)	
Qty	Integer	
Unit_Price	Decimal (10,2)	
Exp_Date	Date	

a. Display the details of items which expire on 31/3/2016.

b. Display the item names with stock zero.

c. Remove the items which expire on 31/12/2015.

d. Increase the unit price of all items by 10%.

e. List the items manufactured by "ABC & Co" with quantity above 100.

4. Create a table *Book* with the following fields and insert at least 5 records into the table.

Book_ID	Integer	Primary key
Book_Name	Varchar (20)	
Author_Name	Varchar (25)	
Pub_Name	Varchar (25)	
Price	Decimal (10,2)	

a. Display the details of books with price 100 or more.

b. Display the Name of all the books published by SCERT.

c. Increase the price of the books by 10% which are published by SCERT.

d. List the details of books with the title containing the word "Programming" at the end.

e. Remove all the books written by "Balaguruswamy".

5. Create a table *Bank* with the following fields and insert at least 5 records into the table.

Acc_No	Integer	Primary key
Acc_Name	Varchar (20)	
Branch_Name	Varchar (25)	
Acc_ Type	Varchar (10)	
Amount	Decimal (10,2)	

a. Display the account details of "Savings Account" in Kodungallur branch.

b. Change the branch name "Trivandrum" to "Thiruvananthapuram".

c. Display the details of customers in Thiruvananthapuram, Ernakulam and Kozhikode.

d. List the details of customers in Thrissur branch having a minimum balance of Rs. 5000.

e. Delete all the current accounts in Mahe branch.

Level 2

1. Use *Student* table and write SQL statements for the following:

a. Update the column Total with the sum of Mark1, Mark2 and Mark3.

b. List the details of students in Science batch in the ascending order of their names.

c. Display the highest Total in Humanities batch.

d. List the details of students who passed (Subject minimum is 30 and aggregate minimum is 90) the course.

e. Delete the students of Commerce batch who failed in any one subject.

2. Use *Employee* table and write SQL statements for the following:

   a. Update DA with 75% of Basic for Managers and 80% Basic for all other employees.

   b. Update the Gross_pay with the sum of Basic and DA

   c. Display the details of employees in Purchase, Sales and HR departments in descending order of Gross pay.

   d. Find the number of employees in Accounts department.

   e. Delete the details of clerks whose Gross pay is below 5000.

3. Use *Stock* table and write SQL statements for the following:

   a. Display the details of items which expire after 31/3/2016 in the order of expiry date.

   b. Find the number of items manufactured by the company "SATA".

   c. Remove the items which expire between 31/12/2015 and 01/06/2016.

   d. Add a new column named Reorder in the table to store the reorder level of items.

   e. Update the column Reorder with value obtained by deducting 10% of the current stock.

4. Use *Book* table and write SQL statements for the following:

   a. Insert a column named Number_of_pages into the table.

   b. Display the details of books of the same author together in the descending order of the price published by NCERT.

   c. Display the average price of books published by "BPB" and written by "Robert Lafore".

   d. List the details of books published by "PHI" that contains the word "Programming" in the title.

   e. Remove all the books written by "Balaguruswamy", "Kanetkar" or "Robert Lafore".

5. Use *Bank* table and write SQL statements for the following:

   a. Display the branch-wise details of account holders in the ascending order of the amount.

   b. Insert a new column named Minimum_Amount into the table with default value 1000.

c. Update the Minimum_Amount column with the value 1000 for the customers in branches other than Alappuzha and Malappuram.

d. Find the number of customers who do not have the minimum amount 1000.

e. Remove the details of SB accounts from Thiruvananthapuram branch who have zero (0) balance in their account.

Level 3

1. Use *Student* table and write SQL statements for the following:

    a. Update the column Total with the sum of Mark1, Mark2 and Mark3.

    b. Add a new column Average to the table Student.

    c. Update the column Average with average marks.

    d. List the details of student who has the highest Total.

    e. Delete the students of Commerce batch who failed in any two subjects.

2. Use *Employee* table and write SQL statements for the following:

    a. Update DA with 75% of Basic for Managers and 80% of Basic for all other employees.

    b. Update the Gross_pay with the sum of Basic and DA.

    c. Display name, department and gross pay of employees in Purchase, Sales and HR departments. The employees in the same department should appear together in the ascending order of Gross pay.

    d. Find the number of employees in each department where there is minimum of 5 employees.

    e. Show the details of employee with Gross pay greater than the average gross pay.

3. Use *Stock* table and write SQL statements for the following:

    a. Display the number of items manufactured by each company which expire after 31/3/2016.

    b. Add a new column Reorder in the table to store the reorder level of items.

    c. Update the column Reorder with value obtained by deducting 10% of the current stock.

    d. Display the details of items which expire at last.

    e. Remove the items which expire before 01/03/2015 or that are manufactured by “ABC & Co”.

4. Use *Book* table and write SQL statements for the following:
    a. Create a view containing the details of books published by SCERT.
    b. Display the average price of books published by each publisher.
    c. Display the details of book with the highest price.
    d. Display the publisher and number of books of each publisher in the descending order of the count.
    e. Display the title, current price and the price after a discount of 10% in the alphabetical order of book title.

5. Use *Bank* table and write SQL statements for the following:
    a. Display the number and total amount of all the account holders in each branch.
    b. Display the number of Savings Bank account holders in each branch.
    c. Display the details of customers with the lowest balance amount.
    d. Display the branch and number of Current accounts in the descending order of the count.
    e. Display the details of customers in Kozhikode branch whose amount is greater the average amount.

APPENDIX – 2
Sample List of Questions for Lab Work

Computer Science

Programming in C++ – 10 Qns. (L1 – 5, L2 – 3, L3 – 2)

1. Input the three coefficients of a quadratic equation and find the roots. (L1)
2. Find area of a rectangle, a circle and a triangle. Use switch statement for selecting an option from a menu. (L3)
3. Find the sum of the digits of an integer number. (L1)
4. Find the sum of the squares of the first N natural numbers. (L1)
5. Find the length of a string without using strlen() function. (L1)
6. Read admission number of N students in a class and search for a given admission number in the list. Use linear search method of searching. (L1)
7. Define a function to find the factorial of a number. Using this function find the value of nCr. (L2)
8. Input an integer number and display its binary equivalent with the help of a user-defined function. (L2)
9. Define a structure to store the details of books such as Book Code, Book Title, Date of Purchase, Author, Publisher and Price. Write a program with this structure to store the details of 10 books and display the details. (L3)
10. Input string into a character pointer and count the vowels in the string. (L2)

Web Applications – 10 Qns. (L1 – 5, L2 – 3, L3 – 2)

1. Design a simple and attractive webpage for Kerala Tourism. It should contain features like background colour/image, headings, text formatting and font tags, images, etc. (L1)
2. Design a webpage as shown below using appropriate list tags. (L1)

List of Nobel Laureates from India

Rabindra Nath Tagore

> He was the first to get Nobel Prize from India. He received prize in literature in 1921. He got Nobel Prize for his collection of poems "Gitanjali".

C V Raman

> He got Nobel for Physics in 1930. He received Nobel Prize for his contribution called Raman Effect.

Mother Teresa

> Mother Teresa who founded Missionaries of Charity which is active in more than 100 countries received Nobel Prize in 1979.

Amartya Sen

Amartya Sen was awarded Nobel Prize in 1998 in Economics. He has made contributions to welfare economics, social choice theory etc.

Kailash Satyarthi

He is a child right activist who founded “Bachpan Bachao Andolan” in 1980. He shared Nobel prize for peace in 2014.

3. Design a simple webpage about your school. Create another webpage named address.htm containing the school address. Give links from school page to address.htm. (L2)
4. Design a webpage containing frames that divide the screen vertically in the ratio 50:50. Design two web pages – one containing the list of Indian cricket team members and the second page containing a list of Indian football team members. (L2)
5. Design an HTML form to accept the Curriculum Vita of a job applicant. The form should provide facility to accept name, address in multiple lines, gender using option button, nationality using a list box and hobbies using check boxes. The form should provide buttons to save and clear the contents of text boxes. (L3)
6. Develop a webpage with two text boxes and a button labelled “Show”. The user can enter a number in the first text box. One clicking the button, the second text box should display the day corresponding to the given number using switch statement in JavaScript. (1 – Sunday, 2 – Monday, ….., 7 – Saturday) (L2)
7. A webpage should contain one text box for entering a text. There should be two buttons labelled “To Upper Case” and “To Lower Case”. On clicking each button, the content in the text box should be converted to upper case or lower case accordingly. Write the required JavaScript for these operations. (L1)
8. Write a PHP program to accept the total sales of a particular salesman and display commission. If the monthly sales amount is greater than 1 lakh - commission is 10%, if it is between 1 lakh and 1.5 lakh - commission is 12% and if it is greater than 1.5 lakh - commission is 15%. (L1)
9. Write a PHP program to accept a number and display it in the following format. If 5 is given, then output will be as follows:

```
1
2  2
1  2  3
1  2  3  4
1  2  3  4  5
```

(L1)

10. Write a PHP program to accept User Id and password and check whether it is valid or not. If it is correct then display the message “Successfully Logged In” else display the message “Invalid User Id or Password”. (The User Id and password are to be stored in a table in a database and accessed from the PHP program) (L3)

SQL – 5 Qns. (L1 – 2, L2 – 2, L3 – 1)

1. Create a table *Student* with the following fields and insert at least 5 records into the table except for the column Total. (L1)

Roll_Number	Integer	Primary key
Name	Varchar (25)	
Batch	Varchar (15)	
Mark1	Integer	
Mark2	Integer	
Mark3	Integer	
Total	Integer	

   a. Update the column Total with the sum of Mark1, Mark2 and Mark3.

   b. List the details of students in Commerce batch.

   c. Display the name and total marks of students who are failed (Total < 90).

   d. Display the name and batch of those students who scored 90 or more in Mark1 and Mark2.

   e. Delete the student who scored below 30 in Mark3.

2. Create a table *Employee* with the following fields and insert at least 5 records into the table except the column Gross_pay and DA. (L1)

Emp_code	Integer	Primary key
Emp_name	Varchar (20)	
Designation	Varchar (25)	
Department	Varchar (25)	
Basic	Decimal (10,2)	
DA	Decimal (10,2)	
Gross_pay	Decimal (10,2)	

   a) Update DA with 75% of Basic.

   b) Display the details of employees in Purchase, Sales and HR departments.

   c) Update the Gross_pay with the sum of Basic and DA.

   d) Display the details of employee with gross pay below 10000.

   e) Delete all the clerks from the table.

3. Create a table *Stock,* which stores daily sales of items in a shop, with the following fields and insert at least 10 records into the table. (L2)

Item_code	Integer	Primary key
Item_name	Varchar (20)	
Manufacturer_Code	Varchar (5)	
Qty	Integer	
Unit_Price	Decimal (10,2)	
Exp_Date	Date	

a. Display the details of items which expire after 31/3/2016 in the order of expiry date.

b. Find the number of items manufactured by the company "SATA".

c. Remove the items which expire between 31/12/2015 and 01/06/2016.

d. Add a new column named Reorder in the table to store the reorder level of items.

e. Update the column Reorder with value obtained by deducting 10% of the current stock.

4. Create a table *Book* with the following fields and insert at least 5 records into the table. (L3)

Book_ID	Integer	Primary key
Book_Name	Varchar (20)	
Author_Name	Varchar (25)	
Pub_Name	Varchar (25)	
Price	Decimal (10,2)	

a. Create a view containing the details of books published by SCERT.

b. Display the average price of books published by each publisher.

c. Display the details of book with the highest price.

d. Display the publisher and number of books of each publisher in the descending order of the count.

e. Display the title, current price and the price after a discount of 10% in the alphabetical order of book title.

5. Create a table *Bank* with the following fields and insert at least 5 records into the table. (L2)

Acc_No	Integer	Primary key
Acc_Name	Varchar (20)	
Branch_Name	Varchar (25)	
Acc_ Type	Varchar (10)	
Amount	Decimal (10,2)	

a. Display the branch-wise details of account holders in the ascending order of the amount.

b. Insert a new column named Minimum_Amount into the table with default value 1000.

c. Update the Minimum_Amount column with the value 1000 for the customers in branches other than Alappuzha and Malappuram.

d. Find the number of customers who do not have the minimum amount 1000.

e. Remove the details of SB accounts from Thiruvananthapuram branch who have zero (0) balance in their account.