FEDERAL BOARD OF INTERMEDIATE AND SECONDARY EDUCATION
H-8/4, ISLAMABAD

No.1-10/FBISE/RES/334 14 March, 2025

NOTIFICATION

Assessment Frameworks for Practical Based Assessment (PBA) containing lists of experiments/praticals along with instructions and Model Question Papers (Composite) in the subjects of Physics, Chemistry, Biology and Computer Science at SSC and HSSC levels based on National Curriculum of Pakistan 2022-23 (Scheme of Studies 2006) are hereby notified for implementation with effect from Annual Examinations 2026 and onwards.

2. The Assessment Frameworks for Composite PBA (Scheme of Studies 2006) are available at FBISE website. The weblink is **https://www.fbise.edu.pk/curriculum_model_paper.php .**

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ASSESSMENT FRAMEWORK

FOR PRACTICAL BASED ASSESSMENT (PBA) - COMPOSITE

COMPUTER SCIENCE

HSSC LEVEL



NATIONAL CURRICULUM OF PAKISTAN (2022-23)

SCHEME OF STUDIES 2009

WE WORK FOR EXCELLENCE

FEDERAL BOARD OF INTERMEDIATE AND SECONDARY EDUCATION (FBISE), ISLAMABAD

Table of Contents

S. No	Contents	Page No.
1.	Acknowledgement	1
2.	About the PBA Assessment Framework	2
3.	Guidelines/instructions for teachers/paper setters	3
4.	List of Experiments aligned with SLOs (Composite PBA)	4
5.	Model Question Paper Computer Science HSSC (COMPOSITE)	6

ACKNOWLEDGEMENT

It is a great honour that we at the Federal Board of Intermediate and Secondary Education (FBISE) have developed the Assessment Framework (AF) for the Practical Based Assessment (PBA) of Computer Science at the Higher Secondary School Certificate (HSSC) level. The primary objective of the Assessment Framework is to optimize the Student Learning Outcomes (SLOs) of curriculum 2022-23 that are associated with practical concepts and laboratory work. This comprehensive framework has been crafted meticulously by subject matter and assessment experts who conducted an in-depth review of all learning outcomes of HSSC level Computer Science curriculum.

This significant undertaking was the result of a series of extensive meetings and collaborative efforts of the subject and assessment experts. Their dedication and expertise have been instrumental in bringing this framework to fruition.

The Assessment Framework for Practical Based Assessment (PBA) will serve as a guiding document for students, teachers, and paper setters. Students will receive clear directions for preparing themselves for the PBA examinations. Similarly, teachers will use it as a guide to perform laboratory work and to prepare students for the final PBA examinations. Paper setters of PBA will also seek guidance from this document and prepare PBA paper accordingly for annual examinations. It may be noted that only those students will be able to attempt the PBA paper who have performed all the practicals in laboratory.

Following subject as well as assessment experts remained constantly engaged in the development of the Assessment Framework for PBA:

1. Ms. Rozina Faheem, Principal, F G College of Home economic and Management Sciences, F-11/1 Islamabad
2. Ms. Sadaf Zehra Kazmi, Associate Professor, Islamabad Model College for Girls (Postgraduate), F-7/2, Islamabad
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5. Ms. Zohra Shafaqat, Lecturer, Fauji Foundation College for Girls, Lalazar Rawalpindi

The whole work was successfully accomplished under the able supervision and guidance of Dr. Ikram Ali Malik, Chairman, FBISE and due to the hard work and dedication of the staff of Research Section of FBISE, in particular, Syed Zulfiqar Shah, Deputy Secretary, Research and Academics who played pivotal role in finalizing the Assessment Framework for PBA.

MIRZA ALI
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ABOUT THE PBA ASSESSMENT FRAMEWORK

To ensure clarity and precision in the understanding of Practical Based Assessment (PBA) Question Paper, the Student Learning Outcomes (SLOs) have been categorized into two distinct groups: formative for PBA and summative for PBA in the separately composed Assessment Frameworks for Classes HSSC-I and HSSC-II. Subsequently, all the SLOs of HSSC-I and HSSC-II meant for summative PBA have been translated into workable and functional composite lists of practicals which are part of this booklet. This extraction of lists of practicals helps in effectively measuring student progress and understanding of the scientific concepts linked with laboratory work. These practicals must be performed by the students under the supervision of their teachers in the laboratories in order to prepare themselves for the PBA Examinations.

The Assessment Framework for Practical Based Assessment (PBA) will act as a comprehensive guide for students, teachers, and paper setters. Students will receive clear instructions in order to perform practicals in the laboratory and prepare themselves for the PBA examination. Teachers will use the same to strategize the optimal use of the laboratory for performing practicals.

The Model Question Paper for Practical Based Assessment (PBA), along with clear instructions, has also been developed and made part of this booklet to provide a structured format for upcoming examinations. The model question paper ensures consistency and fairness, offering students a comprehensive understanding of PBA examination.

All the practicals have been aligned with their corresponding SLOs marked summative for PBA. The purpose of this alignment is to explain how the practicals relate with their corresponding summative SLOs for PBA.

Instructions for paper setters have also been included before the PBA model question paper, providing self-explanatory guidance on the selection and nature of each question which is part of the model paper.

Guidelines/instructions for Students/Teachers/Paper Setters

i. The PBA paper will consist of two sections i.e. Section A and B.

ii. Section A will have three questions, having parts in it. Question-1 comprises of two parts based on Domain C and H respectively. Question-2 and 3 will also be based on Domain C.

iii. Section B will also have three questions, having parts in it. Question-4 will be based on Domain B while Question-5 will be based on Domain A. Question-6 will be two parts based on Domain D and G respectively.

iv. The weightage of section A will be 60% i.e 30 marks, while that of section B will be 40% i.e 20 marks.

v. In Practical Based Assessment (PBA), there will be no marks for practical notebooks and viva voce. However, students may record programs and other related tasks on any type of plain papers/worksheets/ practical folder for their future memory of all aspects of practical performance to attempt the PBA Examination amicably.

vi. It may be noted that performance of all the practicals is mandatory in the laboratory during the whole academic session because only those students will be able to attempt the PBA who will have performed the practicals in the laboratory as per requirement of each practical.

vii. MCQs will not be included/assessed in the Practical Based Assessment paper.

viii. Questions carrying 0.5 marks will not be included/assessed in any section of the PBA paper.

List of Practicals aligned with SLOs (Composite PBA)
For HSSC Annual Examination 2026 & onwards
Computer Science Curriculum (2022-23)-Scheme of Studies 2009

Note: In the Practical-Based Assessment (PBA), questions will be taken/developed from the list of practicals provided below, aligned with the summative SLOs listed in the corresponding column.

SECTION-A (60% of practical marks — 30 Marks)

No.	List of Practicals	Aligned SLOs
1.	Write and execute simple programs that uses variables and operators with input/ output handling in Python. Write and execute programs in Python that using sequence, selection, and repetition. Draw different shapes using Turtle library functions in Python. Write programs in Python using different libraries. Write and execute Python programs using function that solves a large problem by decomposing into sub problems. Write Python programs that performs some mathematical operations on a value passed to it. Write programs in Python using file handling and databases. Write and execute programs in Python using lists.	**[SLO CS-11-C-01]** Students should understand the importance of computer programming and applications **[SLO CS-11-C-02]** Students should be able to write and execute simple programs in Python. **[SLO CS-11-C-03]** Students should be able to draw shapes using Turtle Graphics functions in Python **[SLO CS-11-C-04]** Students should be able to understand the need for libraries and learn the use of some simple libraries in Python. **[SLO CS-11-C-05]** Students should be able to translate simple algorithms that use sequence and repetition in Python. **[SLO CS-11-C-06]** Students should be able to decompose a problem into sub-problems and implement those sub-problems using functions in Python **[SLO CS-11-C-07]** Students will determine ways of debugging their code in Python **[SLO CS-12-C-02]** Students should be able to use more advanced programming constructs such as data structures (lists etc.) file handling (disk IO to write to storage), and databases in Python. **[SLO CS-12-C-03]** Students should be able to implement complex algorithms that use lists etc. in python. **[SLO CS-12-C-04]** Students will determine more advanced techniques (unit tests, breakpoints, watches) for testing and debugging their code in Python.
2.	Create and test a basic prototype for business idea. Create and test a basic minimum viable product for the business.	**[SLO EN-11-H-01]** Students will create, test, and iterate a prototype for a business idea. **[SLO EN-12-H-01]** Students will create and test a minimum viable product for their business.

SECTION-B (40% of practical marks — 20 Marks)		
3.	Create truth tables for expressions up to 3 inputs. Draw logic gates for a Boolean expression. Simplify the Boolean expression using Karnaugh map.	**[SLO CS-11-A-01]** Students will be able to understand and apply logic gates in digital systems, define and create truth tables using Boolean operators like AND, OR, NOT, NAND, XOR) and logic diagrams.
4.	Create flowchart/ pseudocode to address computational problems like: • Print the largest/smallest number • Finding the sum of all numbers • Print even/ odd numbers • Find the factorial of a number • Print the table of a number Solve computational problems like: • Sort the given list of numbers in ascending/descending order using Bubble sort / insertion sort algorithm. • Searching a given number from the list of numbers by using binary /linear search.	**[SLO CS-11-B-01]** Plan, develop, systematically test, and refine computational artifacts for problem-solving such as pseudocode, etc. **[SLO CS-11-B-02]**Apply common search, and sort algorithms
5.	Create a scatter plot/ bar chart/ pie chart/ boxplot/ line graph to show the relationship between the two variables using tools such as Excel, Google Sheets, R, or Python.	**[SLO CS-11-D-01]** Students will be able to relate the role and importance of model building with their real-world applications **[SLO CS-11-D-02]** Students will understand and explain experimental design in data science **[SLO CS-11-D-03]** Students will analyze pre-existing data sets to create summary statistics and data visuals (such as bar charts, pie charts, line graphs, etc.)
6.	Design a strategy for collecting data from real-life examples using: ➢ Interviews ➢ Surveys ➢ Prototypes ➢ Simulations	**[SLO CS-11-G-01]** Perform advanced searches to locate information and/or design a data-collection approach to gather original data (e.g. qualitative interviews, surveys, prototypes, simulations).

Model Question Paper Computer Science HSSC
(COMPOSITE)
FOR ANNUAL EXAMINATION 2026 & ONWARDS
Practical Based Assessment (PBA)
Computer Science Curriculum (2022-23)-Scheme of Studies 2009

Total Marks: 50 Time: 2 hours 30 minutes

Note: Attempt all questions and write answers within provided spaces on the E-sheet.

SECTION-A (30 Marks)

Q No.1. **[10 marks]**

a) Write a Python code that uses a function to enter a number, square it, and continue reading numbers until a negative number is entered. [5 marks]

b) You are an entrepreneur who wants to start an online T-shirts store. Your goal is to create an MVP (minimum viable product) to quickly test your idea with potential customers.

i. Identify the most essential feature for the online store. [1 mark]

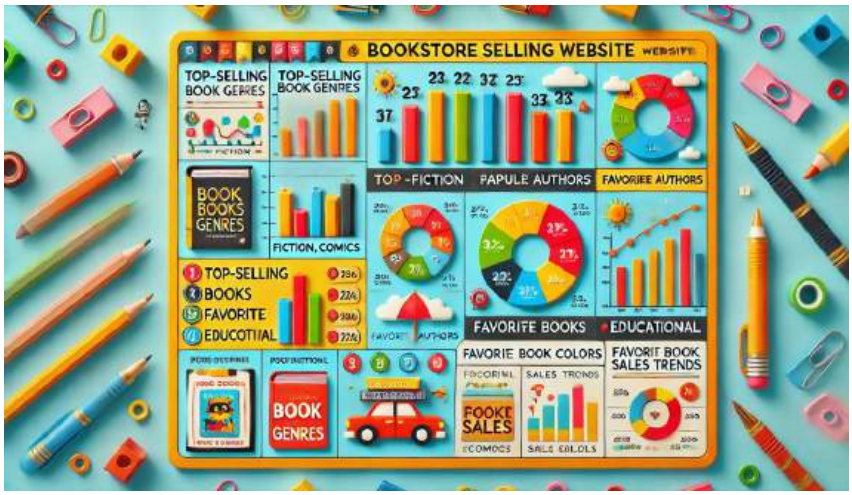
ii. Identify an appropriate tool and technology you will use to create the Frontend and Backend. [1 mark]

iii. Once the MVP is complete, gather feedback from potential users (friends, family, etc.) and plan future improvements. Design any three future improvements. [3 marks]

OR

a) Write a Python program that opens the file and reads its content. Prints the content of the file line by line. [5 marks]

b)



Here is a prototype for an online bookstore. Provide feedback on how to enhance its design and functionality. [5 marks]

i) What do you think is the strongest part of the design?

ii) What changes would you recommend making the prototype more engaging?
iii) Are the labels easy to read and understand? Justify your answer.
iv) Would this chart help students learn about organizing and interpreting data?
v) Is there any data you think should be added to make the chart more relatable for students?

Q No.2. You are a weather scientist tracking the rainfall (in mm) for each month of the year. Use Python list to analyze and display this data. **[10 marks]**

a) Store the rainfall data for each month in a Python list and print it. [2 marks]

Use the following data (in mm): [50, 80, 60, 30, 120, 90, 70, 100, 85, 95, 40, 65]

b) What does the following Python code prints? [1+1 marks]

```
rainfall=[50, 80, 60, 30, 120, 90, 70, 100, 85, 95, 40, 65]
print(max(rainfall))
print(min(rainfall))
```

c) Examine the following Python program, identify any errors, and correct them. [4 marks]

```
rainfall=[50, 80, 60, 30, 120, 90, 70, 100, 85, 95, 40, 65]
avg= sum(rainfall)/12;
print("average rainfall = , average)
```

d) Modify the following Python code such that it prints the months with "**Dry**" rainfall. Also print the months with dry rainfall. [2 marks]

```
rainfall=[50, 80, 60, 30, 120, 90, 70, 100, 85, 95, 40, 65]
count=0
for i in range(10):
   if rainfall[i] >=70:
      count= count + 1
print("total months with greater than 70mm rainfall: ", count)
```

Q No.3. A college teacher wants to track the attendance of students in a class: **[10 marks]**

i. Write a Python program that asks the user whether a student is present or absent. [2 marks]

   If the student is "present," print "Student is present."

   If the student is "absent," print "Student is absent."

ii. Modify the above program to enter attendance for **five (05)** students. [3 marks]

iii. After tracking the attendance of all five students, print the total number of students **present**. [3 marks]

iv. Add a feature to calculate and print the percentage of students who are **present**. [2 marks]

SECTION-B (20 Marks)

Q No.4. **[6 marks]**

a) Write an algorithm to input three numbers and prints the smallest number. [3 marks]

b) Write a Binary search algorithm to find the number **36** in the given list: [3 marks]

93	87	83	71	65	52	47	36	10

OR

a) Develop a pseudocode that prints even numbers from 1 to 100. [3 marks]

b) Draw a trace table for the given pseudocode: [3 marks]

```
Step 1: START
Step 2: num1 = 3, num2 = 4
Step 3: total ← 0
Step 4: FOR i FROM 1 TO num2 DO
Step 5: total ← total + num1
Step 6: END FOR
Step 7: PRINT total
Step 8: END
```

Q No.5. Simplify the Boolean Function F using the Karnaugh Map and also construct the logic circuit for the simplified expression. **[4+2 marks]**

$$\mathbf{F = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + A\bar{B}C + AB\bar{C} + ABC + \bar{A}BC}$$

Q No.6. **[8 marks]**

a) Write a python code to generate a dataset with two variables where **y=3x+4** and plot a line chart and a box plot. [2+2 marks]

b) i) You are assigned to explore the reasons behind students' preferences for online learning compared to in-person learning. What kind of questions would you ask in your interview to gather qualitative data on students' learning preferences (any four questions)? [2 marks]

ii) You are conducting a survey to understand students' reading habits. Distribute the survey to 50 students in your class. Design a questionnaire having at least four appropriate questions to collect data about students' reading habits with closed-ended questions. [2 marks]



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