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مركز القياس والتقويم التربوي
The Center for Educational Assessment and Measurement (CEAM)

سلطنة عُمان
وزارة التربية والتعليم

Assessment Document for Students' Learning

in Computer Studies

Grade (12)

Royal Guard of Oman Technical College

سلطنة عمان
مركز القياس والتقويم التربوي
وزارة التربية والتعليم

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Introduction

This is the student assessment handbook for Computer System Principles and Practice for the first semester. This handbook is based on the official guidelines of assessment issued by the Centre of Evaluation and Measurement within the Ministry of Education. This comprehensive handbook is intended to serve as a reliable reference for teachers and supervisors involved in the assessment of Grade 12 Science students.

The content of this handbook encompasses essential topics such as the definition of essential key terms in assessment process, the various assessment tools employed, the general distribution of learning outcomes, and specifications for the centralised end-of-year examination for Grade 12 students. Additionally, the handbook includes a section dedicated to the moderation process tailored specifically for Grade 12.

In essence, this handbook serves as an indispensable resource to facilitate a standardized and well-structured assessment approach, promoting educational excellence and enhancing the overall learning experience for grade 12 science students.

Essential Definitions

1. Learning Assessment

Learning assessment refers to a systematic and comprehensive process of gathering, analysing, and interpreting information to evaluate and measure students' knowledge, skills, and understanding of the subject matter. It involves using various assessment methods and tools to assess students' academic progress, achievement of learning outcomes, and overall growth.

The primary purpose of learning assessment is to provide valuable insights into students' strengths and areas for improvement, allowing educators to make informed decisions about instructional strategies, curriculum development, and individualized support. By continuously evaluating students' performance, learning assessment plays a crucial role in fostering effective teaching practices, enhancing the learning experience, and promoting educational excellence.

Learning assessment can take various forms, including formative and summative assessments:

Formative assessment is designed as an ongoing process to aid students in achieving specific learning outcomes. The key goal of formative assessment is to enhance and uplift academic standards by providing timely feedback and support to learners.

Summative assessment is primarily serves to evaluate students' overall learning outcomes and provides essential evidence for reporting to parents and other stakeholders. Its fundamental objective lies in measuring academic standards and proficiency.

The combination of both formative and summative assessments enables educators to support students' continuous learning and ensure they are meeting the educational standards and objectives.

2. E-Assessment

E-assessment, a pivotal aspect of modern educational practices, revolves around leveraging information technology to measure students' learning and performance. Through E-assessment, information and communication technology (ICT) plays a central role in presenting assessment activities and capturing students' responses. This broad category of assessment encompasses diverse activities that serve both formative and summative purposes.

Recently, digital tools are increasingly being adopted by schools to measure student's skills and knowledge and to determine that the learning objectives have been met.

3. Distance Assessment

Distance assessment represents a distinctive assessment methodology catered to learners who are geographically distant from the assessment centre and have minimal or no in-person interaction with teachers. This approach is thoughtfully designed to be executed remotely. The essence of distance assessment lies in its ability to evaluate learners regardless of their location or circumstances, where traditional modes of assessment delivery might pose challenges or prove impractical.

4. Continuous Assessment

Continuous Assessment (CA) includes a range of different assessment techniques strategically employed within the classroom to gather comprehensive insights into students' learning journeys.

The significance of Continuous Assessment (CA) stems from several key advantages it offers:

- **Affirming Assessment as Integral to Teaching and Learning:** It is based on a positive view of assessment as a natural part of teaching and learning process.
- **Assessing Complex Learning Outcomes:** It allows assessment of learning outcomes which are, for practical reasons, difficult to assess by means of formal testing.
- **Promoting Fair and Balanced Evaluation:** It can provide a fairer, more balanced picture of student's achievement, especially for those who become nervous during formal tests.
- **Timely Insight into Student Progress:** It provides information about student's learning at an early stage, making it possible for action to be taken promptly, while the academic year is still in progress.
- **Fostering In-Depth Understanding of Students:** It encourages teachers to have good idea about the performance of all their students and to closely observe individual student's on-going progress and development.
- **Cultivating Consistent Effort:** It (possibly) motivates students to work hard consistently, if they know that their everyday work in class contributes to their report card assessment.

Employment of Online Continuous Assessment

It is essential for all specialists, supervisors and teachers to emphasize on the necessity of activating the continuous assessment remotely through the educational platforms. By diligently implementing continuous assessment in remote learning environments, educators can gain valuable insights into students' progress and understanding of the curriculum. Through ongoing evaluation, they can identify areas where students excel and areas that require additional support or intervention.

Student's Portfolio and Moderation (Grade 12)

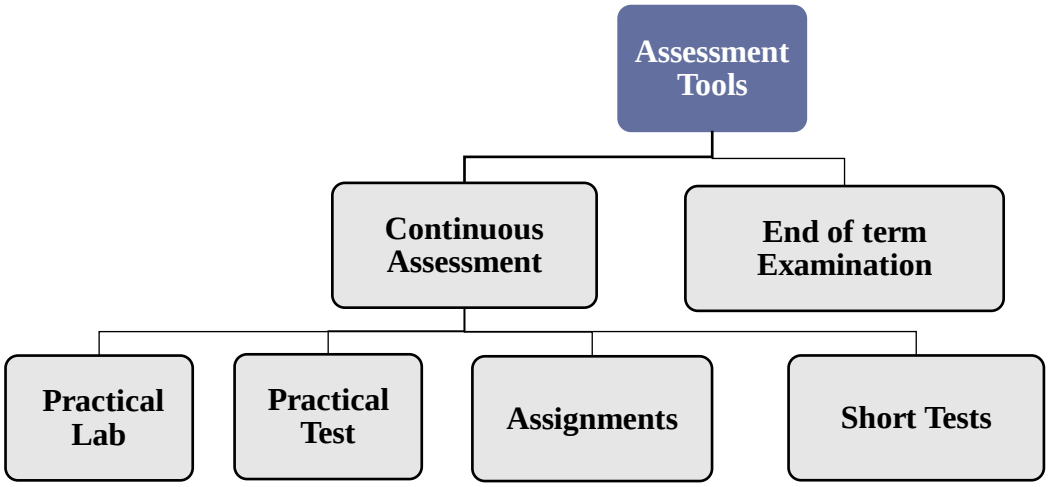
One highly effective method to assess and track the progress of students is the allocation of portfolios and electronic folders for each student. These portfolios serve as comprehensive repositories of students' work and evidence, capturing their performance and growth throughout various assessment tools. The portfolios must encompass crucial elements, including details of assigned tasks, marking guides, awarded marks, and teacher's feedback. Moreover, the portfolios must provide concrete evidence of the students' accomplishments, such as:

- One model of labs
- One model of practical test
- One written assignment
- Two short tests.

To maintain fairness and ensure accurate assessment, visiting moderators will randomly select at least six student portfolios for moderation. The moderation process will play a significant role in ensuring the fairness and accuracy of the assessment system.

It is worth noting that a lack of evidence for the specified assessment tools within a portfolio may lead to deductions in the student's marks, underscoring the crucial role played by these records in determining academic performance.

Assessment Tools (Grade 12)



The assessment of this subject comprises two primary components: Continuous Assessments (CA) and a Final Examination. Each semester follows a grading scheme wherein Continuous Assessment contributes 70% to the overall score, while the Final Examination carries a weightage of 30%.

Student performance is evaluated through the allocation of marks, with a maximum limit of 100 marks. These marks are recorded at the conclusion of each semester. The following table presents an overview of the assessment structure for each semester:

Assessment Tool	Number per semester	Type	Total Weight	Total marks
Practical Lab (maximum of 1)	1	Continuous (CA)	70%	5
Practical Test	1			5
Assignments	2			30
Short Tests	2			30
Final Exam	1	Final Examination	30%	30

Continuous Assessment Activities

When designing Continuous Assessment Activities (CAA), teachers have flexibility in creating assessment tasks for their students. However, it is important to adhere to the following guidelines:

- **Alignment with Assessment Objectives:** The activity set should provide students with the opportunity to address the Assessment Objectives, and it should clearly indicate which Assessment Objectives are being assessed (Knowledge, Application, or Reasoning).
- **Written Response Requirement:** The activity must necessitate a written response from the student. Oral responses or multiple-choice questions (MCQs) alone are not acceptable as forms of assessment.
- **A deadline** for completion should be provided to students, submissions beyond the deadline should NOT be accepted unless there are exceptional circumstances at the discretion of the teacher. Deadlines should provide all students with ample opportunity to complete the tasks.

Description of CAAs:

This Section provides further guidelines and explanation regarding the various tools and techniques, which can be used either in the classroom or electronically for continuous assessment purposes.

1. Practical Lab:

The practical lab is a task that requires students to use and apply their knowledge, understanding and skills in a practical or hands-on manner. It involves the completion of a specific set of tasks, which may include problem-solving, experimentation, programming, designing, or any other practical application related to the subject. The following are some guidelines for teachers:

- The practical assignment carries a weightage of 5 marks.
- It MUST be completed Individually.
- It may be completed in the classroom or at home.
- The teacher **MUST** provide clear instructions and requirements for the practical assignment, including the specific tasks, deliverables, technical specifications, and evaluation criteria. This ensures that students have a thorough understanding of what is expected of them.
- The teacher **MUST** use an assessment rubric that clearly outlines the criteria for evaluating all specific tasks. The rubric may cover aspects such as technical proficiency, problem-solving skills, creativity, and documentation or any other aspects based on teacher requirements and preferences. The use of a rubric facilitates consistent and fair assessment.
- It is **MANDATORY** for the student portfolio to include the assessment rubric that was used to evaluate the student's performance, along with the assigned mark. Additionally, the portfolio must contain a written response for the practical assignment which can be in the form of a written/typed assignment document or screenshots of student product. This written response, serving as evidence of the student's work, will be submitted for moderation purposes.

2. Practical Test:

A practical test is an assessment method that focuses on evaluating students' practical skills and competencies in a controlled testing environment. It involves a predefined set of tasks or activities that students must complete within a specific time frame.

- The practical test carries a weightage of 5 marks.
- It MUST be completed Individually.
- The practical test MUST be completed in the classroom.
- The teacher **MUST** provide clear instructions and requirements for the practical test, including the specific tasks, technical specifications, and assessment criteria. This ensures that students have a thorough understanding of what is expected of them.
- During the administration of practical tests, the teacher **MUST** employ a set of proactive measures to prevent instances of cheating, to ensure the integrity of practical tests and maintain a fair assessment environment.
- The teacher **MUST** use an assessment rubric that clearly outlines the criteria for evaluating all specific tasks.
- It is **MANDATORY** for the student portfolio to include the assessment rubric that was used to assess the student's performance, along with the assigned mark. Additionally, the portfolio must contain a written response for the practical assignment which can be in the form of a written/typed assignment document or screenshots of student work. This written response, serving as evidence of the student's work, will be submitted for moderation purposes.

3. **Assignments:**

To assess students' understanding and learning progress effectively, the following criteria should be considered while administering the assignments:

- Each semester should have TWO assignments. The first assignment is worth 20 marks, while the second assignment is worth 10 marks. The total marks for both assignments combined will be 30 marks.
- The content of each assignment should align with the curriculum outcomes and learning objectives for the respective semester.
- Assignments must come with clear and well-defined instructions. Providing students with explicit guidelines and expectations ensures that they understand what is expected of them and allows them to focus on showcasing their understanding effectively.
- Appropriate submission deadlines should be set for each assignment. This gives students sufficient time to complete the tasks thoroughly and enables teachers to assess the work within a reasonable timeframe.
- The teacher should emphasize the importance of academic integrity and discourage plagiarism in assignments. Students should be encouraged to produce original work and properly cite any external sources used.
- The teacher should establish clear rubrics and grading criteria for each assignment. These guidelines aid in consistent and fair evaluation, providing students with transparent feedback on their performance.
- After assessing the assignments, the teacher should provide constructive feedback to students. This feedback allows them to understand their strengths and areas for improvement, facilitating their continuous growth.
- The teacher should design assignments that offer valuable learning opportunities. Assignments can be structured to encourage research, critical thinking, and creativity, nurturing students' intellectual development.
- It is **MANDATORY** for the student portfolio to include the assessment rubric that was used to evaluate the student's performance, along with the assigned mark. Additionally, the portfolio must contain a written response for the assignment. This written response, serving as evidence of the student's work, will be submitted for moderation purposes.

4. Short Test

When preparing the short tests, the following criteria must be carefully considered to ensure a fair and comprehensive assessment:

- **Number and Weightage of Tests:** there will be TWO short tests during each semester, with each test carrying 15 marks. The total marks for both tests combined will be 30 marks.
- **Test Duration:** each short test must be time-limited, lasting no more than 30 minutes. This constraint ensures that students can demonstrate their knowledge and skills efficiently within a defined period.
- **Alignment with Approved Curriculum Outcomes:** the content and questions of the short tests must align with the approved curriculum outcomes. This ensures that the tests adequately cover the designated course content and assess the relevant learning objectives.
- **Integration with End-of-Year Exam:** the learning outcomes assessed in the short tests should also be included in the end-of-year examination. This approach ensures that students' performance in both short-term and long-term assessments accurately reflects their overall understanding and progress.
- **Test Structure:** Each short test must be composed of two parts:
    a. **20% Multiple-choice items:** These items provide a diverse set of questions with predetermined answer options, assessing students' knowledge and comprehension skills.
    b. **80% Extended response items:** These items require students to elaborate on their answers and showcase their application, and reasoning skills.
- **Diverse Learning Levels:** All short tests should reflect different learning levels to assess students' knowledge, application, and reasoning abilities. The distribution of learning levels in each test should be as follows:
    a. **50% Knowledge Level:** Questions that assess students' understanding and recalling of fundamental concepts.
    b. **30% Application Level:** Questions that require students to apply their knowledge to solve practical problems or scenarios.
    c. **20% Reasoning Level:** Questions that challenge students to think critically, analyse information and make informed decisions.

The following table summarizes the short test specifications:

	Knowing	Applying	Reasoning
Multiple-choice (3 marks)	2	1	-
Extended response (12 marks)	6	3	3
Total mark	8 marks (50%)	4 marks (30%)	3 marks (20%)

- **Short Tests Content for CPP Grade (12)**

Note: The content included in the two short tests will **NOT** be excluded from the End-of- term Exam

Semester	Short Test	Subtopics
1	1st	Typical hardware components in Computer System + Software in Computer System
	2nd	Operation of Key Components of the Microprocessor + Function and Operation microprocessor
2	1st	Introduction to C# + Operators
	2nd	Selection in C# + Iteration

Re-submission of CAAs:

The re-submission or re-sitting of continuous assessment activities should generally **NOT** be permitted for students. This ensures the consistency and fairness of the assessment process. However, in exceptional circumstances, such as prolonged authorized absence or significant medical conditions, students may be granted the opportunity to re-submit activities, subject to the approval of the teacher. It is important to note that re-submission or re-sitting should not be allowed solely for the purpose of raising grades, unless valid exceptional circumstances apply. This policy ensures the integrity of the assessment process and ensures that grades reflect the students' genuine performance and understanding.

End Of Term Examination

Examination Format:

- One formal examination will be prepared and set at the end of each semester; this examination carries a weightage of 30 marks of the assessment for each semester.
- Grade 12 final exam to be prepared **CENTRALLY** and to be held at ministry of education exam centres.
- The duration of the final exam will be 2.5 hours.

Learning Levels:

Level	Knowledge and understanding	Application	Reasoning	Total Marks
Weighting	50%	30%	20%	**100%**
Marks	15	9	6	**30**

Question's Types and Weighting:

<table>
<tr><th>Question</th><th>Question Type</th><th colspan="2">Percentage</th><th>Marks</th><th>Total Marks</th></tr>
<tr><td>Q1</td><td>Multiple Choice Question (MCQ)</td><td colspan="2">20%</td><td>6</td><td>6</td></tr>
<tr><td>Q2</td><td>Short Response Question</td><td rowspan="2">80%</td><td>40%</td><td>12</td><td rowspan="2">24</td></tr>
<tr><td>Q3</td><td>Extended Response Question</td><td>40%</td><td>12</td></tr>
<tr><td colspan="2">Total</td><td colspan="2">100%</td><td>30</td><td>30</td></tr>
</table>

Final Exam Table of Specification (Grade 12):

Topic	Number of Lessons	Weights	MCQ 20%		Short Answer 40%		Long Answer 40%		Assessment levels			Total
			No. of Items	Mark	No. of Items	Mark	No. of Items	Mark	Knowledge 50%	Application 30%	Reasoning 20%	
Typical Hardware Components in Computer System	4	11%	1	**1**	1	**2**	-	-	2	1	-	3
Software in Computer Systems	5	13 %	-	-	2	**4**	-	-	4	-	-	4
Security of Computer System	5	14%	1	**1**	-	-	1	**4**	3	2	-	5
Numeric and Alphanumeric Data Representation and Manipulation	6	16%	1	**1**	-	-	1	**4**	1	4	-	5
Operation of Key Components of the Microprocessor	4	11%	1	**1**	1	**2**	-	-	1	1	1	3
Function and Operation micro-Architecture	4	11%	1	**1**	1	**2**	-	-	2	-	1	3
Registers and Register Handing	3	8%	-	-	1	**2**	-	-	1	1	-	2
Flowchart and Pseudocode	6	16%	1	**1**	-	-	1	**4**	1	-	4	5
Total	**37**	**100%**	**6**	**6**	**6**	**12**	**3**	**12**	**15**	**9**	**6**	**30**

Recording Students Marks

It is imperative that students' grades be accurately documented for every unit or semester by adhering to the following suggested model. Teachers are encouraged to utilize a spreadsheet that has been prepared in this prescribed format.

	CPP Marks Sheet								
Grade:			Semester:				Year:		
Students Name		Continuous Assessment Tools					Total %	Final Exam %	Total %
		Continuous Assessment Activities (CAA)					70	30	100
	Practical lab	Practical Test	Assignment 1	Assignment 2	Short Test1	Short Test2			
	5	5	20	10	15	15			

For Questions and Suggestions @

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