



**GUIDELINES ON SETTING EXAMINATION PAPERS-
FORMATIVE ASSESSMENT TECHNIQUES AND
SUMMATIVE EXAMINATION BLUEPRINTS**

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The integrity of our assessment systems is fundamental to the reputation of the University and attests to the quality of learning and teaching. It is paramount that we all share an understanding of all aspects of assessment. Our degrees are only as good as the validity, reliability and credibility of our assessments.

I. FORMATIVE AND SUMMATIVE ASSESSMENTS

- 1.1. **Formative assessments** are 'for' learning - they are part of the learning process. These assessments are sources of information for both students and lecturers, allow students to receive feedback of their responses and give them second chances to demonstrate success.
- 1.2. When giving feedback, the lecturer should:
 - (a) Address the topic
 - (b) Address the response
 - (c) Discuss particular errors
 - (d) Provide examples that work
 - (e) Provide gentle guidance
 - (f) Provide an opportunity for review
- 1.3. In general, formative assessments don't require formal examinations papers and fixed periods. They should be quick, flexible, from long essay to true or false questions to help lecturers take a snapshot of student learning at any time during a lesson or unit of study, in any curriculum area, and for students to gauge their understanding.
- 1.4. The formative assessment strategy may be influenced by the size of the class: Pre-Reading Quiz, One Minute Paper, Think-Pair-Share, Case-Based Learning, and Multiple Choice Questions (MCQ). However, among a number of techniques, UR recommends the use of the One Minute Paper. This is a highly effective technique for checking students' progress, both in understanding and reacting to the course material. Lecturers ask students to take out a blank piece of paper, pose a question and give them a minute to respond. Lecturers can use this to generate a discussion or to collect responses to see if students are learning. (A sample in Appendix 1).
- 1.5. The answers provided by students allow the lecturers to have a clear picture of what students know, what they do not master yet and for which they need support, what appropriate teaching method to use to re-teach or extend, and how to pace instruction.
- 1.6. Formative assessments can be taken as part of a continuum where specific tasks are planned to provide feedback to students throughout the learning experience.
- 1.7. When planning for formative assessments, it is important to:
 - a. Create clear criteria or performance standards against which student progress will be assessed
 - b. Communicate criteria or performance standards to students well in advance of the assessment task
 - c. Provide specific feedback based on the criteria or performance standards.

- 1.8. **Summative assessments** are ‘of’ learning. At the end of each instructional unit or module, lecturers need for example to test the achievements of the Intended Learning Outcomes of the unit or the module by students, to allocate grades according to their performance and to allow those who qualify to progress to the next level of learning. Therefore, formal examinations papers are often mandatory.
- 1.9. Although a summative or final examination is administered toward the end of the module, it should be aligned to the curriculum before the teaching-learning starts. It is therefore essential to set examination papers at the very beginning of the teaching period based on educational priorities to allow the University, the College, the School, the Department to prioritize what is taught.
- 1.10. Examinations should be set by teams of lecturers who have expertise in the subject. When setting examinations questions, module teams need to know what type of exam they intend to create. UR recommends that they follow clear steps and use an examination blueprint.

II. GENERIC STEPS TO SETTING AN EXAMINATION PAPER

Step 1	Determine the weighting of the Learning Outcomes applicable to the paper
Step 2	Determine the Graduate Attributes the assessors wish to cover in the paper and how these can be linked or integrated within the subject in each question where possible.
Step 3	Determine the type of question appropriate to assess the achievement of Learning Outcomes and the acquisition of Graduate Attributes
Step 3	Determine appropriate marks to be allocated to each question
Step 4	Brainstorm the nature or type of each question and sub-question e.g. long essay, short essay, short answer, Multiple Choice Questions (MCQ), true or false, computational etc.
Step 5	Decide on the category of the cognitive domain to be addressed in each question.
Step 6	Decide on how each question should be structured.
Step 7	Set the question paper, model answer and the marking memorandum simultaneously.
Step 8	Apply the suggested time allocations for each question.

Step 9	Develop the examination paper instructions, including suggested time allocations.
Step 10	Ensure that the paper is moderated and all quality control checks have been completed.

III. EXAMINATION BLUEPRINTS

- 1.1. In the general sense, a blueprint is a guide for making something - a design, a plan, a map or pattern. The examination blueprint or test specification at UR intends to provide the examination strategy at a glance. Blueprints should be publically accessible and are increasingly a part of HE audits.
- 1.2. Akem (2006) - quoted by Alade& Omoruyi (2014)- views *'the table of specification as a guide to assist a teacher or examiner in the evaluation system. The table shows the total number of items to be allocated to each instructional objectives, it also suggest what might be covered under each item, take decision on what types of items to be used. In fact the blueprint stage is the last and crucial stage in an evaluation plan since it enables the teacher to combine properly the objective and the content areas, bearing in mind the importance and the weight attached to each areas'*.
- 1.3. In short, a blueprint is the matrix or chart reporting the number and type of assessment questions across the topics in content area, consistent with learning outcomes, graduate attributes and the relative weights given to each topic.
- 1.4. The purpose of the blueprint system at UR is to have a clear map of the examination format clarifying the questions to be posed according to the:
 - Category of cognitive domain: remembering, understanding, applying, analysing, evaluating and creating (Appendix 1)
 - ILOs & Graduate attributes: Knowledge and Understanding ; Cognitive/Intellectual skills/Application of knowledge ; Communication/ICT/Numeracy/Analytic Techniques/Practical Skills/Information Literacy ; Personal, Intellectual, and Professional Autonomy; Employability and career development; Global citizenship; Lifelong learning; Collaboration, Teamwork and Leadership; Research, Creativity and Innovation, Scholarship and Enquiry; Subject Knowledge and Professional Skills; Communication and Information Literacy; Ethical, Social and Professional Understanding
 - Type of questions: long essay, short essay, short answer, Multiple Choice Questions (MCQ), true or false, extended matching questions (EMQ), computational
 - Content area: chapters/units/topics to be covered.

IV. EXAMPLES OF EXAMINATION BLUEPRINTS

Considering the different chapters/units or topics in a module, one interesting test of specification or examination blueprint, is to indicate the number of questions for each cognitive domain, for each topic as well as the weighting in terms of allocation of marks or percentage.

Table1-Example of an Examination Blueprint linking Category of Cognitive Domain, Topics and Marks or Percentage

Category of cognitive domain	Remembering (marks or %)	Understanding (marks or %)	Applying (marks or %)	Analyzing (marks or %)	Evaluating (marks or %)	Creating (marks or %)	Number of questions & sub questions	Total marks or percentage
Content								
Topic 1	5		5		5		3	15
Topic2	-	5		5		5	3	15
Topic 3	5		5	5	5		4	20
Topic 4		5		5		5	3	15
Topic 5	5		5		5	5	4	20
Topic 6		5	5	5			3	15
Total marks or percentage	15	15	20	20	15	15	20	100

When setting questions, Graduate Attributes shall be taken into account.

Table 2- Example of an Examination Blue print linking ILOs and Graduate Attributes to Type of questions

Type of question	Long essay (marks or %)	Short essay (marks or %)	Short answer (marks or %)	MCQ (marks or %)	True or false (marks or %)	Computational (marks or %)	Number of questions	Total marks or percentage
ILO & Attribute								
Knowledge and Understanding		5	5				2	10
Cognitive/Intellectual skills/Application of knowledge		10	5	5		5	4	25
Communication/ICT/ Numeracy/Analytic Techniques/Practical Skills/Information Literacy			5			5	2	10
Personal, Intellectual, and Professional Autonomy	-	5	-	-	5	-	1	10

Employability and career development	-	-	-	5	-	-	1	5
Global citizenship	-	-	5	-	-	-	1	5
Lifelong learning		-	-	-	-	-		-
Collaboration, Teamwork and Leadership	-	-	-	-	-	-	-	-
Research, Creativity and Innovation, Scholarship and Enquiry		10	5		5	10	4	30
Ethical, Social and Professional Understanding		-	5	-	-	-	1	5
Total marks or percentage	-	30	30	10	10	20		100

An examination blueprint can be established by module teams to indicate in advance what type of question and what category of the cognitive domain is most appropriate to test the achievement of each of Intended Learning Outcome and Graduate Attribute.

Table 3-Example of an Examination Blueprint linking ILOs & Graduate Attributes, Type of questions and Appropriate category of the cognitive domain

Type of question	Long essay	Short essay	Short answer	MCQ	True or false	Computational	Number of questions	% age or marks
ILO & Attribute	Category of cognitive domain							
Knowledge and Understanding	-	Remember, Understand	Remember, Understand	-	-	-	2	10
Cognitive/Intellectual skills/Application of knowledge	-	Analyse, apply, evaluate		Analyse, apply, evaluate	Analyse, apply, evaluate	Analyse, apply, evaluate	4	20
Communication/ICT/Numeracy/Analytic Techniques/Practical Skills/Information Literacy		Understand, analyse, apply	Understand, analyse, apply					10
Personal, Intellectual, and Professional Autonomy	-	Remember, analyse	-	-	-	-	1	5
Employability and career development	-	-	-	Understand	-	-	1	5
Global citizenship	-	-	Analyse	-	-	-	1	5

Lifelong learning		Remember, analyse	Apply	-	-	-	2	10
Collaboration, Teamwork and Leadership	-	-	-	-	-	-	-	-
Research, Creativity and Innovation, Scholarship and Enquiry	Analyse, apply, evaluate	Analyse, apply, evaluate	Analyse, apply, evaluate		Understand	Understand, evaluate	4	30
Ethical, Social and Professional Understanding		-	Analyse, Evaluate	-	-	-	1	5
Total marks or percentage	-	30	30	10	10	20		100

An examination blueprint can be used to direct module teams in advance of the form of assessment and the types of questions to use in order to evaluate the achievement of Graduate Attributes.

Table 4- Example of an Examination Blueprint linking ILOs and Attributes, Type of questions and Forms of Assessment

Type of question and form of assessment	Long essay	Short essay	Short answer	MCQ	True or false	Computational	Total marks or %age
ILO & Attribute							
Knowledge and Understanding		Individual test 1	Final examination	Individual test 1		Final examination	20
Cognitive/Intellectual skills/Application of knowledge	Group work 2	Final examination	Individual test 1				15
Communication/ICT/ Numeracy/Analytic Techniques/Practical Skills/Information Literacy		Final examination		Individual test 2		Individual test 1	15
Personal, Intellectual, and Professional Autonomy	Individual Assignment 1-		-	-	-	Group work 2	10
Employability and career development	-	-	-	Quiz 1	-	-	5
Global citizenship	-	-	Individual Assignment 2	-	-	-	5

Lifelong learning		Individual Assignment 2		-	-	-	5
Collaboration, Teamwork and Leadership	-	-	-	-	-	-	-
Research, Creativity and Innovation, Scholarship and Enquiry	Group work 1	Final exam	Individual test 2			Individual test 1	20
Ethical, Social and Professional Understanding		-	Individual Assignment 1	-	-	-	5
Total marks or percentage	-	20	20	10	10	20	100

Table5-Weighting to Content Area

Content area	Total marks or percentage
Topic 1	15
Topic 2	15
Topic 3	20
Topic 4	15
Topic 5	20
Topic 6	15
Total marks or percentage	100

Table 6-Weighting to Graduate Attribute

Graduate Attribute	Total marks or percentage
Personal, Intellectual, and Professional Autonomy	5
Employability and career development	5
Global citizenship	5
Lifelong learning	10
Collaboration, Teamwork and Leadership	-
Research, Creativity and Innovation, Scholarship and Enquiry	30
Knowledge, Understanding and Application	25
Communication and Information Literacy	15
Ethical, Social and Professional Understanding	5
Total marks or percentage	100

Table 7-Weighting to Cognitive Domain

Category of cognitive domain	Total marks or percentage
Remembering	15
Understanding	15
Applying	20
Analysing	20
Evaluating	15
Creating	15
Total marks or percentage	100

Table 8-Weighting to difficulty level

Level of difficulty	Total marks or percentage
Easy	30
Average	50
Difficult	20

Appendix 1- A sample of One Minute Paper for Formative Assessment

In order to prepare for the next sessions, it would be really helpful for me to know about your learning in today's session. Please take a minute to respond to the following questions

1. Here's what I learned in today's lecture:

2. Here are some questions I still have:

3. Here are some things I don't even understand well enough to ask about:

4. Other comments or suggestions:

Appendix 2- An example of the use of a THINK-PAIR-SHARE for Formative Assessment

How to Use

1. Think

Have students write a response to a prompt or a question.

2. Pair

Tell students to pair up and share their responses.

3. Share

Reconvene the class and ask pairs to report back on their conversations.

When to Use

Use Think-Pair-Share at any point in the lesson to structure meaningful conversation:

- Before introducing new material to tap into prior knowledge
- After watching a film clip to gauge a reaction
- After reading a short text to begin a discussion
- Before students begin an assignment, such as an essay or a set of word problems, to gather ideas or formalize procedures

Appendix 3- Case-Based Learning for formative assessment

The case method is defined, by the Association for Case Teaching, as ‘a means of participatory and dialogical teaching and learning by group discussion of actual events’ and (Dunne and Brooks, 2004, 9).

Cases can include:

- written cases,
- video cases,
- interactive cases,
- simulations,
- games,
- field trips,

Why use cases?

- Case-based learning provides a context for abstract material.
- Cases provide an ‘experience’ for students that can be transformed into learning through reflection or experimentation.
- Case-based learning is linked with the effective development of critical thinking, problem solving, clinical reasoning and analysis, which in turn are characteristics of a deep approach to learning.
- It also can be used to facilitate a model of self-directed and reflective learning that serves students very well in future courses and careers (Dunne and Brooks, 2004).

Characteristics of an Effective Case

When examining the concept of case-based learning, it is important to first capture the essential components of the method. Anyone can tell a story, but according to Wasserman (1994) and Herried (1997) effective cases for learning share a number of characteristics:

- The case content is closely aligned with the overall instructional goals and objectives.
- The case tells a story and focuses on an issue that arouses interest.
- The case itself is well-written and its readability is appropriate for the age or level of the student.
 - The case should be written or presented in the present tense and deal with an authentic situation not more than five years old.
 - The case includes direct quotes, using the characters’ dialog to tell the story.
 - The story is compelling and creates empathy with the main characters.
- The case clearly states and illuminates the dilemma without resolving it.
- The case is relevant to the reader.
- The case provokes conflict and forces decision making.
- The case is general enough to be used in several applications.
- The case is short.

Why cases are used in Law, Business and Medicine

Law	Business	Medicine
<ul style="list-style-type: none"> • Learn law and legal process • To teach students to "think like" a lawyer • Promote judgment • Enhance advocacy • Develop critical analysis 	<ul style="list-style-type: none"> • Develop analytical skills • Develop sound business judgment • Test understanding and application theory • Provide a real world perspective • Motivate a topic • Engage and involve students • Learn to work in groups • Develop self confidence • Develop presentation skills 	<ul style="list-style-type: none"> • Increase motivation for learning • Structure knowledge in ways that can be used in clinical contexts • Promote integration of knowledge • Develop clinical reasoning skills • Develop self directed learning skills • Promote evidence based practice

Source: Dunne and Brooks (2004)

Many of these skills such as the ability to make sound judgments, analyze data, work effectively in groups and present information, are transferable skills that cross-disciplinary boundaries.

Appendix 4-New Bloom's Taxonomy

The **cognitive process dimension** represents a continuum of increasing cognitive complexity—from remember to create. Anderson and Krathwohl identify 19 specific cognitive processes that further clarify the bounds of the six categories.

Table 9- The cognitive process dimension-categories, cognitive processes (and alternative names)

Lower Order Thinking Skills		Higher Order Thinking Skills			
LOW		MEDIUM		HIGH	
Accessible to all learners who are functioning at the relevant grade		Accessible to the above average learners		Accessible to most capable learners	
Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Recognize (identify, locate, name) Recall (retrieve, describe, reproduce)	Interpret (clarify, paraphrase, represent, translate) Exemplify (illustrate, instantiate) Classify (categorize, sub sum) Summarize (abstract, generalize) Infer (conclude, extrapolate, interpolate, predict) Compare (contrast, map, match) Explain (construct models, defend arguments)	Execute (carry out, calculate,) Implement (use, perform, apply)	Differentiate (discriminate, distinguish, focus, select) Organize (find, cohere, integrate, outline, parse, structure, combine) Attribute (deconstruct, breakdown)	Check (coordinate, detect, monitor, test,) Critique (judge, diagnose, assess, evaluate, measure, experiment)	Generate (hypothesize, invent, estimate, determine, forecast, predict) Plan (design) Produce (construct, create)

Source: Anderson and Krathwohl (2001).

1. Remembering

Recognizing or recalling knowledge from memory. Remembering is when memory is used to produce or retrieve definitions, facts, or lists, or to recite previously learned information.

2. Understanding

Constructing meaning from different types of functions be they written or graphic messages or activities like interpreting, exemplifying, classifying, summarizing, inferring, comparing, or explaining

3. Applying

Carrying out or using a procedure through executing, or implementing. Applying relates to or refers to situations where learned material is used through products like models, presentations, interviews or simulations.

4. Analyzing

Breaking materials or concepts into parts, determining how the parts relate to one another or how they interrelate, or how the parts relate to an overall structure or purpose. Mental actions included in this function are differentiating, organizing, and attributing, as well as being able to distinguish between the components or parts. When one is analyzing, he/she can illustrate this mental function by creating spreadsheets, surveys, charts, or diagrams, or graphic representations.

5. Evaluating

Making judgments based on criteria and standards through checking and critiquing. Critiques, recommendations, and reports are some of the products that can be created to demonstrate the processes of evaluation. In the newer taxonomy, evaluating comes before creating as it is often a necessary part of the precursory behavior before one creates something.

6. Creating

Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing. Creating requires users to put parts together in a new way, or synthesize parts into something new and different creating a new form or product. This process is the most difficult mental function in the new taxonomy.

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