

# Mechanics of Question Paper Setting

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## ABSTRACT

*The goal of medical education is to produce the physician we would like to see if we are sick - Melinkoff*

In all educational developments, one of the most troublesome questions is that of evaluation. Written examination is the most widely used tool in evaluation and assessment of the competency of the medical students. At present, questions are prepared casually just before the examination and are not subjected to any quality check, which may lead to confusion or wrong understanding of the questions by the students. This article is aimed at providing guidelines and a scientific method to frame good question papers to improve the quality of evaluation and assessment of medical students.

## INTRODUCTION

Written examination is still the widely used tool of evaluation both in formative and summative evaluation. It cannot be replaced entirely by any other method. In contrast to practical and oral examinations, written examination leaves a record for reevaluation in case of a controversy. The instrument used in the written examination is the question paper.

Assessment is usually done at two levels: Internal assessment periodically, usually at the end of each term conducted by the departments known as formative assessment, and final examination, usually at the end of each year conducted by the University, known as summative assessment<sup>1</sup>. For these examinations question paper setting is an important task. At present, questions are prepared casually just before the examination and are not subjected to any quality check, which may lead to confusion or wrong understanding of the questions by

the students. Moreover, the question paper quite often lacks validity, reliability, relevance and objectivity. The quality of question paper can be improved by adequate preparation<sup>1-3</sup>.

Therefore this article is aimed at providing guidelines and a scientific method to frame good question papers to improve the quality of evaluation and assessment of medical students.

## QUESTION PAPER SETTING/PREPARATION

The steps involved in question paper setting are<sup>4-6</sup>:

1. Decision on the design of question paper
2. Preparation of a blue-print of the question paper
3. Preparation of a model question paper
4. Preparation of a marking scheme
5. Refining the question paper

6. Editing the question paper
7. Review of the question paper

**1. DESIGN OF A QUESTION PAPER**

The decision of the design of question paper is a policy decision, which has to be made by the Dean/Principal of the college, in consultation with the Medical Education Unit. The recommendations of Nepal Medical Council and affiliated Universities are to be followed. The points to be decided are:

1. Weightage to be given to different forms of questions i.e. how many essays, short answer type questions, very short answer type questions, or multiple choice questions should be decided to make a balanced question paper. This also involves decisions on the number of question papers in a subject, number of marks, total number of questions, and time allotted for the paper. The number of sections in each question paper also requires to be decided.
2. Weightage to be given to different learning objectives and to different topics or areas of the subject. If the educational objectives were already divided into must know, desirable to know and nice to know categories, the same weightage can be adapted in the question paper. Since the terminal examinations are for certification of the competency of a learner in terms of knowledge and skills that he is supposed to acquire at the end of a course, the question paper should not be made very difficult. On the contrary, the question paper should aim at finding out whether the minimal skills/knowledge required has been achieved by the student or not.
3. Guidelines regarding the use of options, nature of sections and difficulty level of the paper are also required to be delineated.

Once the above decisions are made, it is advisable to write them in clear and simple terms. Such a document will help at a later stage to write the instructions to the Question Paper setters.

**2. BLUE-PRINT OF THE QUESTION PAPER**

Blue-print of a question paper, also known as table of specifications, is a two-dimensional chart giving placement of different questions (in terms of marks and number of questions) in respect of objectives tested by

the item(s), content area under which item is framed, and the form of question (Table 1).

**Table 1:** Blue-print of a question paper

Objectives/ content area	Knowledge (Recall)			Understand- ing (Interpre- tation)			Appli- cation (Problem solving)			Skill	Total
	O	SA	LA	O	SA	LA	O	SA	LA		
Total											

O = objective; SA = short answer; LA = long answer

**3. PREPARATION OF A MODEL QUESTION PAPER**

The model question paper is written on an item card. A model item card is given below.

**Table 2:** Model item card

Objective:		Marks:
Content area/Topic:		Estimated difficulty level:
Form of Question:		Estimated time:
Question		
Model answer	Points of answer	Marks for the points

**4. PREPARATION OF A MARKING SCHEME**

Once a model paper has been prepared, the next step is to evolve a marking scheme. The purpose of marking scheme is to assign proportions of marks to different parts of the answer. There are two types of marking schemes – Analytical (Objective type and short answer type) and Global (Long answer type).

**5. REFINING THE QUESTION PAPER**

After the model question paper and the marking scheme has been made, a second critical look at the questions is recommended. While reviewing questions to refine them, the following questions need to be asked:

1. Does the question test an important learning outcome?
2. Is it based on a predetermined objective?

3. Is the scope of the well defined as regards to:

- Clarity of directions?
- Language of the questions?
- Length of answer?
- Marking scheme?
- Appropriate difficulty level?

A question should be relevant to the set objectives of the course. The emphasis should be on the professional skill and competence. Questions such as “Describe important clinical and metabolic changes that occur in space flight” may be avoided. The questions should not relate to trivial or insignificant, vague and diffuse topics. The following questions given as short notes in Family Medicine are examples: Peripheral blood smear, Referral service, Family medicine, Social pathology, Physical examinations and health. Questions on a rare phenomenon or entity does not represent higher learning and does not necessarily judge the practical or professional ability of the student and hence must be avoided as far as possible.

The length of the question paper should be such that it should be reasonably feasible for an average student to answer it within the stipulated time. The mark allotted to each question is usually predetermined, and it should be proportional to the length and difficulty level of the question. At the same time the questions sampled should be such that uniform coverage of the entire curriculum is done.

The language should be clear, and unambiguous. The language should be understandable by an average student. Questions such as “Describe clinical paradigms of thrombotic thrombocytopenic purpura and hemolytic uremic syndrome” should be avoided. This phrase may not be familiar to many students. The dictionary meaning of ‘paradigm’ is ‘example’ or ‘model’.

Special care may be taken to avoid spelling or grammatical errors which may cause confusion or even alter the meaning.

“Open ended” questions are apt to encourage rambling by a student and it may be difficult to ascertain substance amidst the verbiage. Short answer questions without a ‘stem’ or verb do not indicate precisely what the examiner wants. A question carrying two marks in a University examination paper reads as “brucellosis”.

## 6. EDITING OF THE QUESTION PAPER

Editing is the next step in the preparation of the question paper. While editing the question papers, the following points are to be checked:

1. Grouping questions according to objectives, form of questions, content area, etc.
2. Numbering questions
3. Instructions for administration

## 7. REVIEW OF THE QUESTION PAPER

The question paper may be reviewed with the help of the following check list:

**Table 3:** Check-list for reviewing question paper

1. Has the paper covered the syllabus in a fair way without giving undue emphasis to one part or another?
2. Does the paper test the full range of abilities as defined by objectives in the syllabus?
3. Has the weightage to the various topics, different forms of questions and objectives adhered to the scheme shown in the blue-print?
4. Has the paper been set at an appropriate level of difficulty (i.e., the questions neither too easy nor too difficult to average students)?
5. Will the paper provide an adequate adequate discrimination between performance of candidates of different abilities?
6. Does the question paper have comparability of options in terms of objective, content, form and difficulty?
7. Are the questions precise and unambiguous?
8. Is there any excessive overlap between questions?
9. Can the paper be satisfactorily answered in the time allowed?
10. Is the question paper comparable in standard with those set in previous years?
11. Does the paper avoid repetition of questions set in previous years?

The final step is to ensure confidentiality by sending rough sheets to the University or destroying them as per the instructions.

**CONCLUSIONS**

In conclusion, a systematic approach will improve question paper setting in our examinations. The steps involved are plan the design, prepare the blue-print, prepare a model paper, prepare a marking scheme, refine the questions, edit the questions, review the question paper, and final typing/writing and dispatch.

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