Guidelines for Writing Test Questions

Multiple Choice [MC] Questions:
Here are some guidelines for your MC questions:¹

1. The stem should be meaningful by itself and should present a definite problem.
2. The use of internal or beginning blanks in completion-type MC items should be avoided.
3. Use a negatively stated stem only when significant learning outcomes require it.
4. Irrelevant difficulty should be avoided.
5. All distractors should be plausible.
6. Avoid the use of complex MC format.
7. The relative length of the options should not provide a clue to the answer.
8. Avoid using “none of the above” or “all of the above” as an option.

See this link http://www.caacentre.ac.uk/dldocs/otghdout.pdf AND this link http://www3.fed.cuhk.edu.hk/chemistry/files/constructMC.pdf for examples of well written and poorly written MC questions that demonstrate the importance of the above MC guidelines.

TIPS for writing MC questions:²

Question stem
- When the stem is an incomplete statement, place the “blank” for the correct choice at the end of the statement.
- When a negative item is used, emphasize the negative word or phrase; that is, underline, capitalize, or italicize, for example, “DOES NOT.”
- Avoid grammatical clues to the correct answer such as “a” or “an” as the last word of the stem or plural verbs that match plural choices.
- If all responses begin with common words or phrases, then place these commonalities at the end of the stem.
- Write the stem such that the students don’t have to read all the choices before they can determine the question.
- When several stems have the same set of choices, consider using a matching question.

Question choices or responses
- Include at least four, but not more than five, possible responses.
- Provide reasonably plausible choices.
- Only one response should be correct.
- Omit responses that are obviously wrong.
- List possible responses in a column — easier to read and answer
- Avoid patterns in placing correct answers (such as having "c" be correct in more than half of the questions).

• If a hierarchy exists within the responses, place them in ascending order (e.g., numerical responses in numerical order, years in chronological order).
• Use “none of the above” and “all of the above” with appropriate discretion. They can give away the answer or cause confusion, if all alternative choices aren’t worded very carefully.
• Avoid language that is similar or identical to important words in the stem.

**True/ False Questions:**

**Constructing True/False Questions**

**True/false topic**
• Make questions require application of knowledge as much as possible.
• Always make certain the statement is unequivocally true or false.
• When using opinion statements, cite the source that will make the complete statement true or false.

**True/false protocol**
• Develop approximately the same number of true and false statements.
• Do not consistently make true statements longer than false statements, or vice versa.
• Avoid negative and complicated statements.
• Words such as “all,” “only,” “never,” and “always” give hints about the answer and are usually false. Use them only when the question is to measure understanding.
• Statements with the words “generally” and “usually” tend to be true.

**Matching Questions:**

**Definition**
A matching question is two lists of related words, phrases, pictures, or symbols. Each item in one list is paired with at least one item in the other list.

Matching may be considered to be a variant of multiple-choice in which more than one choice is correct.

Check all that apply (multiple select) is also a variant of matching in which one of the lists (or the stem) has only one item.

**Characteristics of matching questions**
• Used for recognition of relationships and making associations
• Can be used for a wide range of subject matter
• Can be used to match
  o terms and definitions
  o symbols and names

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4 Ibid
- questions with answers
- cause with effect
- parts with functions
- procedures with operations
- principles with situations in which they apply

- Good matching items can easily be converted to multiple-choice items.
- The premises and responses should be homogeneous.

**Example - good**

Column A contains a list of characteristics of questions. On the line to the left of each phrase, write the letter of the question type in Column B that best fits the phrase. Each response in Column B may be used once, more than once, or not at all.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B) 1. Least useful for educational diagnosis</td>
<td>A. Multiple-choice</td>
</tr>
<tr>
<td>(A) 2. Measures greatest variety of learning outcomes</td>
<td>B. True-false</td>
</tr>
<tr>
<td>(C) 3. Most difficult to score objectively</td>
<td>C. Short answer</td>
</tr>
<tr>
<td>(B) 4. Provides the highest score by guessing</td>
<td></td>
</tr>
</tbody>
</table>

**Example - bad**

Column A lists several phrases related to Pennsylvania. On the line to the left of each phrase, write the letter of the response in column B that best fits the phrase.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>__ 1. Pennsylvania's official state flower</td>
<td>A. Ruffed grouse</td>
</tr>
<tr>
<td>__ 2. Pennsylvania's official state bird</td>
<td>B. Pittsburgh</td>
</tr>
<tr>
<td>__ 3. Major steel producing city</td>
<td>C. Mountain laurel</td>
</tr>
<tr>
<td>__ 4. 2003 Penn State student population</td>
<td>D. Over 80,000</td>
</tr>
<tr>
<td></td>
<td>E. Erie</td>
</tr>
</tbody>
</table>

Main errors:
1. Directions about how to handle choices in Column B are unclear.
2. The responses are not homogeneous. That is, answers for 1, 2, and 4 are obvious, leaving only the two cities as choices for 3.

**Matching protocol**

- Directions should provide a clear basis for matching.
- Have from 4 to 10 items in each list.
- Have about 3 extra items from which responses are chosen.
- Mix the order of the items in the columns.
- Use brief phrases and as few words as possible in each list.
- Longer statements should be in the premise (left) column and shorter statements in the response (right) column.
- Use a larger or smaller number of responses than premises. That is, avoid perfect matching which allows for elimination of responses when the test-taker is unsure of the correct answer.
- Format the entire item on the same page.
- All responses should be plausible solutions.
Essay Questions: 

Requiring students to compose a response is not the only characteristic of an effective essay question. There are assessment items other than essay questions that require students to construct responses (e.g., short answer, fill in the blank). Essay questions are different from these other constructed response items because they require more systematic and in-depth thinking. An effective essay question will align with each of these four criteria:

1. Requires examinees to compose rather than select their response.
2. Elicits student responses that must consist of more than one sentence.
3. Allows different or original responses or pattern of responses.
4. Requires subjective judgment by a competent specialist to judge the accuracy and quality of responses.

and will provide students with an indication of the types of thinking and content to use in responding to the essay question.

Study the two examples below for examples of good and bad essay questions:

Example A
List the 7-step path to making “ethical decisions.” List them in their correct progressive order.

Explanation
Example A does not meet the criteria for effective essay questions for the following reasons:

1. The question does not require students to use complete sentences or more than one sentence. Students may respond to Example A by simply listing the name and number for each step.
2. Depending on where students learned the steps, all the responses they give to the essay question may be identical. Students will basically repeat the 7-step path word for word. The question does not allow for original responses or response patterns.
3. Although the question does require a list of steps, it does not require systematic and complex thinking about the ideas. While some essay questions may serve their purpose in requiring students to list certain ideas, the most effective essay questions require deep and original thinking. Effective essay questions elicit a depth of thought from students that can only be judged by someone with the appropriate experience and expertise in the content matter. Thus, content expertise is essential for both writing and grading essay questions.

To gain a better understanding of the basic elements of an essay look at Example B. Again, determine whether the given example contains the basic elements of an essay.

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question and then compare your answer with the explanation below the example.

**Example B**
**Explain in what ways a person’s failure to apply step 5 of the seven-step path for making ethical decisions will impact his or her ability to make ethical decisions.**
**Provide an example that illustrates this impact.**

**Explanation**
Example B is an effective essay question. Not only do students need to compose a response, but they also need to write several sentences in order to provide an answer that sufficiently meets the demands of the given task. Moreover, the task given to students in the essay question is constructed in such a way that it allows for different responses and response patterns. Students can provide a wide variety of examples to illustrate the impact, and they can structure their response in various ways. They could give the example first and then provide an explanation, or they could state the impact first and then provide an example. Students could also go back and forth between their explanation and their example as they write their response. They could look at the interaction between step 5 and other steps of the seven-step path in various ways. For example, one student might focus on the interaction between step 5 and step 4 and another student might focus on the interaction between step 5 and step 6. Hence, the task allows for original responses and response patterns. Because of the variety of possible answers, a competent specialist in the seven-step path for making ethical decisions must judge the accuracy and quality of the student responses. The grader must have a good understanding of the model to judge the accuracy, quality, and relevance of students’ explanations and examples. This closer look at Example B shows that it contains the basic elements of an effective essay question.