



## HOW TO WRITE OR REVIEW MULTIPLE-CHOICE QUESTIONS

<b>STEM</b>	A 32-year-old man has a 4-day history of progressive weakness in his extremities. He has been healthy except for an upper respiratory tract infection 10 days ago. His temperature is 37.8 C (100 F), blood pressure is 130/80 mm Hg, pulse is 94/min, and respirations are 42/min and shallow. He has symmetric weakness of both sides of the face and the proximal and distal muscles of the extremities. Sensation is intact. No deep tendon reflections can be elicited; the plantar responses are flexor.
<b>LEAD-IN</b>	Which of the following is the most likely diagnosis?
<b>OPTIONS</b>	<p>A. Acute disseminated encephalomyelitis†</p> <p>B. Guillain-Barré syndrome**</p> <p>C. Myasthenia gravis†</p> <p>D. Poliomyelitis†</p> <p>E. Polymyositis†</p>

\*\* = Correct Answer    † = Distractors

*A standard multiple-choice question consists of*

- a stem
- a lead-in question
- a series of answer choices
- **one** preferred answer
- a **minimum of three** distractors

### EFFECTIVE MULTIPLE-CHOICE QUESTIONS *SHOULD...*

**Should** measure learner performance against the identified **learning objectives**.

**Should** test application of knowledge using experimental and clinical **vignettes**.

**Should** include information needed in the question and not the answer choice (i.e. the **stems** should be **long** and the **options short**).

**Should** include answer choices that exist on a **continuum** between "least correct" and "most correct."



**Should** be answerable **without looking** at the answer options.

**Should** contain **plausible distractors**.



## HOW TO WRITE OR REVIEW MULTIPLE-CHOICE QUESTIONS

### EFFECTIVE MULTIPLE-CHOICE QUESTIONS *SHOULD NOT...*

**Should not** include the following formats

#### *True/False questions*

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*Absolutes in the question or the answer choices  
 (e.g. **always, never, all or none of the above**)*

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*Vague terms in the question or answer choices  
 (e.g. **usually or frequently**)*

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*Negatively phrased items in the questions  
 (e.g. All of the following are correct **EXCEPT** or Which of the following is **NOT** correct)*

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**Should not** contain esoteric or interesting topics that are not essential.

**Should not** be “tricky” or overly complex.

**Should not** include verbatim textbook phrasing.

### ISSUES RELATED TO TESTWISENESS

Flaws related to testwiseness make it easier for some students to answer the question correctly, based on their test-taking skills alone. By *eliminating these types of flaws* from your questions, you provide a level playing field for the testwise and not-so-testwise learners.

**Grammatical cues** One or more distractors don't follow grammatically from the stem

**Logical cues** 3 of the 5 answer choices are plausible while the remaining are clearly not

**Absolute terms** Terms such as “always” or “never” are used in the answer choices

**Long correct answer** Preferred answer is longer, more specific, or more complete than the other choices

**Word repeats** A word or phrase is included in the stem and in the preferred answer



## HOW TO WRITE OR REVIEW MULTIPLE-CHOICE QUESTIONS

### CASE-BASED QUESTIONS

Case-based questions require that the learner apply knowledge gained versus rote memorization. They may include some of the following types of information:

Age  
Gender  
Site of Care  
Presenting Complaint

Duration  
Patient History  
Physical Findings

Results of Diagnostic Studies  
Initial Treatment  
Subsequent Finding

1. A *<patient description>* has
  - 1.1. a *<type of injury and location>*. Which of the following structures is most likely to be affected?
  - 1.2. *<history findings>* and is taking *<medications>*. Which of the following medications is the most likely cause of his *<one history, PE or lab finding>*?
  - 1.3. *<abnormal findings>*. Which *<additional finding>* would suggest/suggests a diagnosis of *<disease 1>* rather than *<disease 2>*?
  - 1.4. *<symptoms and signs>*. These observations suggest that the disease is a result of the *<absence or presence>* of which of the following *<enzymes, mechanisms>*?
  - 1.5. *<symptoms, signs, or specific disease>* and is being treated with *<drug or drug class>*. The drug acts by inhibiting which of the following *<functions, processes>*?
  - 1.6. *<abnormal findings>*. Which of the following *<positive laboratory results>* would be expected?
2. Following *<procedure>*, a *<patient description>* develops *<symptoms and signs>*. Laboratory findings show *<findings>*. Which of the following is the most likely cause?
3. A patient has *<abnormal findings>*, but *<normal findings>*. Which of the following is the most likely diagnosis?

#### **QUESTION 1.A**

Acute intermittent porphyria is the result of a defect in the biosynthetic pathway for

- A. collagen
- B. corticosteroid
- C. fatty acid
- D. glucose
- E. heme\*\*
- F. thyroxine (T4)

#### **QUESTION 1.B**

An otherwise healthy 33-year-old man has mild weakness and occasional episodes of steady, severe abdominal pain with some cramping but no diarrhea. One aunt and a cousin have had similar episodes. During an episode, his abdomen is distended, and bowel sounds are decreased. Neurologic examination shows mild weakness in the upper arms. These findings suggest a defect in the biosynthetic pathway for

- A. collagen
- B. corticosteroid
- C. fatty acid
- D. glucose
- E. heme\*\*
- F. thyroxine (T4)

The **preferred** question format is **1.B**. Case-based questions require that the learner apply the knowledge gained versus rote memorization.