Creating Educational Tests

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Selected Response Tests

- True-False
- Matching
- Multiple Choice
Background

• Advantages
  – Allows for assessment of a wide range of learning objectives
  – May provide diagnostic information by analyzing patterns of incorrect responses

Jean Mandernach: Park University Faculty Development. Park University.
Background

• Advantages
  – Permits wide sampling and broad coverage of content domain
  – Allows the comparison and evaluation of related ideas, concepts, or theories
Background

• Advantages
  – Permits manipulation of difficulty level by adjusting the degree of similarity among response options
  – Amenable to item analysis

Jean Mandernach: Park University Faculty Development. Park University.
Background

• Disadvantages
  – Quality items are difficult and time consuming to develop
  – Tendency for items to focus on low level learning objectives

Jean Mandernach: Park University Faculty Development. Park University.
Background

• Disadvantages
  – Assessment results may be biased by students’ reading ability and test-wiseness
  – Does not measure the ability to organize and express ideas

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One-Best-Answer

Least Correct

D
C
A

Most Correct

B

March 9, 2006
ADEA Conference--2006
Polysaccharides of the plant cell wall are synthesized mainly in:

a. the endoplasmic reticulum
b. the cytosol
c. the plasma membrane
d. the Golgi complex
e. amyloplasts
Stimulus Response

Stem:
A 32-year-old-man has a 4-day history of progressive weakness in his extremities. He has ….

Lead-In:
Which of the following is the most likely diagnosis?

Options:
a. Acute disseminated encephalomyelitis
b. Guillain-Barre syndrome
c. Myasthenia gravis
d. Poliomyelitis
e. Polymyositis

Susan M Case & David B. Swanson, National Board of Medical Examiners
Components

As societies increase in complexity from folk to industrial, social control is more likely to be invested in the

A. Family
B. School
C. State
D. Peer group
E. Religious structures

Distractors

Answer

Stem

March 9, 2006
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Guidelines

- Single, definite statement

Polysaccharides:

a. the endoplasmic reticulum
b. the cytosol
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Guidelines

- Single, definite statement

Polysaccharides of the plant cell wall are synthesized mainly in:

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Guidelines

• Avoid unnecessary information

Paul Muldon, an Irish postmodern poet who uses experimental and playful language, uses which poetic genre in “Why Brownlee Left”?

a. sonnet
b. elegy
c. narrative poem
d. dramatic monologue
e. haiku
Guidelines

- Avoid unnecessary information

Paul Muldon uses which poetic genre in “Why Brownlee Left”?

a. sonnet
b. elegy
c. narrative poem
d. dramatic monologue
e. haiku
Guidelines

- Use negatives sparingly

Which of the following is not a symptom of osteoporosis?

a. decreased bone density
b. frequent bone fractures
c. raised body temperatures
d. lower back pain
Guidelines

• Use negatives sparingly

Which of the following is a symptom of osteoporosis?

a. decreased bone density
b. hair loss
c. raised body temperatures
d. painful joints
Guidelines

- Avoid giving clues to answer

A fertile area in the desert in which the water table reaches the ground surface is called an?

- a. mirage
- b. oasis
- c. water hole
- d. polder
Guidelines

- Avoid giving clues to answer

A fertile area in the desert in which the water table reaches the ground surface is called a/an?

a. mirage
b. oasis
c. water hole
d. polder
Guidelines

• Avoid long correct answer

Secondary gain is:

a. synonymous with malingering
b. a frequent problem in obsessive-compulsive disorder
c. a complication of a variety of illnesses and tends to prolong many of them
d. never seen in organic brain damage
Guidelines

• Avoid logical clues

Crime is:

a. equally distributed among the social classes
b. over-represented among the poor
c. over-represented among the middle class
d. reaching a plateau of tolerability for the nations
Guidelines

• Avoid inconsistent numeric data

Following a second episode of infection, what is the likelihood that a woman is infertile:

a. less than 20%
b. 20 to 30%
c. Greater than 50%
d. 90%
e. 75%
Guidelines

• Avoid vague frequency terms

Severe obesity in early adolescence:

a. usually responds dramatically to dietary regimens
b. often is related to endocrine disorders
c. has a 75% chance of clearing spontaneously
d. show poor prognosis
e. usually responds to pharmacotherapy
Additional Guidelines

Length

🌟 Stand Alone MC
🌟 1 minute per question
🌟 Stimulus Response
🌟 max 10 items per unit
Additional Guidelines

☑️ Frequency

🌟 More than mid-term and final
🌟 Too many impedes class time
🌟 Moderate frequency correlated with final exam
🌟 First exam usually 3rd week
Additional Guidelines

- Distractors
  - remain consistent
  - 3 to 4 distractors

- Avoid
  - none of the above
  - all of the above
  - k type questions
Item Shape

LONG STEM

A. SHORT OPTIONS
B. SHORT OPTIONS
C. SHORT OPTIONS
D. SHORT OPTIONS
Connect Theory with Practice

Following are two test questions derived from the objectives we did earlier.
Example 1

What is the primary treatment for a periodontal abscess?

A. Antibiotics  
B. Incision and drainage  
C. Remove tooth decay  
D. Treat pain with anti-inflammatories
Which of the following antibiotics will destroy anaerobes but will not harm most of the beneficial aerobic organisms?

A. Clindamycin
B. Metronidazole
C. Ampicillin
PRACTICE
What You Need for this Exercise

- The objectives you wrote earlier
- The dental anatomy content paper
- 2 - 3 sheets of blank paper
- A pen or pencil
Format for this Exercise

- Rejoin your objective team
- Find the objectives you created earlier
- Write 2 questions for each level
- Spend 15 minutes writing questions
- Be prepared to share your questions with the entire group