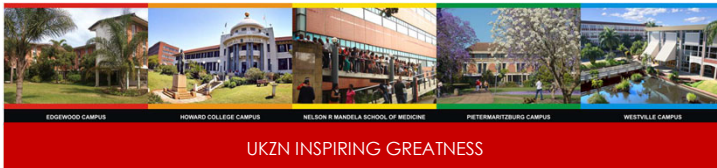
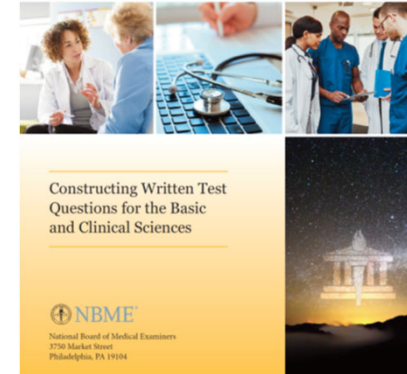




## Setting High Quality SBA MCQs Prof Mergan Naidoo



## How to set good quality SBA



## Key areas you may want to cover


- Anatomy
- Physiology/ Pathophysiology
- Diagnosis
- Epidemiology
- Diagnostic investigations
- Management
- Complications
- Family and community\*
- Teaching and training\*
- Ethics and professional practice
- Leadership and governance\*

## General guidelines on setting good MCQs


- Can only be Single Best Answer (A-Type) or Extended matching (R-Type).
- Must focus on common and/or life or organ threatening conditions.
- Should be pitched to assess high level of Bloom's taxonomy.
- Questions should be checked for alignment with learning outcomes.
- Mandatory pre-test and post test vetting.
- Cut-off score should not be fixed but be based on standard setting.

## Specific guidelines

---


- Must always have a **good story** (vignette).
  - Age and gender are mandatory.
  - The diagnosis should not be given.
  - Avoid anything which may act as a lead for clever candidates.
  - The story must contain an “Aha!” information or moment.
- 

## Continued

- Each item should focus on an important concept or testing point
  - Each item should assess application of knowledge, not recall of an isolated fact
  - The item lead-in should be focused, closed, and clear; the test-taker should be able to answer the item based on the stem and lead-in alone
  - All options should be homogeneous and plausible, to avoid cueing to the correct option
  - Always review items to identify and remove technical flaws that add irrelevant difficulty or benefit savvy test-takers.
- 

## Step 1

---

- Which common or life threatening or organ threatening concept do I want to test candidates on?
- 

## Step 2

---

- Write the model answer.
- 

## Step 3

---

- Add all possible distracters even if they are more than needed.



## Step 4

---

- Write the instruction.



## Step 5

---

- Add a story containing all the basics.



## Step 6

---

- Insert the "Aha!" statement.



Vignette worksheet	
Patient's age and gender	
Site of care	
Chief complaint/presenting complaint (include nature of onset)	
Duration of symptoms (include changing nature of symptoms)	
Pertinent history (history of present illness (HPI), personal, medications, family)	
Examination findings	
Results of diagnostic studies	
Response to initial treatment	
Lead-in	

Vignette worksheet	
1	Patient's age and gender: A 47-year-old man
2	Site of care Emergency department
3	Chief complaint/presenting complaint (include nature of onset) Shortness of breath, severe chest pain, sweating
4	Duration of symptoms (include changing nature of symptoms) For the past 2 hours
5	Pertinent history (history of present illness (HPI), personal, medications, family) Hypertension treated with hydrochlorothiazide; has smoked one pack of cigarettes daily for 30 years
6	Examination findings Vitals: P 110, R 24, BP 110/50; chest auscultation: grade 3/6 diastolic murmur heard over the LSB with radiation to RSB; femoral pulses decreased bilaterally
7	Results of diagnostic studies ECG shows left ventricular hypertrophy
8	Response to initial treatment Not applicable
9	Lead-in Which of the following is the most likely diagnosis?
10	Option set (include answer)* A. Acute myocardial infarction B. Aortic dissection C. Oesophageal rupture D. Mitral valve prolapse

## Step 7

---

- Check if all distractors are functional.


## Step 8

---

- Check for grammatical flaws.


## Step 9

---

- Do a cover the option test with colleague(s).
- 

### Checklist for Writing Single-Best Answer MCQs


<b>Question as a whole</b> (see <i>Structuring Multiple-Choice Questions</i> and <i>Assessing Application of Knowledge</i> lessons)	
<input type="checkbox"/>	Has a single-best answer format (i.e., single question, multi-question sets, extended matching questions) been used?
<input type="checkbox"/>	Does the question test application of knowledge rather than recall of isolated facts?
<input type="checkbox"/>	Does the question satisfy the "cover the options" rule, so that an answer can be formulated without seeing the options?
<input type="checkbox"/>	Is the question "shapely," with most of the reading in the stem and relatively short options?
<b>Stem</b> (see <i>Structuring Multiple-Choice Questions</i> lesson)	
<input type="checkbox"/>	Is the stem structured as a vignette, describing a specific situation?
<b>Lead-in</b> (see <i>Structuring Multiple-Choice Questions</i> lesson)	
<input type="checkbox"/>	Is the lead-in focused so that it poses a clear question to be solved by the examinee?
<input type="checkbox"/>	Does the phrasing of the lead-in avoid making the vignette irrelevant?
<input type="checkbox"/>	Is the lead-in structured as a complete sentence ending in a question mark?
<input type="checkbox"/>	Is the lead-in phrased positively rather than negatively?
<b>Options</b> (see <i>Structuring Multiple-Choice Questions</i> and <i>MCQ Flaws and How to Avoid Them</i> lessons)	
<input type="checkbox"/>	Can the options be rank ordered on a single dimension from most correct to least correct?
<input type="checkbox"/>	Are the options homogeneous in content and phrasing?
<input type="checkbox"/>	Are the options similar in length and parallel in structure?
<input type="checkbox"/>	Does each option follow grammatically and logically from the lead-in?
<input type="checkbox"/>	Does the correct answer avoid repeating words used in the stem ("clang" clue)?
<input type="checkbox"/>	Are the distractors phrased to avoid repetition that clues the correct answer (convergence)?
<input type="checkbox"/>	Does each option avoid the use of absolute terms, such as "always" and "never"?
<input type="checkbox"/>	Does each option avoid the use of vague frequency terms such as "rarely" and "usually"?
<input type="checkbox"/>	Has the option set been constructed to avoid use of "None of the above" and "All of the above"?



Remember that testing time is a precious commodity. Use it wisely.


## Step 10

---

- Test matrix.
- 

## Step 12

---

- Coding.
- 

## Example


---

Flipped classroom




## List all distractors

---

- a) Blended approach
  - b) Flipped classroom
  - c) Problem based
  - d) Student centred
  - e) Video-enhanced
- 

## Write a story and a lead in

A teacher decided to video his lecture and upload it on Moodle. He asked his students to watch the video at home and discuss, in small groups, a few real-life scenarios in the classroom the following day. Each group then presented, and he facilitated the discussions. What term most appropriately describes this method of learning?

- a) Blended approach
  - b) Flipped classroom
  - c) Problem based
  - d) Student centred
  - e) Video-enhanced
- 


## Example of a question

---

A 25-year-old HIV positive patient presents with cough, night sweats and fever all for two weeks. What is the next most appropriate investigation?

- a. Chest X-Ray
- b. Sputum culture
- c. Sputum GeneXpert
- d. Sputum microscopy

Common/Essential/Easy/Application/70%



## Example of a question

A 25-year-old HIV positive patient is referred from the PHC clinic with cough, night sweats and fever for 2 weeks. His GeneXpert test at the clinic was negative and he was prescribed amoxicillin but has not improved. What is the next most appropriate investigation?

- Chest X-Ray
- Sputum culture
- Sputum line probe assay
- Urine LAM

## Extended Matching Questions

- Decide on a theme eg: diagnosis, investigations, Management i.e. Drug Mx
- Very useful for undifferentiated conditions
- Follows similar format to SBA in terms of vignette and lead-in and options
- Two/Three plausible options per vignette
- Best done in EMQ "writing parties"

1. A small interdisciplinary faculty group responsible for the unit exam draws up a **test "blueprint"** emphasising key goals and objectives. Question counts in the blueprint are not completely determined by lecture "counts"

2. The director of the instructional unit develops **question writing assignments** based on the test blueprint and pool needs and schedules the EMQ party

3. Before the party, "exemplar" questions in needed topic areas are identified; **option lists for EMQ sets are developed**

4. **Orientation** is provided to writers attending party (8 or 16 is best)

5. **Option lists are distributed**

6. **Quartets are formed**; each quartet breaks into two pairs to write stems to assigned option lists on a computer

7. **Pairs within a quartet exchange and review stems**, editing them as necessary on the computer

8. **Quartets exchange stems**, read them aloud, and edit them as necessary on the computer

9. **Approved stems are divided into EMQ sets** (typically 2-4 stems per set) and option lists are refined or customised to include those options that are relevant for each set. There should be at least 3 options that are relevant for each stem included in the set. Alternatively, individual stems can be converted to SBAs with option lists customised to the stems

10. **Approved sets are added to the question bank** for future use

11. The **unit exam is constructed from the bank** according to the test blueprint, and the **draft exam is reviewed** by the faculty group responsible for it, again reading each question aloud and replacing questions as necessary to achieve the desired content coverage

12. **Trainees take the test, submitting "challenges"** at that time; the challenges are considered as a part of the preliminary scoring and key validation process

13. After **flawed questions are identified** and any mis-keys are corrected, the final scoring of the unit exam takes place, and grades are distributed to trainees

14. Question statistics are added to the question bank to aid in future question/test development efforts. (Tests are not returned to trainees, although review may take place under proctored conditions).

Complaints			
Abdominal mass	Diarrhoea	Haematuria	Rash
Abdominal pain	Dizziness	High blood pressure	Sad affect
Ascites	Dysmenorrhoea/ amenorrhoea	Insomnia	Shortness of breath
Back pain	Easy bruising	Jaundice	Syncope
Bizarre behaviour	Failure to thrive	Joint pain	Urinary problems
Breast lump	Fatigue	Limb weakness	Vaginal discharge / pruritis
Chest pain	Fever	Lymphadenopathy	Vaginal bleeding / pain
Confusion	Flank pain	Melaena	Weight gain
Cough	Headache	Nausea and vomiting	Weight loss
Developmental delay	Haematemesis	Palpitations	Wheezing

## Step 14

---

- Review and vetting at most 2-yearly.

---

## Questions

?