

WELCOME TO MEU'S PRESENTATION FOR THE MONTH OF AUGUST '25

Topic: "Assessment Tools for Written Examination "

a] Construction of MCQ

b] Configuration of PBQ

c] Framework of SAQ and SEQ

Participating Disciplines: Department of Nephrology
Department of Biochemistry
Department of Plastic Surgery

Date : 11th August , 2025

Time : 08.00 am

Venue : Medical Education Unit (3rd Floor, College Building, DMC)

All respected Faculties are cordially invited

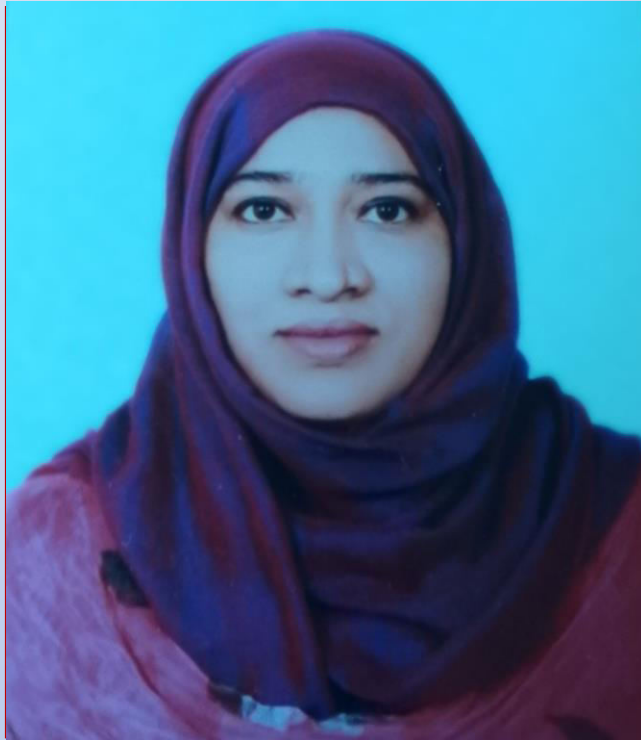
Medical Education unit

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SPEAKERS



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Assessment tools for written examination :Construction of MCQ

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Learning objectives

At the end of the session, participants will be able to

- acknowledge attributes of good assessment
- understand fixed response question: MCQ
- determine the components of MCQ
- describe the types of MCQ
- determine the merits and demerits of MCQ
- understand how to prepare MCQ

Attributes of Good Assessment

- Validity
- Reliability
- Objectivity
- Feasibility
- Impact on the student

Validity

- It refers to the extent to which an assessment measures what it was intended to measure.
- Categories:
 - Content validity: extent to which intended content is measured.
 - Criterion validity: extent to which intended criterion is measured.
 - Construct validity: construct is one's knowledge, intelligence, clinical reasoning, problem solving, skill, communication, attitude. The extent to which an assessment measures the construct that is intended to be measured.

Reliability

- The extent to which an assessment will provide similar results if used repeatedly on same group under same condition.
- Reliability is numerical value.
- Test/retest, different assessment method, split halves, different markers/examiners are the ways to test reliability.
- High reliability does not ensure validity, but higher validity ensures reliability.

Objectivity

- The extent to which an assessment is to produce similar result when it is given by two examiners on same examinee or examinee of similar quality.
- Improve objectivity:
 - Documented answers.
 - Specific answers.
 - Marks distribution is provided.
 - Checklist is provided.
 - Examiners are trained.

Feasibility

- Assessment should be feasible to the teacher and student.
- It should be cost effective.
- Construction of test papers and grading should not be too difficult.

Impact on the students

- Assessment should encourage the students to deep learners and self directed learners.
- It should be avoiding memorization.
- It should enable the students to be confident to use it in real life.

Construction of MCQ

Components of MCQ

Direction

Following each question or incomplete statement is followed by five possible responses. Please select the best correct statement.

A 24 years old woman presented to the physician with culture positive urine.

Stem

How would you label her as asymptomatic bacteriuria

Lead in

- a) $>10^5$ organisms per ml of urine in culture in a healthy individual.
- b) $>10^4$ organisms per ml of urine in culture in a healthy individual.
- c) $>10^3$ organisms per ml of urine in culture in a healthy individual.
- d) $>10^2$ organisms per ml of urine in culture in a healthy individual.
- e) >10 organisms per ml of urine in culture in a healthy individual.

Choices

Item

Key: a

Distractors : bcde

MCQ (multiple choice questions)

It is a written test of fixed response type, in which examinee is asked to select the correct response from a given list of options.

Types

- Single best answer.
- Multiple true false completion.
- Multiple true false.
- Matching type.
- Extended matching type
- Assertion and reason

Single best answer

Following each question or incomplete statement is followed by five possible responses.

Please select the best correct statement.

Q 1. A 10-year-old girl presented with nephrotic syndrome. What is the probable diagnosis?

- a) Focal Segmental Glomerulosclerosis
- b) Systemic Lupus Erythematosus with renal involvement
- c) Minimal Change Diseases
- d) IgA Nephropathy
- e) IgM Nephropathy

Key: c

Multiple true false completion type

The following questions/incomplete statements are followed by five possible responses. State the correct response as TRUE and incorrect statement as FALSE.

Q 1. White cell cast in urine is suggestive of

- a) nephritis
- b) pyelonephritis
- c) renal stone disease.
- d) papillary necrosis.
- e) acute interstitial nephritis

Answer: a) F b) T c) F d) F e) T

Multiple true false type

The following statement is followed by five possible responses, one or more of them are correct.

Answer the question in space using the following key-

1. Only (a) is correct.
2. (a), (c), (d) are correct.
3. (a), (b), (d) are correct.
4. (a), (d), (e) are correct.
5. (a) and (e) are correct.

Q 1. A 23 years old female diagnosed as lupus nephritis class IV on maintenance immunosuppression with AZATHIOPRINE presented with fever-

- a) Fever may be due to lupus flair.
- b) Raised CRP signifies lupus flair.
- c) High titer anti dsDNA signifies lupus flair.
- d) Neutropenia may signify infection in this case.
- e) Beta 2 micro globin may be raised in infection.

Key: 2.

Matching type

The following question contains five incomplete statements that are numbered, followed by five statements that are lettered. Match the numbered statements with the lettered statements to complete the statements as [(number)-letter].

1. In a frequent relapsing case of minimal change disease without steroid toxicity, best treatment option is.
 2. In a patient with minimal change disease with serum albumin less than 2 gm/dl, patient should be put on.
 3. Refractory oedema in minimal change disease should be treated with.
 4. Steroid dependent nephrotic syndrome should be treated with.
 5. The chance of AKI increases with the use of.
-
- a) steroid sparing immunosuppressive agent.
 - b) long course steroid.
 - c) intravenous albumin.
 - d) prophylactic anticoagulant.
 - e) injectable frusemide.

Answer: 1-b. 2-d. 3-c. 4-a. 5-e.

Extended matching type

The following question is stated by a theme followed by five options (numbered) related to the theme. There are three clinical scenarios (lettered). Match the clinical scenario (lettered) with the (numbered) options.

Theme: Immunosuppressive Agent

1. prednisolone
 2. calcineurin inhibitor.
 3. cyclophosphamide.
 4. mycophenolate mofetil.
 5. rituximab.
- a) 12-year-old girl presented with generalized swelling of whole body for the first time. Her urine examination revealed ALBUMIN +++, RBC-NIL, CAST-NIL. Her 24 hours UTP is 6.3 gm/day. ANA is positive and anti ds DNA are positive in high titer. Renal biopsy showed thickening of glomerular basement membrane with full house deposition in immunofluorescence. The preferred immunosuppressive agent is.
- b) 53 year old male with diagnosed membranous nephropathy (idiopathic) presented with progressively rising serum creatinine. The preferred immunosuppressive agent is.
- c) 22-year-old male with biopsy proven IgA nephropathy was treated for 6 months with losartan K and in spite of his controlled blood pressure, his proteinuria remained almost same as baseline which was 8.3 gm/day. The preferred immunosuppressive agent is.

Answer: (a)-4. (b)-3. (c)-1.

Assertion reason type

The following question contain a pair of statements. One of them is assertion followed by a reason.

1.UTI is more common is children.

Because

Children have poorly developed genital.

2.AKI is commonly caused by hypovolemia.

Because

Hypovolemia causes Acute tubular necrosis.

3.DM is the most common cause of CKD.

Because

DM causes reduced glomerular filtration in early stage.

4.Hypertension is commonly associated with minimal change disease.

Because

Hypertension causes no histological change in glomerulus.

5.Lupus nephritis should be suspected in nephritic presentation even in young girl.

Because

SLE may occur even in pediatric population.

Answer the question using following key.

a)Both assertion and reason are true as well as explanation is true.

b)Assertion is false but reason statement is true.

c)Assertion is true but reason is false

d)Both assertion and reason are true but explanation is not correct.

e)Both assertion and reason are false as well as explanation is false.

Answer: 1-b. 2-a. 3-c. 4-e. 5-a.

Merits and demerits of MCQ

Traits	Merits	Demerits
Content coverage	Large content can be covered.	Mostly address recall domain, rarely interpretation.
Validity	Very good	
Reliability	Very good	
Objectivity	Very good.	
Feasibility	Marking is easy.	Difficult to construct question and responses.
Organizing, expression and writing capacity		Cannot be tested.
Impact on students		Students can guess.

Guideline for construction of MCQ

- A MCQ question should focus on a learning objective of an important topic, which would assess something that a participant need to remember without using reference.
- The stem should be written in simple language, concise but providing necessary information. The grammar used in the question should be consistent with the type of MCQ and the choices. The answer to the MCQ stem should be in the mind of the examinee just after reading it.

Guideline for construction of MCQ

- Choices that are provided should be plausible.
- The MCQ should be constructed immediately after the learning lesson and it should be consulted with other faculty members regarding the correctness.
- The whole test paper should be looked into for any duplication or whether information provided in one item will give clue to another item.

Evaluation of MCQ

- Test paper analysis:
 - Whether time was adequate: if more than 5% students comment that time was not adequate, it is needed to be looked into.
 - Number of students attempting each question: if a question is attempted by less than 5% students it needs to be modified.
 - Differentiation of the students: the standard deviation of mean should fall within 10 percent of best possible marks.
 - Average performance: average performance of the test with 4 options should be 50-70 and with 5 options 45 in single best answer.

Thank you