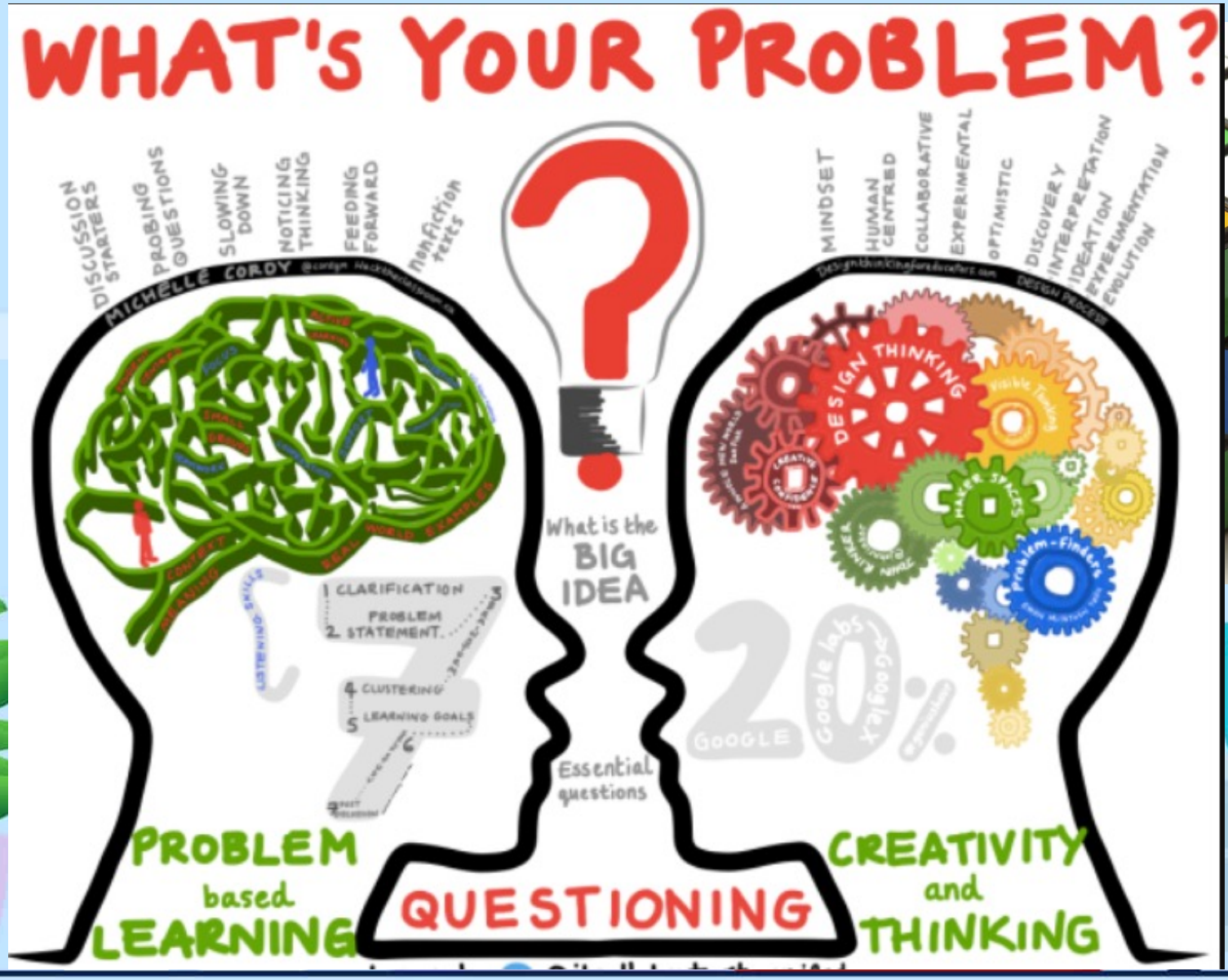
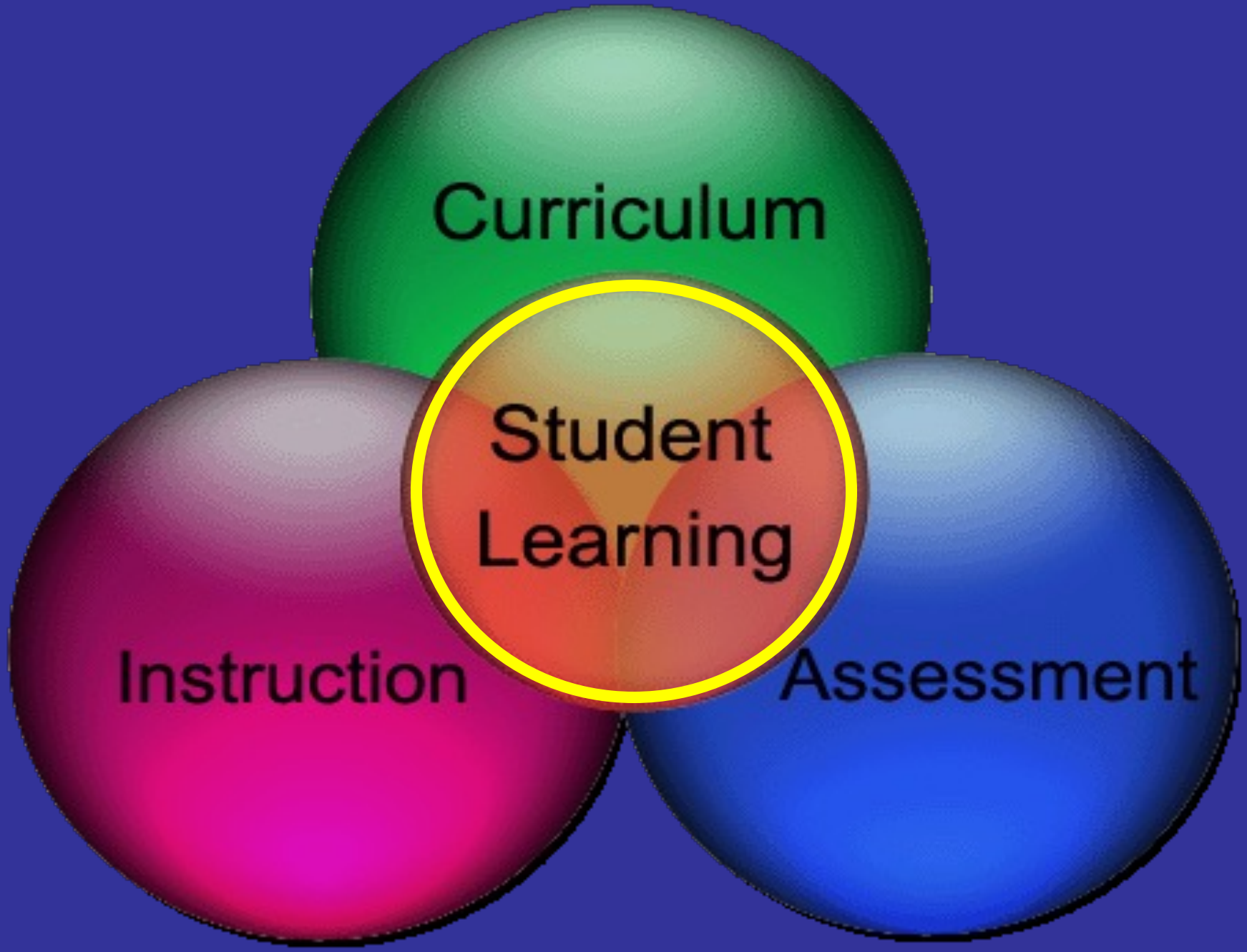

WHAT'S YOUR PROBLEM?
DISCUSSION STARTERS
PROBING QUESTIONS
SLOWING DOWN
NOTICING THINKING
FEEDING FORWARD
nonfiction texts
MICHELLE CORDY
MINDSET
HUMAN CENTRED
COLLABORATIVE
EXPERIMENTAL
OPTIMISTIC
DISCOVERY
INTERPRETATION
IDEATION
EXPERIMENTATION
EVOLUTION
What is the BIG IDEA
1 CLARIFICATION
PROBLEM
2 STATEMENT.
4 CLUSTERING
5 LEARNING GOALS
DESIGN THINKING
Essential questions
PROBLEM based LEARNING
QUESTIONING
CREATIVITY and THINKING

Problem Based Question in Biochemistry

Prof. Shamima Parvin
Head, Department of Biochemistry
Ad-din Women's Medical College, Dhaka

Objectives of the session

- Learned audience will be able to–
  - Identify the basic information of PBQ
  - Prepare guideline for PBQ construction
  - Prepare checklist for Constructing/Moderating PBQ
  - Construct ideal PBQ


Curriculum
Student
Learning
Instruction
Assessment

Assessment

Or

Exam

...is the

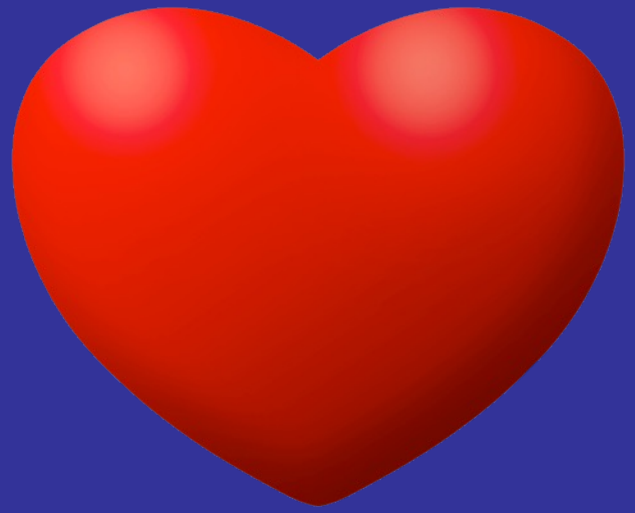
engine

which drives

student learning

(John Cowan)

Curriculum: Importance



The heart of
Any program/course

The curriculum instructs teachers what to *teach*;

The exam instructs students what to *learn*.

Donald Melnick, 1991

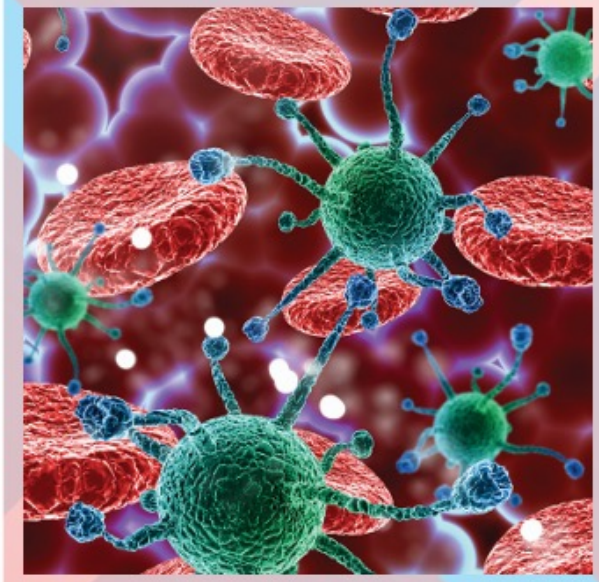
Bachelor of Medicine & Bachelor of Surgery (MBBS) Curriculum in Bangladesh

Bangladesh Medical & Dental Council (BM&DC)
203, Shaheed Sayed Nazrul Islam Sarani (86, Bijoy Nagar), Dhaka-1000
www.bmdc.org.bd

December-2021

Operational Manual of MBBS Curriculum 2021

Subject: Biochemistry



Developed By-
Directorate General of Medical Education (DGME)
Mohakhali, Dhaka-1213

- There will be two groups in each paper, group A and group B.
- There will be seven questions in each group.
- In Group A:
  Q. No.1-5: each carrying 5 marks are SAQ type of which 4 to be answered
  Q. No. 6: problem based question (PBL) of SAQ type carrying 5 marks (mandatory)
  Q. No. 7: (with or without an alternate) carrying 10 marks is SEQ type (mandatory)

- In Group B:
  Q. No.8-12: each carrying 5 marks are SAQ type of which 4 to be answered
  Q. No. 13: problem based question (PBL) of SAQ type carrying 5 marks (mandatory)
  Q. No. 14: (with an alternate) carrying 10 marks is SEQ type (mandatory)

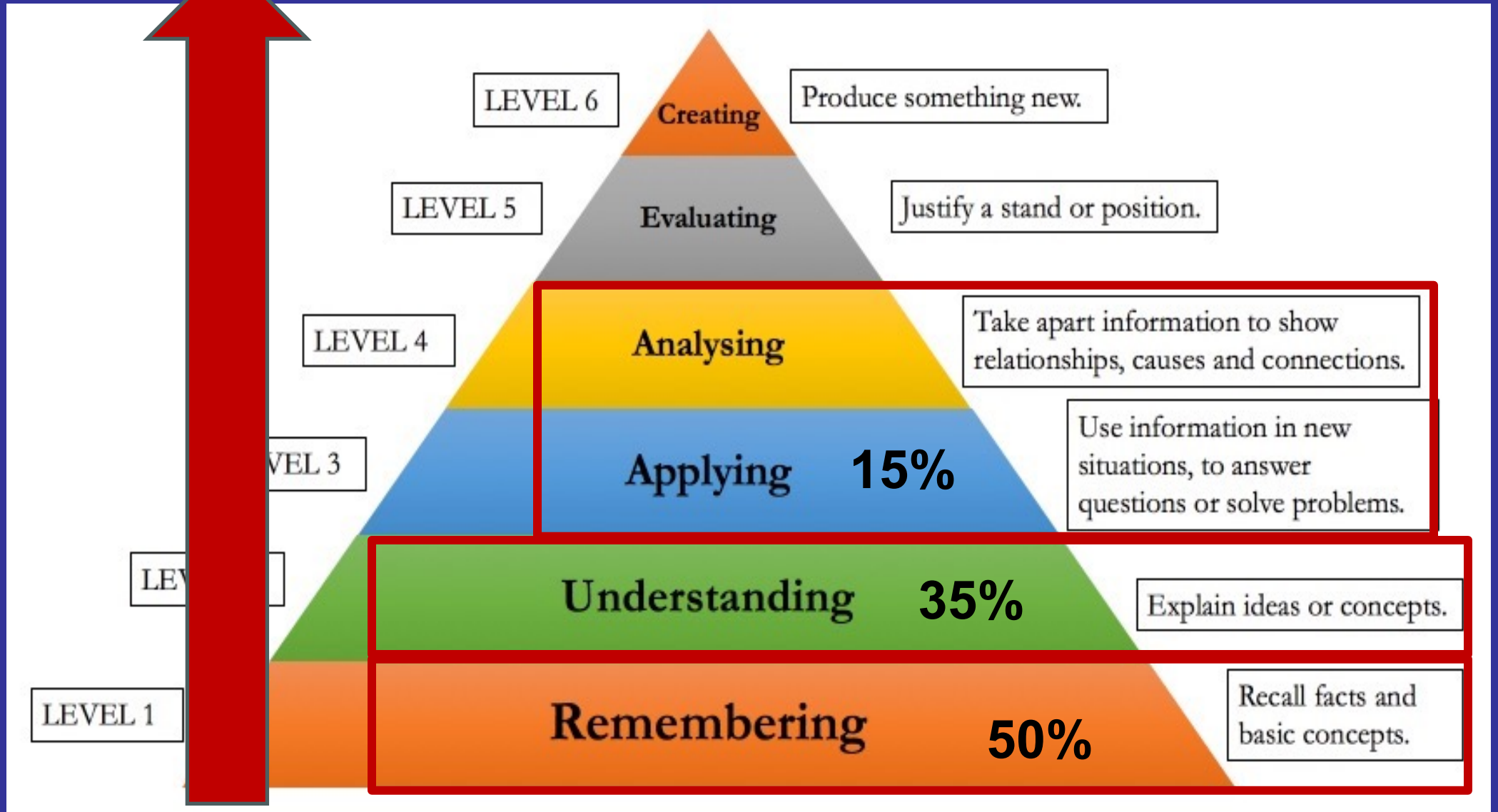
Allocation of time for SAQ +SEQ is two (2) hours and thirty (30) minutes.

- The question may have stems but it is not mandatory to have stems in all questions.
- The students will use separate answer script for each group.

Type of Questions

- Recall type – 50%
- Understanding type – 35%
- Problem based / Analytical type – 15%

Bloom's Taxonomy



Level of cognitive domain

Phase 4

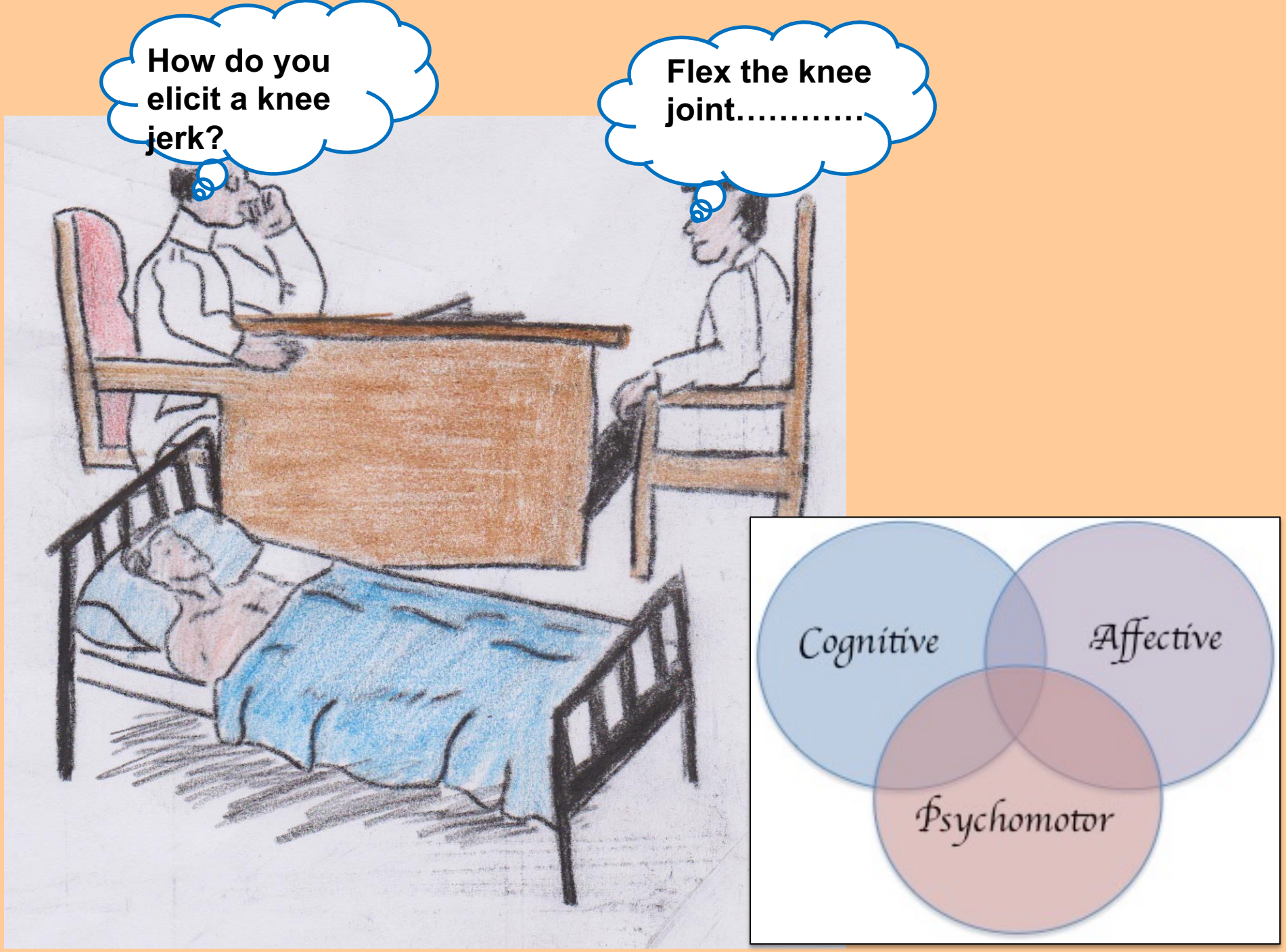
Phase 3

Phase 2

Phase 1

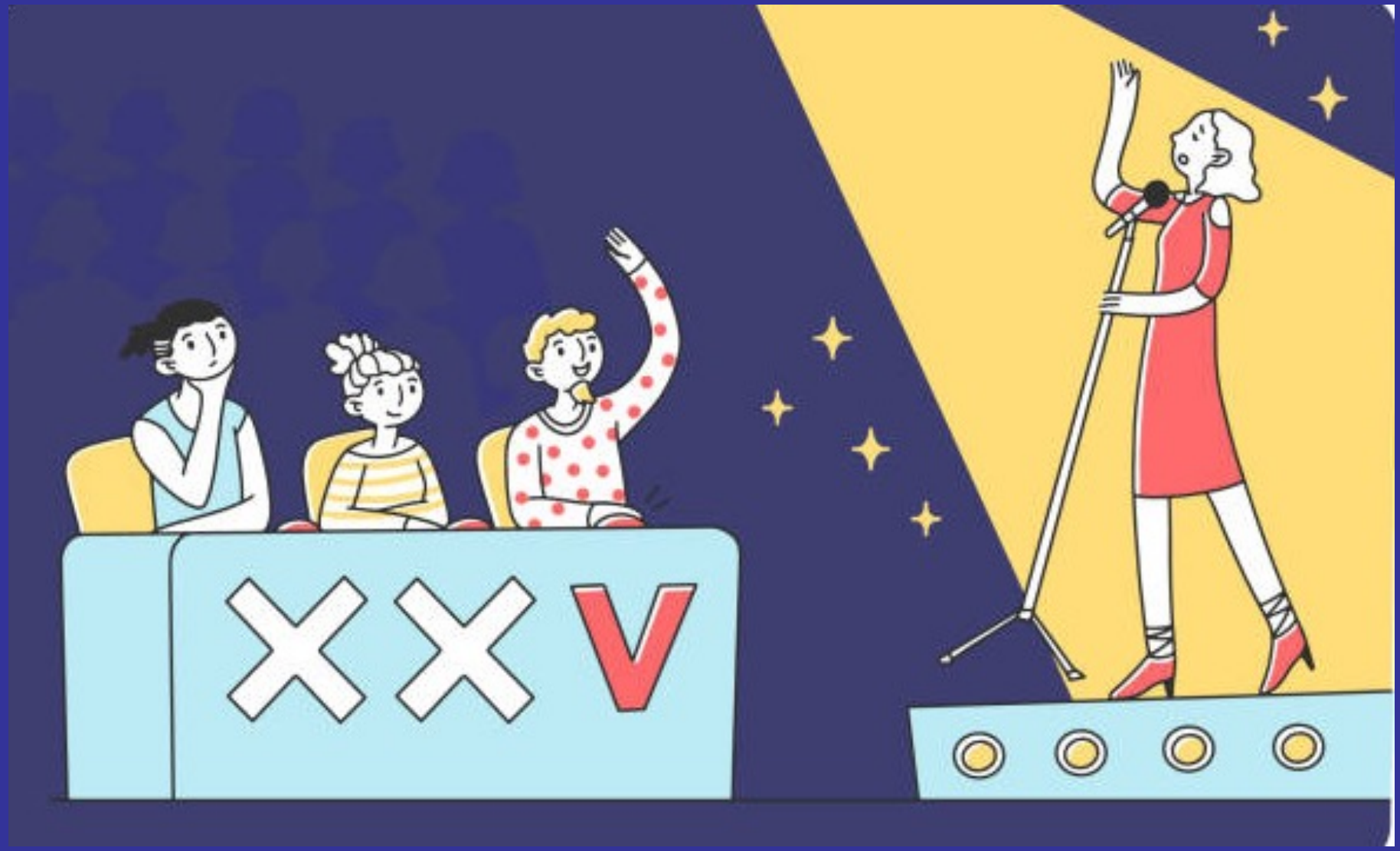
Criteria of a good assessment

- Validity
- Reliability
- Objectivity
- Feasibility


How do you elicit a knee jerk?
Flex the knee joint……
Cognitive
Affective
Psychomotor

Reliability vs Validity

Subjectivity



Objectivity

Draft Guideline on construction of Problem based question (PBQ)

General

- Should be relevant to the learning objectives
- Must have validity, reliability & objectivity
- Encompass common and important topics (core content)

Scenario/statement

- Contain the clues/hints that compels the examinee to read the scenario while answering
- Correct & adequate information
- Avoid irrelevant information
- Contain storyline with realistic sequence

Scenario/statement

- grammatically sound
- within thirty to sixty words
- stated with proper information

  (eg. Age, gender, socioeconomic status, location such as emergency, OPD, ward of a hospital, biochemistry laboratory, tutorial room, or others which is relevant)

Scenario/statement

- Can be depicted in different sets of circumstances, such as
  - ✓Clinical problem
  - ✓Problem/event related to lab findings
  - ✓findings related to radiology and imaging
  - ✓Clinical problem/condition related to genetics
  - ✓Problem/methods related to lab procedure
  - ✓Others

Question

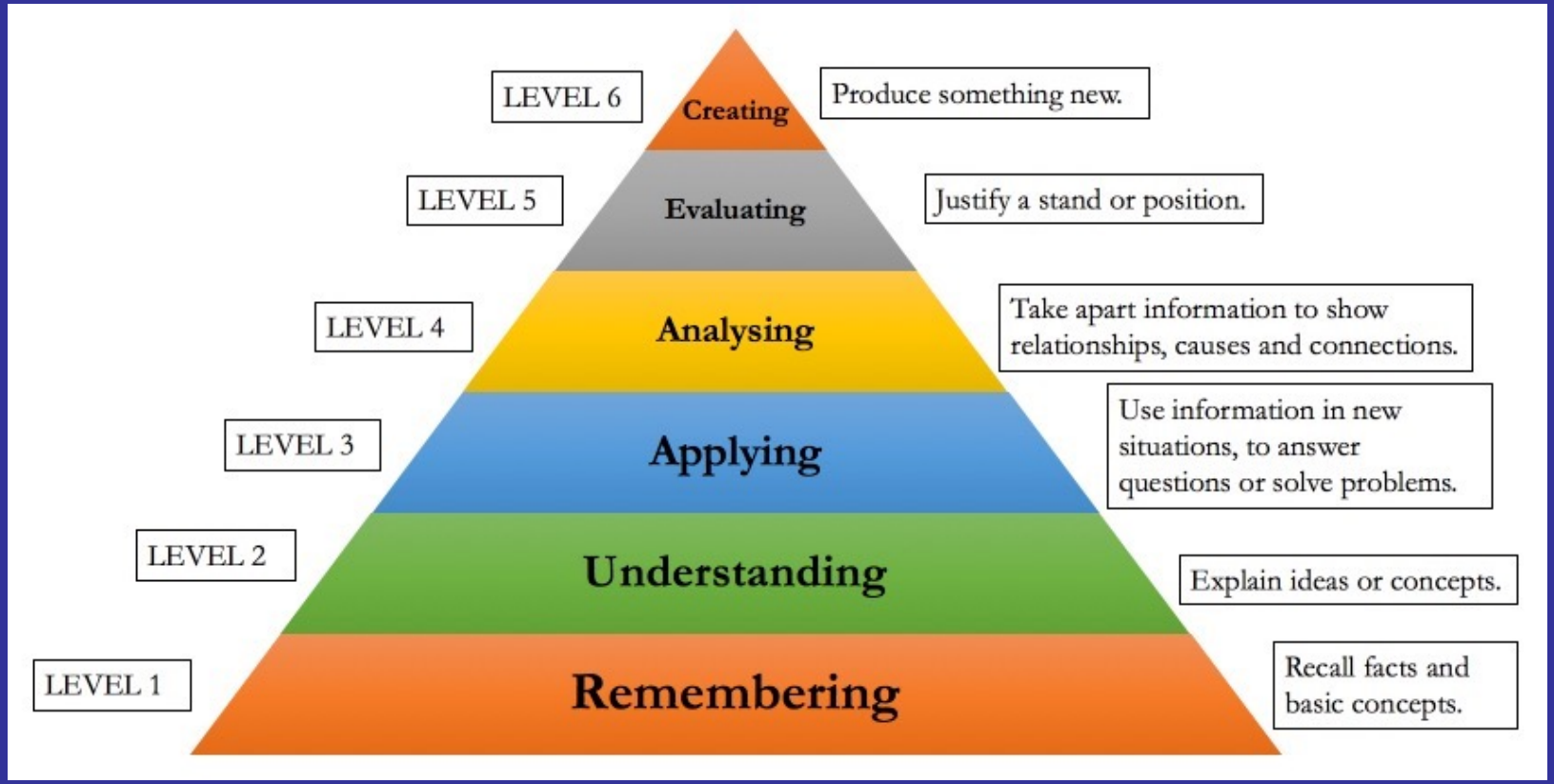
- ✓ SAQ (Short answer question) pattern-2/3/4
- ✓ valid, reliable & objective
- ✓ avoid the question that directs the recall answer
- ✓ address higher levels of cognitive domain

Question

- Demands taking help from the scenario
- One question should not inquire multiple answer
  - should be branched
  - answer to the 1st asked question determines answer to the subsequent questions.

Mark distribution

- Have justified & structured marks allotment



Answer key

- Constructing the correct & specific answer key to the question is **MANDATORY**

University of Dhaka
First Professional MBBS Examination of May 2024 (New Curriculum)
Subject: Biochemistry Paper-I
Short Answer Question (SAQ) & Structural Essay Question (SEQ)

Full Marks: 70 Time: 2 hours 30 minutes

Group-A: Answer any four questions from question no.1-5 and question no. 6 & 7 must be answered.
Group-B: Answer any four questions from question no.8-12 and question no. 13&14 must be answered.
Use a separate answer script for each group.

GROUP- A

Q.No.1.	a)	Define P^H and buffer? Deduce Henderson Hassel batch equation using law of mass	3
	b)	Action. Why bicarbonate buffer is called the most important to maintain blood P^H?	2
Q.No.2.	a)	Define and classify carbohydrate with example.	3
	b)	Give the biomedical importance of glucose and ribose	2
Q.No.3.	a)	What do you mean by polypeptide and protein? How peptide bond is formed.	2
	b)	Mention different levels of structural organization of protein	3
Q.No.4.	a)	Name the hazards in a biochemistry laboratory. What is biohazard	3
	b)	How biohazard can be prevented?	2
Q.No.5.	a)	Define and classify lipids. What is simple lipid?	2
	b)	Mention the biomedical importance of Ecosanoid.	3
Q.No.6.		55 years old obese women having diabetes mellitus is presented to a physician with high blood pressure, high total plasma cholesterol level and elevated LDL_C.	
	a)	Is there any risk of developing atherosclerosis? If so for which of the abnormality mentioned above.	2
	b)	Mention the steps of metabolism of LDLc.	3
Q.No.7.		Enzymes are usually protein in nature, we state usually as there are example of enzyme which are not protein. They only accelerate the rate of reaction and are not used in the process .Some enzymes require co-factor for their activity some do not. Some are tightly incorporated into protein by covalent or non-covalent force some are not. There are various factors that affect enzyme activity.	
	a)	Give an example of an enzyme which is unusual in that which is not a protein.	1
	b)	Classify enzymes with one example of each.	3
	c)	Describe effect of temperature and P^H on enzyme activity.	2
	d)	Define co-enzyme & co-factor with example.	4


Self-
Assessment

Q No.6

- 55 years old obese women having diabetes mellitus is presented to a physician with high blood pressure, high total plasma cholesterol level and elevated LDLc.
  a) Is there any risk of developing atherosclerosis? If so for which of the abnormality mentioned above.
  b) Mention the steps of metabolism of LDL cholesterol.

Q No.6

Question b) can be answered without reading scenario

a) Is there any risk of developing atherosclerosis? If so for which of the abnormality mentioned above.

b) Mention the steps of metabolism of LDL cholesterol.

GROUP-B

Q.No.8.	a)	Name the digestive juices with their P^H values.	3
	b)	Discuss about carbohydrate digestion and absorption.	2
Q.No.9.	a)	Enumerate the lipoproteins with their site of origin	2
	b)	Show the urea cycle with diagram	3
Q.No.10.	a)	Why TCA cycle is called an amphibolic pathway?	3
	b)	What is gluconeogenesis? Mention its biomedical importance.	2
Q.No.11.	a)	Define transamination and oxidative deamination with examples.	3
	b)	Write the sources and fates of acetyl coA in our body.	2
Q.No.12.	a)	Name the ketone bodies .How they are synthesis in the body?	2
	b)	Why does ketoacidosis occur in uncontrolled diabetes mellitus?	3

Q.No.13. A 4 year old child was brought to a doctor with complaints of abdominal pain and cramps, diarrhea and flatulence which was aggravated after taking milk and milk products

	a)	What is the probable diagnosis of this condition?	2
	b)	What is the biochemical defect and explain the mechanism of causing diarrhea in this child.	3

Q.No.14. Diabetes mellitus (DM) is the commonest endocrine disorder characterized by an elevated blood glucose level caused by a relative or absolute deficiency in insulin.

	a)	Write down the important differences between type I & type II DM.	2
	b)	How will you diagnose a patient of DM according to WHO?	2
	c)	Mention the procedure and diagnostic interpretation of OGTT.	3
	d)	Briefly discuss the biochemical basis of dyslipidemia in DM.	3

Q. No 13

Following questions can not be answered without reading scenario

a) What is the probable diagnosis of this condition?

b) What is the biochemical defect and explain the mechanism of causing diarrhea in this child.

PBQ-1

- A young man came to OPD complaining of bloating and diarrhea. His eyes were sunken with signs of dehydration. He had a history of taking a huge amount of ice cream on the night before starting diarrhea. He had a history of repeated diarrhea after ingestion of milk/milk products.

  a) What is the name of this condition? (1)

  b) Which enzyme deficiency might be the cause of this clinical picture? (1)

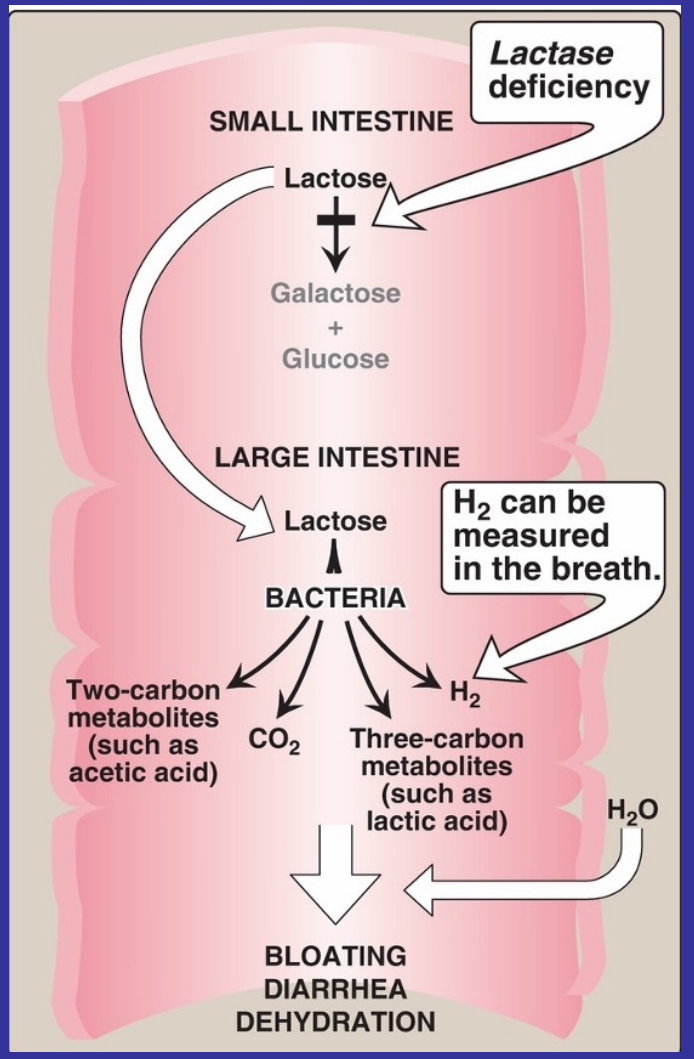
  c) Explain the biochemical basis of diarrhea in this condition with a diagram (3)

PBQ-1 answer key

a) lactose intolerance

b) lactase enzyme deficiency

c) Diagram/flowchart



PBQ-2

- A 55-years-old woman was admitted to the hospital with weakness, anorexia & peripheral neuropathy. On examination anemia was found. On investigation the peripheral blood film shows large immature RBC.

  a) What type of anemia the women is suffering from? (1)

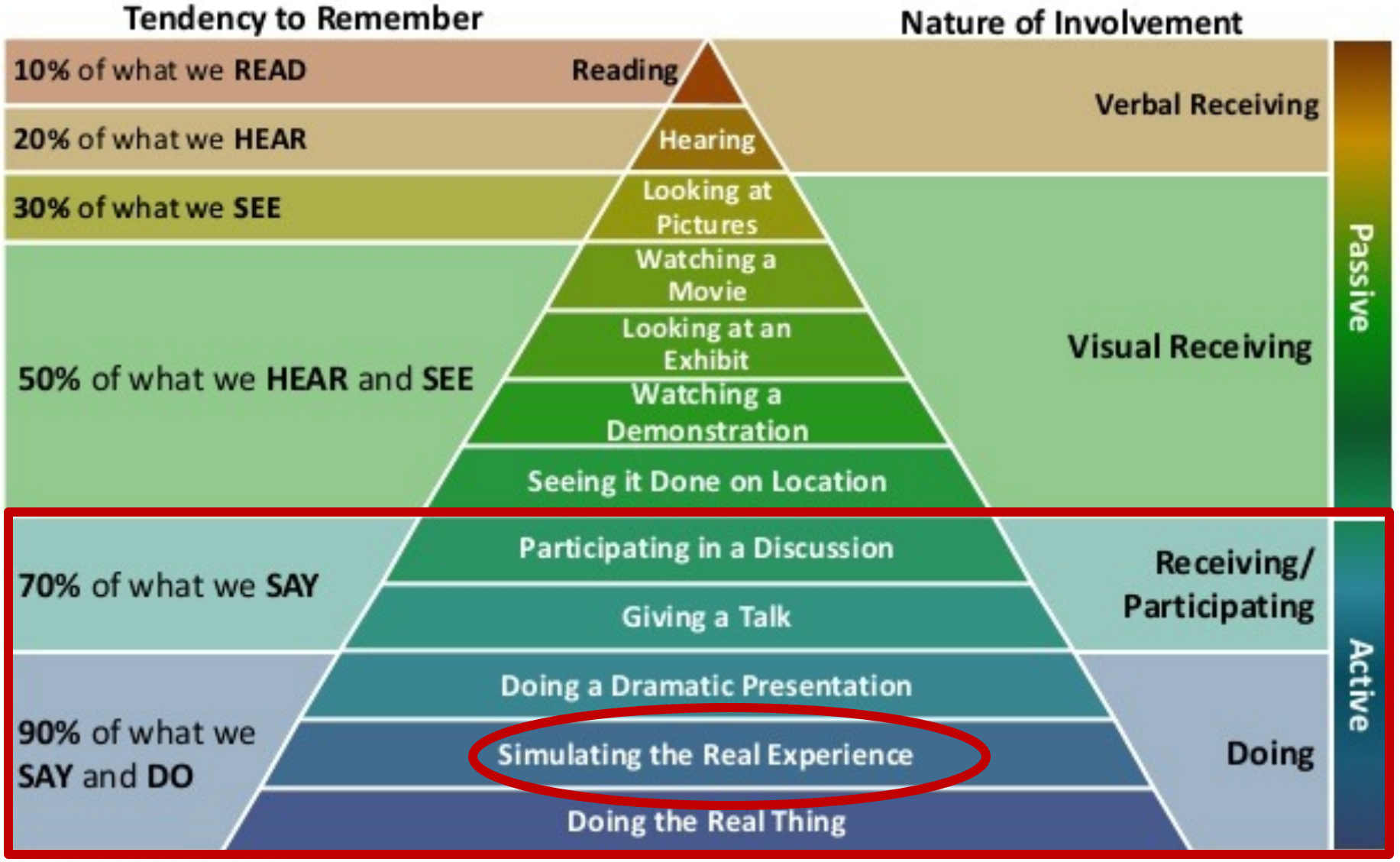
  b) Which vitamin deficiency is responsible for this? (1)

  c) Name the active form of that vitamin (1)

  d) Explain the biochemical basis of developing anemia here (2)

Dale Edgar's Cone of Learning

"I see and I forget.
I hear and I remember.
I do and I understand."
– *Confucius*



Infographic published by Neil Beyersdorf
linkedin.com/in/neilbeyersdorf

"Seeing is believing, doing is knowing." – *Neil Beyersdorf*

- **“To change curriculum or instructional methods without changing assessments would achieve nothing”**

- **“Changing the assessment system without changing the curriculum had a much more profound impact upon the nature of learning”**

— G. E. Miller

Why does a student prefer guidebook than textbook?...

Take home message

Think About It

References

- Assessment in medical education: Evolving perspectives and contemporary trends by Rita Sood & Tejinder Singh.
- Essentials of medical education by Adhikari & Jayawickramarajah
- Essential skills for a medical teacher by Harden and Laidlaw,
- Concepts of medical education by Tahmina Begum
- Guideline provided by DGME
- online resource materials

Group work

- Preparation of guideline for PBQ construction
- Preparation of checklist for PBQ construction
- Construction of the ideal PBQ