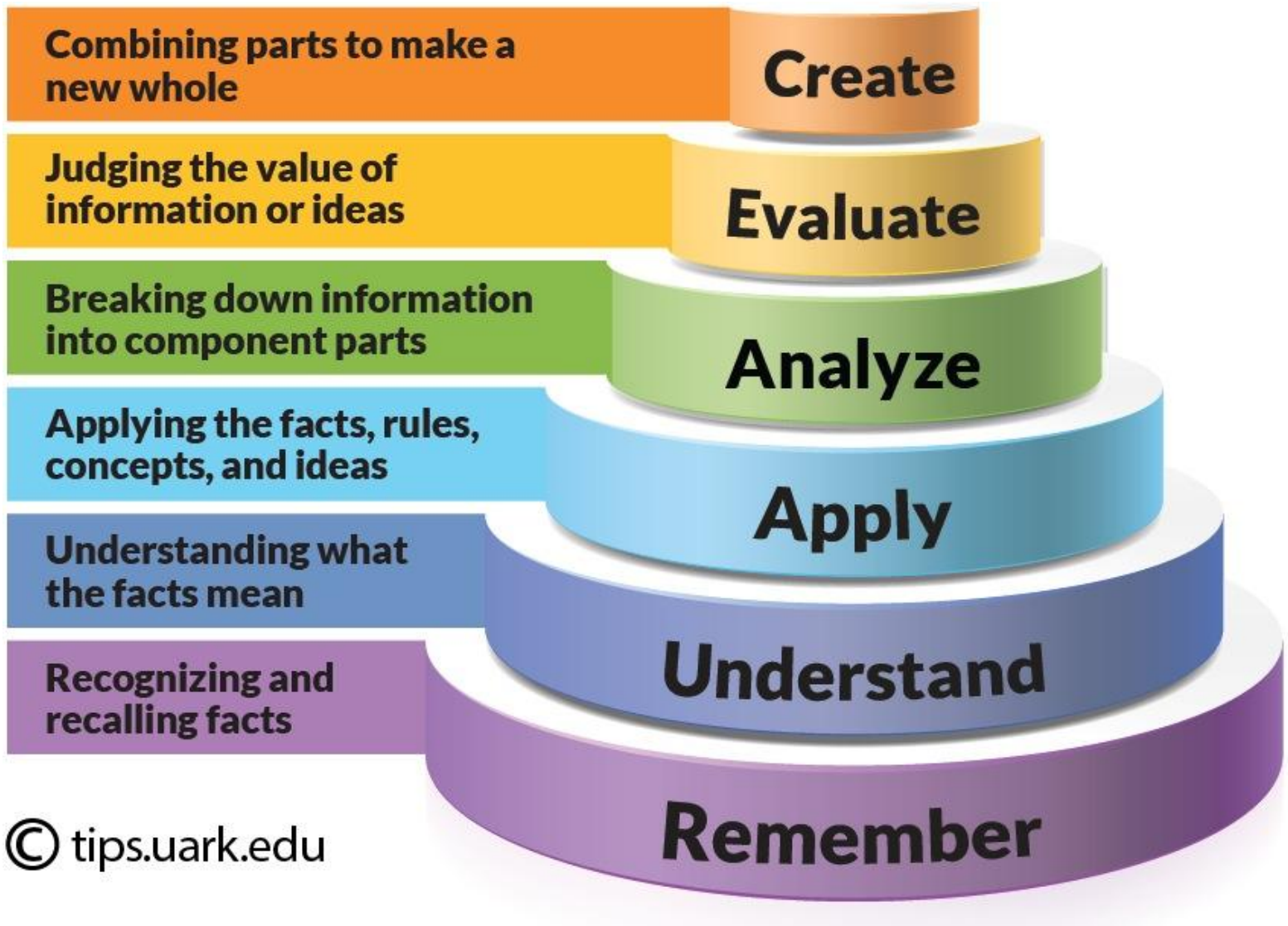
Question Preparation using Bloom's Taxonomy with CLO Mapping

Professor Dr Md Kamrul Islam
Dept. of Genetic Engineering & Biotechnology
Shahjalal University of Science & Technology
Sylhet-3114

Align Questions with Course Learning Outcomes

- Tips for aligning questions with specific course learning outcomes (CO/CLO)
- Preparing ‘Table of Specification (ToS)’
- Related activities

Bloom's Taxonomy



Crafting CO-Based Questions: Use of Bloom's Taxonomy (Tips)

Remembering	• Memorize and repeat facts, replicate known procedures or recall facts and basic concept. • define, duplicate, list, identify, repeat, label, name, state, calculate.
Understanding	• Demonstrate understanding of concepts • explain, describe, discuss, paraphrase, interpret, classify, summarize, report.
Applying	• Use existing knowledge or information to new situations and problems • solve, calculate, determine, implement, execute, use, demonstrate, schedule, sketch.

Crafting CO-Based Questions: Use of Bloom's Taxonomy (Tips)

Analyzing	• Explore relationships, causes and connections among ideas/elements of a system. • differentiate, distinguish, organize, relate, explain, compare, contrast, examine, test, predict, model, interpret.
Evaluating	• Making judgments based on a set criteria and standards/a sound analysis or Justify a stand or decision • Assess, appraise, judge, choose, defend, prioritize, rate, critique, recommend, argue.
Creating	• Use existing information to make something new or • Produce new or original work • design, develop, plan, formulate, compose, generate, construct, assemble, investigate.

Keep in mind that an action verb at the beginning of a question is not a reliable indicator of level of Bloom's Taxonomy.

Aligning Questions with COs: Use of Bloom's Taxonomy

Keep in mind that using an action verb in a question does not necessarily relate to the specified level of Bloom's Taxonomy.

- For an example:
  - **Explain** the chemical reaction mechanism. (Understanding)
  - **Explain** how changes in the concentration of reactants affects the reaction rate. (Analyzing)

- For an example:
  - **Calculate** the simple interest on a loan using the formula. (Remembering)
  - **Calculate** the elasticity of demand for a product based on changes in price and quantity. (Applying)

CO Attainment Assessment: TOS

IQAC

Table of Specification (TOS) for the Summative and Continuous Assessment (Semester Final Exam)

Questions			Bloom's levels of Cognition					
Q. No.	Marks	CLO No	Remember	Understand	Apply	Analyze	Evaluate	Create
1(a)								
1(b)								
1(c)								
.....								
.....								
2(a)								
2(b)								
2(c)								
.....								
.....								
3(a)								
3(b)								
3(c)								
.....								
.....								
4(a)								
4(b)								
4(c)								
.....								
.....								
Total Marks								
Total % in each level								
% Marks in Major levels								

Crafting CO-Based Questions: Example

IPE 07153241: MANUFACTURING PROCESSES-II

Credit: 3.0

COURSE CONTENT

Bulk deformation processes: Forging; open, close, coining, Extrusion; Hot and cold extrusion process; Rolling; Sheet metal working: Shearing and forming, Bending, Bulging, Explosive forming; Non-traditional machining process: Electro-discharge, electrochemical, LASER beam, electron beam, and abrasive jet machining; Nonconventional joining processes: LASER, Electron Beam, Submerged Arc welding; Plastic products manufacturing processes: Injection molding, compression molding, blow molding, vacuum forming and hand lay-up.

COURSE LEARNING OUTCOMES

- CO1: Describe the working principles and mechanisms involved in various manufacturing processes, including bulk deformation, sheet metal forming, nonconventional machining and joining, and plastic product manufacturing.
- CO2: Differentiate one method from others within a specific family of manufacturing processes, including bulk deformation, sheet metal forming, nonconventional machining and joining, and plastic product manufacturing.
- CO3: Apply the engineering knowledge to solve real-life problems related to various metal forming, nonconventional machining and joining processes.
- CO4: Evaluate the usefulness of various metal forming, nonconventional machining, and joining processes in manufacturing.
- CO5: Plan a sequence of operations appropriate for fabricating a desired part/product.

Crafting CO-Based Questions: Example

IPE 07153241: MANUFACTURING PROCESSES-II Credit: 3.0

1(a)	Briefly describe the characteristics of the hot working process.	CO1	(1.5)
1(b)	With a neat sketch, explain the phenomenon of recrystallization during hot working.	CO1	(1.5)
1(c)	With a neat sketch, describe how the hydrostatic extrusion process works.	CO1	(2)
1(d)	How does the hydrostatic extrusion process differ from the direct extrusion process? Or Differentiate between hydrostatic and direct extrusion processes.	CO2	(1.5)
1(e)	Suppose, to make a starting stock for other process, AA-1100 aluminum 10cm billets need to be cold extruded to a round bar of 5cm diameter. (i) if the original length of the billet is 500mm, calculate the extrusion force necessary. (ii) If the extrusion ram of the press of part (i) is made of a high strength tool steel with a yield strength of $\sigma_{0.2}$ = 1000 MPa, would it be possible to extrude the 10cm billet to a 5cm diameter bar without deforming the ram? Justify your answer. Given that AA-1100 aluminum's strength constant, K = 140 MPa and strain hardening exponent, n = 0.25	CO3	(3.5)

Crafting CO-Based Questions: Example

IPE 07153241: MANUFACTURING PROCESSES-II Credit: 3.0

2(a)	XYZ Manufacturing Corporation, a leader in industrial metal components, aims to expand its product line with high-quality washers from sheet metal. As a process design consultant, you are assigned to assist production engineers in establishing an efficient washer production line. In this context, develop a plan for the washer production outlining the sequence of operations with clear sketches.	CO5	(4)
2(b)	Using neat sketches, briefly discuss the phases involved in sheet metal cutting within the blanking and punching processes.	CO1	(3)
2(c)	A compound die is used to blank and punch a large washer out of soft brass sheet stock 3.0 mm thick. The outside diameter of the washer is 25.0 mm, and the inside diameter is 12.0 mm. Determine the punch and die sizes for (i) the blanking operation, and (ii) the punching operation. Given that clearance allowance is 7% of the stock thickness for the soft brass.	CO3	(3)

Crafting CO-Based Questions: Example

IPE 07153241: MANUFACTURING PROCESSES-II Credit: 3.0

3(a)	Distinguish between laser beam welding (LBM) and electron beam welding.	CO2	(1.5)
3(b)	Describe the working principle of electron beam machining, complemented by a well-drawn schematic.	CO1	(2.5)
3(c)	Suppose a company intends to join two complex-shaped aerospace-grade titanium alloy components for a critical aircraft structure. The company has two options for joining the aforementioned parts: laser beam welding and electron beam welding. As a production-in-charge, which process do you think is more useful in making the stated weld joint? Justify your answer.	CO4	(3)
3(d)	If a company aims to enter the beverage packaging industry by producing a two-piece aluminum beverage can, as the production-in-charge, create a production plan detailing the required metal-forming operations and their sequences. Include clear sketches.	CO5	(3)

Preparing a Table of Specifications (TOS): Sem. Final Exam

IPE 07153241: MANUFACTURING PROCESSES-II Credit: 3.0

QUESTIONS			BLOOM'S LEVELS OF CONGNITION					
Question Number	**Marks Assigned**	**Related CO Number**	**Remember**	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
1(a)	1.5	CO1		1.5				
1(b)	1.5	CO1		1.5				
1(c)	2	C01		2				
1(d)	1.5	C02				1.5		
1(e)	3.5	C03			3.5			
2(a)	4	CO5						4
2(b)	3	CO1		3				
2(c)	3	CO3			3			

Preparing a Table of Specifications (TOS): Sem. Final Exam

IPE 07153241: MANUFACTURING PROCESSES-II Credit: 3.0

QUESTIONS			BLOOM'S LEVELS OF CONGNITION					
Question Number	**Marks Assigned**	**Related CO Number**	**Remember**	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
3(a)	1.5	CO2				1.5		
3(b)	2.5	CO1		2.5				
3(c)	3	CO4					6	
3(d)	3	CO5						6
TOTAL MARKS	30			10.5	6.5	3	3	7
TOTAL % IN EACH LEVEL				35%	21.7%	10%	10%	23.3%
% MARKS IN MAJOR LEVELS								

[(10.5/30)×100]

BASIC LEVEL COURSE

LOWER INTERMEDIATE LEVEL COURSE

UPPER INTERMEDIATE LEVEL COURSE

ADVANCED LEVEL COURSE

Preparing a Table of Specifications (TOS): Sem. Final Exam

IPE 07153241: MANUFACTURING PROCESSES-II Credit: 3.0

QUESTIONS			BLOOM'S LEVELS OF CONGNITION					
Question Number	**Marks Assigned**	**Related CO Number**	**Remember**	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
3(a)	1.5	CO2				1.5		
3(b)	2.5	CO1		2.5				
3(c)	3	CO4					6	
3(d)	3	CO5						6
TOTAL MARKS	30			10.5	6.5	3	3	7
TOTAL % IN EACH LEVEL				35%	21.7%	10%	10%	23.3%
% MARKS IN MAJOR LEVELS								

[(10.5/30)×100]

FIRST YEAR SECOND YEAR THIRD YEAR FOURTH YEAR

Aligning Questions with Course Learning Outcomes

Tips for aligning questions with COs

1. A question paper prepared for the semester-end exam should **cover all** course learning outcomes unless **specified** in the curriculum that certain learning outcomes will be assessed **exclusively** in mid-semester exams.
2. A question can have either **no** sub-questions or **multiple** sub-questions
3. **Each** question or **each** of its sub-questions must align with **only** one of the learning outcomes.
4. Not **all** sub-questions of a question **need** to be **aligned** with the same learning outcome.
5. A **single** question or a **single** sub-question of a question should **not cover** multiple Bloom's Taxonomy level.
6. The serial number, question number, assigned marks, related course learning outcome (CO), and Bloom's level of the questions **must match** in both the main question and the corresponding alternative question (in cases where a question consists of multiple sub-questions).

Use Bloom's Taxonomy as a tool for crafting questions.

কোর্সের শিরোনাম: **আধুনিক বাংলা কবিতা-১**

Course Content: & Course Learning Outcomes (COs) :

	Course Content:	CLOs
১.	ঈশ্বরচন্দ্রগুপ্ত: উনিশশতকে বাঙালির সমাজমনস্কতা ও জাগরণ, আধুনিকতার সংজ্ঞা, আধুনিক বাংলা কবিতার গতিপ্রকৃতি, সাহিত্যক্ষেত্রে সংবাদপত্রের ভূমিকা।	CO1: আধুনিক বাংলা কবিতার উদ্ভব ও বিকাশ সম্পর্কে জানতে পারবে।
২.	মাইকেল মধুসুদন দত্ত : উনিশশতকে বাঙালির সমাজমনস্কতা ও জাগরণ, দেশাত্ববোধ, মহাকাব্য, সনেট, অমিত্রাক্ষর ছন্দ।	CO2: আধুনিক বাংলা কবিতার প্রবণতা বিশেষত্ব সম্পর্কে জানতে পারবে।
৩.	বিহারীলাল চক্রবর্তী : গীতি কবিতার ধরন-প্রকৃতি, বাংলা গীতিকবিতা, বাংলা গীতিকবিতায় বিহারীলালের অবদান।	CO3: আধুনিক বাংলা কবিতার রূপকল্প ও রসকল্প সম্পর্কে জ্ঞান অর্জন করবে।
৪.	সত্যেন্দ্রনাথ দত্ত : বাংলা কবিতায় ফারসি প্রভাব, সমৃদ্ধ ভাষা থেকে বাংলায় অনুবাদ, মানবতাবাদ, ছন্দ-অলংকার ।	CO4: আধুনিক বাংলা কবিতার শিল্পতত্ত্ব ও নতুন শিল্পরীতি বিষয়ে জ্ঞান লাভ করবে।
৫.	কবি চতুষ্টয়ের সমাজভাবনা, জীবনবোধ।	CO5: কবিতা কীভাবে আধুনিক সমাজ ও জীবনবোধের ক্ষেত্রে ভূমিকা পালন করে সে সম্পর্কে জানতে পারবে।

বাংলা বিভাগ

দ্বিতীয় বর্ষ প্রথম সেমিস্টার (২০২৩-২০২৪) পরীক্ষা-২০২৫

কোর্স নং : BNG-02322102, কোর্স শিরোনাম : আধুনিক বাংলা কবিতা-১

ক্রেডিট : ০৩, সময় : ০৩ ঘণ্টা, পূর্ণমান : ৬০

[ডানপাশে উল্লেখিত সংখ্যা প্রশ্নের পূর্ণমান জ্ঞাপক।]

১। ক) 'এত বড় প্রতিভা ইয়ার্কিতে ফুরাইলো'– উক্তিটি কে, কার উদ্দেশ্যে বলেছে? ০২

খ) *ঈশ্বরগুপ্তের কবিতা সংগ্রহ*'র আলোকে স্বদেশচিন্তামূলক কবিতা সম্পর্কে আলোচনা কর। ০৮

২। ক) 'আমি, ডাকি আবার তোমায়, শ্বেতভুজে ভারতি!' এখানে 'শ্বেতভুজে ভারতি' কে? ০২

খ) *মেঘনাদবধ কাব্য*র গঠনকৌশল সম্পর্কে আলোচনা কর। ০৮

অথবা

ক) মধুসূদন দত্ত কোন কাব্যে প্রথম অমিত্রাক্ষর ছন্দ প্রয়োগ করেন? ০২

খ) *মেঘনাদবধ কাব্য*র রস পরিণতি সম্পর্কে আলোচনা কর । ০৮

৩। ক) 'ভোরের পাখি' কাকে এবং কেন বলা হয়? ০২

খ) *সাধের আসন* কাব্য অবলম্বনে কবিমানসের স্বরূপ উন্মোচন কর। ০৮

৪। ক) সত্যেন্দ্রনাথ দত্ত কত সালে, কোথায় জন্মগ্রহণ করেন? ০২

খ) *কাব্য-সঞ্চয়ন* অবলম্বনে সত্যেন্দ্রনাথ দত্তের প্রকৃতিচেতনা সম্পর্কে আলোচনা কর। ০৮

৫। ক) সীতা-সরমা সাক্ষাৎ *মেঘনাদবধ কাব্য*র কোন সর্গে ঘটে? ০২

খ) *ঈশ্বরগুপ্তের কবিতা সংগ্রহ*'র আলোকে প্রার্থনামূলক কবিতা সম্পর্কে আলোচনা কর । ০৮

৬। ক) *সাধের আসন* কাব্যটি কার প্রভাবে রচিত হয়েছিল। ০২

খ) ক্রৌঞ্চধূসহ ক্রৌঞ্চে নিষাদ বিঁধিলা

তেমতি দাসেরে, আসি, দয়া কর, সতি।– সপ্রসঙ্গ ব্যাখ্যা কর। ০৮

অথবা

ক) 'আভ্যুদয়িক' কবিতায় কার প্রসঙ্গ আলোচিত হয়েছে? ০২

খ) স্বর্গের বাণীর ধ্বনি ভেসে ভেসে আসে না!

এ দেশে ভারতী দেবী বুঝি প্রাণে বাঁচে না।– সপ্রসঙ্গ ব্যাখ্যা কর। ০৮

Table of Specification (TOS) for the Summative and Continuous Assessment (Semester Final Exam)

Course No. **BNG 0232 2102** Course Title: **Adhunik Bangla Kabita**

Questions			Bloom's Level of Cognition					
Q. No.	**Marks**	**CO No.**	**Remember**	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
1(a)	2	1	2					
1(b)	8	1				8		
2(a)	2	2	2					
2(b)	8	2		8				
3(a)	2	3	2					
3(b)	8	3					8	
4(a)	2	4	2					
4(b)	8	4			8			
5(a)	2	2	2					
5(b)	8	1			8			
6(a)	2	3		2				
6(b)	8	5						8
Total Marks	**60**		10	10	16	8	8	8
Total % in each level			16.7	16.7	26.7	13.3	13.3	13.3
% Marks in Major levels			**60**			**40**		

Course Title: Industrial Relations and Human Resource Management

Course Contents:

Industrial Relations: Emergence of industrial relations, actors and framework of industrial relations.

Globalization, Industrialization and Transition of Labour Market: Neo-liberalism and deregulation of labour market, informalization and feminization of labour.

Trade Unionism and Collective Bargaining: Structure, functions and recognition of trade unions, issues and factors of collective bargaining.

Human Resource Management: Traditional versus strategic HR management, process of strategic human resource management.

Staffing and Human Resource Development*:* Recruitment and selection, job analysis, employee skills (Hard skills and soft skills), planning and strategizing training.

Industrial Disputes and conflict Management: Causes and forms of dispute, redress procedures and dispute settlement Mechanism.

Employee Separation and Retention Management: Reduction in force, turnover, retirement.

Employee Welfare: employee morale, compensation and benefits*,* employee assistance and employee counseling.

Course Learning Outcomes (COs)

On successful completion of the course students will be able to-

CO1 Demonstrate fundamental knowledge about the field of industrial relations and human resource management.

CO2 Analyze problems in industrial relations including employee dissatisfaction, disputes and grievance.

CO3 Apply the essential concepts of industrial relations and their interrelationship in the organizational level.

CO4 Evaluate employee morale, compensation and labour benefits.

CO5 Design solutions of the problems to ensure employee welfare.

B.Sc. (Hons.) 1st year 2nd Semester Examination-2024
Course No.: SCW 0417 1201J;
Course Title: Industrial Relations and Human Resource Management
Total Marks: 60; Credit: 2; Time: 2 hours

Instructions:

- *Answer all the following questions*
- *Marks for each question are the same*

15×4=60

1.	(a)	Define industrial relations	3
	(b)	Identify the actors of industrial relations and their roles.	4
	(c)	Critically discuss the conflict theory of industrial relations.	8
2.	(a)	Define the concepts of 'Trade Union' and 'Collective Bargaining'.	6
	(b)	Explain the issues that are involved in the collective bargaining process.	9
		Or,	
	(a)	'Globalization and industrialization are two interconnected concepts' – Explain.	6
	(b)	Discuss the structure and functions of a trade union.	9
3.	(a)	What do you mean by industrial disputes?	3
	(b)	Find out different causes of industrial disputes.	3
	(c)	Illustrate the methods of resolving industrial disputes in the context of Bangladesh.	9
4.	(a)	Define human resource management.	3
	(b)	Identify the objectives of human resource management.	4
	(c)	Distinguish between traditional human resource management and strategic human resource management.	8
		Or,	
	(a)	What is meant by human resource development?	3
	(b)	Describe recruitment as an element of the human resource development process.	4
	(c)	Discuss with an example the recruitment process of an organization.	8

Table of Specification (TOS) for the Summative and Continuous Assessment (Semester Final Exam)

Course No. SCW 0417120J
Course Title: **Industrial Relations and Human Resource Management**

Questions			Bloom's Level of Cognition					
Q. No.	**Marks**	**CO No.**	**Remember**	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
1(a)	3	1	3					
1(b)	4	2		4				
1(c)	8	3					8	
2(a)	6	1		6				
2(b)	9	1			9			
3(a)	3	2	3					
3(b)	3	2	3					
3(c)	9	2		9				
4(a)	3	1	3					
4(b)	4	1	4					
4(c)	8	1		8				
Total Marks	**60**		16	27	9		8	
Total % in each level			26.7	45	15		13.3	
% Marks in Major levels			**86.7**			**13.3**		

Shahjalal University of Science and Technology, Sylhet

Department of Genetic Engineering and Biotechnology

MS 1st Year 2nd Semester Examination, 2024

Course No.: **GEB 0512 5235** Course Title: **Advanced Food Biotechnology**

Total Marks: 60 Credits: 3 Time: 3 Hours

Instructions:

- ***Number in the right side indicates the marks of the question***
- ***Marks for each question are same***
- ***Answer the following questions***

10×6=60

1. a)	Write the purpose of the heat treatment of milk.	3
b)	What is the difference between whey concentrate, whey isolate, and whey hydrolysate?	3
c)	Discuss the production of rennet casein from enzymatic methods.	4
	OR	
a)	Mention various types of thermal processing of the milk.	3
b)	Differentiate among milk clarification, standardization, and homogenization.	3
c)	Generalize the factors affecting the variation in the composition of milk.	4
2. a)	Compose the practical importance of the size of milk fat globules.	5
b)	Describe the production and chemical derivatives of lactose.	5
3. a)	Demonstrate the production criteria of functional foods.	5
b)	Explain the potential health benefits of functional foods.	5
4. a)	Explain how PCR amplification of the 16S rRNA gene can be used for rapid detection of foodborne pathoges.	3.5
b)	Discuss the role of mitochondrial genes (such as COI) in DNA barcoding for animal identification.	3.5
c)	Analyze the advantages of multiplex PCR over conventional single-target PCR in food safety testing.	3
5. a)	Discuss how meat grading parameters influence consumer perception and market value.	2
b)	Evaluate the importance of ante-mortem inspection in preventing zoonotic disease transmission.	4
c)	Briefly discuss different types of rancidity.	4
	OR	
a)	Write the nutritional composition of meat and fish.	2
b)	Critically analyze the post-mortem inspection methods in detecting microbial contamination.	4
c)	Briefly discuss the factors affecting rancidity and reversion.	4
6. a)	What do you mean by biofortification?	1
b)	Prepare the ways to increase the micro-nutrients content on food diet.	4
c)	Develop a comprehensive strategy to evaluate and enhance the impact of biofortified crops in addressing nutritional problems.	5

Table of Specification (TOS) for the Summative Assessment (Semester Final Exam)

Course No.: **GEB 0512 5235** Course Title: **Advanced Food Biotechnology**

	Questions		Bloom's Level of Cognition						
Q. No.	**Marks**	**CO No.**	**Remember**	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**	
1(a)	3	2			3				
1(b)	3	2					3		
1(c)	4	2			4				
OR									
1(a)	3	2			3				
1(b)	3	2					3		
1(c)	4	2			4				
2(a)	5	2						5	
2(b)	5	3				5			
3(a)	5	4			5				
3(b)	5	4		5					
4(a)	3.5	5					3.5		
4(b)	3.5	4			3.5				
4(c)	3	4				3			
5(a)	2	1			2				
5(b)	4	2					4		
5(c)	4	2				4			
OR									
5(a)	2	1			2				
5(b)	4	2					4		
5(c)	4	2				4			
6(a)	1	4	1						
6(b)	4	4			4				
6(c)	5	4						5	
Total Marks	**60**		1	5	21.5	12	10.5	10	60
Total % in each level			2	8	36	20	18	17	100
% Marks in Major levels				46			54		100

Shahjalal University of Science and Technology

Department of Genetic Engineering and Biotechnology

B. Sc(Hons) 2nd Year 1st Semester Examination, 2025

Course No. **ANS 0511 2121** Course Title: **Animal and Human Physiology**

Total Marks: 60 Credits: 3 Time: 3 Hours

		10×6=60
1. a)	Which organ produces bile? Explain how bile helps in digestion.	1+2=3
b)	What are the main functions of saliva in the human digestive system?	4
c)	Differentiate between rumen and reticulum.	3
	OR	
a)	What is cud? Shortly explain the process of re-chewing food in ruminants.	1+2=3
b)	Describe the main functions of the small intestine in nutrient absorption.	4
c)	Compare ruminant digestion with human digestion.	3
2. a)	What is respiration? Explain the mechanism of breathing with the role of ribs and diaphragm.	1+2.5=3.5
b)	What are alveoli? How does gas exchange take place in the alveoli?	1+2.5=3.5
c)	Explain what could happen to the process of digestion if chewing did not properly break down food before swallowing.	3
3. a)	What is urine? State the main components of urine.	1+1.5=2.5
b)	Compare the roles of the cortex, medulla, and renal pelvis in kidney function.	5
c)	Name a common cause of UTI. Which gender is more prone to UTI and why?	1+1.5=2.5
4. a)	a) Define hematocrit. How can it be calculated from blood sample?	1+2=3
b)	b) Explain the physiological and biochemical basis of color of blood and color of plasma.	3
c)	How are leukocytes classified? Which leukocyte has the longest lifespan?	3+1=4
	OR	
a)	Define anaemia. Which type of anaemia is characterized by RBC abnormalities?	1+2=3
b)	How can hemoglobinemia and hemoglobinuria occur as a result of RBC destruction?	3
c)	What do you mean by jaundice? What are the main sites of erythrocyte destruction in birds?	3+1=4
5. a)	Define puberty and semen.	1+1=2
b)	Illustrate how dysfunction in any stage of the sexual act could affect reproduction.	4
c)	Analyze how the endocrine functions of testis and ovaries influence secondary sexual characteristics.	2+2=4
6. a)	Classify nervous system.	2
b)	Write the function of cerebrum, spinal cord and cerebellum.	3
c)	Differentiate between axon and dendrite.	3

Table of Specification (TOS) for the Summative and Continuous Assessment (Semester Final Exam)

Course No. **ANS 0512 2121** Course Title: **Animal and Human Physiology**

	Questions		Bloom's Level of Cognition					
Q. No.	**Marks**	**CO No.**	**Remember**	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Create**
1(a)	3	3		3				
1(b)	4	3		4				
1(c)	3	3				3		
2(a)	3.5	5		3.5				
2(b)	3.5	5		3.5				
2(c)	3	3			3			
3(a)	2.5	3	2.5					
3(b)	5	3				5		
3(c)	2.5	3		2.5				
4(a)	3	1	1	2				
4(b)	3	1		3				
4(c)	4	1	3	1				
5(a)	2	2	2					
5(b)	4	2			4			
5(c)	4	2				4		
6(a)	2	4		2				
6(b)	3	4		3				
6(c)	3	4				3		
6(d)	2	4	2					
Total Marks	**60**		10.5	27.5	7	15		
Total % in each level			17.5	45.8	11.7	25		
% Marks in Major levels				**75**			**25**	

Mark sheet: Continuous Assessment

IPE 07153241: MANUFACTURING PROCESSES-II Credit: 3.0

Registration Number	Question Number	Midterm I			Midterm II		Assignment	Quiz	Total Marks
		MT1 (a)	MT1 (b)	MT1 (c)	MT2 (a)	MT2 (b)			
	Marks Assigned								
	Related CO								

Mark sheet: Continuous Assessment

IQAC

শাহজালাল বিজ্ঞান ও প্রযুক্তি বিশ্ববিদ্যালয়, সিলেট

উপস্থিতি ও মার্কশীট (উপস্থিতি, মিড-সেমিস্টার পরীক্ষা ও এসাইনমেন্ট/পারফর্মেন্স/কুইজ)

বিভাগ:

.....বর্ষ .....সেমিস্টার .....শিক্ষাবর্ষ

কোর্স নম্বর ..... কোর্সের শিরোনাম.....

রেজিস্ট্রেশন নং	উপস্থিতি (Out of)	প্রশ্ন নম্বর	মিড-সেমিস্টার পরীক্ষা — ১			মিড-সেমিস্টার পরীক্ষা — ২			মিড-সেমিস্টার (১ ও ২) পরীক্ষার মোট নম্বর	এসাইনমেন্ট/ পারফর্মেন্স/ কুইজ
		প্রশ্ন সংশ্লিষ্ট মার্কস								
		প্রশ্ন সংশ্লিষ্ট সিও								

Mark sheet

শাহজালাল বিজ্ঞান ও প্রযুক্তি বিশ্ববিদ্যালয়, সিলেট
পরীক্ষার্থীদের প্রাপ্ত নম্বরের তালিকা

.....বর্ষ.....সেমিস্টার.....শিক্ষাবর্ষ

IQAC

কোর্স নম্বর..... কোর্সের শিরোনাম.....

মোট নম্বর..... গ্রুপ (A/B).....

রেজিস্ট্রেশন/কোড নং	প্রতি প্রশ্নে পাওয়া নম্বর ও সংশ্লিষ্ট সিও (CO)																														সর্বমোট প্রাপ্ত নম্বর
	Q.No.	1					2					3					4					5					6					
		a	b	c	d	e	a	b	c	d	e	a	b	c	d	e	a	b	c	d	e	a	b	c	d	e	a	b	c	d	e	
	CO No.																															

নামঃ..... স্বাক্ষর.....

() পরীক্ষ () স্ক্রুটিনাইজার বিভাগ..... তারিখ: / /

Question Structure (Exam Ordinance, SUST)

IQAC

Each discipline must follow one unique question structure for final examinations.

For 3.00 (three) or 4.00 (four) credits theory courses:

(a) the written (final) examinations will be conducted for 60 marks,

(b) there will be six questions for Double Examiner System (three questions in each part of the question paper for single examiner system) and the examinees will be asked to answer all of them, and

(c) the examination time/duration will be 3 (three) hours.

10×6=60

Question Structure (Exam Ordinance, SUST)

IQAC

For 2.00 (two) credits theory courses:

(a) the written (final) examination will be conducted for 60 marks,

(b) there will be four questions for Double Examination System (two questions in each part of the question paper for Single Examination System), and the examinees will be asked to answer all of them, and

(c) the examination time/duration will be 2 (two) hours.

15×4=60

Aligning Questions with Course Learning Outcomes

- **Activity**: Revisiting last semester's question paper: Identifying the (mis)matching and preparing the ToS.

What to do

- Each team will choose **one** of the last semester's question papers (of his or her own discipline).
- Following the given **tips**, check each question or each branch of the question carefully and revise, if needed.
- Prepare the **ToS** of the selected question (**Individual**).
- Prepare a **PowerPoint** slide using the **revised** set of questions and share your experience (**Team**).

Thanks a lot

Crafting CO-Based Questions: Use of Bloom's Taxonomy

▪**Keep in mind that using an action verb in a question does not necessarily relate to the specified level of Bloom's Taxonomy.**

- For an instance:
  - Explain the government's education policy. (Understand)
  - Explain how the government's education policy has influenced the dynamics of social inequality and community relationships. (Analyze)

- For an instance:
  - Interpret the patterns obtained from the geological data (Understand)
  - Interpret how the patterns in the geological data may be indicative of past seismic activity. (Analyze)
- For an instance:
  - Calculate the molar mass of a given chemical compound. (Applying)
  - Calculate the concentration of a solution given the mass of solute and volume of solvent. (Applying)

CO Attainment Assessment: Examples

CO Attainment Assessment

Semester & Year:	Fall 2019
Course Code:	CSE 231
Course Title:	Microprocessor and Assembly Langauge
Level & Term:	L2-T3
Section:	All
No. of Students:	8
ML Initial:	AAM
Threshold:	50%

CO-Question Matrix				
	Mid	Final	Total	%
CO1	9	4	13	20%
CO2	10	8	18	28%
CO3	6	12	18	28%
CO4	0	8	8	12%
CO5	0	8	8	12%
			65	*100%*

CO Met Criteria	
If CO Marks (%) >= Threshold	Y
If CO Marks (%) < Threshold	N

Student ID	Student Name	Midterm Examination						Total Marks	Semester Final						Total Marks	CO Attainments									
		Q1	Q2	Q3	Q4	Q5	Q6		Q1	Q2	Q3	Q4	Q5	Q6		CO1 Marks (%)	CO1 Met (Y/N)	CO2 Marks (%)	CO2 Met (Y/N)	CO3 Marks (%)	CO3 Met (Y/N)	CO4 Marks (%)	CO4 Met (Y/N)	CO5 Marks (%)	CO5 Met (Y/N)
		CO1	CO1	CO2	CO2	CO3	CO3		CO1	CO2	CO3	CO3	CO4	CO5											
		6	3	4	6	3	3	25	4	8	6	6	8	8	40										
192-15-0001	Student1	3	N	2	1	3	3	12	2	N	6	6	2	8	24	38%	N	17%	N	100%	Y	25%	N	100%	Y
192-15-0002	Student2	4	N	3	2	3	3	15	3	N	6	6	3	2	20	54%	Y	28%	N	100%	Y	38%	N	25%	N
192-15-0003	Student3	2	N	4	3	2	2	13	4	N	6	6	6	3	25	46%	N	33%	N	83%	Y	75%	Y	38%	N
192-15-0004	Student4	2	2	4	2	1	1	12	4	5	5	5	2	4	25	62%	Y	61%	Y	67%	Y	25%	N	50%	Y
192-15-0005	Student5	N	3	2	3	2	2	12	2	6	4	4	2	2	20	38%	N	61%	Y	67%	Y	25%	N	25%	N
192-15-0006	Student6	4	3	3	4	2	2	18	3	7	5	5	3	2	25	77%	Y	78%	Y	78%	Y	38%	N	25%	N
192-15-0007	Student7	1	3	2	3	1	1	11	2	8	3	3	3	2	21	46%	N	72%	Y	44%	N	38%	N	25%	N
192-15-0008	Student8	4	3	3	2	1	1	14	3	6	4	4	4	2	23	77%	Y	61%	Y	56%	Y	50%	N	25%	N
No. of Students Who Attempted		7	5	8	8	8	8		8	5	8	8	8	8	No. students achieved CO		4		5		7		1		2
Threshold Marks for each question		3	1.5	2	3	1.5	1.5		2	4	3	3	4	4	% students achieved CO		50%		63%		88%		13%		25%
No. of Students Who got >50%		4	5	8	4	5	5		8	5	8	8	2	2	CO Results		Y		Y		Y		N		N
Percentage of Students Who got >50%		50%	63%	100%	50%	63%	63%		100%	63%	100%	100%	25%	25%											

PO Attainment Calculation

CO's	CO Results	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Y	3											
CO2	Y	3	2										
CO3	Y		3	2	3	3							
CO4	N		3	3									
CO5	N				3	3							
PO Attainment		100%	63%	40%	50%	50%							