

Question Preparation

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Align Questions with Course Learning Outcomes

- Tips for aligning questions with specific course learning outcomes (CLO)
- Preparing 'Table of Specification (ToS)'
- Activities

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

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 CLO-Based Questions: Use of Bloom's Taxonomy

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.

Crafting CLO-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)

Aligning Questions with CLOs: 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**)

CLO Attainment Assessment: TOS

Table of
Specification
(TOS)

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 CLO-Based Questions: Example

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 CLO-Based Questions: Example

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 CLO-Based Questions: Example

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 CLO-Based Questions: Example

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): Final Exam

07153241: MANUFACTURING PROCESSES-II Credit: 3.0

QUESTIONS			BLOOM'S LEVELS OF CONGNITION					
Question Number	Marks Assigned	Related CLO 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): Final Exam

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								

$$[(10.5/30) \times 100]$$

BASIC LEVEL
COURSE

LOWER INTERMEDIATE
LEVEL COURSE

UPPER INTERMEDIATE
LEVEL COURSE

ADVANCED LEVEL
COURSE

Preparing a Table of Specifications (TOS): Final Exam

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								

$$[(10.5/30) \times 100]$$

FIRST YEAR

SECOND YEAR

THIRD YEAR

FOURTH YEAR

Course Content and Course Learning Outcomes (CLOs)

ক্রম	Course Content	CLOs
১	ঈশ্বরচন্দ্র গুপ্ত: উনিশ শতকে বাঙালির সমাজমনস্কতা ও জাগরণ, আধুনিকতার সংজ্ঞা, আধুনিক বাংলা কবিতার গতিপ্রকৃতি এবং সাহিত্যক্ষেত্রে সংবাদপত্রের ভূমিকা।	CLO1: শিক্ষার্থীরা আধুনিক বাংলা কবিতার উদ্ভব ও বিকাশ সম্পর্কে জ্ঞান অর্জন করতে পারবে।
২	মাইকেল মধুসূদন দত্ত: উনিশ শতকে বাঙালির সমাজমনস্কতা ও জাগরণ, দেশাত্মবোধ, মহাকাব্য, সনেট এবং অমিত্রাক্ষর ছন্দ।	CLO2: শিক্ষার্থীরা আধুনিক বাংলা কবিতার প্রবণতা ও বিশেষ বৈশিষ্ট্য সম্পর্কে জ্ঞান অর্জন করতে পারবে।
৩	বিহারীলাল চক্রবর্তী: গীতিকবিতার ধরন ও প্রকৃতি, বাংলা গীতিকবিতা এবং বাংলা গীতিকবিতায় বিহারীলালের অবদান।	CLO3: শিক্ষার্থীরা আধুনিক বাংলা কবিতার রূপকল্প ও রসকল্প সম্পর্কে জ্ঞান অর্জন করতে পারবে।
৪	সত্যেন্দ্রনাথ দত্ত: বাংলা কবিতায় ফারসি প্রভাব, সমৃদ্ধ ভাষা থেকে বাংলায় অনুবাদ, মানবতাবাদ, ছন্দ ও অলংকার।	CLO4: শিক্ষার্থীরা আধুনিক বাংলা কবিতার শিল্পতত্ত্ব ও নতুন শিল্পরীতি সম্পর্কে জ্ঞান লাভ করতে পারবে।
৫	কবি চতুষ্টয়ের সমাজভাবনা ও জীবনবোধ।	CLO5: শিক্ষার্থীরা কবিতা কীভাবে আধুনিক সমাজ ও জীবনবোধের ক্ষেত্রে ভূমিকা পালন করে, সে সম্পর্কে জানতে পারবে।

বাংলা বিভাগ
দ্বিতীয় বর্ষ প্রথম সেমিস্টার পরীক্ষা-২০২৫
কোর্স নং: BNG-02322102 কোর্স শিরোনাম: আধুনিক বাংলা কবিতা-১
ক্রেডিট: ০৩ | সময়: ০৩ ঘণ্টা | পূর্ণমান: ৬০
[ডানপাশে উল্লিখিত সংখ্যা প্রশ্নের পূর্ণমান জ্ঞাপক।]

Table of Specification (TOS) for the Summative and Continuous

Assessment (Semester Final Exam)

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

১।	ক	‘এত বড় প্রতিভা ইহাকিতে ফুরাইল’ উক্তিটি কে, কার উদ্দেশ্যে বলেছেন?	২
	খ	ঈশ্বরগুপ্তের কবিতা সংকলনের আলোকে যদেচ্ছাচিত্তমূলক কবিতা সম্পর্কে আলোচনা কর।	৮
২।	ক	‘আমি, ডাকিব আবার তোমায়, শ্বেততুজে ভারতী!’ এখানে ‘শ্বেততুজে ভারতী’ কে?	২
	খ	মেঘনাদবধ কাব্যের গঠনকৌশল সম্পর্কে আলোচনা কর।	৮
		অথবা	
	ক	মধুসূদন দত্ত কোন কাব্যে প্রথম অমিত্রাক্ষর ছন্দ প্রয়োগ করেন?	২
	খ	মেঘনাদবধ কাব্যের রস পরিণতি সম্পর্কে আলোচনা কর।	৮
৩।	ক	‘ভোরের পাখি’ কাকে এবং কেন বলা হয়?	২
	খ	সার্থক আসন কাব্য অবলম্বনে কবিমানসের স্বরূপ উন্মোচন কর	৮
৪।	ক	সত্যেন্দ্রনাথ দত্ত কত সালে, কোথায় জন্মগ্রহণ করেন?	২
	খ	কাব্য-সংগ্রহ অবলম্বনে সত্যেন্দ্রনাথ দত্তের প্রকৃতিচেতনা সম্পর্কে আলোচনা কর।	৮
৫।	ক	‘সাধের আসন’ কাব্যটি কার প্রভাবে রচিত হয়েছিল?	২
	খ	টীকা লিখ: ‘তেমতি দাসের, আসি, দয়া কর, সতী।’ – প্রসঙ্গ ব্যাখ্যা কর।	৮
		অথবা	
	ক	‘আত্মপরিচয়’ কবিতায় কার প্রসঙ্গ আলোচিত হয়েছে?	২
	খ	স্বর্গের বাণীর ধ্বনি ভেসে ভেসে আসে না! এ দেশে ভারতী দেবী বধি প্রাণে বাঁচে না।’ – প্রসঙ্গ ব্যাখ্যা কর।	৮

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		

MSS 2nd Semester Final Examination-2024 (Mixed Mode)**PAD 523: Public Policy and Governance: Frameworks and Applications****Department of Public Administration****University of Rajshahi****Time: 3 Hours****Marks: 70****(Answer all five questions. Questions under OR are alternatives carrying similar CLOs and marks distribution.)**

Q. No.	Sub	Questions	CLO	Marks
1	a)	Differentiate between 'Public Policy' and 'Public Administration' and analyse their significance in the governance of a country.	CLO 3	8
	b)	Analyse the essential characteristics of Public Policy.	CLO 3	6
2	a)	Describe the policy framework.	CLO 2	4
	b)	Evaluate how policy models help policymakers understand complex policy problems.	CLO 5	5
	c)	Formulate a public policy strategy for Bangladesh based on the Rational Choice Approach and critically explain its potential effectiveness and limitations.	CLO 6	5
	OR			
	a)	Describe Force Field Analysis.	CLO 2	4
	b)	Justify how Force Field Analysis helps understanding policy change.	CLO 5	5
	c)	Develop a plan to apply Force Field Analysis to any public issue in Bangladesh.	CLO 6	5
3	a)	Describe agenda setting in public policy.	CLO 2	4
	b)	Justify why some issues receive government attention while others do not.	CLO 5	5
	c)	Critically discuss how a public issue gained policy attention in Bangladesh.	CLO 6	5
	OR			
	a)	Explain the key features of the Top-down and Bottom-up Implementation Approaches.	CLO 2	4
	b)	Justify how implementation gaps emerge due to institutional and behavioural constraints.	CLO 5	5
	c)	Develop a strategy using implementation theory explaining the challenges in delivering rural public services in Bangladesh.	CLO 6	5
4	a)	What is policy evaluation?	CLO 1	4
	b)	Justify why evaluation of policy outcomes is important.	CLO 5	4
	c)	Develop a strategy highlighting how evaluation can improve service delivery in Bangladesh.	CLO 6	6
	OR			
	a)	What is ethical governance in public policy-making?	CLO 1	4
	b)	Justify why ensuring social equity is important in the policy process.	CLO 5	4
	c)	Design a policy intervention that could reduce inequality in Bangladesh and explain how it promotes equity.	CLO 6	6
5	a)	Analyse why e-governance is important.	CLO 4	4
	b)	Justify how ICT supports public policy processes.	CLO 5	4
	c)	Design a digital governance initiative in Bangladesh and explain how it improved policy implementation or service delivery.	CLO 6	6

Table of Specification (TOS) for the Summative Assessment**PAD 523: Public Policy and Governance: Frameworks and Applications****Department of Public Administration, University of Rajshahi**

Questions	Marks	CLO	Remember	Understand	Apply	Analyse	Evaluate	Create
1(a)	8	3				8		
1(b)	6	3				6		
2(a)	4	2		4				
2(b)	5	5					5	
2(c)	5	5						5
OR								
2(a)	4	4		4				
2(b)	5	5					5	
2(c)	5	3						5
3(a)	4	2		4				
3(b)	5	5					5	
3(c)	5	6						5
OR								
3(a)	4	2		4				
3(b)	5	5					5	
3(c)	5	6						5
4(a)	4	1	4					
4(b)	5	5					4	
4(c)	5	6						6
OR								
4(a)	4	2	4					
4(b)	4	5					4	
4(c)	6	6						6
5(a)	4	4				4		
5(b)	4	5					4	
5(c)	6	6						6
Total Marks	70		4	8		18	18	22
Total % in each level			5.71%	11.44%		25.71%	25.71%	31.43%
% Marks in Major Levels			17.15%		25.71%		57.14%	

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.

Instructions:

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

15×4=60

- Define industrial relations 3
 - Identify the actors of industrial relations and their roles. 4
 - Critically discuss the conflict theory of industrial relations. 8
- Define the concepts of 'Trade Union' and 'Collective Bargaining'. 6
 - Explain the issues that are involved in the collective bargaining process. 9

Or,

 - 'Globalization and industrialization are two interconnected concepts' – Explain. 6
 - Discuss the structure and functions of a trade union. 9
- What do you mean by industrial disputes? 3
 - Find out different causes of industrial disputes. 3
 - Illustrate the methods of resolving industrial disputes in the context of Bangladesh. 9
- Define human resource management. 3
 - Identify the objectives of human resource management. 4
 - Distinguish between traditional human resource management and strategic human resource management. 8

Or,

 - What is meant by human resource development? 3
 - Describe recruitment as an element of the human resource development process. 4
 - 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		

Group A

			Marks
1.	a)	Define measurement scales and identify the suitable measurement scale for the following variables: Year of schooling, Expenditure, History of surgery, Color of eye, Stage of cancer, number of children in a family, satisfaction level, IQ score.	4
	b)	Explain briefly the different steps in constructing the frequency distribution of data.	2
	c)	Illustrate how a box plot represents the distribution of data, including the outliers.	2
	d)	Provide two situations where Bar diagram and Histogram would be applied.	2
2.	a)	Define the harmonic mean and provide the formula for its calculation. Give an example to illustrate how the harmonic mean is different from other measures of central tendency such as the arithmetic mean.,	2
	b)	Explain the statement: "The median is used for ordinal data or for numerical data if the distribution is skewed".	2
	c)	Show that for any set of positive real numbers, the following inequality holds: $AM \geq GM \geq HM$.	6
3.	a)	Define measures of dispersion. Write-down the characteristics of an ideal measure of dispersion.	2
	b)	What is the coefficient of variation (CV)? Describe its application in studying the variation of data.	3
	c)	Show that the variance of the first n natural number is $\frac{n^2-1}{12}$.	4
	d)	If skewness is less than -1 or greater than 1, sketch the shape of the distribution.	1
4.	a)	Define the correlation between two variables and describe it with a suitable example.	2
	b)	List the assumptions of Karl Pearson's correlation coefficient.	2
	c)	Show that coefficient of correlation lies between -1 to 1.	3
	d)	What are the applications of correlation? Distinguish between Karl Pearson correlation and Spearman rank correlation.	3
5.	a)	Explain the concept of a simple linear regression model and provide examples of real-world situations where the linear regression model is useful.	3
	b)	Distinguish between multiple linear regression and simple linear regression.	2
	c)	Set up a simple linear regression model with the usual notations, state its important assumptions, and then estimate the parameters using the ordinary least squares method.	5
6.	a)	Define attributes with an example, and list the names of the different measures of association.	3
	b)	What are the application and limitation of the cross-tabulation for assessing the measures of association or independence	2
	c)	When should the chi-square test for independence be applied? How is the chi-square test statistic calculated in a 2x3 contingency table?	5

Questions			Bloom's Level of Cognition					
Q. No.	Marks	CO No.	Remember	Understand	Apply	Analyze	Evaluate	Create
1(a)	4	1	4					
1(b)	2	1		2				
1(c)	2	1			2			
1(d)	2	1				2		

2(a)	2	2		2				
2(b)	2	2				2		
2(c)	6	2			6			

3(a)	2	2	2					
3(b)	3	2		3				
3(c)	4	2			4			
3(d)	1	2			1			

4(a)	2	3	2					
4(b)	2	3	2					
4(c)	3	3			3			
4(d)	3	3				3		

5(a)	3	3		3				
5(b)	2	3				2		
5(c)	5	3			5			

6(a)	3	4	3					
6(b)	2	4		2				
6(c)	5	4				5		
Total Marks	60		13	12	21	14		
Total % in each level			22	20	35	23		
% Marks in Major levels			77			23		

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 <u>PCR</u> amplification of the <u>16S rRNA</u> gene can be used for rapid detection of foodborne <u>pathogens</u> .	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 <u>PCR</u> over conventional single-target <u>PCR</u> 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 <u>biofortification</u> ?	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 <u>biofortified</u> 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
Total % in each level			2	8	36	20	18	17
% Marks in Major levels				46			54	

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 <u>PCR</u> amplification of the <u>16S rRNA</u> gene can be used for rapid detection of foodborne <u>pathogens</u> .	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 <u>PCR</u> over conventional single-target <u>PCR</u> 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 <u>biofortification</u> ?	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 <u>biofortified</u> 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
Total % in each level			2	8	36	20	18	17
% Marks in Major levels				46			54	

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 <u>UTI</u> . Which gender is more prone to <u>UTI</u> 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 <u>anaemia</u> . Which type of <u>anaemia</u> is characterized by RBC abnormalities?	1+2=3
b)	How can <u>hemoglobinemia</u> 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. <u>ANS 0512 2121</u> 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

07153241: MANUFACTURING PROCESSES-II Credit: 3.0

Registration Number	Question Number	Incourse I			Incourse II		Assignment	Quiz	Total Marks
		1 (a)	1 (b)	1 (c)	2 (a)	2 (b)			
	Marks Assigned								
	Related CLO								

Mark sheet: Continuous Assessment

[illegible]

Mark sheet

পরীক্ষার্থীদের প্রাপ্ত নম্বরের তালিকা

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

কোর্স নম্বর	কোর্সের শিরোনাম
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মোট নম্বর..... গ্রুপ (A/B).....

রেজিস্ট্রেশন/কোড নং	প্রতি প্রশ্নে পাওয়া নম্বর ও সংশ্লিষ্ট সিও (CO)																												সর্বমোট প্রাপ্ত নম্বর			
	Q.No. CO 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

নামঃ স্বাক্ষরঃ

Aligning Questions with Course Learning Outcomes

Activity

Prepare the question paper by incorporating Bloom's Taxonomy and CLO mapping, and complete the Table of Specifications (ToS) accordingly

Acknowledge

Professor Dr Kamrul Islam
Dept. of Genetic Engineering & Biotechnology, SUST

