Khulna University

School	**Life Science**	Discipline:	**Forestry and Wood Technology**	Program	**Bachelor of Science (Honours) in Forestry**
Year:	**4^{th}**	Term:	**1^{st}**	Session:	**2024-2025**
Course code:	**0821 05 FWT 4101**		Course Title:	**Agroforestry and Farming System**	
Total marks:	**60**	Time:	**3 hours**	Credit:	**03**
Instructions (if any):		**Use separate answer script for each section.**			

SECTION-A

There are **FOUR** questions in this section. Answer any **THREE** questions

1. a) Discuss the biophysical and socio-economic advantages of agroforestry over monoculture. [L6; CLO 1, 2] 05

   b) Discuss the productive and protective roles of agroforestry in the context of Bangladesh. [L6; CLO 1, 2] 05

2. a) What is the major classification of Agroforestry based on its structure and function? Give an example of each type. [L5, CLO 2] 04

   b) Explain agroforestry system, sub-system, practice and technology with examples. [L2; CLO 1, 2] 04

   c) Why is indigenous knowledge important in practicing agroforestry? Explain. [L4, CLO 1] 02

3. a) Describe the concept of a multipurpose tree species with examples. [L4; CLO 1, 2] 02

   b) Define tree domestication. What are the principles of tree domestication? [L2, CLO 2] 03

   c) Describe the basic steps of D&D for biophysical and socio-economic survey in agroforestry design. [L1, CLO 2] 05

4. a) Agroforestry is a land use problem solving technology - Justify. [L5; CLO 1, 2] 03

   b) Why is cost-benefit analysis important in agroforestry? [L2, CLO 2] 04

   c) Explain NPV and BCR as the financial profitability analysis of agroforestry projects. [L2; CLO 1, 2] 03

SECTION-B

There are **FOUR** questions in this section. Answer any **THREE** questions

5.	a)	Describe the major agroforestry practices of different agro-ecological zones of Bangladesh. [L4, CLO 2]	06
	b)	Discuss the agroforestry development and practices in India and Nepal. [L6, CLO 2,3]	04
6.	a)	Define a farm and farming system. Compare and contrast subsistence and commercial farming systems. [L1,6, CLO 2,3]	04
	b)	Discuss the factors to be considered in establishing a commercial farm in the hilly region. [L5, CLO 2]	03
	c)	How do crop diversity and crop intensity affect sustainable farming? Explain. [L3, CLO 3]	03
7.	a)	Discuss the characteristics and importance of homegardens of Bangladesh considering biodiversity conservation and livelihood support. [L6, CLO 2,3]	05
	b)	Briefly describe the major types of cropland agroforestry practices in the South-Western part of Bangladesh. [L4, CLO 2,3]	05
8.	a)	Depict the roles of trees in different agro-ecological regions in terms of production, protection and improvement of farming systems. [L4, CLO 2,3]	03
	b)	Discuss the prospects of agroforestry in the coastal areas of Bangladesh. [L6, CLO 2,3]	04
	c)	Discuss the constraints of agroforestry development in Bangladesh. [L6, CLO 2,3]	03

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School	**Life Science**	Discipline:	**Forestry and Wood Technology**	Program	**Bachelor of Science (Honours) in Forestry**
Year:	**4^{th}**	Term:	**1st**	Session:	**2024-2025**
Course code:	**0821 05 FWT 4103**		Course Title:	**Forest Management**	
Total marks:	**60**	Time:	**3 hours**	Credit:	**03**
Instructions (if any):		**Use separate answer script for each section.**			

SECTION-A

There are **FOUR** questions in this section. Answer any **THREE** questions.

1. a) Define Forest as per FAO. [L1, CLO1] 02

   b) What are the basic principles and objectives of forest management? [L3, CLO1] 02

   c) Briefly describe the productive and protective roles of forest with reference to present forest management practice in Bangladesh. [L5, CLO3] 02

   d) Explain in brief about the paradigm shift of the forest management regime in Bangladesh. [L2, CLO2] 04

2. a) Write the major steps involved in cost benefit analysis. [L1; CLO2,3] 02

   b) Briefly explain different types of rotation. [L2; CLO2,3] 05

   c) What is NPV? Why is it important in Forestry investment planning? [L1, CLO3] 03

3. a) Define deforestation and forest degradation. [L1, CLO2] 02

   b) What is REDD+? Briefly explain the REDD+ Implementation phases. [L2; CLO2,3] 04

   c) Critically discuss the role of site-specific plan (SSP) in forest restoration, biodiversity conservation, and livelihood improvement in the context of Chattogram Hill Tracts Forest. [L6; CLO2,3] 04

4. a) Briefly explain the principles and purpose of a working plan for a forest division in Bangladesh. [L5, CLO3] 04

   b) Describe the concept of conflict escalation and conflict resolution in co-management. [L4, CLO5] 03

   c) In Madhupur National Park, land encroachment by local communities has created conflicts with Bangladesh Forest Department. Analyze how such conflicts can be managed using appropriate conflict management approaches and stakeholder participation. [L4; CLO2,3] 03

SECTION-B

There are **FOUR** questions in this section. Answer any **THREE** questions.

5. a) Define a normal forest. Discuss the concept and characteristics of a normal forest in relation to sustainable forest management. [L2; CLO1] 03

   b) Discuss the effects of different silvicultural systems on forest normality. [L5; CLO3] 03

   c) Compare normal even-aged and normal uneven-aged forests in terms of age structure, regeneration, and yield regulation. [L5; CLO2] 04

6. a) Define growing stock. [L1; CLO4,5] Suggest management guidelines for overstocked and understocked natural forest stands. [L5; CLO4,5] 04

   b) Write the importance of a permanent sample plot (PSP). [L1, CLO4] 02

   c) Explain in brief about the normal and actual distribution of age classes under the shelterwood silvicultural system. [L5; CLO4,5] 04

7. a) Define yield and sustained yield. How normal annual yield can be estimated using growing stock only? Explain. [L2; CLO2] 03

   b) If a normal irregular forest is managed under selection system having an approximate harvesting age of 120 years and the volume of old wood is 50,200 m^3, and the volume of medium wood is 30,100 m^3. The old wood and medium wood grow 2% and 4% per annum, respectively. Determine the annual yield using "French method of 1883 with Melard's modification" and the "Simmon's modification of the Von Mantel method". [L4; CLO3] 05

   c) How would you determine the minimum exploitable diameter in a forest having a selection system? Explain. [L5; CLO2] 02

8. Write short notes on the following: 4×2.5=10

   I. Working circle [L3; CLO1]

   II. Felling series and cutting section [L3; CLO1]

   III. Periodic block [L3; CLO2]

   IV. Stumpage appraisal [L3; CLO3]

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School	**Life Science**	Discipline:	**Forestry and Wood Technology**	Program	**Bachelor of Science (Honours) in Forestry**
Year:	**4th**	Term:	**1st**	Session:	**2024-2025**
Course code:	**0821 05 FWT 4105**		Course Title:	**Forest Development Planning and Project Designing**	
Total marks:	**60**	Time:	**3 hours**	Credit:	**03**
Instructions:		**Use separate answer script for each section.**			

SECTION-A

There are **FOUR** questions in this section. Answer any **THREE** questions

1.	a)	Define development. Write down the various aspects of development. [L1; CLO 1,2]	03
	b)	Enlist the goals of SDGs. [L1; CLO 1,2]	03
	c)	Discuss the scope of forest development in Bangladesh. [L6; CLO 1,2]	04
2.	a)	Write down the realism and flexibility in planning. [L2; CLO 1,2]	02
	b)	Justify the concept of realism in the forest development planning process. [L5; CLO 1]	02
	c)	Describe in detail the forest development planning process. [L2; CLO 1,2]	06
3.	a)	How can you forecast the demand and supply of forest resources? [L2; CLO 1,2]	03
	b)	Write down the challenges of forestry sector in Bangladesh. [L3; CLO 1,2]	02
	c)	Explain the roles of forest sector analysis in addressing the demand and supply of forest products and services. [L5; CLO 1]	03
	d)	Human resources and capacity building play an important role in the forest sector of Bangladesh. Discuss it. [L6; CLO 1]	02
4.	a)	Compare the limitations of NPV, BCR, and IRR. [L3; CLO 2]	03
	b)	Explain the impacts of externalities in the forest sector. [L5; CLO 2]	02
	c)	Discuss various types of social costs and benefits in the forest sector. [L6; CLO 2]	05

SECTION-B

There are **FOUR** questions in this section. Answer any **THREE** questions

5.	a)	Compare a project and a program in the forest sector, using relevant examples. [L3; CLO 3]	03
	b)	Discuss the importance of projects in the development and management process of the forest sector. [L6; CLO 3]	04
	c)	Discuss the importance of a project life cycle in the forest sector. [L6; CLO 3]	03
6.	a)	How does the 'Theory of Change (ToC)' play roles in project design? [L1; CLO 3]	03
	b)	Why is the ToC treated as a project design tool? Briefly describe your answer. [L1; CLO 3]	03
	c)	'Project design often comes before a project plan'. Justify it. [L5; CLO 3]	02
	d)	'A good project design reduces uncertainty'. Explain it. [L5; CLO 3]	02
7.	a)	How can a logical framework contribute to design a project? [L1; CLO 3]	02
	b)	Relate 'Design, Monitoring and Evaluation (DME) Cycle' to the project design process. [L2; CLO 3]	03
	c)	Make relationships among monitoring, evaluation, and learning, using relevant examples from forest sector. [L4; CLO 3]	03
	d)	'Identify risks and constraints' is one of the components of project design. Justify it. [L5; CLO 3]	02
8.	a)	What is meant by DPP, TAPP? [L1; CLO 3,4]	02
	b)	Briefly describe the role of NGOs in forest development in Bangladesh. [L1; CLO 3,4]	03
	c)	Briefly describe the activities of SUFAL project implemented by Forest Department of Bangladesh. [L2; CLO 3,4]	05

Khulna University

School	**Life Science**	Discipline:	**Forestry and Wood Technology**	Program	**Bachelor of Science (Honours) in Forestry**
Year:	**4th**	Term:	**1st**	Session:	**2024-2025**
Course code:	**0821 05 FWT 4107**		Course Title:	**Pulp and Paper Technology**	
Total marks:	**60**	Time:	**3 hours**	Credit:	**03**
Instructions:		**The figures in the margin indicate full marks. The questions are of equal value**			
Remarks:		**Use separate answer script for each section.**			

SECTION-A

There are **FOUR** questions in this section. Answer any **THREE** questions

1. a) Define pulp. Classify pulp based on sources and processes. [L2, CLO1] 03
   b) Distinguish between mechanical and chemical pulp. [L4, CLO1] 02
   c) Make a list of fibrous and non-fibrous raw materials used for pulping. [L1, CLO1] 02
   d) Briefly discuss the preparation and treatment of pulpwood. [L6, CLO1] 03

2. a) The quality of chemical pulp is superior to mechanical pulp in terms of paper making properties. Justify. [L4, CLO1,2] 03
   b) Compare "stone ground wood" with "refine mechanical pulping."[L5, CLO1,2] 03
   c) Explain various stages in sulfite pulp processing. [L4, CLO1,2] 04

3. a) Why pulp bleaching is essential for quality paper making? [L1,2; CLO1,2] 03
   b) Define bleaching sequence. Explain the bleaching sequence of 'CEDED'. [L5; CLO1,2] 04
   c) Make a comparison between continuous digester and batch digester. [L5; CLO1,2] 03

4. a) Distinguish between alkaline and acidic pulping. [L4, CLO2] 02
   b) What is Kraft pulping? Draw the flow diagram of Kraft/Sulfate pulping. [L3, CLO2] 04
   c) Discuss the relative advantages and disadvantages of Kraft pulping process. [L4, CLO2] 02
   d) Briefly describe the recovery of black liquor from Kraft pulping process. [L2, CLO2] 02

SECTION-B

There are **FOUR** questions in this section. Answer any **THREE** questions

5.	a)	Distinguish between paper and paperboard. [L4, CLO3]	02
	b)	What is refining? Briefly discuss the effect of refining on paper making. [L3, CLO3]	03
	c)	How could you verify that fibrillation was achieved during refining? [L5, CLO3]	02
	d)	What is beating of pulp? What are the functions of beating? [L1, CLO3]	03
6.	a)	What is head box? What are the functions of head box in paper making? [L2, CLO4]	03
	b)	Describe the wet end and dry end operation of paper mill. [L3, CLO4]	04
	c)	Among the different sections of a paper machine which one is the most expensive one to operate? Provide a brief description of it. [L5; CLO3,4]	03
7.	a)	Provide a comparison between calendering and supercalendering in paper making process. [L4; CLO3,4]	04
	b)	Give two possible reasons why tensile strength and other paper properties vary depending upon the direction of paper? [L3; CLO3,4]	02
	c)	Write short notes on: [L3; CLO3,4] i) Caliper ii) Watermark iii) Tissue paper iv) Newsprint	04
8.		Write short notes on the followings. [L2, CLO3]	2.5×4=10
	a)	Kappa number	
	b)	Recycled paper	
	c)	Bursting and tensile strength of paper	
	d)	Pulp consistency and viscosity	

Khulna University

School	Life Science	Discipline:	Forestry and Wood Technology	Program	Bachelor of Science (Honours) in Forestry
Year:	4th	Term:	1st	Session:	2024-2025
Course code:	0821 05 FWT 4109		Course Title:	Wood Modification and Properties Improvement	
Total marks:	60	Time:	3 hours	Credit:	03
Instructions (if any):		Use separate answer script for each section.			

SECTION-A

There are **FOUR** questions in this section. Answer any **THREE** questions

1.	a)	What is wood modification? Classify wood modification. [L2; CLO1]	03
	b)	Why modification is introduced as an alternative method to wood protection? [L4; CLO 1]	02
	c)	Distinguish between active and passive wood modification. [L4; CLO1]	02
	d)	Briefly discuss the mechanisms of decay resistance of modified wood. [L2; CLO1]	03
2.	a)	During chemical modification, how does a chemical improve the properties of wood? [L2; CLO1 & 2]	03
	b)	What are the basic principles to be considered for selecting a reagent for chemical modification? [L2; CLO1 & 2]	03
	c)	Briefly discuss the importance of "cell wall accessibility" and "reactivity of cell wall polymer" in chemical modification. [L6; CLO1 & 2]	04
3.	a)	What is acetylation of wood? Depict the chemical reaction of acetylation. [L3; CLO2]	03
	b)	Briefly discuss the major steps in acetylation of wood. [L4; CLO2]	03
	c)	Mention the variables affecting the reactions of chemical modification of wood. [L2; CLO2]	04
4.	a)	Discuss the physical properties of wood that are affected by thermal modification. [L6; CLO1& 2]	04
	b)	In the following two situations, where do you expect to observe higher mass loss of wood during thermal modification? Justify. [L5; CLO1 & 2] i) Between inert atmosphere and air; ii) between dry conditions and wet conditions.	06

SECTION-B

There are **FOUR** questions in this section. Answer any **THREE** questions

5.	a)	What is microvoid? Why the study of microvoids is important in wood modification? [L2; CLO3 & 4]	04
	b)	What changes do occur to microvoids during modification process? [L4; CLO3 & 4]	03
	c)	Modified woods are usually more resistant to decay than untreated wood. Explain. [L4; CLO3 & 4]	03
6.	a)	What are the criteria for effective resin modification of wood? [L3; CLO3]	02
	b)	Distinguish between 'Impreg' and 'Compreg' with particular reference to their improved properties. [L3; CLO3]	03
	c)	What is 'DMDHEU' modification? Discuss its modifying properties. [L6; CLO3]	03
	d)	Write down the properties and products of furfurylated wood. [L1; CLO3]	02
7.	a)	What is WPG? How WPG is determined in modified wood? [L3; CLO3]	03
	b)	Can absolute proof of bonding be found by WPG? Explain. [L5; CLO3]	02
	c)	What is bulking co-efficient of modified wood? When it is measured? [L2; CLO3]	02
	d)	How dimensional stability of modified wood is determined? Explain with appropriate formulas. [L5; CLO3]	03
8.	a)	Describe the methods often used for determining environmental impacts of modified wood. [L6; CLO3 & 4]	04
	b)	Provide a schematic presentation showing the various components considered in a life cycle analysis (LCA) of a modified wood. [L5; CLO3 & 4]	03
	c)	A full life cycle analysis (LCA) of any product is expected to involve a number of stages. What are those? [L3; CLO3 & 4]	03

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School	Life Science	Discipline:	Forestry and Wood Technology	Program	Bachelor of Science (Honours) in Forestry
Year:	4th	Term:	1st	Session:	2024-2025
Course code:	0411 05 BA 4151		Course Title:	Accounting	
Total marks:	60	Time:	3 hours	Credit:	03
Instructions (if any):		Use separate answer script for each section.			

SECTION-A

There are **FOUR** questions in this section. Answer any **THREE** questions

1. Tania Rahman opens her own legal consultancy firm in Dhaka, Bangladesh on July 1, 2025. During the first month of operations, the following transactions occurred: 10

    1. Tania invested Tk. 11,00,000 in cash in the business.
    2. Paid Tk. 80,000 for July rent on office space.
    3. Purchased office equipment on account Tk. 3,00,000.
    4. Provided legal services to clients for cash Tk. 1,50,000.
    5. Borrowed Tk. 70,000 cash from a bank by issuing a note payable.
    6. Provided legal services to clients on account Tk. 2,00,000.
    7. Paid monthly expenses: Salaries and wages: Tk. 50,000; Utilities: Tk. 30,000; Advertising: Tk. 10,000.
    8. Tania withdrew Tk. 1,00,000 cash for personal use.

    Prepare a tabular analysis for the month of July, 2025. [L3; CLO1]

2. a) "The terms debit and credit mean increase and decrease, respectively". Is it true? Explain why or why not. [L2; CLO2] 03

    b) Transaction data for Royale Real Estate Agency are presented as follows: 07

Oct. 1-	James Royale begins business as a real estate agent with a cash investment of $17,000.
Oct. 2-	Hires an administrative assistant.
Oct. 3-	Purchases office furniture for $1,900, on account.
Oct. 6-	Sells a house and lot for C. Rouse; bills C. Rouse $3.800 for realty services performed.
Oct. 27-	Pays $1,300 on the balance related to the transaction of October 3.
Oct. 30-	Pays the administrative assistant $2,500 in salary for October.

    Journalize the transaction. [L3; CLO3]

3. The trial balance columns of the worksheet for Dixon Company at June 30, 2022, are as follows: 10

Dixon Company Worksheet For the Month Ended June 30, 2022		
	Trial Balance	
Account Titles	Dr.	Cr.
Cash	2,320	
Accounts Receivable	2,440	
Supplies	1,880	
Accounts Payable		1,120
Unearned Service Revenue		240
Owner's Capital		3,600
Service Revenue		2,400
Salaries and Wages Expense	560	
Miscellaneous Expense	160	
	7,360	7,360

Other data: 1. A physical count reveals $500 of supplies on hand.
2. $100 of the unearned revenue is still unearned at month-end.
3. Accrued salaries are $210.

Enter the trial balance on a worksheet and complete the worksheet. [L4; CLO2]

4. Write short notes on the followings. [L2; CLO2]

a) Unearned revenue 2.5

b) Income statement 2.5

c) Depreciation 2.5

d) Balance sheet 2.5

SECTION-B

There are **FOUR** questions in this section. Answer any **THREE** questions

5. a) What is cost accounting? Differentiate cost accounting and financial accounting. [L2; CLO2] 04

b) "The total fixed cost doesn't change with activity change, but total variable cost changes with activity change. Per unit fixed cost changes with activity change, but per unit variable cost is fixed". Explain this statement with examples. [L2; CLO2] 06

6. a) What do you understand by EOQ? What are the assumptions of EOQ? [L2; CLO3] 05

b) A local distributor for a national tire company expects to sell approximately 9600 tires of a certain size. Annual carrying costs are $16 per tire and ordering costs are $75. The distributor operates 288 days a year. Calculate Economic Order Quantity? [L4; CLO4] 05

7. Salina is the sole owner of Clear View Park, a public camping and recreation facility located near a tourist area in Bangladesh. Salina has compiled the following financial information as of December 31, 2025:

Revenues during 2025- camping fees:	Tk. 140,000
Revenues during 2025- general store:	Tk. 65,000
Accounts Payable:	Tk. 11,000
Cash on hand:	Tk. 23,000
Original cost of equipment:	Tk. 105,500
Fair value of equipment:	Tk. 140,000
Notes payable:	Tk. 60,000
Expenses during 2025:	Tk. 150,000
Accounts receivable:	Tk. 17,500

a) Determine Salina's net income from Clear View Prak for 2025. [L4; CLO3] 05

b) Prepare a Balance Sheet for Clear View Prak as of December 31, 2025. [L4; CLO3] 05

8. Rottino Company purchased a new machine on October 1, 2024, at a cost of Tk. 150,000. The company estimated that the machine will have a salvage value of Tk. 12,000. The machine is expected to be used for 10,000 working hours during its 5-year life. 10

Compute the depreciation expense under the following methods for the year indicated.

(a) Straight line for 2024.

(b) Units-of-activity for 2024, assuming machine usage was 1,700 hours.

(c) Declining-balance using double the straight-line rate for 2024 and 2025. [L4; CLO2]