



Khulna University

School: Life Science;	Discipline: Forestry and Wood Technology;	Program: MSc in Forestry
Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT 5101;	Course Title: Sustainable Forest Management	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) Define sustainable forest management (SFM) and analyze its key principles and objectives in relation to ecological, economic, and social dimensions. [L3; CLO 2] 5
(b) Discuss the importance of sustainable forest management in the context of global change, ecosystem resilience, and human wellbeing. [L5; CLO 3] 5
02. (a) Define 'criteria' and 'indicator' with example. [L1; CLO 1] 2
(b) List criteria (set by ITTO) for SFM at national level. [L1; CLO 1] 2
(c) How is biodiversity conservation important for maintaining forest productivity? [L3; CLO 1] 3
(d) Briefly discuss the relationship between 'Reduced Impact Logging' and SFM. [L3; CLO 1] 3
03. (a) What are the purposes of 'Diagnostic Sampling'? [L1; CLO 2] 2
(b) For the restoration of a degraded natural forest, how would you assess the seedling regeneration status of the forest prior to intervention? [L5; CLO 2] 4
(c) Distinguish between 'enrichment planting' and 'assisted natural regeneration'. Explain their importance in SFM. [L3; CLO 2] 4
04. (a) Explain how site conditions and species composition influence the selection of silvicultural systems. [L5; CLO 3] 3
(b) Describe different silvicultural systems used in tropical natural forests and evaluate their suitability for long-term productivity. [L4; CLO 3] 4
(c) Explain different strategies used to mitigate the negative impacts of logging operations on forest ecosystems. [L5; CLO1] 3



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Section B

There are four questions in this section. Answer any three questions.

05. (a) Why is the knowledge about cost important in forest management? [L2; CLO3] 2
(b) List the steps in work study of forestry operations. [L1; CLO3] 2
(c) Despite that an economic analysis is usually carried out for forest related projects, why is it always advised not to pay very high importance on such analysis. [L3; CLO3] 3
(d) Briefly discuss the procedure of 'environmental assessment' of forestry projects. [L4; CLO3] 3
06. (a) Discuss the structure and key components of a forest management plan for a forest division. [L4; CLO 1] 4
(b) Explain the role of forest management planning in achieving multiple objectives such as production, conservation, and social welfare. [L5; CLO 3] 3
(c) Explain the differences between forest management plans for production forests and protected areas such as National Parks. [L5; CLO 3] 3
07. (a) Briefly discuss the underlying causes of forest degradation/deforestation in Bangladesh. [L4; CLO 3] 3
(b) How far the current forest policy of Bangladesh (2025) supports SFM? [L6; CLO 3] 4
(c) Discuss the present state of forest management in Bangladesh. [L4; CLO 3] 3
08. Write short notes on the followings: 2.5 x 4 = 10
i. Economic valuation of forest ecosystem services [L4; CLO 1]
ii. Public participation in forest land-use decision making [L4; CLO 1]
iii. Co-management and forest sustainability [L4; CLO 3]
iv. Forest restoration approaches and techniques [L4; CLO 3]



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School: Life Science;	Discipline: Forestry and Wood Technology;	Program: Master of Science in Forestry
Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT-5103;	Course Title: Forest Resources and Services	Session: 2025-2026
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) Define biome. Narrate the different roles of biomes with their classification. 03
[L2; CLO 1]
- (b) Justify the reasons why the northern most and southern most poles are most diversity poor biomes in the world. [L5; CLO 1] 04
- (c) Briefly describe the causes that are putting the majority biomes in danger. 03
[L6, CLO 1]
02. (a) What do you understand the common pool resources? How these resources are rival in consumption and non-excludable? [L2; CLO 3] 04
- (b) List the main forest goods of different ecological forests of Bangladesh. 02
[L4; CLO 3]
- (c) Summarize the importance of global forest goods. [L2; CLO 3] 04
03. (a) Give a detailed account of wood-based forest products and commodities that are directly consumed or commercially used at global scale. [L3; CLO 2,3] 05
- (b) Write the special significance of non-timber forest products from socio-economic and cultural considerations. Give an account of non-timber forest products obtained from different forests of Bangladesh. [L4; CLO 2,3] 05
04. (a) Discuss the major causes of deforestation and degradation in Bangladesh. 05
[L6; CLO 4]
- (b) Explain the main efforts required to forest resources conservation in Bangladesh. [L2; CLO 4] 05



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Course Code: 0821 05 FWT-5103;		Course Title: Forest Resources and Services		
Total Marks: 60;		Time: 3 Hours;	Credit: 3	

Instructions: Use Separate answer script for each section

Section B

There are four questions in this section. Answer any three questions.

05. (a) What do you understand by Ecosystem Services (ES)? Discuss how the integration of ES into the development policies and planning can help natural resources management, sustainability and human well-being. [L5; CLO 3,5] 06
- (b) Describe the major types of ecosystem services according to MEA and TEEB with examples. [L5, CLO 3] 04
06. (a) What do you understand by valuation of ecosystem services? Discuss how valuation of ES can contribute to sustainable natural resources management. [L6; CLO 4] 04
- (b) Describe the types of ES values to be identified and assessed in order to have total economic value of an ecosystem. [L4; CLO 4] 04
- (c) Differentiate between revealed preference and stated preference methods of ES valuation with examples. [L2; CLO 4] 02
07. (a) Give a detail list of provisioning, regulatory, supporting and cultural services of the Sal Forest of Bangladesh. [L5; CLO 1] 04
- (b) Narrate the concept of carbon trade mechanism. [L2; CLO 1] 02
- (c) Explain how carbon trade mechanism can be brought into the Payments for Ecosystem Services in Bangladesh. [L2; CLO 1] 04
08. (a) What is natural capital? Why does natural capital matter for economic growth? [L5; CLO 4] 04
- (b) What is natural capital accounting? [L3; CLO 4,5] 03
- (c) Describe briefly the system of environmental-Economic-Accounting (SEEA) central framework for natural capital accounting. [L4; CLO 2,3] 03



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School: Life Science;	Discipline: Forestry and Wood Technology;	Program: MSc in Forestry
Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT 5105;	Course Title: Tropical Forest Ecology	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section B

There are four questions in this section. Answer any three questions.

05. (a) Explain the concept of ecosystem services in tropical forests. Discuss the provisioning, regulating, supporting and cultural services of tropical forests with examples. [L5, CLOs: 1, 3] 6
- (b) What is species-area curve? How do you expect the species-area curve along different canopy strata in a tropical forest? Explain. [L5, CLOs: 1, 3] 4
06. (a) Discuss the role of ecological information in the sustainable management of forest ecosystems. [L4, CLO: 4] 3
- (b) Critically evaluate the limitations of ecological models in representing complex forest ecosystems. [L5, CLO: 4] 3
- (c) Define ecological succession. Explain primary and secondary succession in tropical forest ecosystems with examples. [L2, CLO: 3] 4
07. (a) What are the major causes of tropical deforestation? [L2, CLOs: 1, 4] 2
- (b) "Human activities have transformed tropical forests from biodiversity hotspots into vulnerable ecosystems." Justify your opinion. [L5, CLOs: 1, 4] 4
- (c) Discuss the ecological, social and economic importance of forest restoration programs. [L5, CLOs: 1, 4] 4
08. (a) Compare conceptual, analytical and simulation ecological models with suitable examples. [L5, CLOs: 1, 4] 3
- (b) Explain seed tree system and shelterwood system. Compare their effectiveness in promoting natural regeneration. [L5, CLOs: 3, 4] 5
- (c) Write a brief note on: (i) ecosystem restoration and (ii) role of soil microorganisms in tropical soils. [L4, CLOs: 3, 4] 2



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Course Code: 0821 05 FWT 5105;	Course Title: Tropical Forest Ecology	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) What are the characteristics of tropical forests? Give a list of products and services obtained from tropical forests. [L5, CLO: 2] 4
- (b) Explain the ecological and economic importance of tropical forests in the context of sustainable development. [L2, CLO: 3] 3
- (c) Briefly discuss the main causes of tropical forest destruction. [L5, CLOs: 1, 3] 3
02. (a) Why do tropical rain forests have high biological diversity? Give your opinion. [L3, CLOs: 1, 3] 3
- (b) Describe the energy flow pattern in an ecosystem along a gradient from wet to dry? Compare net primary productivity between oligotrophic and eutrophic forests. [L3, CLOs: 1, 3] 3
- (c) Classify tropical forests based on structure. Give a brief description of each of them. [L3, CLOs: 1, 3] 4
03. (a) Discuss the major threats to tropical forest diversity and suggest appropriate conservation and management strategies. [L5, CLOs: 1, 3] 3
- (b) What is carbon sequestration? Why it is important in climate change mitigation? [L4, CLOs: 1, 3] 4
- (c) Discuss in brief how illegal logging influence forest regeneration process. [L5, CLOs: 1, 3] 3
04. (a) Explain the interaction between vegetation, soil properties, and nutrient availability in tropical forest ecosystems. [L5, CLOs: 1, 3] 4
- (b) Make a brief note on plant-plant interactions and plant-animal interactions in a tropical forest. [L4, CLOs: 1, 3] 3
- (c) Do you think soil characteristics differ among various tropical forest ecosystems? Justify your opinion. [L5, CLOs: 1, 3] 3



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Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT-5107;	Course Title: Forest Biodiversity and conservation	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) Define biodiversity at the genetic, species, and ecosystem levels. [L1; CLO 1] 03
(b) Evaluate the ethical argument for biodiversity conservation. [L5; CLO 3] 03
(c) Discuss the ecological and socio-economic drivers of biodiversity loss from the forests of Bangladesh. [L2; CLO 2] 04
02. (a) Contrast the structural and functional attributes of primary forest versus a secondary plantation. [L2; CLO 2] 03
(b) Explain how habitat fragmentation affects large herbivores. [L3; CLO 3] 03
(c) What are the characteristics of biological corridors to restore habitat connectivity? [L5; CLO 3] 04
03. (a) Define keystone species, flagship species and endemic species. [L1; CLO 1,3] 02
(b) How do cultural perspectives of indigenous communities influence the success of local biodiversity conservation initiatives? Explain. [L5; CLO 3] 04
(c) How does spatial heterogeneity within a forest stand contribute to niche specialization and the maintenance of high species richness? Explain. [L3; CLO 3] 04
04. (a) While sampling an area for biodiversity assessment, what factors need to be considered? [L2; CLO 1,2] 03
(b) Discuss about the merits and demerits of Shannon's index and Simpson's index in biodiversity measurement. [L4; CLO 1,2] 03
(c) Explain the species-area relationship curve with an illustration. [L3; CLO 1,2] 02
(d) What is importance Value Index (IVI)? Explain with equation. [L2; CLO 1,2] 02



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Course Code: 0821 05 FWT-5107;	Course Title: Forest Biodiversity and Conservation	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section B

There are four questions in this section. Answer any three questions.

05. (a) How does biodiversity conservation contribute towards sustainable forest management? [L6; CLO 1] 05
- (b) Briefly discuss possible modification in clear cutting system for mitigating biodiversity loss. [L2, CLO 1,2] 05
06. (a) Discuss about resistance and resilience in the ecosystem stability. [L1; CLO 2] 02
- (b) Compare the “Redundancy Hypothesis” and the “Rivet Hypothesis” regarding species loss. [L3; CLO 3] 02
- (c) Write the qualifications of an area to be a biodiversity hotspot. [L1; CLO 1,2] 03
- (d) How does management of invasive species affect biodiversity conservation? [L6; CLO 3] 03
07. (a) Describe the administrative hierarchy established by the Bangladesh Biodiversity Act 2017. [L2; CLO 3] 03
- (b) Contrast the management objectives of national park versus a wildlife Sanctuary. [L3; CLO 3] 04
- (c) What is “biopiracy” in Biodiversity Conservation Act 2017? [L2; CLO 2] 03
08. (a) Discuss in-situ and ex-situ conservation initiatives practiced in Bangladesh. [L2; CLO 2] 04
- (b) Discuss the institutional capacity of GoB for biodiversity conservation. [L6; CLO 3] 04
- (c) Evaluate the sustainability of reliance on international climate grants for biodiversity conservation in Bangladesh. [L5; CLO 3] 02



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Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT-5109;	Course Title: Forest Soil and Site Productivity	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) What is a soil profile? How does it form? [L1; CLO 1] 03
(b) Explain boreal forest soils with emphasis on permafrost. [L2; CLO 1] 03
(c) How does the forest hydrology alter due to the silvicultural site preparation techniques? [L3; CLO 1,3] 04
02. (a) Name the different types of humus found in forest soils. [L1; CLO 2] 02
(b) Explain how the rate of decomposition affects the accumulation of organic matter in the forest floor. [L2; CLO 1] 03
(c) Critique the forestry practice of removing all logging residues (branches and leaves) from a site after harvest in terms of nutrient conservation. [L5; CLO 3] 05
03. (a) How can forest soils act as both a source and a sink of GHGs? [L1; CLO 1,3] 03
(b) Compare the relative contribution of tropical, temperate and boreal forests to the global forest carbon stock. [L4; CLO 1,3] 03
(c) Explain carbon sequestration. How do forests sequester carbon? [L2; CLO 1,3] 04
04. (a) Discuss the impact of heavy machinery during timber harvest on soil structure. [L2; CLO 3] 03
(b) Analyze the long-term impacts of shifting cultivation (Jhum) on soil aggregate stability. [L4; CLO 2] 03
(c) Design a soil conservation strategy for a forest plantation on a slope exceeding 30 degrees. Compare the use of 'Vegetative Barriers' versus 'Contour Trenching.' [L6; CLO 3] 04



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Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section B

There are four questions in this section. Answer any three questions.

05. (a) Analyze the drivers of land availability for forestry in Bangladesh, considering population density and competing land-use demands. [L4; CLO 2] 04
- (b) Discuss the impact of tenure conflicts and land grabbing on the success of forest restoration in central Sal Forest of Bangladesh. [L2, CLO 4] 04
- (c) How does the "decoupling of land tenure from tree tenure" specifically benefit landless stakeholders while maintaining state control? [L3, CLO 4] 02
06. (a) Explain importance of throughfall and stemflow in nutrient recycling. [L2; CLO 2,4] 02
- (b) Define nutrient recycling. Discuss the process of nutrient recycling in forest ecosystems. [L6; CLO 2,4] 04
- (c) Elaborate the factors affecting litter decomposition and nutrient release. [L6; CLO 2,4] 04
07. (a) Critique the Site Index (SI) method. [L5; CLO 5] 03
- (b) You are managing a degraded uneven-aged, mixed-species forest where the exact stand age is unknown. Why would the standard Site Index (SI) fail in this scenario? [L6; CLO 5] 03
- (c) Propose an alternative method to assess site productivity for uneven-aged, mixed-species forest stands. [L6; CLO 5] 04
08. (a) Discuss the components of a smart nutrient management plan. [L6; CLO 4] 03
- (b) Illustrate the objectives of forest nutrient management. [L2; CLO 4] 03
- (c) How the soil health is influenced by the microbial activity? [L1; CLO 5] 04



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Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT-5121;	Course Title: Forestry for Community Development	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) Distinguish between Society and Community. [L4; CLO 1] 02
(b) Describe the characteristics and functions of community. [L2; CLO 1] 04
(c) What is an institution? To what extent do social institutions support community development in Bangladesh? [L5; CLO 2] 04
02. (a) What is community development? Write two conditions for community development. [L1; CLO 1] 03
(b) Draw cyclical flow diagram of community development process. [L2; CLO 1,3] 03
(c) Explain the major challenges that limit the effectiveness of the co-management approach in the Sundarbans mangrove forest? [L5; CLO 2,3] 04
03. (a) Define livelihood. [L1; CLO3] 02
(b) Who are forest people? Analyze the role of forest people in maintaining forest ecosystems. [L4; CLO 3] 04
(c) Explain the sustainable livelihood framework with a diagram. [L3; CLO3] 04
04. (a) What are common-pool resources? Explain it using some examples. [L5; CLO 2] 03
(b) How can the 'Tragedy of the Commons' influence community development? [L1; CLO 2] 04
(c) Briefly explain the Prisoner's Dilemma using examples. How can it be related to community development? [L5; CLO 2] 03



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Course Code: 0821 05 FWT-5121;	Course Title: Forestry for Community Development	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section B

There are four questions in this section. Answer any three questions.

05. (a) Differentiate among the following conflict-related terms: conflict analysis, negotiation, mediation, management, and mitigation. [L4; CLO 4] 05
- (b) Briefly explain the root causes of conflicts in participatory forestry. [L5; CLO 4] 03
- (c) Briefly explain how climate change can aggravate displacement conflicts in a society. [L5; CLO 4] 02
06. (a) “Leadership is all about the ability to influence others in the community” - Discuss the statement. [L3; CLO 4] 04
- (b) Briefly discuss the characteristics of an efficient community leader. [L1; CLO 4] 03
- (c) Explain how leadership is very important for Community Development. [L3; CLO 4] 03
07. (a) Define empowerment. [L1; CLO 4] 02
- (b) Given the existing situation in Bangladesh, how can women’s participation in protected area management be ensured? [L1; CLO 4] 04
- (c) Critically explain the role of Non-Government Organization (NGO) in social forestry. [L5; CLO 4] 04
08. (a) How can REDD+ mitigate climate change effects? [L1; CLO 5] 03
- (b) Discuss the roles of forests in mitigating and adapting to the effects of climate change. [L6; CLO 5] 04
- (c) Briefly discuss the roles of forest governance in addressing deforestation in Bangladesh. [L6; CLO 5] 03



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School: Life Science;	Discipline: Forestry and Wood Technology;	Program: MSc in Forestry
Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT 5123;	Course Title: Agroforestry Systems and Practices	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) Discuss the opportunities and limitations of agroforestry considering the landuse and agro-ecosystems of Bangladesh. [L5; CLO 1] 4
(b) Describe alley cropping, woodlot and contour hedgerows with illustrations in the context of Bangladesh. [L6; CLO 2] 6
02. (a) Discuss the characteristics of a tree species desirable for planting in an agroforestry farm. [L4; CLO 2] 2
(b) Name five MPTS that are suitable as farm trees for Bangladesh. Write their characteristics and multipurpose uses. [L2; CLO 2] 5
(c) A farmer owns 2 hectares of saline affected land in coastal area. Design a suitable agroforestry model for the farm and justify your choices. [L6; CLO 2] 3
03. (a) Discuss the importance of evaluating tree-crop interactions for successful agroforestry practice. [L5; CLO 3] 4
(b) Discuss the present form of Jhum cultivation practiced in the hill districts of Bangladesh. [L5; CLO 3] 3
(c) Suggest possible strategies and interventions in order to reduce the negative consequences of Jhum cultivation. [L6; CLO 3] 3
04. (a) Discuss the potentials of agroforestry for restoration of degraded hilly areas. [L4; CLO 2] 4
(b) Discuss the prospects of homestead agroforestry in Bangladesh. [L5; CLO 3] 4
(c) Why agroforestry systems are more widely adopted in tropical regions than temperate regions? [L5; CLO 3] 2



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Total Marks: 60;	Time: 3 Hours;	Credit: 3

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Section B

There are four questions in this section. Answer any three questions.

05. (a) Describe seasonal calendar, transect walk and PRA tools for biophysical and socio-economic surveys to diagnose and design agroforestry solutions for landuse problems. [L5; CLO 1,2] 6
- (b) In the face of climate change, how agroforestry can help making a landscape climate resilient. [L6; CLO 2] 4
06. (a) Discuss the status of agroforestry in India and Nepal. [L3; CLO 1,3] 4
- (b) Discuss the importance of formulating agroforestry policy in Bangladesh. [L3; CLO 2] 2
- (c) Discuss the determinants of farming systems in Bangladesh and distinguish between subsistence and commercial farming systems. [L5; CLO 1,3] 4
07. (a) Write in short about climate smart agroforestry. [L2; CLO 1] 3
- (b) Describe the constraints affecting adoption of agroforestry by small farmers. [L5; CLO 3] 3
- (c) Discuss the scope of agroforestry in carbon sequestration and environmental amelioration in the context of REDD+. [L6; CLO 2] 4
08. (a) What is D&D? Discuss the basic steps of D&D for agroforestry project planning and implementation. [L6; CLO 3] 5
- (b) Agroforestry development and extension can contribute towards sustainability of forest management in Bangladesh. Discuss the statement. [L6; CLO 3] 5



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Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT-5125;	Course Title: Protected Area Management	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) What is the “Global 30x30 Initiative”? [L1; CLO 1] 02
(b) Do you think the concept of protected areas is powerful in biodiversity conservation? 04
Defend your position. [L5; CLO 1]
(c) Effective Protected Area Management (PAM) is essential for preventing habitat 04
destruction, mitigating human-wildlife conflicts, and ensuring long-term ecological
resilience. Justify the statement. [L5; CLO 1]
02. (a) What is protected area governance? Classify and describe protected area governance. 03
[L4; CLO 3]
(b) What are the principles of protected area governance? Discuss in brief. [L6; CLO 3] 04
(c) ‘Governance is a key factor for protected area to succeed in conserving biodiversity 03
and securing sustainable livelihoods’-Justify. [L5; CLO 3]
03. (a) What is CBD? State the objectives of CBD. [L1; CLO 5] 02
(b) Briefly discuss the challenges of Nature Based Solution (NBS) application in 04
Bangladesh and the ways to overcome these challenges. [L6; CLO 2]
(c) Discuss the applicability of theory of change to improve conservation outcomes in 02
protected areas. [L5; CLO 2]
(d) Compare between rightsholders and stakeholders. [L2, CLO 3] 02
04. (a) Briefly mention the application of game theory in protected area management. 02
[L3; CLO 2]
(b) Briefly mention the application of the Power-Interest Matrix in Madhupur National 03
Park. [L4; CLO 2]
(c) What is adaptive co-management? Why adaptive co-management is important for 03
protected area management. [L3; CLO 2]
(d) Briefly discuss the roles of IUCN in protected area management. [L5; CLO 2] 02



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Total Marks: 60;	Time: 3 Hours;	Credit: 3

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Section B

There are four questions in this section. Answer any three questions.

05. (a) Define conservation. State the conservation values of protected areas. [L1; CLO 2] 03
(b) Discuss the cultural and spiritual significance of protect areas like the Sundarbans. [L5, CLO 2] 03
(c) What is world's conservation strategy? State the main objectives of the world's conservation strategy. [L3, CLO 3] 02
(d) Compare between ancillary and voluntary conservation with examples. [L5; CLO 3] 02
06. (a) Discuss participatory protected area management as a shared governance approach practiced in Bangladesh. [L5; CLO 3] 03
(b) Briefly discuss the importance of adaptive governance in managing the protected areas of Bangladesh. [L5; CLO 3] 03
(c) Explain how various ecosystem services can improve the governance of a protected area? [L1; CLO 4] 04
07. (a) Why and how National Parks and wildlife Sanctuaries are declared in Bangladesh? [L3; CLO 2] 04
(b) What are current management activities in protected area in Bangladesh? Discuss. [L5; CLO 5] 03
(c) What is NCS? What are the conservation strategies and actions adopted for forest resources conservation of Bangladesh? Discuss. [L2; CLO 5] 03
08. (a) Justify the global initiatives in conserving the biodiversity of the protected areas of Bangladesh. [L5; CLO 5] 05
(b) Briefly discuss the conservation strategies of Bangladesh with their limitation/challenges. [L6; CLO 5] 05



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School: Life Science;	Discipline: Forestry and Wood Technology;	Program: MSc in Forestry
Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT 5131;	Course Title: Wood Material Science	
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

1.
 - a) Provide a brief description of different cell wall components in plant. [L6; CLO2,3] 3
 - b) Explain the periclinal and anticlinal division of cambium cells. [L5; CLO1,2,3] 4
 - c) Describe briefly about the hormones which control the formation, maintenance and proliferation of the vascular cambium. [L6; CLO1,2,3] 3
2.
 - a) Describe cambial dynamics during wood formation process. [L6; CLO1,2,3] 3
 - b) "Vascular cambium establishes a process of dormant, reactivation, and active stages". Explain. [L5; CLO1,2,3] 4
 - c) Explain the phenomenon of "programmed cell death" during the formation of wood. [L5; CLO1,2,3] 3
3.
 - a) Distinguish between brown rot, white rot, and soft rot in terms of the cell wall components primarily degraded. [L5; CLO2,3] 3
 - b) Explain why wood with a moisture content below 20% is generally resistant to microbial decay. [L5; CLO2] 3
 - c) Describe the relationship between decay and weight loss in wood. [L5; CLO3] 2
 - d) Explain the biological significance and uses of tannins? [L5; CLO3] 2
4.
 - a) Write down the roles of enzymes in trees. [L3; CLO2,3] 3
 - b) The knowledge of the mechanisms of enzymatic degradation of wood and its components is helpful for us. Explain. [L5; CLO2,3] 3
 - c) Briefly describe exo-enzymes and endo-enzymes. [L6; CLO2,3] 4



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Instructions: Use Separate answer script for each section

Section B

There are four questions in this section. Answer any three questions.

5. a) Define equilibrium moisture content (EMC). Explain how relative humidity and temperature of the surrounding air jointly influence the EMC of wood. [L2; CLO2] 4
b) Demonstrate how seasonal variation affects indoor wooden furniture. [L3; CLO2] 3
c) Compare the physical behavior of wood above and below FSP. [L4; CLO3] 3
6. a) Define adsorption and desorption in wood science. Explain hysteresis in wood moisture sorption. [L2; CLO2] 4
b) Distinguish between moisture content on a dry basis versus green basis, and explain which is standard in wood science. [L2; CLO3] 3
c) Evaluate the importance of moisture control in wood utilization. [L5; CLO3] 3
7. a) List the major physical properties of wood. [L1; CLO3] 2
b) Explain why wood has low thermal conductivity in the radial direction compared to the longitudinal direction. [L2; CLO3] 3
c) Explain why dry wood behaves as an electrical insulator. [L2; CLO3] 2
d) Analyze the effect of grain orientation on dimensional stability. [L4; CLO3] 3
8. a) Explain how capillary tension leads to collapse deformation. [L5; CLO1,2] 3
b) Describe how resin impregnation improves deformation behavior in wood. [L6; CLO1,2] 3
c) What are the factors (intrinsic and extrinsic) those affect deformation behavior in wood? [L1; CLO1,2] 4



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Course Code: 0821 05 FWT 5133;	Course Title: Forest Bioenergy	Session: 2025-2026
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) What are the differences between biomass and bioenergy? [L1, CLO: 1] 4
(b) State the reasons why people still use fossil fuels instead of alternative fuels. 3
[L2, CLO: 2]
(c) Is biomass a sustainable energy source? Discuss. [L5, CLO: 2] 3
02. (a) Briefly discuss the composition and properties of lignocellulosic biomass. 3
[L5, CLO: 2]
(b) What is wood fuel? What are the different forms of wood fuel? Discuss. [L2, CLO: 3] 3
(c) Make a list of good fuel wood species in Bangladesh. [L1, CLO: 3] 2
(d) Briefly discuss the importance of promoting fuel wood production. [L5, CLO: 3] 2
03. (a) Illustrate examples of first, second, and third-generation biofuels with their raw materials and uses. [L3, CLO: 2] 3
(b) What is the densification of biomass? Write the advantages and disadvantages of biomass densification when used as fuel. [L4, CLO: 3] 4
(c) Explain how moisture content affects the energy value of biomass. [L3, CLO: 3] 3
04. (a) Write down the characteristics of a good fuel wood tree species in Bangladesh. 3
[L4, CLO: 2]
(b) Write the chemical composition of forest biomass. [L1, CLO: 2] 3
(c) What is 'syngas'? Write the advantages of using syngas as a source of energy. 4
[L1, CLO: 1]



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Instructions: Use Separate answer script for each section

Section B

There are four questions in this section. Answer any three questions.

05. (a) What are biochar and charcoal? State the difference between biochar and charcoal [L1, CLO: 3] 4
- (b) Discuss the factors that affect the yield of charcoal. [L5, CLO: 5] 3
- (c) Explain the advantages of using biochar and hydrochar as solid biofuels. [L4, CLO: 5] 3
06. (a) What is pyrolysis? Differentiate pyrolysis from combustion. [L4, CLO: 2] 3
- (b) Briefly discuss the economic and environmental advantages of pyrolysis. [L5, CLO: 3] 3
- (c) Discuss the mechanism and products of biomass pyrolysis. [L5, CLO: 2] 4
07. (a) What is life cycle assessment (LCA) of a product? Why is it important for bioenergy products? [L4, CLO: 4] 3
- (b) Discuss the main components involved in conducting a LCA of a product. [L2, CLO: 4] 3
- (c) Discuss the effect of forest biomass conversion on soil, water and air quality. [L4, CLO: 5] 4
08. (a) Discuss the relationship between sustainable forest management and forest bioenergy. [L2, CLOs: 3,5] 3
- (b) Write down the key policy considerations for sustainable forest bioenergy production. [L1, CLOs: 3,4] 3
- (c) How use of forest bioenergy may accelerate deforestation and forest degradation? [L5, CLO: 5] 4



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Year: MS;	Term: I;	Examination Year: 2026;
Course Code: 0821 05 FWT-5135;	Course Title: Wood Protection	Session: 2025-2026
Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section A

There are four questions in this section. Answer any three questions.

01. (a) Wood is a substrate for micro-organisms. Explain the statement. [L5; CLO 1] 03
(b) Classify the biotic and abiotic agents of wood deterioration. [L2; CLO 1] 03
(c) Briefly describe the factors affecting the growth and survival of fungi in wood. 04
[L2; CLO 1]
02. (a) Why microbial growth in wood is limited below fiber saturation point (FSP)? 02
[L1; CLO 1]
(b) Distinguish between sap stain and blue stain on the basis of effects on timber 03
properties. [L2; CLO 1]
(c) Explain in details about the mechanism of degradation of cellulose by decay 05
fungi. [L2; CLO 1]
03. (a) Illustrate the decay mechanism of brown rot fungi with necessary explanation. 04
[L3; CLO 3]
(b) Describe the changes of physical and strength properties of wood due to the 04
fungal decay. [L1; CLO 1]
(c) Distinguish between the deterioration pattern of sap stain and blue stain fungi. 02
[L2; CLO 1]
04. (a) Why heartwood is more durable than sapwood? Explain. [L4; CLO 1] 03
(b) Briefly discuss the causes and variability of natural durability of wood. 03
[L2; CLO 1]
(c) Explain the 'accelerated field test' method mentioning its importance. 04
[L5; CLO 2]



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Total Marks: 60;	Time: 3 Hours;	Credit: 3

Instructions: Use Separate answer script for each section

Section B

There are four questions in this section. Answer any three questions.

05. (a) What are the functions of air in a seasoning kiln? [L1; CLO 2] 02
(b) What type of defects occur in wood during drying? Illustrate different types of wood defects. [L2; CLO 2] 05
(c) What are the advantages of progressive kiln over other kilns? [L1; CLO 2] 03
06. (a) Plant extracts can be used as environmentally friendly wood preservative. Explain the statement. [L5; CLO 2] 04
(b) Briefly describe the properties of preservative treated wood. [L2; CLO 2] 04
(c) Why the drying times depend on wood and weather? [L1; CLO 2] 02
07. (a) Changes in the wood preservation sector have resulted in the introduction of wood modification. Justify the statement. [L5; CLO 3] 03
(b) Briefly discuss the mechanisms of decay resistance of modified wood. [L2; CLO 2] 04
(c) Distinguish between 'Impreg' and 'Compreg' with particular reference to their benefits and application. [L3; CLO 2] 03
08. Write short notes on the followings: 2.5x4=10
(a) Laser incising of wood [L2; CLO 2]
(b) Termite attack on wood [L2; CLO 1]
(c) Environmental impacts of wood preservation [L2; CLO 1]
(d) Micro-distribution of preservative in wood [L2; CLO 3]