

[Question of Term Final Examination]
Khulna University

School	Life Science	Discipline:	Forestry and Wood Technology	Program	B.Sc.(Hons.) in Forestry
Year:	2nd	Term:	1st	Session:	2024-2025
Course code:	0821 05 FWT 2101	Course Title:	Forest Ecology		
Total marks:	60	Time:	3 hours	Credit:	3
Instructions (if any):		The figures in the margin indicate full marks. The questions are of equal value. Use separate answer script for each section.			

Section-A

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

1. a) What is 'ecosystem'? Justify that a traditional homegarden in Bangladesh is an ecosystem. [L2; CLO1,2] 03
b) How is a forest ecosystem different from a cropland ecosystem? [L2; CLO1,2] 02
c) Argue that in a natural ecosystem, not a food chain, but a food web exists. [L2; CLO3] 02
d) Briefly discuss the importance of ecology in timber production management. [L4; CLO1,2] 03
2. a) List the factors affecting the availability of water to plant. [L1; CLO3,4] 02
b) Describe two strategies that might improve seedling survival while raising a plantation on a drought prone area. [L2; CLO3,4] 03
c) Briefly describe the ecological role of wind. [L4; CLO3,4] 02
d) In Khulna University campus trees are susceptible to be wind thrown. What strategies would you recommend (with justification) to minimize the rate of wind-throw of trees? [L6; CLO3,4] 03
3. a) Discuss the role of solar radiation in plant growth, regeneration and species distribution in forests. [L5; CLO2] 06
b) Define microclimate in forests. How forest vegetation modify temperature and humidity? [L4; CLO2] 04
4. a) What is nutrient uptake in plants? Discuss the factors affecting nutrient uptake in forest vegetation. [L5; CLO2] 04
b) Define mycorrhizae. Discuss the role of mycorrhizal associations in plant growth. [L4; CLO2] 03
c) Explain the concept of nutrient cycling and re-translocation. [L2; CLO2] 03

Section-B

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

5. a) Distinguish between 'population' and 'community'. [L2; CLO4,5] 02
b) How is your life affected for being in a population? [L3; CLO4,5] 02
c) List the interspecific interactions with example that you can observed in the Khulna University campus. [L4; CLO4,5] 03
d) If tigers disappear from the Sundarbans, what could be the effect on the forest ecosystem? How could the effects be minimized? [L6; CLO4,5] 03
6. a) Briefly discuss the essential features of succession. [L4; CLO4,5] 03
b) Compare the characteristics of 'pioneer' and 'climax' species. [L2; CLO4,5] 02
c) How does 'disturbance' affect the rate of successional changes? [L3; CLO4,5] 02
d) When a large gap is produced in a forest, how a stable plant community may develop again in the area? [L4; CLO4,5] 03
7. a) Define different types of biodiversity with example. [L3; CLO4,5] 03
b) How does rich plant biodiversity improve the productivity of a forest ecosystem? [L5; CLO4,5] 02
c) Discuss the relationship between 'biodiversity' and 'disturbance' in an ecosystem. [L5; CLO4,5] 02
d) Why should we conserve biodiversity? [L6; CLO4,5] 03
8. a) Define ecotone with examples. Discuss the characteristics of ecotone. [L2; CLO4] 03
b) Explain the terms composition, mutualism and commensalism with examples. Describe the role of species interactions in community stability. [L3; CLO4] 04
c) Discuss quadrat and transect methods of vegetation analysis. [L5; CLO4] 03

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School: **Life Science**, Discipline: **Forestry and Wood Technology**, Program: **B.Sc.(Hons.) in Forestry**

Year: **2nd**, Term: **1st**, Session: **2024 – 2025**

Course code: **0821 05 FWT-2103**, Course Title: **Forest Genetics and Tree Improvement**

Total marks: **60**, Time: **3 hours**, Credit: **3**

- Instructions:
- The figures in the margin indicate full marks. The questions are of equal value.
 - Use separate answer script for each section.

SECTION-A

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

1. a) Define crossing over, genome and heredity. [L1; CLO 1,2] 03
b) Describe the process of crossing over. [L1; CLO 1,2] 03
c) Discuss the importance of protein synthesis in Genetics. [L6; CLO1,2] 04
2. a) What are Mendel's laws of inheritance? [L1; CLO2] 02
b) Distinguish between dominant and recessive traits. [L4; CLO2] 02
c) Explain Mendel's laws and their importance in Forest Genetics. [L2; CLO2] 06
3. a) Explain the 'test cross' and 'back cross'. [L2; CLO1,2] 03
b) Identify the major causes of biological evolution. [L3; CLO 1,2]. 04
c) Explain the genetic and environmental causes of phenotypic variability. [L5; CLO3,4] 03
4. a) Define selection and selection efficiency. [L1; CLO3] 02
b) Explain how variability within and among populations are measured and used in tree improvement. [L2; CLO3] 04
c) Describe the major breeding strategies used in forest tree improvement. [L6; CLO 3] 04

SECTION-B

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

5. a) Define tree improvement. [L1; CLO1]. 02
b) Mention the objectives and importance of tree improvement in Forestry. [L1,2; CLO1] 04
c) Explain how tree improvement contributes to plantation forestry, conservation and industrial wood production. [L2; CLO1] 04
6. a) Write down the importance of vegetative propagation in forestry practice. [L1; CLO5,6]. 03
b) Describe cleft grafting and veneer grafting techniques. [L4; CLO5,6]. 04
c) Distinguish between scion and root stock. [L4; CLO 5,6] 03
7. a) Write down the advantages and disadvantages of introducing exotic species. [L1; CLO5,6] 03
b) What is plus tree? Describe the selection procedure of a plus tree. [L1,2; CLO5,6] 04
c) Differentiate between clonal seed orchard and seedling seed orchard. [L4; CLO5,6] 03
8. a) Define clonal forestry. [L1; CLO 3] 02
b) Analyze the benefits and risks of using clonal forestry. [L4; CLO3] 04
c) Define tissue culture. Mention the major steps involved in plant tissue culture. [L1,4; CLO3] 04

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Year:	2nd	Term:	1st	Session:	2024-2025
Course code:	0821 05 FWT 2105	Course Title:	Sawmilling, Saw Doctoring and Wood Working		
Total marks:	60	Time:	3 hours	Credit:	3
Instructions (if any):		The figures in the margin indicate full marks. The questions are of equal value. Use separate answer script for each section.			

SECTION-A

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

1. a) What is meant by sawmill and sawmilling? [L1; CLO1,2] 02
b) Briefly describe the different types of sawmills. [L5; CLO1,2] 03
c) Explain the terms plank, board and beam. [L2; CLO1,2] 03
d) How sawing wastes can be utilized by sawmills? [L1; CLO1,2] 02
2. a) List the major processes that are carried out in a sawmill. [L1; CLO1,2] 03
b) Why is sawing often started from the small end of a log? [L2; CLO2] 03
c) How does the location of a sawmill influence both economic and operational efficiency of the mill? [L4; CLO2] 04
3. a) What is tooth setting of a saw? Name different types of tooth settings with sketches. [L1,3; CLO3,4] 04
b) Define 'kerf' and 'pitch'. [L1; CLO3,4] 03
c) Determine the pitch of the teeth in a 48-inch diameter circular saw having 54 teeth. [L1; CLO3,4] 03
4. a) What is meant by tensioning of a band-saw blade? Compare the effects of insufficient and excessive blade tension [L1,4; CLO2] 04
b) What is brazing? Describe in detail the stellite-tipped saw blade. [L14; CLO2] 03
c) Why are cross-cut saws usually spring-set? [L2; CLO2] 03

SECTION-B

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

5. a) Distinguish between the nominal and actual size of lumber. [L2; CLO3] 03
b) Write down the advantages and disadvantages of quarter-sawn timber. [L2; CLO3] 04
c) Explain the importance of lumber grading. [L2; CLO4] 03
6. a) How can you regulate the thickness of cut in a jointer? Explain. [L4; CLO3,4] 04
b) Explain rip cut, cross cut, miter cut and bevel cut with necessary sketches. [L4; CLO3,4] 04
c) What is meant by chuck and shank? [L1; CLO3,4] 02
7. a) What are the major environmental issues in sawmilling and wood working? [L2; CLO2,3] 03
b) Compare the functions of a jointer and a planer. How do they differ in operation? [L4; CLO3] 04
c) Evaluate the effectiveness of hand sanding versus machine sanding. [L4; CLO3] 03
8. a) For a timber construction work that requires much strength, which type of joints would you suggested? Explain your reasons. [L5; CLO3,4] 04
b) Write down the features of a rabbit joint with necessary sketch. [L3; CLO3,4] 03
c) Explain the following terms: i) groove, ii) dovetail, iii) dado. [L2; CLO3,4] 03

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Year:	2nd	Term:	1st	Session:	2024-2025
Course code:	0821 05 FWT 2107	Course Title:	Non-Wood Forest Products and Utilization		
Total marks:	60	Time:	3 hours	Credit:	3
Instructions (if any):		The figures in the margin indicate full marks. The questions are of equal value. Use separate answer script for each section.			

SECTION-A

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

1. a) Define Non-Wood Forest Products (NWFPs). Mention the alternative terms popularly used for NWFPs. [L1; CLO1] 02
b) 'NWFPs can include a wide variety of items.' Discuss. [L4; CLO2] 04
c) Describe the contribution of NWFPs to the livelihood of people living in and around the forests of Bangladesh. [L5; CLO2] 04
2. a) Tannin has the ability to convert hide into leather. How and why? [L1; CLO1,2] 03
b) List four medicinal plants (with botanical names) and four edible products obtained from forests of Bangladesh. [L2; CLO1] 03
c) What are natural dyes? Name some trees that produce dye from wood with their uses in Bangladesh. [L1; CLO 1, 2] 04
3. a) Make a sketch showing the classification of resin. [L2; CLO1,2] 03
b) Discuss in brief about the uses of gums and resins. [L6; CLO1,2] 03
c) How do the local people differentiate between toxic and edible mushrooms? [L4; CLO1,2] 04
4. a) Differentiate between fibre and flosses. Discuss the classification of fibres. [L2; CLO2] 04
b) Write the characteristics of natural fibre. [L2; CLO2] 02
c) Give a description of some of the important plants found in the forests of Bangladesh which yield fibres and flosses. [L6; CLO1,2] 04

SECTION-B

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

5. a) Illustrate the conservation guidelines for the Nypa leaves and honey in the Sundarbans. [L2; CLO3,4] 03
b) What do you mean by gregarious flowering and monocarpic death? Explain with examples. [L1; CL 3,4] 03
c) Explain the chemical composition and storage process of shellac. [L2; CLO3,4] 04
6. a) Why deciduous forests are rich in NWFPs. [L2; CLO4] 02
b) Describe the prospects of fruits and nuts based local industries in Bangladesh. [L4; CLO4] 04
c) Discuss the contribution of NWFPs based rural industries for the women empowerment in Bangladesh. [L4; CLO2] 04
7. a) Analyze the market opportunities for medicinal plants in Bangladesh. [L1; CLO3] 03
b) Discuss the future of bamboo based industries in Bangladesh. [L3; CLO3] 04
c) How ecotourism and NWFPs based rural industries can support each other? [L4; CLO2] 03
8. a) How does the efficiency of people involved in NWFPs industries can be improved in Bangladesh? [L2; CLO3,4] 03
b) Explain the soil and climatic requirements for sericulture. [L5; CLO3,4] 04
c) Summarize the marketing constraints of NWFPs in Bangladesh. [L2; CLO3,4] 03

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Year:	2nd	Term:	1st	Session:	2024-2025
Course code:	0821 05 FWT 2109	Course Title:	Mycology and Forest Pathology		
Total marks:	60	Time:	3 hours	Credit:	3
Instructions (if any):		The figures in the margin indicate full marks. The questions are of equal value. Use separate answer script for each section.			

SECTION-A

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

1. a) Define fungi. What are the characteristics of fungi? [L1; CLO1] 03
b) Briefly discuss the importance of fungi with particular reference to human. [L2; CLO1] 02
c) Describe the asexual reproductive structure of fungi with illustrations. [L2; CLO1] 05
2. a) Explain the mode of nutrition of fungi. [L2; CLO1,2] 03
b) Why mycorrhizae are important to certain trees? Explain. [L1; CLO1,2] 02
c) Write down the life history of *Ganoderma lucidum* with necessary illustration. [L1; CLO1,2] 05
3. a) What is plant disease? How disease is caused in plants? [L2; CLO2] 03
b) Define the following disease symptoms of forest trees: wilting, canker, leaf spot and dieback. [L1; CLO2] 04
c) Briefly discuss the symptoms, causal pathogen and control measures of damping-off disease of seedlings. [L4; CLO2] 03
4. a) Briefly describe the process of wood decay. How decay can be controlled? [L1; CLO2] 04
b) What is heart rot in living trees? How heart rot can be detected in trees? [L5; CLO2] 03
c) Discuss the mode of dispersal of fungi. [L3; CLO1,2] 03

SECTION-B

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

5. a) What is meant by top-dying of Sundri? Mention the causes and control measure of top-dying of Sundri. [L2; CLO3] 04
b) Name four important diseases and their causal factors of Gamar. [L1; CLO3] 04
c) Briefly discuss the importance of seed pathology. [L4; CLO3] 02
6. a) How air pollutants affect plant? Briefly describe the effect of O₃, SO₂, NO₂ and peroxyacetyl nitrates (PAN) on plants. [L1; CLO2,3] 04
b) What are the causes of water logging? [L1; CLO2,3] 03
c) Briefly discuss the effects of drought on plants. [L6; CLO2,3] 03
7. a) Identify the principles of control management? [L3; CLO2,3] 03
b) Draw a sketch of disease triangle and control triangle. [L6; CLO2,3] 03
c) What are the techniques used in forest nurseries to prevent and/or control diseases? [L1; CLO1,2] 04
8. Write short notes on the followings: [L1; CLO1,2,3] 2.5x4=10
 - a) Koch's postulates
 - b) Obligate and facultative parasites
 - c) Self-defense mechanism of plant
 - d) Dieback of Keora

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School	Life Science	Discipline:	Forestry and Wood Technology	Program	B.Sc.(Hons.) in Forestry
Year:	2nd	Term:	1st	Session:	2024-2025
Course code:	0732 05 CE 2151	Course Title:	Forest Surveying		
Total marks:	60	Time:	3 hours	Credit:	3
Instructions (if any):		The figures in the margin indicate full marks. The questions are of equal value. Use separate answer script for each section.			

SECTION-A

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

1. (a) What is Forest Surveying? State the scope of Surveying in forestry. [L2; CLO 1] 04
 (b) Discuss about the importance of Surveying in forestry. [L2; CLO 1] 03
 (c) Classify Forest Surveying. [L2, CLO 1] 03
2. (a) Analyze the problems faced during surveying in dense forest area. [L4; CLO 3] 03
 (b) What are the considerations for selecting a station in chain survey? [L2; CLO 1] 03
 (c) What is offset? How can you take perpendicular offsets using only a chain and a tape? [L2; CLO 3] 04
3. (a) Write down the advantages and disadvantages of chain survey. [L3; CLO 2] 05
 (b) A rectangle ABCD, its sides are: AB=65 feet, BC=57 feet, CD=72 feet, DA=59 feet and AC=90 feet. Calculate the area of the rectangle ABCD. [L4; CLO 5] 05
4. (a) Define fore bearing and back bearing with illustration. [L1; CLO 2] 02
 (b) How would you define map orientation, and what are the different methods to orient a map accurately? [L1,2; CLO 1] 05
 (c) Analyze errors arising from improper map orientation. [L4; CLO 2] 03

SECTION-B

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

5. (a) Define plane table surveying. [L2; CLO 2] 01
 (b) Briefly describe radiation method of plane table surveying. [L3, CLO 2] 05
 (c) Write down the advantages and disadvantages of plane table surveying. [L3; CLO 2] 04
6. (a) What is leveling? Differentiate between the profile and differential leveling. [L1,2; CLO 1] 03
 (b) Compare the rise and fall method with height of instrument method. [L2; CLO 2] 03
 (c) In a leveling operation, the reduced levels of the first and last benchmarks were 108.78 and 114.95, respectively. The sum of the back and fore readings was 24.88 and 18.64, respectively. Determine the closing error. [L6; CLO 3] 04
7. (a) Differentiate between a contour map and a topographic map? [L2; CLO 2] 02
 (b) How do contour lines help in understanding the slope steepness of land? Describe with illustration. [L3; CLO 1] 04
 (c) What is Simpson's rule for area calculation? Derive an expression for it. [L4; CLO 3] 04
8. (a) Define Mean Sea Level, Geoid, Datum and Benchmark. [L1; CLO 2] 04
 (b) Write down the characteristics of contours. [L1; CLO 2] 06