

[Question of Term Final Examination, 2026]
Khulna University

School: Life Science	Discipline: Forestry and Wood Technology	Program: Bachelor of Science (Honours) in Forestry
Year: 1 st	Term: 2nd	Session: 2024-2025
Course Code: 0821 05 FWT-1201	Course Title: Forest Tree Physiology	
Total Marks: 60	Time: 03 hours	Credit: 03
Instructions (if any): Use separate answer script for each section		

Section A

There are 4 questions in this section. Answer any 3 questions.

1. a) Compare between plant physiological processes and plant internal conditions with examples. (L4, CLO1,2) 05
b) Explain the role of plant physiology in forestry with the help of Kleb's concept. (L2, CLO1,2) 05
2. a) Differentiate between minerals and nutrients. What makes a nutrient essential for plant growth and development? (L3, CLO2) 04
b) Define micro nutrient and macro nutrient. List the essential nutrients under each type. (L2, CLO2) 04
c) Mention one important function and one deficiency symptom of P & K. (L2, CLO2) 02
3. a) Explain gravitational water, bound water and capillary water of soil. (L2, CLO2) 03
b) What is translocation? Why it is essential for plants? Discuss. (L4, CLO2) 03
c) Explain the translocation pathways of plant metabolites. (L4, CLO2) 04
4. a) Differentiate between active and passive transports in plants with examples. (L2, CLO3,4) 04
b) Write the characteristics of vascular plants. (L3, CLO3,4) 02
c) Explain transpiration process in plant. (L5, CLO2) 04

Section B

There are 4 questions in this section. Answer any 3 questions.

5. a) What do you understand by passive and active plant nutrient absorption? (L1, CLO3) 02
b) Describe the contact and carbonic acid exchange mechanism in plants. (L3, CLO3) 06
c) Explain "Carrier Concept" of mineral salt absorption by plant roots. (L5, CLO3) 02
6. a) Define gross and net primary productions. (L1, CLO5) 02
b) Describe in short the light and dark phases of photosynthesis process. (L3, CLO5) 04
c) Discuss how climate change could affect photosynthesis and primary production. (L6, CLO5) 04
7. a) Define cellular respiration. Discuss the importance of cellular respiration in plants. (L2, CLO3) 02
b) "Cellular respiration occurs in three sequential pathways"- Explain. (L5, CLO3) 06
c) Compare between NAD⁺ and NADH. (L3, CLO3) 02
8. a) Define plant growth and development. "Plant retain the capacity for unlimited growth"- Justify. (L1, CLO4) 03
b) Write phenotypic plasticity of plant with examples. (L2, CLO4) 02
c) What is flowering periodicity? What are the differences between monoecious and dioecious plant? (L2, CLO4) 02
d) Define phytohormone. Write down the characteristics of phytohormone. (L3, CLO5) 03

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Program: Bachelor of
Science (Honours) in
Forestry

Year: 1 st

Term: 2nd

Session: 2024-2025

Course Code: 0821 05 FWT-1205

Course Title: Wood Physics and Mechanics

Total Marks: 60

Time: 03 hours

Credit: 03

Instructions (if any): Use separate answer script for each section

Section A

There are 4 questions in this section. Answer any 3 questions.

1. a) Define moisture content of wood. Why moisture content of wood in living trees is highly variable? (L2, CLO1) 03
b) Briefly discuss the different forms of water that held in wood. (L4, CLO1) 02
c) Show the relationship between moisture content and mechanical properties of wood at below and above Fibre Saturation Point (FSP). (L3 and CLO1,2) 03
d) What are the reasons of anisotropy of wood? Explain. (L2, CLO1,2) 02
2. a) Describe the oven-dry method of determining wood moisture content. (L2, CLO1) 04
b) "Wood shows hysteresis in sorption." Explain. (L5, CLO1) 02
c) A wood block with an initial weight of 46 kg. The weight changes to 41.8 g after 24 hours of oven drying and further to 40 g after 4 hours. The temperature of the oven is $103 \pm 2^{\circ}\text{C}$. Calculate the moisture content of that wood block. (L3, CLO1) 04
3. a) Compare between density and specific gravity of wood. (L4, CLO2,3) 04
b) What is dimensional stabilization of wood? How Anti-swelling efficiency is measured? (L1, CLO2) 03
c) Two wooden blocks are given. Block A: mass = 1.8 kg, volume = 0.002 m^3 , Block B: mass = 2.5 kg, volume = 0.004 m^3 . Calculate the density of both wood blocks and determine which one is denser. (L2, CLO3) 03
4. a) Differentiate between permeability and diffusion? Why permeability is important for wood? (L4, CLO2,3) 03
b) Distinguish between steady and non-steady state conditions. (L4, CLO2,3) 03
c) State and explain Fick's first law of diffusion. (L5, CLO2,3) 04

Section B

There are 4 questions in this section. Answer any 3 questions.

5. a) Explain the formula of thermal conductivity. What are the factors that influence thermal conductivity of wood? (L5, CLO1,3) 03
b) Why wood does not feel extremely hot or cold to touch as do other materials? (L1, CLO1,3) 02
c) Define specific heat and calorific value of wood. (L1, CLO3) 02
d) What is ignition? Mention the processes of wood and plant biomass conversion. (L2, CLO1,3) 03
6. a) Define elastic and plastic deformation. "Ideally elastic body does not exist." Explain. (L5, CLO2,3) 03
b) Explain the relationship among stress, strain and MOE with necessary figure. (L5, CLO2,3) 04
c) What is meant by hardness and toughness of wood? Why these features are important? (L2, CLO2,3) 03
7. a) What is electrical conductivity of wood? Explain the factors affecting electrical resistivity. (L1,6, CLO3) 04
b) If thick beams of wood and metal (of the same dimension) are burnt at high temp., what will you observe? Explain your reasons. (L6, CLO1,3) 02
c) Define dielectric constant. Show that lower the density and moisture content, lower the dielectric constant. (L5, CLO1) 04
8. a) How strength of wood is influenced by its density? Explain your reasons. (L5, CLO2,3) 02
b) Write short notes on the followings (provide sketches if necessary): i) Creep and fatigue ii) Three and four point bending tests. (L3, CLO2,3) 04
c) A 2 x 2 x 30 inch clear dry specimen of red oak is supported near each end with a 28 inch. span and loaded at the center in a universal testing machine. A gradually increasing load is applied and when the load reaches 1500 lb (below the proportional limit), the deflection at midspan under the load measures 0.260 inch. Calculate the MOE of the specimen. (L6, CLO3) 04

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Year:	1 st	Term:	2 nd	Session:	2024-25
Course code:	0532 05 FWT 1207		Course Title:	Geology and Soil Science	
Total marks:	60	Time:	3 hours	Credit:	3
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) Why understanding of Earth's interior structure is important? [L2, CLO 1] 02
 - b) How can geological knowledge reduce damage from natural disasters? [L1, CLO 1] 02
 - c) Explain the internal composition of the Earth, specifically focusing on the core, mantle and crust. [L2, CLO 2] 03
 - d) Describe folds, faults and fractures. [L5, CLO 1] 03
2.
 - a) Define special properties of minerals with suitable examples. [L1, CLO 3] 02
 - b) Why is streak often more useful than surface color, especially for minerals with metallic luster? [L6, CLO 3] 02
 - c) Mention the identifying characteristics of quartz and feldspar. [L4, CLO 3] 03
 - d) Give a flow chart for mineral identification. [L5, CLO 3] 03
3.
 - a) Define petrology and outline the basic classification of rocks. [L1, CLO 1] 02
 - b) Describe the characteristics and formation processes of igneous, sedimentary and metamorphic rocks. [L2, CLO 2] 05
 - c) Formulate a flowchart showing how a sedimentary rock in Bangladesh could eventually become a metamorphic rock? [L3, CLO 2] 03
4.
 - a) What is an index fossil? [L1, CLO 3] 01
 - b) Define paleoenvironment and explain why fossils are considered important environmental indicators. [L5, CLO 3] 03
 - c) Discuss the environmental conditions that favor fossilization. [L6, CLO 3] 03
 - d) Describe the molds, and casts as modes of fossil preservation. [L4, CLO 3] 03

SECTION-B

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

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|----|----|--|----|
| 5. | a) | Define soil and soil science. [L1, CLO 3] | 02 |
| | b) | Describe the different soil horizons (O, A, E, B, C) and their sub-divisions. [L2, CLO 3] | 04 |
| | c) | Contrast a typical forest soil profile with a degraded agricultural soil profile. [L4, CLO 3] | 04 |
| 6. | a) | Define soil texture and soil structure. [L1, CLO 4] | 02 |
| | b) | Distinguish among bulk density, particle density and porosity. [L3, CLO3] | 03 |
| | c) | A forest plantation soil has high bulk density, poor porosity, weak structure and slow water infiltration. Analyze how these physical conditions may affect root growth, aeration, water movement, microbial activity and tree productivity. [L4, CLO 4] | 05 |
| 7. | a) | Explain physical, chemical and biological weathering of rocks. [L3, CLO 4] | 06 |
| | b) | Describe the five major factors of soil formation (Climate, Organisms, Relief, Parent material, Time). [L2, CLO 3] | 04 |
| 8. | a) | What is dissolved organic matter. [L1, CLO 3] | 02 |
| | b) | Define active acidity and reserve acidity in soil. [L1, CLO 3] | 02 |
| | c) | Explain the significance of soil pH in soil fertility and plant growth. [L5, CLO 3] | 03 |
| | d) | State the three specific criteria that must be met for a chemical element to be considered an "essential plant nutrient". [L3, CLO 4] | 03 |

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School: Life Science	Discipline: Forestry and Wood Technology	Program: BSc (Honours) in Forestry
Year: 1 st	Term: 2nd	Session: 2024-2025
Course Code: 0521 05 FWT 1209	Course Title: Introduction to Environmental Science	
Total Marks: 60	Time: 03 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

Question No.	Question description	Marks
1. a)	What is environmentalism? Write down the importance of environmentalism in the global context. (CLO- 1; L- 1,5)	04
b)	Explain the interdisciplinary nature of environmental science. (CLO- 1,2; L- 4)	03
c)	Evaluate the role of forestry education in solving environmental problems. (CLO- 1,2; L- 5)	03
2. a)	Describe the composition and functions of the atmosphere. (CLO- 1,2; L- 1)	03
b)	Explain the interactions among atmosphere, hydrosphere and biosphere. (CLO- 1,2; L- 2)	04
c)	What are the major environmental problems in the world? (CLO- 2; L- 1)	03
3. a)	What do you understand by global change? (CLO- 2; L- 2)	03
b)	List down the various indicators of global change. (CLO- 1; L- 4)	03
c)	What are greenhouse gases? Explain the greenhouse effects with a diagram. (CLO- 3; L- 4)	04
4. a)	What is environmental pollution? Mention the major environmental problems in Bangladesh. (CLO- 1,2; L- 1)	03
b)	Explain air pollution and its impact on human health. How does Forestry help to reduce air pollution? (CLO- 3; L- 2)	04
c)	Analyze the social and economic impacts of environmental degradation in Bangladesh. (CLO- 3; L- 4)	03

SECTION-B

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

Question No.	Question description	Marks
5. a)	What are pollutants? Compare between biodegradable pollutants and non-biodegradable pollutants. (CLO- 1; L- 1,2)	04
b)	Identify the functions of ATP and ETP in Bangladesh industrial sectors. (CLO- 1; L- 3)	03
c)	Discuss the role of UNFCCC to combat climate change. (CLO- 3; L- 2)	03
6. a)	Define soil pollution. Explain the causes of soil pollution. (CLO- 2; L- 1,3)	04
b)	Identify the causes of soil acidification. (CLO- 2; L- 3)	03
c)	Discuss the causes and consequences of water pollution. (CLO- 2; L- 2)	03
7. a)	What are solid wastes? List down the nature of solid waste composition. (CLO- 2; L- 1,3)	03
b)	Evaluate the effectiveness of 3R concept (Reduce, Reuse, Recycle)	03
c)	Critically analyze the advantages and disadvantages of various solid waste disposal methods used in Bangladesh. (CLO- 2; L- 5)	04
8. a)	Discuss the global strategies and treaties to combat climate change. (CLO- 3; L- 4)	04
b)	Write down the recent global development in controlling various kinds of pollution. (CLO- 3; L- 3)	03
c)	Evaluate the effectiveness of environmental laws in pollution management. (CLO- 2; L- 5)	03

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School:	Life Science	Discipline:	Forestry and Wood Technology	Program:	BSc (Honours) in Forestry
Year:	1st	Term:	2nd	Session:	2024 - 2025
Course code:	0541 05 Math 1251	Course Title:	Mathematics		
Total marks:	60	Time:	3 hours	Credit:	3
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) If $y = a \sin(a + y)$, then prove that $\frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$ [L1, CLO 1,2] 03
 b) Differentiate $y = \frac{x^2 \sqrt[3]{7x-14}}{(1+x^2)^4}$ (Use logarithm to differentiate) [L2, CLO 1,2] 03
 c) Find $\frac{d}{dx}[(x^2 + 1)^{\sin x}]$ [L3, CLO 1,2] 04

2. Integrate the followings: [L3, CLO 1,2] 5x2=10
 a) $\int \frac{7x - 9}{x^2 - 2x + 35} dx$
 b) $\int \sqrt{4 + 8x - 5x^2} dx$

3. a) If $x_r = \cos \frac{\pi}{2r} + i \sin \frac{\pi}{2r}$, then prove that $x_1 \cdot x_2 \cdot x_3 \cdot x_4 \dots = -1$ [L1, CLO 1,2] 04
 b) If $(a_1 + ib_1)(a_2 + ib_2)(a_3 + ib_3) \dots (a_n + ib_n) = A + iB$, then prove that [L1, CLO 2]
 (i) $\tan^{-1} \frac{b_1}{a_1} + \tan^{-1} \frac{b_2}{a_2} + \tan^{-1} \frac{b_3}{a_3} + \dots + \tan^{-1} \frac{b_n}{a_n} = \tan^{-1} \frac{B}{A}$ 03
 (ii) $(a_1^2 + b_1^2)(a_2^2 + b_2^2)(a_3^2 + b_3^2) \dots (a_n^2 + b_n^2) = A^2 + B^2$ 03

4. a) Find the equation whose roots are the nth power of the roots of the equation $x^2 - 2x \cos x + 1 = 0$ [L1, CLO2] 06
 b) IF n is a positive integer, then prove that $(1 + i)^n + (1 - i)^n = 2^{\frac{n+1}{2}} \cos \frac{n\pi}{4}$ [L1, CLO2] 04

SECTION-B

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

5. a) If $A = \begin{bmatrix} 1 & 2 \\ -2 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 1 \\ 2 & 3 \end{bmatrix}$, and $C = \begin{bmatrix} -3 & 1 \\ 2 & 0 \end{bmatrix}$, verify that $(AB)C = A(BC)$ [L1, CLO1, 2] 03
 b) Find the values of x, y, z and a which satisfy the matrix equation [L3, CLO2] 02

$$\begin{bmatrix} x+4 & 3y+2x \\ z-7 & 6a-9 \end{bmatrix} = \begin{bmatrix} 2 & 8 \\ 5 & 2a \end{bmatrix}$$

 c) Define inverse of a matrix. Find the inverse of the matrix $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$ [L1, CLO2] 05

6. a) Find the inverse matrix of $A = \begin{bmatrix} 1 & 0 & 3 \\ 3 & 4 & -1 \\ 2 & 5 & -4 \end{bmatrix}$ using Block Method i.e. $\{A|I \rightarrow I|A^{-1}\}$ [L1, CLO3] 05
 b) Find the solution of the system of linear equations with the matrix. [L1,2; CLO3] 05

$$\begin{aligned} 2x + y - 2z &= 10 \\ 3x + 2y + 2z &= 1 \\ 5x + 4y + 3z &= 4 \end{aligned}$$

7. a) Solve the equation $32x^3 - 48x^2 + 22x - 3 = 0$ when the roots being in arithmetical progression. [L3, CLO1,2] 05
 b) Solve the equation $2x^3 - x^2 - 22x - 24 = 0$ when the roots being in the ratio of 3:4. [L3, CLO1,2] 05

8. a) Prove that a homogeneous equation of the nth degree represents n straight lines, real, or imaginary, which all pass through the origin. [L1, CLO1,2] 05
 b) Find the equation of the circle passing through the points (-3, 2), (1, 7) and (5, -3). [L3, CLO1,2] 05

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School:	Life Science	Discipline:	Forestry and Wood Technology	Program:	Bachelor of Science (Honours) in Forestry
Year:	1	Term:	2	Session:	2024 - 2025
Course code:	0314 05 SOC 1253	Course Title:	Sociology		
Total marks:	60	Time:	3 hours	Credit:	3
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) Illustrate the scope of sociology in present times. [L2, CLO 1] 04
b) Critically analyze the major theoretical perspectives of sociology. [L4, CLO 1] 06
2. a) Differentiate between society and community. [L3, CLO 1] 04
b) Illustrate modern typologies of society with a suitable example. [L2, CLO 1] 06
3. a) What is meant by family in sociology? [L2, CLO 1] 03
b) Which type of family system do you think is more effective for socialization, nuclear or extended? Explain with examples. [L4, CLO 2] 04
c) How did culture impact on civilization? [L4, CLO 1] 03
4. a) What are the forms of social stratification? Classify. [L2, CLO 2] 03
b) Identify the major dimensions of social inequality with recent examples. [L3, CLO 2] 04
c) What do you understand by social mobility? [L2, CLO 1] 03

SECTION-B

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

5. a) Differentiate between urbanization and industrialization. [L3, CLO 1] 04
b) What are the main impediments in implementing industrialization of Bangladesh? Discuss with contemporary views. [L5, CLO 3] 06
6. a) Distinguish between crime and evidence with relevant examples. [L2, CLO 2] 05
b) Critically analyze the strain theory of deviance. [L4, CLO 2] 05
7. a) Discuss the short-term versus long-term effects of cyclones and storm surges on society in forest-adjacent coastal zones of Bangladesh. [L4, CLO 3] 06
b) What are the causes of juvenile delinquency? Identify. [L3, CLO 2] 04
8. To what extent did structural factors (economic conditions, governance deficits, youth unemployment) contribute to the outbreak of the July Movement in Bangladesh? [L5, CLO 2] 10