

Khulna University

School: Life Science Discipline: Forestry and Wood Technology Program: BSc (Hon's) in Forestry
 Year: 1st Term: 1st Session: 2025-26
 Course code: 0821 05 FWT 1101 Course Title: Introduction to Forestry
 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 all vegetated areas are not forest? Explain. [L2; CLO1] 03
 b) What is ecological forest? Give examples. [L1,2; CLO1] 03
 c) What are the scope and importance of studying forestry? [L4; CLO1] 04
2. a) Name major forest types of the world. [L4; CLO3] 02
 b) Why tropical rain forests are more diverse than any other forest types? [L2; CLO3] 03
 c) Briefly discuss the environmental functions of a forest. [L5; CLO3] 05
3. a) What are the different parts of a tree? What are their functions? [L1; CLO2] 04
 b) Classify plants on the basis of heights. [L4; CLO4] 04
 c) What do you mean by silviculture? [L2; CLO1] 02
4. a) Illustrate the concept of tangible and intangible benefits. [L2; CLO4] 02
 b) List the tangible and intangible benefits that we obtain from the Sundarbans. [L4; CLO4] 03
 c) Critically discuss whether intangible benefits are more important than tangible benefits. [L6; CLO4] 03
 d) Differentiate between deforestation and forest degradation. [L4; CLO3] 02

SECTION-B

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

5. a) Name the major forest types of Bangladesh? [L1; CLO1]. 02
 b) How ecological forests are different from legal forest? [L2; CLO1] 02
 c) Write the distribution, climatic condition and species composition of hill forests of Bangladesh. [L2,3; CLO1] 06
6. a) Write the administrative setup of Bangladesh Forest Department. [L1; CLO2] 02
 b) Discuss the major functions of Bangladesh Forest Department. [L5; CLO2] 03
 c) Name the divisions under Forest management and Forest Product branches of the Bangladesh Forest Research Institute. [L1,2; CLO2] 05
7. a) Discuss the consequences of deforestation in Bangladesh. [L6; CLO4] 05
 b) Discuss the importance of People's participation in forest management in Bangladesh. [L6; CLO3] 05
8. a) Define native and exotic species. [L1; CLO5] 02
 b) Give local and botanical names of six timber species of Bangladesh. [L2; CLO5] 03
 c) Which argument recently GoB has banned planting of Akashmoni and Eucalyptus? [L4; CLO5] 05



Khulna University

School: Life Science Discipline: Forestry and Wood Technology Program: BSc (Hon's) in Forestry
Year: 1st Term: 1st Session: 2025-26
Course code: 0821 05 FWT 1103 Course Title: Forest Botany and Dendrology
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) Mention the objectives of biological classification. [L3;CLO1,2] 02
b) Briefly describe the Bentham & Hooker's system of plant classification with necessary example. [L6;CLO1,2] 04
c) Narrate the importance of studying plant classification in forestry. [L5;CLO1,2] 04
2. a) Draw a diagram of prokaryotic cell. [L3;CLO3,4] 02
b) Name the organelles, which help provide cells with energy and release energy? [L2;CLO3,4] 02
c) What is vascular tissue system? Do you think vascular tissue system is composed of complex tissue? Justify your opinion with necessary example. [L3;CLO1,2] 03
d) Explore the structure of plant cell wall with necessary illustration. [L5;CLO1,2] 03
3. a) Why is secondary growth absent in most monocot plants? [L2;CLO3] 02
b) Xylem is more developed in tall forest trees. Explain logically. [L5;CLO3] 02
c) Define pollination. What are the agents directly involved in plant pollination process? [L1;CLO3,4] 03
d) Do you think seed dispersal is important in forestry? Justify your opinion. [L5;CLO3,4] 03
4. a) Identify the characteristics of Parenchyma tissue. [L3;CLO3,4] 02
b) Draw a diagram to show the different phases of Mitosis cell division. [L3;CLO3,4] 03
c) Explain the components and functions of tissue system of plants. [L5;CLO3,4] 05

SECTION-B

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

5. a) How do bark, crown shape, and branching pattern help in identifying unknown trees? [L1;CLO5,6,7] 03
b) What are the essential conditions for the natural reproduction of *Gmelina arborea*? [L2; CLO 5,6,7]. 02
c) Dendrological knowledge help in forest resource inventory and management. Explain. [L5; CLO 5,6]. 02
d) Describe the distinguishing characteristics of trees, shrubs, herbs, and vines. [L6; CLO 5,6,7]. 03

6. a) Why *Xylia dolabriformis* is recommended for outdoor furniture making? 02
Justify your opinion. [L1; CLO 5,6,7].
b) Mention the importance of studying dendrology in forestry. [L6;CLO5,6,7]. 02
c) Elaborate the phenology of and silvicultural characteristics of *Cerriops decandra*, and *Tectona grandis*. [L6; CLO 5,6,7]. 06
7. a) Define Phenophase. [L1;CLO5] 01
b) Explain the role of litterfall in maintaining the balance and productivity of an aquatic ecosystem [L2;CLO5] 02
c) Discuss how climate change affects phenological events in plants. [L6;CLO5] 03
d) Describe the methods by which the phenology of a particular forest tree species can be determined under natural forest conditions. [L4;CLO5] 04
8. a) Why is a herbarium important in plant identification and taxonomic study? 02
[L5;CLO6]
b) Briefly explain the procedures for preparing a herbarium sheet. [L6;CLO6] 04
c) Describe the identifying characteristics of *Acacia nilotica* and *Nypa fruticans*, and discuss their economic importance. [L6;CLO6] 04



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School: **Life Science** Discipline: **Forestry and Wood Technology** Program: **BSc (Hon's) in Forestry**
Year: **1st** Term: **1st** Session: **2025-26**
Course code: **0821 05 FWT 1105** Course Title: **Wood structure and Properties**
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) Define wood. Write down the features of a woody plant. [L1; CLO1,2] 03
b) Wood is called on an anisotropic material. Why? [L2; CLO1,2] 02
c) Why is early wood less dense than late wood? [L2; CLO1,2] 02
d) Distinguish between soft wood and hard wood on the basis of wood anatomy. [L4; CLO 03
1,2,3]
2. a) What is meant by primary growth and secondary growth of a tree? [L1; CLO1,2] 03
b) Draw a labelled diagram of the secondary cell wall showing the S1, S2, and S3 04
layers. [L2; CLO2]
c) Compare the difference between false rings and discontinuous rings. [L2; CLO1,2] 03
3. a) Explain fusiform initials and ray initials with figures [L3; CLO1,2] 03
b) Why and how sapwood is converted to heartwood? [L1; CLO1,2] 04
c) How can you differentiate among vessel, tracheid and fibre? [L4; CLO1,2] 03
4. a) Define “cross-field pitting”. What is its importance? [L1; CLO2,3] 03
b) Can you write a brief note on wood rays and their function and importance? [L4; CLO2,3] 03
c) Discuss the morphological and anatomical features of the longitudinal tracheid. [L2; 04
CLO1]

SECTION-B

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

5. a) Mention the cell types found in hard wood with appropriate sketches. [L1; CLO1,2]. 03
b) Distinguish between ring-porous and diffuse-porous woods. [L1; CLO1,2] 04
c) Explain the function of tyloses in hard woods. [L4; CLO1,2]. 03
6. a) What are vasicentric tracheid's and in which species are they common? [L1; CLO1]. 03
b) Describe the different types of longitudinal parenchyma arrangements with diagrams. 04
[L2; CLO1].
c) How can you differentiate Juvenile wood from mature wood? [L5; CLO2]. 03
7. a) What is meant by natural defects in wood? Mention its types. [L1; CLO2,3] 04
b) Define Knot. Explain the effects of knot on wood value. [L1,3; CLO2,3] 03
c) How do deviations from straight-grain orientation influence wood properties? [L5; CLO2] 03

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|----|----|--|----|
| 8. | a) | Explain the term “figure in wood”. Can you write in your own words about the value of “figure in wood”? [L2,5; CLO3] | 03 |
| | b) | Summarize the biochemical and structural factors responsible for the natural resistance of wood to decay other than toxicity. [L2; CLO3] | 03 |
| | c) | Elaborate the features of reaction wood with necessary figures. [L6; CLO2,3] | 04 |



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School: Life Science	Discipline: Forestry and Wood Technology	Program: BSc (Hon's) in Forestry
Year: 1st	Term: 1st	Session: 2025-26
Course code: 0531 05 CHEM 1151		Course Title: Chemistry
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) How can water act as an acid and a base? Explain. [L2, CLO1] 03
 b) The hydrogen ion concentration of lemon juice is 4.4×10^{-3} M. Calculate the pH of the juice. Is it acidic or basic? [L4, CLO1] 2+1=03
 c) Explain the composition and mechanism of action of an acidic buffer solution. How does it resist changes in pH when small amounts of acid and base are added? Illustrate your answer with a suitable example. [L4, CLO1] 4

2. a) Explain the concept of lowering of vapor pressure of a solvent when a non-volatile solute is added. Show the relation between lowering of vapor pressure and mole fraction of the solute. [L3, CLO3] 3+1=04
 b) Suppose the vapor pressure of pure water at 25 °C is 23.8 mm Hg. Now calculate the vapor pressure lowering of 1000g of water after addition 100g of sucrose (mol mass) is added to it. [L5, CLO1] 02
 c) Narrate the depression of freezing point of a dilute solution by Beckmann's method. [L2, CLO1] 04

3. a) Mentioned the colligative properties of a dilute solution. [L1, CLO1] 02
 b) Draw a labeled schematic diagram to illustrate the phenomenon of osmotic pressure in a solution. [L3, CLO3] 03
 c) 4.0 g of toluene (mol mass = 92) is dissolved in 200 g of benzene. Now calculate the molality of this solution. [L4, CLO1] 02
 d) Illustrate the mechanism of dialysis for sol purification. [L2, CLO1] 03

4. a) What is meant by "Dispersion phase" and "Dispersion medium" in colloidal solutions? Apply these terms to the following systems with suitable examples-[L3, CLO1] 2+3=05
 i) Emulsion ii) Sol iii) Gel
 b) How can electrophoresis be used to determine the sign of charge on colloidal particles? [L4, CLO3] 05

SECTION-B

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

5. a) Define an electron, a proton and a neutron. Draw a diagram indicating the positions of these three particles. [L1, CLO1] 03
 b) Explain why an electron in an atom cannot have the set of quantum numbers ($n=2$, $l=2$, $m_l=+1/2$), and identify which subshell would actually be described if $n=2$ and $l=1$. [L2, CLO1] 04
 c) Compare isotope, isotone, and isobar with suitable examples. [L3, CLO1] 03

6. a) Describe the term "Oxidation number". [L1, CLO1] 03
- b) Arrange the following in the increasing order of oxidation number of [L4, CLO3] 04
- i) Iodine in I_2 , HI, HIO_4 , ICI ii) Sulphur in S_8 , $S_2O_8^{2-}$, $S_2O_3^{2-}$, $S_4O_6^{2-}$
- c) Balance the following equations by using the ion-electron method [L5, CLO3] 03
- i) $Cr_2O_7^{2-} + Fe^{2+} + H^+ \rightarrow Cr^{3+} + Fe^{3+} + H_2O$ ii) $Fe^{2+} + MnO_4^- + H^+ \rightarrow Mn^{2+} + Fe^{3+} + H_2O$
7. a) What do you understand by the term "Quantum number"? How many quantum numbers does an electron have in an orbital? How are they related to each other? [L3, CLO1] 03
- b) Define oxidizing agent and reducing agent with examples. [L1, CLO2] 03
- c) Calculate the oxidation-reduction potential of the reaction between copper and zinc when $[Cu^{2+}] = 1.5\text{ M}$, $[Zn^{2+}] = 0.5\text{ M}$. $E^\circ = 1.10\text{ V}$ [L3, CLO3] 04
8. a) Explain reaction rate and reaction order. [L3, CLO3] 03
- b) Derive the equation for the rate constant of a first-order reaction. [L3, CLO3] 04
- c) Under a certain set of conditions, the rate of the reaction ($N_2 + 3H_2 \rightarrow 2NH_3$) is $6.0 \times 10^{-4}\text{ Ms}^{-1}$. Calculate the time rate of change for the concentrations of N_2 , H_2 , and NH_3 . [L5, CLO3] 03



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Year: **1st** Term: **1st** Session: **2025-26**
Course code: **0231 05 ENG 1155** Course Title: **Functional and Communicative English**
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. Read the following text and answer the questions given. [L4, CLO3, CLO5] 5x2=10

Pedagogy refers to the art and science of teaching and how knowledge is transmitted in educational settings. It involves the methods, strategies, and approaches teachers use to facilitate learning among the students. Effective pedagogy is not limited to delivering content; it also focuses on understanding learners' needs, abilities, and learning styles. A good teacher adapts instructional techniques to make lessons engaging, meaningful, and accessible. Modern pedagogy emphasizes student centered learning rather than teacher-centered instruction. In this approach, learners actively participate in the learning process through discussion, collaboration, and problem-solving activities. Teachers act as facilitators who guide and support students rather than simply providing information. Technology has also become an important part of pedagogy, offering interactive tools and digital resources that enhance understanding. Different pedagogical approaches include behaviorism, constructivism, and humanism, each highlighting different aspects of learning. Constructivist pedagogy, for example, encourages students to build their own understanding through experience and reflection. Assessment is also an essential part of pedagogy, helping teachers evaluate student progress and improve instruction. Ultimately, effective pedagogy aims to develop critical thinking, creativity, and lifelong learning skills in students, preparing them for real-world challenges.

 - a) Give a suitable title to the text given.
 - b) What does pedagogy refer to?
 - c) What are the main components of pedagogy mentioned in the passage?
 - d) Why is assessment important in pedagogy?
 - e) Summarize the text in three to four sentences.
2.
 - a) Change the following words as directed and make one sentence with each. [L3, CLO1] 5x1=05
Inform (into Noun), Simple (into Verb), Silently (into Noun), Decision (into Adjective), Strength (into Adverb)
 - b) Form WH-questions based on the underlined parts of the following statements: [L3, CLO1] 5x1=05
 - i) Rahim goes to university by bus.
 - ii) She bought a new laptop yesterday.
 - iii) They are waiting in the library.
 - iv) Karim met his friend after class.
 - v) The program starts at 10 a.m.
3. Join the following parts of sentences using appropriate conjunctions or transitional words. Repetition of the same connector is not permitted. [L4, CLO1] 10x1=10
 - a) He was tired. He continued working.
 - b) I studied hard. I could not pass the exam.
 - c) She went to the market. She bought some vegetables.
 - d) The weather was bad. We stayed at home.
 - e) Hurry up. You should miss the train.
 - f) The road was slippery. The driver was not careful.
 - g) We waited for him. He never arrived.
 - h) He apologized. I forgave him.
 - i) She completed the assignment. She submitted it on time.
 - j) The shop was closed. We returned home.
4. Write short notes on the following topics. [L2, CLO3] 2x5=10
 - a) Difference between scanning and skimming
 - b) Techniques of vocabulary development

SECTION-B

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

5. What is speaker-listener rapport? Analyze the characteristics of effective listening. [L4, CLO6] 10
6. Write an application to the Head of your discipline requesting permission and financial assistance for a sessional tour. [L3, CLO5] 10
7. The following passage describes a technical observation regarding wood properties and forest management. It contains errors related to capitalization and punctuation. Rewrite the sentences correctly, ensuring all professional titles, species names, and structural markers are accurate. [L2, CLO5] 10

the divisional forest officer (dfo) visited the laboratory last tuesday to inspect the samples of tectona grandis commonly known as teak. after the inspection he noted several issues including high moisture content, surface cracks and fungal growth. "we must improve our kiln drying process" the officer remarked "otherwise the timber will be unsuitable for export." the team then traveled to the sundarbans- bangladesh's largest mangrove forest to monitor the salinity levels. the researchers findings were published in the khulna university central journal; however the full report is still under review by dr. ahsan. can the local sawmills meet the new quality standards by december

8. Select **one** of the following topics related to the Forestry and Wood Technology Discipline and write a well-structured essay of approximately 250-300 words. Your essay will be evaluated based on logical organization, use of technical vocabulary and grammatical accuracy. [L6, CLO5] 10x1=10

Option A: The role of social forestry in poverty alleviation (*Instruction:* Discuss how community-based forest management in Bangladesh serves as both an ecological necessity and socioeconomic tool. Highlight the balance between forest conservation and the livelihood needs of the local population.)

Option B: Wood as a sustainable alternative to plastic and metal (*Instruction:* Argue for increased use of engineered wood products (like plywood, laminated wood, etc.) in modern construction. Address the environmental benefits of timber and the technological advancements that make wood a viable competitor to non-renewable materials.)

Option C: Forest degradation and deforestation (*Instruction:* Examine the specific causes and effects. Describe how the government and foresters may work together to implement measures to prevent the current situation.)