SH-III/NR/2106/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

FORESTRY

Course ID : NR2106 **Course Code : SH-NR-2106**

Course Title : Soil Biology and Fertility

Time: 2 Hours **Full Marks: 50**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Write a definition or short answer of *any ten* of the following: 1×10=10

(a) Cultivated Soil

(b) Frankia

(c) Soil texture

(d) Soil color

(e) Write down the 2 tree species suitable for where soil pH is less than 6.5. (botanical name)

(f) Pedology

(g) Soil weathering

(h) Soil profile

(i) Bio fertilizer

(j) Soil horizon

(k) Complex fertilizer

(l) Soil fertility

(m) Mycorrhizae

(n) Urea contain nitrogen in the form of _____

(o) Full form of IISS _____

2. Write short note/ define *any ten* of the following: 2×10=20

(a) Soil macro nutrient

(b) Nitrogen fixation

(c) Difference between symbiosis and asymbiosis

(d) Importance of Biofertilizers

(e) Role of microorganisms in soil fertility

(f) Define Soil Horizon

(g) Types of soil erosion

(h) Carbon cycling

(i) Rhizosphere

(j) Differentiated between forest soils and cultivated soils

(k) Role of microorganisms in soil fertility

(l) Soil micro nutrient

(m) "Soil as a natural body" — explain it.

(n) Differentiated between nitrification and de-nitrification in forest ecosystems.

(o) Define Humus formation.

3. Write down on brief *any four* of the following: 5×4=20

(a) Write a short note about the importance of soil to plant growth.

(b) Distinguish between Elluviation and Illuviation process.

(c) Discuss the significance of climate and microorganism in soil formation.

(d) What are the essential nutrient elements in soil? Discuss functions of any two of them.

(e) Define bio-fertilizer. Write their classification and advantages.

(f) Describe carbon formation process and its importance for forest soil.

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SH-III/NR/2107/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

FORESTRY

Course ID : NR2107 **Course Code : SH-NR-2107**

Course Title : Forest Ecology and Biodiversity

Time: 2 Hours **Full Marks: 50**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Write a definition or short answer of *any ten* of the following: 1×10=10

(a) Population ecology.

(b) Pyramid of energy in pond ecosystem is always _____ (Inverted/Upright) only.

(c) Climax

(d) Gross productivity

(e) Niche

(f) Food chain

(g) Crude density

(h) Abundance

(i) Frequency

(j) Basal area

(k) Specific density

(l) Abundance

(m) Biotic components of desert ecosystem

(n) Decomposer

(o) What is succession?

2. Write short note/define *any ten* of the following: 2×10=20

(a) Differentiate between primary and secondary succession.

(b) Define Autotrophic and heterotrophic component.

(c) Define age pyramid which is responsible for stable population.

(d) Differentiate between biotic and abiotic components.

(e) Define autotrophic and heterotrophic succession?

(f) Define pyramid of number with diagrams.

(g) Kinds of ecosystems

(h) Write short note on Food web.

(i) Define commensalism with example.

(j) Negative interaction

(k) Causes of succession.

(l) Ecological equivalents

(m) Population dynamics

(n) Types of dispersion

(o) Stabilization

3. Write down in brief *any four* of the following: 5×4=20

(a) Explain *Ex-situ* and *In-situ* methods of conservation.

(b) List the characteristics of a population. Explain with diagrams any one characteristic.

(c) Define succession. Give an account of general process of succession in nature.

(d) What is pond ecosystem? Explain the pond ecosystem with diagram.

(e) Explain the three hypothetical age pyramids type with diagrams.

(f) Explain population dynamics and carrying capacity.

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SH-III/FB/2103/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

FORESTRY

Course ID : FB2103 **Course Code : SH-FB-2103**

Course Title : Tree Improvement

Time: 2 Hours **Full Marks: 50**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Write a definition or short answer of *any ten* of the following: 1×10=10

(a) What is phenotype?

(b) What do you mean by anthesis?

(c) What is geitonogamy?

(d) What is hybridism?

(e) What do you mean by progeny trial?

(f) Damping off diseases occur due to _____ in nursery.

(g) SAP stands for.

(h) What is called molecular glue?

(i) Name one exotic plant introduced to India from Australia.

(j) Write down the genomic constitution of Trisomic and Triplaid.

(k) Name one widely used plasmid vector in tree breeding.

(l) What is back cross?

(m) What is totipotency?

(n) Mention the minimum size for seed production area.

(o) Why square stand is favorable for SAP rather than linear block?

2. Write short note/ define *any ten* of the following: 2×10=20

(a) What do you mean by heritability?

(b) What does plus tree mean?

(c) What is recurrent selection?

(d) Importance of selection of trees for seed collection.

(e) Define breeding depression.

(f) What is geographic variation?

(g) What is meant by in genetic gain?

(h) What do you mean by gene pool?

(i) What is meant by biodiversity?

(j) What is genetic drift?

(k) What is Mutation?

(l) Why vector is used in molecular cloning?

(m) What is artificial seed?

(n) Why meristem are used chiefly in tissue culture?

(o) Why polyploidy species can withstand mutational stress?

3. Write down on brief *any four* of the following: 5×4=20

(a) Why emasculation is necessary? Describe different types of emasculation process for hybridization. 2+3=5

(b) What is seed production area? How SAP can be development from existing planted stands? 1+4=5

(c) How knowledge of biotechnology can be deployed for tree improvement?

(d) Give an idea of in-vitro propagation of forest tree species.

(e) Why selection of seed orchards is important for seed collection? Explain different criteria for seed orchards selection. 2+3=5

(f) What is pollination? Discuss on brief their importance in tree breeding.

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SH-III/SA/2104/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

FORESTRY

Course ID : SA2104 **Course Code : SH-SA-2104**

Course Title : Dendrology

Time: 2 Hours **Full Marks: 50**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Write a definition or short answer of *any ten* of the following: 1×10=10

(a) Name the book written by Linnaeus.

(b) Who is called father of Botany?

(c) Which inflorescence is found in *Oryza sativa*?

(d) Jute plans belongs to which family?

(e) Name one timber yielding plants of family Fabaceae.

(f) Name one rubber yielding plants.

(g) Name plants with perigynous flower.

(h) Sal belongs to the _____ family.

(i) Mustard belongs to the _____ family.

(j) What do you mean by pulse family?

(k) Name one proponent of phylogenetic system of classification.

(l) Where you find monodelphous system?

(m) Nomenclature of trees.

(n) Where you find verticilllaster inflorescence?

(o) What is systematic botany?

2. Write short note/ define *any ten* of the following: 2×10=20

(a) Name a family with inferior ovary. Mention one economically important plant.

(b) What do you mean by phylogenetic system classification?

(c) What is author citation?

(d) Mention diagnostic characters of the family Poaceae.

(e) To which family *Psidium* sp. belongs. Name another plant of this family.

(f) Mention two merits of Bentham and Hookers classification.

(g) Name two medicinal plants belonging to family Apocynaceae.

(h) Name a family with unisexual flower and a plant of economic importance of this family.

(i) Comment on the systematic position of Malvaceae according to Bentham and Hookers.

(j) Mention two diagnostic characters of Orchidaceae.

(k) Define Bark colour.

(l) What is bark colour? How can you identify the tree species through bark colour?

(m) International Code of Botanical Nomenclature.

(n) What is systematic Botany?

(o) Write down the two objectives of systematic Botany.

3. Write down on brief *any four* of the following: 5×4=20

(a) Give an outline of Bentham and Hookers classification.

(b) Describe different type of aestivation.

(c) Point out the importance of botanical and herbarium.

(d) Compare floral range of Malvaceae and Tiliaceae.

(e) Mention two diagnostic characters of Rubiaceae and give two examples of medicinal plants of this family.

(f) Draw and describe petal characteristics of papilionaceae.

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SH-III/SA/2105/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

FORESTRY

Course ID : SA2105 **Course Code : SH-SA-2105**

Course Title : Forest Mensuration

Time: 2 Hours **Full Marks: 50**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Write a definition or short answer of *any ten* of the following: 1×10=10

(a) Bole height

(b) Commercial bole height

(c) Stump height

(d) d.b.h

(e) Girth class

(f) 3 feet = _____ Yard (fill in the blanks)

(g) Crown width

(h) Form Factor

(i) How to calculate the area of circular section?

(j) Artificial form factor

(k) Basal area

(l) Forest mensuration

(m) 1 square mile = _____ Acres (fill in the blanks)

2. Write short note/define any ten of the following: 2×10=20

(a) Disadvantages of tree calliper

(b) Shadow method

(c) Increment per cent

(d) Stump analysis

(e) Advantages of Abney's Level

(f) Objectives of forest mensuration

(g) Why breast height has been accepted as a standard height for diameter and girth measurement?

(h) What is bark thickness? How it is measured?

(i) Instrumental error

(j) Height class

(k) Kinds of form factor

(l) Increment borer

(m) Huber's formula (for measurement of a frustum of solid)

(n) Uses of form factor in forestry

(o) How to calculate volume of a standing tree?

3. Write down in brief *any four* of the following: 5×4=20

(a) What are the importance of Forest Mensuration in forestry?

(b) Standard rules for measurement of Diameter and Girth of trees.

(c) Explain the current annual increments and mean annual increment with the help of suitable graph.

(d) Detailed discussion about the methods of volume estimation in failed trees.

(e) Write about the following in brief (i) Pressler's borer (ii) Brandis hypsometer

(f) Discuss the principal sources of error in height measurement.

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SH-III/NR/2104/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

FORESTRY

Course ID : NR2104 **Course Code : SH-NR-2104**

Course Title : Environmental Studies and Disaster Management

Time: 2 Hours **Full Marks: 50**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any ten* of the following: 1×10=10

(a) The 3R principle in waste management involves –

(i) Reduce, Regain, Reuse (ii) Reduce, Reuse, Recycle (iii) Reduce, Reform, Reset (iv) Reduce, Retain, Regain

(b) A recent technique for study of vegetation is _____ (fill in the blank)

(c) Write down the name First National park in India?

(d) Study of all organisms in an ecosystem is called _____ (fill in the blank)

(e) EL-NINO is a Natural Disaster occur in

(i) Pacific Ocean (ii) Atlantic Ocean (iii) Indian Ocean (iv) None of theses

(f) Environmental Pollution

(g) Local Diversity is _____ (fill in the blank)

(h) Sound Pollution

(i) Biodiversity

(j) National Park

(k) What is the full form of UNCED?

(l) Preventive measure of water pollutions

(m) What is Environment?

2. Write short note/define any ten of the following: 2×10=20

(a) What do you mean by point and non-point source of water pollution?

(b) What is eutrophication?

(c) What is decibel?

(d) What is mega biodiversity country? Give example.

(e) Define ecological niche?

(f) What is ecotone? Give example.

(g) Significance of Environment Protection Act.

(h) Define Beta diversity.

(i) Forest resources

(j) Environmental Pollution

(k) Solid Waste Management

(l) Man Made Disasters

(m) Secondary Air Pollutants

(n) What is community forestry?

(o) What is acid rain? Write disadvantages of acid rain.

3. Write down in brief *any four* of the following: 5×4=20

(a) Define Natural Resources. Discuss about provisioning services?

(b) 'Humans benefit from diversity of life'. Discuss the statement.

(c) Define water pollution. Describe the prevention measure of control water pollution.

(d) What is growth curve? Explain s-shaped growth curve with the help of diagram.

(e) What is global warming and climate change? Discuss the causes and remedial measure of global warming?

(f) What is waste management? Explain different technique of solid waste management?

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SH-III/NR/2105/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

FORESTRY

Course ID : NR2105 **Course Code : SH-NR-2105**

Course Title : Forest Survey and Engineering

Time: 2 Hours **Full Marks: 50**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Write a definition or short answer of *any ten* of the following: 1×10=10

(a) Plane table survey

(b) An imaginary line joining the points of equal elevation on the surface of the earth represents _____. (fill in the blanks)

(c) FSI stands for

(d) The vertical distance between consecutive contour lines in called _____. (fill in the blanks)

(e) A surveyor's chain is divided into links and each link is _____ long. (fill in the blanks) The length of gunter's chain is _____. (fill in the blanks)

(f) Base line

(g) Survey of India, map publication directorate is located at _____ (fill in the blanks).

(h) Vernier scale is of _____ type (fill in the blanks).

(i) PTS stands for. (Plane table surveying)

(j) Waterway

(k) Igneous rocks

(l) Contour lines

(m) Chain survey

(n) Moulding

(o) Cross joint

2. Write short note/ define *any ten* of the following: 2×10=20

(a) Size of bricks

(b) Write down the main characters of fire clay for bricks manufacture

(c) Use of bricks

(d) Write down the main characters of river sand

(e) Listing the materials used substitutes of sand

(f) Bulking

(g) Surkhi

(h) Disadvantage of brick masonary

(i) Properties of cement

(j) Types of cement

(k) Methods used for cement storage

(l) Type of plaster used

(m) Cross staff surveying

(n) Define Retaining walls and breast wall

(o) Listing the Equipments used in plane table survey

3. Write down on brief *any four* of the following: 5×4=20

(a) Listing the physical properties is used for the identification and study of minerals.

(b) Elaborate different methods to determine the specific gravity.

(c) What is cantilever bridge? How it is constructed? What are the disadvantages of this type of bridge?

(d) Point out the principle followed for site selection of temporary and permanent bridge construction.

(e) Listing the types of culverts generally used in forest roads. Elaborate any two of them.

(f) Define Forest survey. Scope of Forest survey and Engineering for forest conservation.

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