WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2022-23

BOTACOR11T-BOTANY (CC11)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as far as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions: $1\times6 = 6$
   (a) Write full form of PEN. Mention its ploidy level.
   (b) What is hydrochory?
   (c) What do you mean by Anthophore?
   (d) What is adventive embryony?
   (e) What is pollen kit?
   (f) What is Pollinia?

2. Answer any ***eight*** questions from the following: $3\times8 = 24$
   (a) Distinguish Autogamy, Allogamy and Geitonogamy. 3
   (b) Distinguish between Amoeboid or Invasive tapetum and Glandular tapetum. 3
   (c) What is Callose? Mention the significance of Callose deposition during microsporogenesis. 1+2
   (d) What is self-incompatibility? Differentiate between Gametophytic Self-incompatibility (GSI) and Sporophytic Self-incompatibility (SSI). 1+2
   (e) What is parasexual hybridization? Mention its significance in plant science. 1+2
   (f) Describe the structure of a monocotyledonous embryo with labelled sketch. 3
   (g) Mention the mechanism of seed-dispersal through different agencies with examples. 3
   (h) What are the distinctive features of Anemophilous and Entomophilous flower. $1\frac{1}{2}+1\frac{1}{2}$
   (i) Differentiate between microsporogenesis and microgametogenesis. Where do they occur? 2+1
   (j) Draw and label a monosporic, 8-nucleate embryo sac inside ovule. What is Triple fusion? 2+1
   (k) Define polyembryony. Mention its different types. 1+2
   (l) (i) Differentiate between cybrid and hybrid. $1\frac{1}{2}+1\frac{1}{2}$
   (ii) Distinguish between mixed pollination and in vitro pollination.

3. Answer any ***two*** questions from the following: $5\times2 = 10$
   (a) Give a brief representation of different types of Apomixis present in plant. Write a note on its significance. 3+2
   (b) Briefly describe the different adaptations for cross pollination in plants, with examples. 5
   (c) Discuss the genetic and molecular mechanism of flower development. 5
   (d) Explain with evidences the axis nature of thalamus and leaf nature of floral members. 2+3

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2022-23

BOTACOR12T-BOTANY (CC12)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer ***all*** questions briefly from the following: $1 \times 6 = 6$

(a) Differentiate between primary and secondary dormancy.
(b) Name one chelating agent.
(c) What will be the osmotic potential in a fully turgid cell?
(d) What are phototropins?
(e) Draw the structure of a synthetic auxin.
(f) What are aquaporins?

2. Answer any ***eight*** questions from the following: $3 \times 8 = 24$

(a) Why is Potassium considered as essential element, although it is not found in any of the cell constituents? 3
(b) Explain the Mass flow hypothesis of phloem transport. 3
(c) Pfr is the physiologically active form of phytochrome — Why? 3
(d) Mention the triple response of ethylene. What is Richmond Lang effect? $1\frac{1}{2}+1\frac{1}{2}$
(e) Discuss the different types of channels found in plasma membrane. 3
(f) Describe the role of Ca^{2+} and Cl^- in the opening and closing of stomata. $1\frac{1}{2}+1\frac{1}{2}$
(g) Discuss the role of Brassinosteroids in plant growth and development. 3
(h) What are hydrophonics? Discuss the advantages of hydrophonics. 1+2
(i) Write a short note on phytochrome mediated low energy response and high irradiance response in plants. $1\frac{1}{2}+1\frac{1}{2}$
(j) Distinguish between innate and induced dormancy. Name one phytohormone associated with seed germination. 2+1
(k) Explain the role of Gibberellic Acid in bolting and flowering. 3
(l) What will happen when a cell is placed in (i) Hypertonic solution (ii) Hypotonic solution? Name the phenomenon associated with it. 1+1+1

3. Answer any ***two*** questions from the following: $5 \times 2 = 10$

(a) Define secondary active transport. Differentiate between channel proteins and carrier proteins. 2+3
(b) Write the physiological function of phototropins in plants. 5
(c) Write a short note on cryptochrome. 5
(d) Briefly discuss the transpiration pull theory of water transportation. 5

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2022-23

BOTADSE01T-BOTANY (DSE1/2)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer the following questions: (***all*** the questions are compulsory) $1 \times 16 = 16$

(a) What is β (beta) diversity?
(b) Define Joint-Forest Management.
(c) What is the purpose of rainwater harvesting?
(d) Write the scientific name of one Critically Endangered Species.
(e) Define ecological footprint.
(f) What is the full form of UNEP?
(g) What are the two main benefits of natural resource management?
(h) What is e-waste? Give one example.
(i) Name two methods of soil conservation.
(j) What do you understand by Silviculture?
(k) Name two industries based on forest produce.
(l) What do you understand by sustainable development?
(m) What is meant by environmental impact assessment?
(n) Name one Ramsar site of India.
(o) What is the major non-renewable energy resources in India?
(p) How are forest cover useful for the protection of land?

2. Answer any ***eight*** questions from the following: $3 \times 8 = 24$

(a) What is meant by watershed? Write an account on its management. 1+2
(b) Discuss the IUCN Red list categories and criteria. 3
(c) Write a short note on GIS. 3
(d) What are the importance of waste management? 3
(e) Write in brief about the pros and cons of renewable energy sources. 3
(f) Define eutrophication. Mention its different types. State one remedial measure for the abatement of the same. 1+1+1
(g) Write the full form of CBD. Discuss the role of CBD in addressing Wildlife issues. 1+2
(h) What is IPR? What are the benefits of IPR management? 1+2
(i) Give a brief account of forest status and management in India. 3
(j) Write a short note on threats to biodiversity. 3
(k) Write down the aims and objectives of BSI. 3
(l) Define soil degradation. What are the main causes of it? 1+2

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2022-23

BOTADSE03T-BOTANY (DSE1/2)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate marks of question.
Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer ***all*** questions briefly from the following: $1 \times 16 = 16$

(a) Name a chemical agent used for cell disruption.

(b) Distinguish between trophophase and idiophase.

(c) What do you mean by rhizospheric microorganism?

(d) What is freeze drying?

(e) Name one fungus that form mycorrhizal association with higher plants.

(f) Name two common water contaminant bacteria that cause health hazard in human.

(g) Name a fungi used in bioremediation of heavy metals.

(h) Name one industrial product which is produced by aerobic non-aseptic fermentation.

(i) What is the role of sparger in fermenter?

(j) Mention one important character of industrially important microbial strain.

(k) What is TDS of water sample?

(l) Name the enzyme responsible for nitrogen fixation.

(m) What is leghaemoglobin?

(n) Name one 'indicator microbe' of potable water.

(o) Give an example of free living and symbiotic nitrogen fixing bacteria.

(p) Define arbuscular mycorrhizal colony.

2. Answer any ***eight*** questions from the following: $3 \times 8 = 24$

(a) Describe the parts of a bioreactor with diagram.

(b) Compare solid state and submerged fermentation.

(c) Mention different methods used in microbial cell disruption.

(d) Describe the process of citric acid recovery in industrial system.

(e) Name different components of medium of bacterial culture.

(f) Mention the advantages and disadvantages of enzyme immobilization.

(g) What is COD? How it is measured? 1+2

(h) Describe secondary wastewater treatment procedure emphasizing the role of microorganisms in the process.

(i) Write a note on the process of isolation of root nodule bacteria from leguminous plant.

(j) Write the steps involved in recovery of citric acid.

(k) Write the steps involved in the application of glucose isomerase immobilized process.

(l) Enumerate the different steps involved in downstream processing of a desired product.

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2021-22

BOTACOR11T-BOTANY (CC11)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions: 1×6 = 6

   (a) Name a plant having aril in seed.

   (b) What is Ubisch bodies?

   (c) What is Cybrid?

   (d) Write the full form of MGU.

   (e) What is massulae?

   (f) What is the function of Suspensor?

2. Answer any ***eight*** questions from the following: 3×8 = 24

   (a) What is Tapetum? Mention the functions of Tapetum. 1+2

   (b) What are the major causes for the loss of pollen viability? 3

   (c) Why pollen of angiosperms is referred to as microspore? Illustrate the successive stage of microsporogenesis (labeled diagrams only).

   (d) Differentiate between Dichogamy and Herkogamy with examples. 3

   (e) If the haploid number of chromosome in a plant is 8, how many chromosomes would be there in — 3

   (i) Microspore mother cell (ii) Pollen grains (iii) Ovum

   (iv) Embryo and (v) Endosperm

   (f) Differentiate between Amoeboid or Invasive Tapetum and Glandular Tapetum. 3

   (g) Mention in brief the scope of Palynology. 3

   (h) Define albuminous and exalbuminous seeds with examples. 3

   (i) Differentiate among Nuclear, Cellular and Helobial endosperm. 3

   (j) Mention different Hydrochorous and Zoochorous type of fruit dispersals with example. 3

   (k) Mention the characteristics feature of the flowers, where Anemophily, Hydrophily and Entomophily take place. 3

   (l) Distinguish Monosporic, Bisporic and Tetrasporic type of embryo sac. 3

3. Answer any ***two*** questions from the following:

(a) Write briefly the method applied to overcome self-incompatibility.

(b) Discuss briefly about changes associated with the formation of Inflorescence primordia from vegetative shoot apical meristem.

(c) Schematically represent NPC classification as proposed by Erdtman. 5

(d) What is Tectum? How the spore and pollen wall can be differentiated? Draw a schematic diagram of sporoderm following Erdtman and Faegri. 1+1+3

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2021-22

BOTACOR12T-BOTANY (CC12)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer ***all*** questions briefly from the following: 1×6 = 6

(a) What is total water potential in plant?

(b) Name one natural antitranspirant.

(c) What causes the alkalinization of guard cell cytosol during ABA signalling?

(d) Write the function of companion cell in phloem transport in plants.

(e) Define critical day length.

(f) Name the plant hormone which act against pest. It is synthesized in which plant organ?

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) The cell sap of roots of halophytic plant has normally higher osmotic pressure than that of the cell sap of mesophyte plants — Explain with reasons.

(b) Differentiate between diffusion pressure deficit and water potential.

(c) Discuss the role of Fe as essential element and mention its deficiency.

(d) Explain the mechanism of ascent of sap in the light of modern concept.

(e) What are the different types of membrane transporters?

(f) Enumerate the physiological role of auxin.

(g) How can plants be classified based on their photoperiodic response?

(h) Explain how loading of sugar takes place from SE.CC complex in green plants.

(i) Distinguish between phytochrome and cryptochrome.

(j) Discuss the role of gibberellin on the production of α-amylase by aleurone layer in the embryo.

(k) What are natural and synthetic plant growth regulators? Give examples.

(l) Write a short note on the causes of seed dormancy.

3. Answer any ***two*** questions from the following:

(a) Give the chemical structure of kinetin. Discuss the role of cytokinin in cell division and senescence.

(b) What is G-protein? Mention its role in signal transduction pathway.

(c) Describe the role of sucrose-H^+ transporter in phloem loading. 5

(d) Discuss briefly Ca^+ ATPase pump in absorption of ions by roots. State the importance of Donnan equilibrium concept in passive absorption of ions. 5

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2021-22

BOTADSE01T-BOTANY (DSE1/2)

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer the following questions: (***all*** the questions are compulsory) 1×16 = 16

(a) Write two ecological uses of forests.
(b) What is IUCN Red Data Book?
(c) What is geothermal energy?
(d) Write the full form of GIS.
(e) What do you understand by horticulture?
(f) Define natural resources.
(g) What is the percentage of saline water on earth?
(h) What do you mean by genetic diversity?
(i) Why do we need IPR?
(j) Write the importance of wet land.
(k) Write the aim of natural resource accounting.
(l) What is aquifer?
(m) Define hydrological cycle.
(n) Name the four biodiversity hot spots in India.
(o) What are the causes of desertification?
(p) What is biofuel?

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) What do you mean by pastoral land? What is its importance?
(b) Give a brief account of different types of biodiversity.
(c) Write a short note on traditional water management system.
(d) What are the effects of deforestation?
(e) Elaborate the regulative functions carried out by forest.

(f) Write different forms of ground water and three adverse effects of ground water usage.

(g) Explain briefly GIS and its application in environmental science.

(h) Write a brief note on bioprospecting.

(i) What is carbon footprint? — Explain.

(j) Write a note on National Biodiversity Action plan.

(k) Define estuary. Write its characteristics.

(l) What are the goals of sustainable development?

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2021-22

BOTADSE02T-BOTANY (DSE1/2)

HORTICULTURAL PRACTICES AND POST-HARVEST TECHNOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions briefly: 1×16 = 16

(a) What is pruning?

(b) Name a perennial ornamental climber.

(c) Define biopesticide. Give example.

(d) What is food irradiation?

(e) Name the causal organism of postharvest fruit rot.

(f) Define biofertilizer with example.

(g) What is quarantine?

(h) What is olericulture?

(i) Write the importance of bonsai.

(j) Mention different asexual propagation methods of plants.

(k) What is tertiary food processing?

(l) Write the importance of cut flower.

(m) 'Kishen Bhog' is the variety of which fruit?

(n) Write the features of urban horticulture.

(o) What are different traits of quality of fruits?

(p) Define crop sanitation.

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) Differentiate between food and nutrition. Discuss the role of horticulture in food and nutrition security. 1+2

(b) What is drip irrigation? Discuss its benefits. 1+2

(c) Discuss different types of sexual and asexual propagation methods used in horticulture.

(d) Mention the importance of food preservation. What are the primary principles of food preservation?

(e) What is germplasm? Mention different methods of germplasm conservation. 1+2

(f) Discuss the key principles of 'bonsai' aesthetics. 3

(g) What is biological control of plant diseases? Mention its role in IPM. 1+2

(h) What is urban forestry? Mention its benefits. 1+2

(i) Discuss the role of postharvest technology in maintaining quality of the crops. 3

(j) Discuss the non-direct marketing practices of fruit and vegetable crops. 3

(k) What is crop rotation? How it benefits in controlling diseases of crops? 1+2

(l) Mention the methods used to minimize losses after harvesting the crops. 3

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2021-22

BOTADSE03T-BOTANY (DSE1/2)

INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate marks of question.
Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer ***all*** questions briefly from the following: 1×16 = 16

(a) Name one antifoam agent.

(b) Name the enzyme associated with development of semi synthetic penicillin.

(c) Define eutrophication.

(d) Name one ammonifying bacterium.

(e) Write a difference between α-amylase & β-amylase.

(f) What is secondary metabolite?

(g) Write the name of an enzyme which is use to break the fungal cell wall in laboratory.

(h) What is microbial plastic? Give an example.

(i) Name one flavouring agent.

(j) Write an advantage of air lift fermenter.

(k) Define upstream process in industrial fermentation.

(l) Write the name of a bacteria which grow only on hydrocarbons.

(m) Write the name of an instrument which is use to break the cells in industry.

(n) Define bioaerosol.

(o) What is salting out of protein?

(p) What is PHA?

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) Write the steps involved in the formation of root nodule in leguminous root. 3

(b) Write in brief the methods of enzyme immobilization. 3

(c) Write the main principles of fixed bed and fluidized bed bioreactor. 3

(d) Describe the recovery process of ethanol and penicillin. 3

(e) Compare batch and continuous fermentation. What is diauxic growth? 2+1

(f) Write the benefit of mycorrhiza in agriculture.

(g) Describe the process of sewage waste water treatment.

(h) How water quality can be checked by faecal coliform?

(i) Draw the growth curves of bacteria in batch and continuous fermentations.

(j) Describe the roles of microbes in medical microbiology. 3

(k) Describe different parts of constantly stirred tank bioreactor. 3

(l) Draw a flowchart for purification of an extracellular enzyme. 3

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2020, held in 2021

BOTACOR11T-BOTANY (CC11)

REPRODUCTIVE BIOLOGY OF ANGIOSPERMS

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions briefly: 1×6 = 6

   (a) What is P-tapetum?

   (b) What is herkogamy?

   (c) What is heteromorphic self-incompatibility?

   (d) What is floral evocation?

   (e) Write the name of family or genus showing compound pollen.

   (f) Why the ovule is called megasporangium?

2. Answer any ***eight*** questions from the following: 3×8 = 24

   (a) Describe in brief the process of parasexual hybridization. 3

   (b) Write a short note on mosaic endosperm. 3

   (c) Describe in brief the embryo-endosperm relationship. 3

   (d) What is self-incompatibility? Differentiate between GSI and SSI. 1+2

   (e) Explain with examples the structural modifications of seeds for dispersal by animals. 3

   (f) Explain briefly the terms apospory and apogamy. 3

   (g) What is meant by ABC model of flower development? 3

   (h) Explain the significance of callose deposition during microsporogenesis. 3

   (i) Define double fertilization and state its significance. $1\frac{1}{2}+1\frac{1}{2}$

   (j) Draw and label the different parts of an anatropous ovule. 3

   (k) Write in brief about induced polyembryony. 3

   (l) Enumerate various apomictic methods found in angiosperms. 3

3. Answer any ***two*** questions from the following:

(a) What is endosperm? Mention their types with examples. What is cleavage polyembryony?

(b) Illustrate the successive stages of development of a typical female gametophyte in angiosperms (labelled diagrams only).

(c) Write briefly on the genetic basis of incompatibility. Whether self-pollination is possible in dioecious species?—Justify. 2+3

(d) What is pollination? Discuss the contrivances of cross-pollination. 2+3

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2020, held in 2021

BOTACOR12T- BOTANY (CC12)

PLANT PHYSIOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer ***all*** questions briefly from the following: 1×6 = 6

   (a) State the Fick's first law in diffusion.

   (b) What are aquaporins?

   (c) What happens to water transport if an air bubble forms within the xylem?

   (d) A source of sugar translocation at one time can become sink later on. Comment on the statement.

   (e) Name the plant from where Brassinosteroid was first identified.

   (f) Why it is often said that the flowering pattern of a plant depends on the wavelength last received?

2. Answer any ***eight*** questions from the following: 3×8 = 24

   (a) There are two adjacent living cell A and B. Cell A has an osmotic potential (Ψ_S) of –10 bars and pressure potential (Ψ_p) of 5 bars, whereas cell B has an osmotic potential (Ψ_S) of –5 bars and pressure potential (Ψ_p) of 2 bars. What will be the direction of water flow in the cell?

   (b) Define the primary active transport and secondary active transport of ions across cell membrane.

   (c) What are essential and beneficial elements in plant nutrition? Give one example of each.

   (d) Differentiate between transpiration and guttation.

   (e) Movement of substances in xylem is unidirectional while in phloem it is bidirectional — Explain the statement.

   (f) State the functions of jasmonates in plant growth and development.

   (g) Mention the role of K ion in stomatal movement.

   (h) What are natural and synthetic plant growth regulators? Give examples.

(i) What do you mean by the phytochrome mediated responses, HIR (high irradiance response) and LER (low energy response)?

(j) What is photo reversibility and physiologically active form of phytochrome?

(k) Give a short note on chryptochrome mediated photoresponses.

(l) Schematically give the Tryptophan dependent pathway of auxin biosynthesis.

3. Answer any ***two*** questions from the following: 5×2 = 10

(a) What is facilitated diffusion? Discuss the role of channel and carrier proteins in the transport of ions across the membrane. 1+4

(b) What are the main objections of cohesion-tension theory of ascent of sap? How this objection was explained by Milburn and Johnson (1966)? 5

(c) Schematically represent the molecular events observed in gibberellins induced seed germination. 5

(d) State the molecular mechanism of vernalization in the light of Flowering Locus C (FLC). 5

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2020, held in 2021

BOTADSE01T-BOTANY (DSE1/2)

NATURAL RESOURCE MANAGEMENT

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

1. Answer the following questions: (***all* the questions are compulsory**) 1×16 = 16

(a) Mention the percentage of fresh water contents on earth.

(b) What are aquifers?

(c) Write the full form of IUCN.

(d) What are the main objectives of CBD (Convention on Biological Diversity)?

(e) What is species richness and abundance?

(f) What is an eutrophic water body?

(g) Define a keystone species.

(h) Name a natural gas used as energy source.

(i) Define biopiracy.

(j) Mention two prime significance of estuaries.

(k) Why wetland is called the nature's kidney?

(l) Write down the full from of WBBDB.

(m) What is meant by NTFP?

(n) Give an example of inexhaustible natural resource.

(o) Give botanical names of two Petrocrops with their respective families.

(p) Define desertification.

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) Explain the concept of bioprospecting.

(b) Discuss in brief the reasons for soil degradation.

(c) Comment on the importance of wetlands.

(d) Write a brief account on sustainable development.

(e) Write a short note on ecological foot print.

(f) What is the difference between renewable and non-renewable natural resources?

(g) Write a short note on management of fresh water resources.

(h) Write down the criteria of Biodiversity Hot Spots.

(i) Write a note on renewable energy sources.

(j) Write in short note about The Ramsar Convention.

(k) State the role of remote sensing in vegetation mapping.

(l) What are the aims and objectives of EIA?

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2020, held in 2021

BOTADSE02T-BOTANY (DSE1/2)

HORTICULTURAL PRACTICES AND POST-HARVEST TECHNOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words as for as practicable
All symbols are of usual significance.

1. Answer ***all*** the following questions briefly: 1×16 = 16

(a) What is a grain silo?

(b) What is meant by IPM?

(c) Define ecotourism.

(d) What is cryopreservation?

(e) What is the center of origin of mango?

(f) What is 'Cavendish AAA'?

(g) What is a graft?

(h) Write the chemical structure of Dicamba.

(i) What is IPR?

(j) What is meant by cascade style of bonsai?

(k) Name the host plant of a borer pest.

(l) Name one mango species other than *Mangifera indica* that produces edible fruit.

(m) What is meant by PGRs?

(n) What is budding method of plant propagation?

(o) What are ornamental plants?

(p) What is meant by urban forestry?

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) Write a note on the role of horticulture in rural economy. 3

(b) Mention a few salient features of ornamental orchids, poppies and marigold. 1+1+1

(c) State the different irrigation methods used in horticulture. 3

(d) Differentiate between biofertilizer and biopesticide. 3

(e) State the advantages and disadvantages of food irradiation. 3

(f) Mention a few policies regarding ancient Indian gardening tradition. 3

(g) Briefly describe the post harvesting storage of cut flowers.

(h) Write a short note on food safety of vegetables.

(i) Mention the importance of flower shows and exhibitions.

(j) State the different strategies involved in minimizing economic loss during postharvest transportation. 3

(k) Give a brief account of chemical methods of pest management. 3

(l) What is hydroponics? Mention its scope and limitation. 1+2

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WEST BENGAL STATE UNIVERSITY

B.Sc. Honours 5th Semester Examination, 2020, held in 2021

BOTADSE03T-BOTANY (DSE1/2)

INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate marks of question.
Candidates should answer in their own words and adhere to the word limit as practicable.

1. Answer ***all*** questions briefly from the following: 1×16 = 16

(a) Define bioreactor.

(b) Write the full form of TDS and TOC.

(c) Name two upstream processes in industrial fermentation.

(d) Name one antifoaming agent in fermentation.

(e) Give an example of VAM fungi.

(f) Write the role of Impeller in bioreactor.

(g) Name one α-amylase producing microorganism.

(h) Name one penicillin producing microorganism.

(i) Why low pH of fermentation medium is suitable for production of citric acid?

(j) What is faecal coliform?

(k) What is full form of COD?

(l) Give two examples of pesticide degrading spore forming bacteria.

(m) What do you mean by fermentation?

(n) Write the name of a Gram-negative bacteria that commercially produced lipase.

(o) Which lactic acid bacteria can ferment both lactose and glucose?

(p) Write the composition of CSL and white sulphite liquor.

2. Answer any ***eight*** questions from the following: 3×8 = 24

(a) What are the advantages and disadvantages of air lift fermenter?

(b) Describe briefly how microorganisms can be used as indicator of water quality.

(c) Mention the raw materials, strains and fermentation conditions with reference to ethanol production.

(d) Write the name of industrial producers and uses of lipase and glutamic acid.

(e) Compare BOD with COD mentioning their significance.

(f) Describe the cause and significance of eutrophication.

(g) Describe the steps involves or procedures for isolation of rhizobia from root nodule.

(h) What are the main characters of microorganism used for an industry?

(i) Draw and describe a bioreactor that fulfil the physiological needs of the organism.

(j) Compare stationary with submerged fermentation.

(k) How do you determine the BOD of water sample?

(l) Describe how soil contaminated aromatic hydrocarbon compounds oxidized by soil bacteria.

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