



AG-1192

M. Sc. (Sem. IV) Examination

March - 2023

CHNN-701(O) : Organic Chemistry
(New Course)

[Total Marks : 70

Time : $2\frac{1}{2}$ Hours]

Introduction : All questions are compulsory.

1 Answer any two of the following :
(1) Give the evidence for linkage between Phosphoric acid and Nucleoside.
(2) Give difference in RNA & DNA. Explain importance of RNA in biosynthesis of protein.
(3) Write a synthesis of thiamine and uric acid.
(4) Discuss the structure of nucleosides.

18 Answer any two of the following :
(1) Discuss the chemical relation between starch and cellulose.
(2) Write a note on deoxy sugar and amino sugar
(3) Explain photosynthesis of carbohydrate.

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1
[Contd...

- 3 Answer any two of the following :
- (1) Compare the structure of Oestone, Oestrol and Oestadiol.
 - (2) What are adrenal cortical hormones ? Discuss the constitution of cortisone.
 - (3) Give evidence for the position and nature of side chain in Ergo sterol.
 - (4) Give the synthesis of progesterone from diosgenine.
- 4 Answer any two of the following :
- (1) Discuss the conformation analysis of 2-bromo cyclohexanone and 2-bromo-4,4-dimethyl Cyclohexanones.
 - (2) Discuss the conformation analysis of 1,3-dihydroxy butyl cyclo hexane and 4-hydroxy Cyclohexane carboxylic acid.
 - (3) Give conformation analysis of 1,2- and 1,3-dimethyl cyclo hexanes.
 - (4) Discuss the conformation of isomeric benzene hexa chlorides with stability order.
- 17
- 18



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Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2023

Organic Chemistry : CHNN-703(O)

(Synthetic Drugs)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

1 Answer any two from following : 18

- (1) Classify the anti-malarial drugs on the basis of chemotherapy. Give the synthesis and physiological activity of Diamino pyrimidines.
- (2) Write a brief account on antifungal drugs.
- (3) How is cancer caused? What are the limitations of its therapy? Draw structures of 6-Mercaptopurine and 6-thioguanine.

2 Answer any two from following : 17

- (1) What are Tranquilizers? Classify them.
- (2) Give synthesis of any two of them.
- (2) Explain anticonvulsant and antiparkinsonism drugs.
- (3) Write a note on
(1) Antipsychotics
(2) Anticonvulsants

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1

[Contd...

- 4 Answer any two from following :
- (1) What is hypertension? What should be normal the blood pressure? Write synthesis of one antihypertensive drug.
 - (2) Write a note on :
 - (a) Anti Bacterial drugs
 - (b) Anti fungal drugs
 - (3) Give the synthesis and uses of :
 - (i) Para amino salicylic acid
 - (ii) Promizol
- 17

- 3 Answer any two from following :
- (1) What is hypertension? What should be the normal blood pressure? Write synthesis and physiological activity of Methyl dopa.
 - (2) Name the different drugs acting on Renal system with their mode of action.
 - (3) Give a note on cardiac drugs.
- 18



AG-1201

Seat No.

M. Sc. (Sem. IV) Examination

March - 2023

Organic Chemistry : CHNN-704(O)

(Selected Topics in Organic Chemistry) (New Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

18

1 Answer any two of the following :

- (1) Explain the Principle, Mechanism and Application of Wagner-Meerwein rearrangement.
- (2) Short note on Principle and Application of Backmann rearrangement.
- (3) Explain the Dakin Reaction with Application.

17

2 Answer any two of the following :

- (1) Explain the Principle, Mechanism and Application of Favorski rearrangement.
- (2) Short note on Benzidine rearrangement.
- (3) Write a note on Hofmann-Martius rearrangement.

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1

[Contd...

- 4 Answer any two of the following :
 (1) Explain the Principle, Mechanism and Application of Dickmann Reaction.
 (2) Write a note on : Leuckart reaction.
 (3) Give the Principle and application of Friedel-Crafts reaction.
- 17
- 3 Answer any two of the following :
 (1) Explain the preparation and application of Organo Magnesium compounds.
 (2) Write a note on Organo Silicon compounds.
 (3) Short note on Organo Cadmium compounds.
- 18



AG-1205-1206 Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2023

(1) CHNN-705 : Disconnection Approach
(Organic Chemistry)

(2) CHNN-705 : Organic Chemistry
(Elective) (New Course)

(Organic Chemical Toxicity &
Solid Waste Management)

(New Course)

Time : 2 Hours]

[Total Marks : 35

(1) CHNN-705 : Disconnection Approach
(Organic Chemistry)

(Elective) (New Course)

1

Answer any two of the following :

18

(1) Discuss the importance of the order of events
in organic synthetic. Explain with suitable
example.

(2) Define the following terms with suitable
example :
(i) FGA
(ii) Synthon
(iii) Synthetic equivalents

(3) Explain reversal of polarity and two group
C-X disconnection with suitable examples.

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1

[Contd..

- 17
- 2
- Answer any two of the following :
- (1) Write a note on : Biomedical waste and its treatment.
 - (2) What is Solid Waste ? Explain its classification with examples.
 - (3) Write a note on : Industria solid waste treatment.

- 18
- 1
- Answer any two of the following :
- (1) Explain the biochemical effects of pesticides and carcinogens.
 - (2) Write a note on : Industrial ecosystem and better industrial process.
 - (3) What is the problem of toxic chemicals in the environment ? Explain solution of this problem.

(2) CHNN-765 : Organic Chemistry
 (Organic Chemical Toxicity &
 Solid Waste Management)
 (New Course)

- 17
- 2
- Answer any two of the following :
- (i) What is protecting group ? Describe the protection of amine group with suitable examples.
 - (ii) Describe the use of acetals and ketals as protecting groups for carbonyl compounds.
 - (iii) Discuss the use of Suzuki reaction and Robinson annelation for organic synthesis.



AG-1218

Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2023

Physics : MSPHY-CC-403

(Quantum Mechanics - 3 & Solid State Physics - 3)

(New Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions : (1) Symbols used have usual meaning.

(2) Figures on RHS indicate marks of

respective question.

1 (a) Attempt any **one** out of two : 8

(1) Obtain Klein-Gordon equation and
discuss relativistic plane wave equation
and its solution.

(2) Discuss Dirac Relativistic equation for
free-particle.

(b) Attempt any **two** out of three : 8

(1) Explain following terms :

(i) Dirac's relativistic Hamiltonian

(ii) Position Probability density

(2) Discuss spin of the Dirac Particle and
what is the effect on Dirac Particle in
electromagnetic fields.

(3) Explain expectation values and
observables.

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1

[Contd...

- 3 (a) Attempt any **one** out of two :
 (1) Discuss optical reflectance, Kramers-Kronig relation and mathematical note.
 (2) Discuss excitons, Frenkel excitons and Alkali Halides.
 8
- (c) Attempt any **one** out of two :
 (1) What is the non-relativistic limit?
 (2) Write Dirac Hamiltonian.
 1
- in central potential.
 (3) Obtain total angular momentum formula $K^2 = j^2 + 1/4 \hbar^2$ for relativistic electron
 (2) Discuss spin magnetic moment in a magnetic field.
 (3) Obtain total angular momentum formula in a magnetic field.
 (1) For the Dirac Particle discuss energy spectrum and eigen function for electron
 8
- (b) Attempt any **two** out of three :
 explain total angular momentum potential with necessary equations and (2) Discuss Relativistic electron in a central equations and Asymptotic behaviour.
 (1) Discuss series solutions of the radial
 8
- 2 (a) Attempt any **one** out of two :
 (2) Define Operators with example equation.
 (1) Give the limitation of Klein-Gordon
 2
- (c) Attempt any **one** out of two :
 2

- (b) Attempt any two out of three :
- (1) Discuss Raman effect in crystal.
 - (2) Explain conductivity of collisionless electron gas.
 - (3) Explain Energy loss of Fast Particle in a solid.
- (c) Attempt any one out of two :
- (1) If exciton is tightly bound then it is called _____ exciton.
 - (2) What is selection rule in quantum mechanics?
- 4 (a) Attempt any one out of two :
- (1) Explain PV cell technology, structures of solar cells, M-S solar cells and MIS solar cells.
 - (2) What is LED? Explain radiative transitions and emission spectra.
- 8 (b) Attempt any two out of three :
- (1) Discuss solid-liquid junction solar cells.
 - (2) Give the comparison of P-N junction and explain Schottky Junction.
 - (3) Discuss photoconductor and photodiodes.
- 1 (c) Attempt any one out of two :
- (1) Give the meaning of phototransistor.
 - (2) Give the LED structure.



AG-1209

Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2023

Botany : BOC-401

(Plant Biotechnology) (New Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

1 (a) Answer the following Long answer

8 questions : (one out of two)

(1) Write note on various scope of

biotechnology.

(2) Describe the vectors mediated/indirect

gene transfer method.

7 (b) Answer the following short notes :

(one out of two)

(1) Mention the social and ethical issues

related to biotechnology.

(2) Write note on vector less / direct DNA

transfer method.

3 (c) Answer the following - Short question :

(three out of five)

(1) What is vector?

(2) Define genetic engineering.

(3) What is t-DNA?

(4) What is gene tagging?

(5) Define transgenic organism.

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- 2 (a) Answer the following - Long answer
question : (one out of two) 8
- (1) Describe the strategy for development of trans gene.
- (2) Write note on molecular farming to produce bioplastic.
- (b) Answer the following - short notes : 6
- (one out of two)
- (1) Write note on fermentation technology.
- (2) Give brief account of Arabidopsis genomes.
- (c) Answer the following - short question : 3
- (three out of five)
- (1) What are nitrogen fixers?
- (2) Give the example of edible vaccines.
- (3) Define molecular farming.
- (4) Name two products obtained from industrial microbes.
- (5) What is genome?
- 3 (a) Answer the following - Long answer
questions : (one out of two) 8
- (1) Write note on diseases resistant transgenic plants.
- (2) Explain the transformation of chloroplast (Cp) genome in plants.
- (b) Answer the following - Short notes : 7
- (one out of two)
- (1) Write short note on Germplasm storage.
- (2) Describe the method of in vitro production of secondary metabolites.

- (c) Answer the following – Short question : (three out of five)
- (1) Give the example of transgenic crops.
 - (2) What is clonal propagation?
 - (3) Define somatocloning.
 - (4) What is Artificial seeds?
 - (5) Give the use of apical bud culture.
- 4 (a) Answer the following – Long answer question : (one out of two)
- (1) Write a note on GMO crops.
 - (2) Describe the role of biotechnology in herbal medicine production.
- (b) Answer the following – Short notes : (one out of two)
- (1) Explain environmental waste management using biotechnology.
 - (2) Describe any one biotechnology based industrial products for human welfare.
- (c) Answer the following – Objective type questions : (three out of five)
- (1) What is floriculture?
 - (2) Name two industrial pollutants.
 - (3) Give the example of hybrid fruits.
 - (4) Give nutritional importance of golden rice.
 - (5) Give one example of Covid-19 vaccine.
- 3



AG-1210

Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2023

Botany : BOC-402

(Ethnobotany, Mushrooms & Mycorrhiza)

(New Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions : (1) This question paper consists total four

questions.

(2) All questions are compulsory and

carrying 18, 17, 18 and 17 marks

respectively.

(3) Illustrate your answers with necessary

diagrams, if required

1 (a) Answer the following **one** out of two : 8

(1) Concept, scope and objectives of ethno

botany.

(2) Significance of ethno botanical practice,

habitat and morphology of plant included

in Liliaceae and Verbenaceae in your

syllabus.

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1

[Contd.

7

- (b) Answer the following **one** out of two :
- (1) Tribals of India and their lifestyle.
 - (2) Medico-ethno botanical survey and their role in Ayurveda.

3

- (c) Answer the following **three** out of five :
- (1) The study of land management for the simultaneous production of food, crops and trees.

(A) Ethnogeography

(B) Ethnobotany

(C) Ethnohistory

(D) Ethnolinguistics

- (2) The tribes of India constitute _____ % of the total population.

- (3) Match Last - I with Last - II and select the correct answer using the codes given below the lists.

Last - I

A. Gondi

B. Manipuri

C. Mundari

D. Indo-European

Codes :

A B C D

(a) 2 4 3 1

(b) 3 1 4 2

(c) 1 2 3 4

(d) 4 3 2 1

Last - II

1. Sino-Tibetan

2. Bengali

3. Dravidian

4. Munda

- (4) The scientific name of sacred basil or holy basil is _____
 (5) Give the Ethno medicinal uses of bark of Neem.
- 2 (a) Answer the following one out of two : 8
 (1) Role of ethno botany in modern medicine with special reference to Gujarat.
 (2) Describe any three methodologies of ethno botanical studies.
- (b) Answer the following one out of two : 6
 (1) The relevance of ethno botany in the present context.
 (2) Describe the plants as a brain ailments and antioxidant and relaxant.
- (c) Answer the following three out of five : 3
 (1) _____ and _____ are the old Indian literature having very much knowledge of plants as a medicine.
 (2) Give the name of any two tools of ethno botanical study.
 (3) Ashwagandha is a drug obtained from :
 (A) Roots of *Rauwolfia serpentina*
 (B) Roots of *Withania somnifera*
 (C) Leaves of *Centella asiatica*
 (D) Flowers of *Artemisia*

- 3 (a) Answer the following one out of two : 8
- (1) Medicinal and nutritional value of edible and poisonous mushrooms.
- (2) Effects of nutrient and chemical factors on mushroom formation.

(b) Give any two examples of modern approach of ethno botany.

	A	B	C	D
(a)	2	3	4	1
(b)	1	2	3	4
(c)	3	1	2	4
(d)	4	2	1	3

Codes :

List - I	A. Rauwolfia	1. Diabetic
	B. Artemisia	2. Antimicrobial
	C. <i>Phyllanthus</i>	3. Antioxidant
	D. Withania	4. Brain ailments
	<i>Fralemus</i>	
List - II		

- (4) Match List - I with List - II and select the correct answer using the codes given below the lists :

- (b) Answer the following **one** out of two : 7
- (1) Scope, biological significance and methods of cultivation of *Agaricus bisporus*.
- (2) Describe any three types of mushrooms. 3
- (c) Answer the following **three** out of five : 3
- (1) Mushroom is :
 (A) A plant consisting of fine green threads
 (B) An edible fungus
 (C) A flowering plant
 (D) A bryophyte devoid of roots, stems and leaves
- (2) The gills of mushroom :
 (A) Help in nutrition
 (B) Bear spores which help in reproduction
 (C) Help in respiration
 (D) Help in enhancing buoyancy
- (3) _____ is a common type of mushroom in grocery stores.
- (4) Give the medicinal values of edible mushrooms.
- (5) Give the examples of oyster mushrooms.

- 4 (a) Answer the following **one** out of two : 8
- (1) Phosphate solubilizing fungi.
 - (2) Isolation and multiplication of mycorrhiza.
- (b) Answer the following **one** out of two : 6
- (1) Types of mycorrhiza.
 - (2) Mycorrhizae : role in crop producing and forestry.
- (c) Answer the following **three** out of five : 3
- (1) Mycorrhiza a relation between fungi and roots of higher plants is :
 - (A) Parasitic relationship
 - (B) Saprophytic relationship
 - (C) Symbiotic relationship
 - (D) Epiphytic relationship
 - (2) Explain : VAM fungi
 - (3) The fungal partner in ecto mycorrhiza belongs to the _____ class.

- (4) Mycorrhizal association helps a tree mainly as :
- (A) Water absorption
 - (B) Fixation of atmospheric nitrogen
 - (C) Digestion of organic matters in the soil
 - (D) Absorption of phosphates
- (5) The characteristic feature of VAM is it penetrates plant cell wall and form



AG-1213-1214-1215 Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2023

Botany

(1) BOE-401 : Bioinstrumentation (New Course)

(2) BOE-402 : Conservation & Restoration Ecology

(ES) (New Course)

(3) BOE-403 : Photobiology, Molecular Microbiology

& Synthetic Biology

(New Course)

Time : 2 Hours]

[Total Marks : 35

(1) BOE-401 : Bioinstrumentation (New Course)

Instructions : (1) This question paper consists of total three

questions.

(2) All questions are compulsory and

carrying 14, 14, and 07 marks

respectively.

(3) There is no overall choice. However, an

internal choice has been provided in

each sub-questions.

(4) Illustrate your answers with necessary

diagrams, if required.

1 Answer the following as per Instruction : 14

(a) Explain in detail : (any one) 8

(1) Application of Cytophotometry

(2) Scanning Electron Microscopy (SEM)

(b) Explain in brief : (any one) 6

(1) Application of Bright field microscopy

(2) Fluorescence Microscopy

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14

8

6

7

Answer the following as per instruction :

- (a) Explain in detail : (any one)
- (1) High Performance Liquid chromatography (HPLC)
- (2) Gel Electrophoresis.

- (b) Explain in brief : (any one)
- (1) Applications of Ultra centrifugation
- (2) Thin Layer Chromatography (TLC)

Give short answers : (any seven)

- (1) Write any one difference between SEM and TEM.
- (2) Write the function of Resolving power of microscope.
- (3) Resolving power of Light Microscope is _____ microscope helps us in getting three dimensional (3D) picture of the specimen
- (4) Resolving power of TEM is derived from _____
- (5) Ion Exchange Chromatography is based on the _____
- (6) The pattern of the paper in chromatography is known as _____
- (7) Write application of Gas Chromatography.
- (8) Write the principle of Centrifugation.
- (9) Write the full form of FPLC.

(2) BOE-402 : Conservation & Restoration Ecology (ES) (New Course)

Instructions : (1) The numbers on the right the marks of that question
 (2) Illustrate your answer with neat and labelled diagram if required.

- 1 (a) Describe : (any one) 8
 (1) Principles and ethics of Conservation ecology.
 (2) Mechanism of Population Regulation.

- (b) Write short notes on : (any one) 6
 (1) Theory of reserve design.
 (2) Species and habitat conservation.

- 2 (a) Describe (any one) 8
 (1) Degradation and restoration of Natural Ecosystem.
 (2) General principles of conservation Management.

- (b) Write short notes on : (any one) 6
 (1) Major tools used in Restoration.
 (2) Impact of disturbances on the functioning of Ecosystem.

- 3 Answer in short : (any seven) 7
 (1) Definition : Ecology
 (2) Define : Conservation Ecology
 (3) Definition : Population
 (4) Define : Protected Area
 (5) Define : Prioritizing species
 (6) Write any two aims of Restoration.
 (7) Define Conservation Strategies.
 (8) Define : Ecosystem
 (9) What is Ecosystem Restoration ?
 (10) Define : Sustainable Development

(3) BOE-403 : Photobiology, Molecular Microbiology

& Synthetic Biology

(New Course)

- 1 (a) Answer the following : (one out of two) 8
- (1) Write a note on ecological significance of CCA.
- (2) Write a note on Light harvesting in cyanobacteria.
- (b) Answer the following : (one out of two) 6
- (1) Short note on Photo-induced damage to microbes.
- (2) Explain model of cyanobacterial CCM.
- 2 (a) Answer the following : (one out of two) 8
- (1) Write a note on production and purification of antibody.
- (2) Role of microalgae and cyanobacteria in renewable energy production.
- (b) Answer the following : (one out of two) 6
- (1) Genetic modification of cyanobacteria.
- (2) Short note on immunoprecipitation.
- 3 Answer the following : (seven out of ten) 7
- (1) What is scytonemin ?
- (2) Name the types of cyanobacterial toxins.
- (3) What is Phycoerythrin function ?
- (4) Write the Components of CCM.
- (5) Write a function of carboxysomal enzymes.
- (6) What is the biological importance of cyanobacteria ?
- (7) Why are antibodies Y-shaped ?
- (8) What is the function of antibodies ?
- (9) Write 3 examples of cyanobacteria.
- (10) Which plant produces bioethanol ?



AG-1211

Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2023

Botany : BOC - 403

(Plant Resources & Utilization & Conservation)

(New Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions : (1) This question paper consists total four

questions:

(2) All questions are compulsory and carrying 18, 17, 18 and 17 marks respectively.

(3) Illustrate your answers with necessary diagrams, if required.

1 (a) Answer the following one out of two : 8

(1) Potato and Wheat - as a food.

(2) Adulteration in oil, spices and cereals.

(b) Answer the following one out of two : 7

(1) Cotton and Cannabis - as textile

fibres.

(2) Bajara and Guarbean - as fodder crops

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- (c) Answer the following three out of five :
- (1) Which one of the following pairs is correctly matched?
- (A) Car-Cocos nucifera
 (B) Jute - *Tanum usitatissimum*
 (C) Sun hemp - *Corchorus capsularis*
 (D) Stuffed - *Cannabis sativa*
- (2) The man made cereal Triticale has been created by a cross between _____ and _____
- (3) In India Chick Pea is grown as a rabi crop. True or False.
- (4) Botanically, fibres are specialized elongated narrow and lignified sclerenchymatous cells with pointed or blunt ends - True or False.
- (5) Bast fibre obtained from the _____ part of _____ plant.
- 8 (a) Answer the following one out of two :
- (1) *Dalbergia* and *Mengliera* - as a fire wood / timber yielding plants.
 (2) Plantation, Chemical composition, Production, Processing and uses of Rubber.
- (b) Answer the following one out of two :
- (1) *Catharanthus* and *Phyllanthus* as medicinal plants.
 (2) Dye yielding plants - any two as per your syllabus.
- 6

	A	B	C	D	
(a)	2	3	4	1	(a)
(b)	3	4	1	2	(b)
(c)	4	2	1	3	(c)
(d)	1	3	2	4	(d)
					3

Codes:

A.	<i>Adathoda vasica</i>	1.	Morphin
B.	<i>Aloe barbadense</i>	2.	Quinazoline
C.	<i>Allium sativum</i>	3.	Alcin
D.	<i>Papaver</i>	4.	Allicin

List - I

List - II

below the lists.

(4) Match List I with List II and select the correct answer using the codes given

- (A) *Crushing the stem of *Ficus elastica**
 (B) *Crushing the fruit of *Hare**
 (C) *Tapping the fruit of *Castilla elastica**
 (D) *Tapping the stem of *Hare**

(3) Rubber is collected from :

- (A) Condiment
 (B) Source of insecticides
 (C) Source of antibiotics
 (D) Sources of pigments

popular as a

(2) Turmeric has recently become widely

(1) Name the drug and its source which is used in ophthalmology to dilate pupil.

(c) Answer the following three out of five :

(5) Write the scientific name and give any one property of timber yielding plant which is obtained from a member of verbenaceae.

3 (a) Answer the following one out of two : 8

(1) Principles of conservation.

(2) International efforts and Indian

initiatives of conservations.

(b) Answer the following one out of two : 7

(1) Sanctuaries and National parks

(2) Wetlands, Mangroves and Coral reefs

(c) Answer the following three out of five : 3

(1) The most important strategy for the conservation of biodiversity is the establishment of

(A) Biosphere reserves

(B) Botanical gardens

(C) National Parks

(D) Wildlife sanctuaries

(2) _____ is an example of In-Situ conservation.

(A) Seed banks

(B) Botanical Gardens

(C) Gene banks

(D) Wildlife sanctuaries

- (3) Which of the following is not among the four coral reef regions of India identified by the Government for intensive conservation and management?
- (A) Gulf of Mannar
 (B) Lakshadweep Islands
 (C) Gulf of Khambhat
 (D) Andaman and Nicobar Islands

- (4) What is the number of Biosphere reserves present throughout the world?

- (5) Match List I with List II and select the correct answer using the codes given below the lists.

List - I

A. Assam

B. Gujarat

2. Kaziranga

Wildlife

Sanctuary

3. Gir Wildlife

Sanctuary

D. Madhya Pradesh

4. Bharatpur Bird

Sanctuary

Codes :

A	4	2	3	1
B	3	4	1	2
C	2	3	4	1
D	1	2	3	4

4 (a) Answer the following one out of two :
 (1) Seed bank and Gene bank
 (2) CSIR and DBT.

(b) Answer the following one out of two :

(1) Ex-Situ conservation - Principles and practices.

(2) General account and activities of BSI.

(c) Answer the following three out of five :

(1) Gene bank also preserves rare genotype for

(A) Cultivation on large scale

(B) Breeding and improvement

(C) Chromosome study and phylogeny of cyto-types

(D) Tracing the history of evolution

(2) Match List I (Conservation) with List II (Establishment) and select the correct

answer using the codes given below the lists:

List - I

A. NBPGR 1. 1942

B. ICAR 2. 1986

C. CSIR 3. 1929

D. DBT 4. 1977

Codes :

A B C D

(a) 3 4 2 1

(b) 4 2 1 3

(c) 4 3 1 2

(d) 2 1 3 4

6

- (3) Write any two objectives of NBPGR.
- (4) The Sibpur Herbarium of Indian Botanical Garden was founded by _____ in _____.
- (5) _____ conservation is the chief mode for preparation of genetic resources which may include both cultivated and wild material.



AG-1212

Seat No. _____

M. Sc. (Sem. IV) Examination

March - 2023

BOC-404 : Botany

(Horticulture & Plant Breeding)

(New Course)

Time : $2\frac{1}{2}$ Hours] [Total Marks : 70

Instructions :

- (1) The question paper consists of four question, each has three question.
- (2) All questions are compulsory. First and third questions carry 18 marks and second and fourth questions carry 17 marks.
- (3) There is no overall choice. However, an internal choice has been provided in each question.
- (4) Illustrate your answers with necessary diagrams, if required.

1 Answer the following : 18

- (a) Answer in brief : (any one out of two) 8
 - (1) Describe importance of horticulture in terms of economy.
 - (2) Horticultural climatic zones of India and Gujarat.
- (b) Write short notes : (any one out of two) 7
 - (1) Pomology and Olericulture.
 - (2) Division of horticulture.

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- (c) Answer from given objective (Three out of five) 3
 - (1) Define : Horticulture
 - (2) What are the 3 areas of horticulture ?
 - (3) What is importance of horticulture ?
 - (4) Which plant is used for ornamental purposes ?
 - (5) What is the importance of nutritive value ?
- 2 Answer the following :
 - (a) Answer in brief : (any one out of two) 8
 - (1) Role of plant growth regulators in seed dormancy.
 - (2) Factors influencing horticultural crop production.
 - (b) Write short notes : (any one out of two) 6
 - (1) Seed physiology.
 - (2) Light and wind as a growth influence factors.
 - (c) Answer from given objective : (three out of five) 3
 - (1) What is the most important factor for plant growth ?
 - (2) What are the characteristics of juvenility ?
 - (3) What are the three layer of soil ?
 - (4) What is the function of plant growth regulators ?
 - (5) Define : Parthenocarpy

- 3 Answer the following : 18
- (a) Answer in brief : (any one out of two) 8
- (1) Describe on objectives and application of plant breeding.
- (2) Comparison between pedigree and bulk selection method.
- (b) Write short notes : (any one out of two) 7
- (1) Mass selection.
- (2) Pure line selection.
- (c) Answer from given objective (three out of five) 3
- (1) Define : Plant breeding
- (2) What is the most important method of plant breeding ?
- (3) Write name of plant breeding methods.
- (4) Who is father of plant breeding ?
- (5) What are the 2 mode of reproduction ?
- 4 Answer the following : 17
- (a) Answer in brief : (any one out of two) 8
- (1) Describe application of polyploidy in crop improvement and its limitation.
- (2) Describe - Bagging, tagging and pollination.
- (b) Write short notes : (any one out of two) 6
- (1) Hybrid vigour
- (2) Biosafety and Bioethics.

- (c) Answer from given objective (Three out of five) : 3
- (1) Write full form of IPR.
 - (2) Define : Hybridization.
 - (3) Define : Emasculation
 - (4) What is called parent ?
 - (5) Importance of polyploidy in plant breeding.