Nov-24-1-651

M.Sc. Semester-III Examination

November-2024

CHNN-601(O) : Chemistry : Organic Chemistry (Natural Products)

Total Marks : 70 **Time : $2^1/_2$ Hours**

1. **Answer Any Two of the following questions:** **18**
   1. Discuss reductive and oxidative degradation of Haemin.
   2. Give the synthesis of Coumarin and Polyporicacid.
   3. Discuss the structure of Anthocyanidine.

2. **Answer Any Two of the following questions:** **17**
   1. Evidence for the position of hydroxy group, angular methyl group and double bond in Eudesmol.
   2. Discuss the structure of Phytol and Squalene.
   3. Write in detail about chemistry of Gibberillic acid.

3. **Answer Any Two of the following questions:** **18**
   1. Give the synthesis of Ascorbic acid and Thiamine.
   2. Give evidence for position of hydroxy group and methyl group in Pantothenic acid.
   3. Detailed study of chemistry of α, β and γ Tocopherols.

4. **Answer Any Two of the following questions:** **17**
   1. Give evidences for the position of acetamido group and size of ring B in Colchicine.
   2. Discuss the structure of Narcotine.
   3. Position of ether group, reactive methylene group and nature of 'N' atom in Strychnine.

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Nov.-24-1-655

M.Sc. Semester-III (New Course) Examination
November-2024
Chemistry : Organic Chemistry
(Industrial Chemistry) CHNN-602(O)

Total Marks : 70 **Time : $2^1/_2$ Hours**

Que. 1 Answer Any Two of the following questions: **18**

1. Explain in detail : Good manufacturing practice and laboratory practice.
2. Write a note on the importance of research and development in chemical Industries.
3. Write a note on Fire and Toxic materials.

Que. 2 Answer Any Two of the following questions: **17**

1. Write a note on Fatty acid and Fatty Alcohols.
2. Describe essential oils and Discuss methods for it isolation.
3. Write a note on : Food additives.

Que. 3 Answer Any Two of the following questions: **18**

1. Write a note on : Fungicidy
2. Write a note on : Rodenticides.
3. Explain details on Agrochemicals.

Que. 4 Answer Any Two of the following questions: **17**

1. What is pulp? Explain the manufacture of Pulp by kraft process.
2. Describe the process of Ethanol manufacturing from sugar.
3. Explain about Rayon. Write any one method to manufacture rayon.

NOV-24-1-659

M.Sc. Semester-III (New Course) Examination
November-2024
Chemistry : Organic Chemistry (Synthetic Drugs)
CHNN-603 (O)

Marks : 70 **Time : $2^1/_2$ Hours**

1. Answer Any Two of the following questions: 18

1. Write a short note on Diagnostic agent. Explain the uses of radioactive isotopes.
2. Discuss receptor site theory. Explain different type of receptors.
3. What is QSAR? Discuss the approaches of the drug design.

2. Answer Any Two of the following questions: 17

1. What is an antibiotic? Give the classification of antibiotics on the basis of their chemical structure.
2. Explain the constitution and synthesis of penicillin.
3. Write the synthesis and activity of streptomycin.

3. Answer Any Two of the following questions: 18

1. Write the short note on sulphadrugs.
2. Give the synthesis and uses of sulphaguanidine and sulphanilamide.
3. Give the synthesis and uses of sulphathiazole and sulphafurazole.

4. Answer Any Two of the following questions: 17

1. What is anticholinergic drugs? Explain synthesis uses and physiological activity of any two anticholinergic drugs.
2. What is anti-histamine drugs? Write the synthesis and uses of any two antihistamine drugs.
3. What is local anesthetics? Write the synthesis and uses of any two local anesthetic having amide group.

NOV-24-1-664

M.Sc. Semester-III (New Course) Examination

November-2024

Chemistry : Organic Chemistry CHNN-604(O)

(Selective topics in Organic Chemistry)

arks : 70 **Time : $2^1/_2$ Hours**

Answer Any Two of the following questions: **18**

1. What are monocyclic dihetero atomic compounds? Explain Chemical reactivity of Oxazole.
2. Explain Synthesis and Chemical reactivity of Isothiazole.
3. Give a Synthesis and Chemical reactivity of Thiazole and Imidazole.

Answer Any Two of the following questions: **17**

1. Give a Skraup synthesis and Explain nucleophilic substitution with displacement of Halide.
2. Give the synthesis of Quinoxaline and Cinnoline.
3. Give a Bischner-Napieralskl synthesis and Friedlander synthesis.

Answer Any Two of the following questions: **18**

1. Write a application of oxidation reagent $KMnO_4$.
2. Write a note on oxidizing reagent Ag_2CO_3 and H_2O_2.
3. Explain application of $Al(O_iPr_3)$

Answer Any Two of the following questions: **17**

1. Write a application of NH_2NH_2 and Fe+HCl
2. Write a application of reduction reagent $LiAlH_4$ and Sodium Cynoborohydride.
3. Explain Uses of Palladium and Nickel.

Nov.-24-1-668

M.Sc. Semester-III (New Course) Examination
November-2024

Chemistry : Organic Chemistry - CHNN-605-A (O)
Green Chemistry

Marks : 35 **Time : 1 1/2 Hours**

1. Answer Any Two following. **17**

1. Define term of green chemistry. Explain green guidelines used in laboratory.
2. Describe the application of green chemistry in future.
3. Discuss the basic principle of green chemistry. Explain the classical and manmade appropriate two illustration of each class.

2. Answer Any Two following. **18**

1. Write note on a green reaction condition and E-factor.
2. Explain application of biocatalyst and phase transfer catalyst.
3. Synthesis of adipic acid by conventional and green method.

Nov.-24-1-669

M.Sc. Semester-III (New Course) Examination
November-2024

Chemistry : Organic Chemistry CHNN-605-B (O)
Photo Chemistry

Marks : 35 **Time : $1\frac{1}{2}$ Hours**

1. Answer Any Two following. 17

1. Explain Fluorescence and phosphorescence.
2. Write short note on interaction of electromagnetic radiation of matter.
3. Discuss the photochemical cycloaddition reaction between benzophenone and 1,3 – butadiene.
4. Discuss Jablonski diagram.

2. Answer Any Two following. 18

1. What is Fries rearrangement? Explain photo Fries rearrangement.
2. Explain norish type I and I cleavages in photochemical reactions.
3. Discuss the photochemistry of carbonyl compounds in cyclic and acyclic compounds.
4. Discuss de-π methane rearrangement in 1,5 – pentadiene.

NOV24-1-696

M.Sc Semester-III Examination

November -2024

MSPHY-301 CC :Physics-Nuclear Physics-I Instruments

Total Marks :70 **Time: $2^{1}/_{2}$Hours**

Instruction : 1. Figures on R.H.S indicate individual Marks
2. The symbols have their usual meanings.

1.(a) Attempt any one
1. Discuss meson theory of Nuclear Forces
2. Discuss the hyperfine structure of atomic spectrum — 08

1.(b) Attempt any two
1. Explain magnetic moment of Deuteron
2. Explain an excited state of Deuteron
3. Explain effect of magnetic field on hyperfine structure of atomic spectra — 08

1.(c) Attempt any one
1. Define nuclear Spin
2. Give Significance of the Sign of the Seatlering length — 02

2.(a) Attempt any one
1. Discuss Breit-Wigner dispersion formula for L=0
2. Discuss statistical theory of nuclear reaction — 07

2.(b) Attempt any two
1. What is Compound nucleus? Explain with example
2. Explain Semi classical description of stripping reaction
3. Discuss Continuum theory of Cross Sections — 08

2.(c) Attempt any one
1. Give the full Name of 'NMR'
2. Write any four reactions for beam of neutrons incident on a Pb^{208} — 02

3.(a) Attempt any one
1. Discuss Scanning electron microscopy (SEM)
2. Explain Transmission electron microscopy (TEM) — 08

3.(b) Attempt any two
1. Explain the Part of Scanning force microscopy (SEM)
2. Write the advantages and disadvantages and Application of SEM
3. Discuss Preparation of the Specimen for electron microscopy — 08

3.(c) Attempt any one
1. Give the Comparison of "SEM" and "TEM"
2. What is Constant height mode of STM — 02

4.(a) Attempt any one
1. Discuss the working of UV-Visible double beam spectrometer
2. Explain Phododiode array spectrometer in detail — 07

4.(b) Attempt any two
1. Discuss UV-Visible Spectrometer
2. Discuss Beer-Lambert Law
3. Discuss in brief the electronic transition of absorbing species Containing π, τ and η — 08

4.(c) Attempt any one
1. Write any four application of UV-Visible spectroscopy
2. Why tungsten-helogen lamp is more useful then tungasten It lament Lamp? — 02

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2. Factors affecting fossilization.

B. **Explain in brief Any One.** 07

1. Methods of fossil study.
2. Petrification.

C. **Give short answers – Any Three.** 03

1. Define : Fossil.
2. Which era is known as the "age of cycads"?
3. Fossils are formed in which types of rocks?
4. What is paleobotany?
5. Petrified plant organs of roughly spherical shape are known as ____

4. **Answer the following as per instruction.....**

A. **Explain in detail Any One.** 08

1. Lepidodendron.
2. Internal structure of Rhynia stem.

B. **Explain in brief Any One.** 06

1. Bennettitales reproductive organs.
2. Internal structure of Calamites stem.

Give short answers – Any Three. 03

1. Lepidodendron belongs to the class ____
2. Lyginopteris is a fossil of ____ (Pteridophytes / Bryophytes / Gymnosperm)
3. Lepidodendroid plants formed dominant vegetation in ____ era.
4. Bennettitales also known as ____
5. Gymnosperm fossils are ____ (Heterosporous or Homosporous)

NOV24-1-700

M.Sc Semester-III Examination

November -2024

MSPHY-301ES :Physics-Research Methodology

Total Marks :35 **Time: $1\frac{1}{2}$ Hours**

1.(a) Attempt any one 06

1. What is research? Explain in details
2. Discuss about research reading and review of literature

1.(b) Attempt any two 06

1. Explain the difference between basic and applied research
2. Describe essential steps in research
3. Discuss the importance of data validation in research work

2.(a) Attempt any one 06

1. Explain in brief field work and its parameter of research
2. Discuss the sequence of a good research report preparation

2.(b) Attempt any two 06

1. Discuss importance of result and discussion in research report
2. Give details about synopsis
3. What is proper way of reporting abbreviation in research report?

3.(a) Answer the following (Any Three) 06

1. Write the social roll of research
2. What are E-Documents?
3. Define applied research
4. What is hypothesis?
5. Enlist the computer aided tools to complete scientific documents

3.(b) Answer the following (Any Five) 08

1. What is Bibligraphy?
2. What is full form of ISSN?
3. What is action research?
4. What is INFLIBNET?
5. The data of research is _____
6. What is Table index?
7. What is Google Scholar?

NOV24-1-697

M.Sc Semester-III Examination

November -2024

MSPHY-302CC :Physics-Statistical Mechanics-2 Computor-2

Total Marks :70 **Time: $2^1/_2$Hours**

Instruction : 1. Symbols have their usual meaning
2. Figures the right indicate marks of the question.

1.(a) Attempt any one
1. Derive first order Vanderwaal's equation for real gas with an isotherm plotted on a PV plane 08
2. Discuss Ginzburg-Landau theory with necessary equation

1.(b) Attempt any two
1. Write short note on Liquid Helium 08
2. Explain second order phase transitions
3. Explain Phase Transition in Ferromagnetic materials.

1.(c) Attempt any one
1. Explain vapour pressure curve of liquid-vaporequilibria in case of Clausius- Clapeyron equation 02
2. What is order parameters?

2.(a) Attempt any one
1. Discuss the Boltzmann's H theorem 07
2. What is the thermionic emission? Derive Richardson Dushman equation for thermionic

2.(b) Attempt any two
1. Discuss Distribution function in space and time 08
2. Explain Effusion and derive necessary equations
3. Derive Boltzmann transport equation in the form of relaxation time approximation.

2.(c) Attempt any one
1. Discuss mean collision time 02
2. What is molecular collisions and derive an equation of pressure

3.(a) Attempt any one
1. Explain the average function and "IF" function in MS Excel 08
2. Write down note on MS Excel and give the salary roll application of it.

3.(b) Attempt any two
1. Explain "recovering the deleted workbook" in the manipulating data in MS Excel 08
2. What is the function of MS Excel for selecting a command and types of data?
3. Explain briefly standard toolbar and formatting toolbar

3.(c) Attempt any one
1. How can you deleting data from the cell address of MS Excel 02
2. How can you increase of decrease the column width?

4.(a) Attempt any one
1. Explain LAN,MAN and WAN with proper diagram 07
2. Explain the Uniform resource locator (URL) and Internet service provider

4.(b) Attempt any two
1. Explain Mesh Topology of network theorem with figure. 08
2. Explain the Surfing and Mail
3. Write the importance of internet and discuss web browser.

4.(c) Attempt any one
1. Write downs any four different network topologies possible. 02
2. Write down the difference between internet and intranet.

NOV24-1-701

M.Sc Semester-III Examination

November -2024

MSPHY-302ES :Physics-Microcontroller

Total Marks :35 **Time: $1^{1}/_{2}$Hours**

Instruction : 1. Symbols have their usual meaning
2. Figure to right indicates marks of the question.

1.(a) Attempt any one 06
1. Draw and discuss Microcontroller 8051 Block Diagram
2. Discuss working of any 6 pin of Microcontroller 8051 in brief

1.(b) Attempt any two 06
1. Explain FLAG and PSW in 8051
2. Write a short note on Stack and Stack pointer
3. Draw TCON function registers and explain its function

2.(a) Attempt any one 06
1. Write a note on AVR Data Memory
2. Draw and discuss AVR Status Register (SREG)

2.(b) Attempt any two 06
1. Explain ADD instruction with example for AVR
2. Write a simple program to toggle the I/O register of Port B Continuously forever
3. Explain MOV instruction with appropriate examples

3.(a) Answer the following (Any Three) 06
1. Discuss function of A and B register in 8051
2. What do you mean by Timer Mode 0 in 8051
3. What is Baud rate? Sate its equation
4. Discuss function of SRAM n AVR chips
5. Write name of any four AVR chips.

3.(b) Answer the following (Any Five) 08
1. What is full form of RAM?
2. Program counter is ____ bity register
3. What is Microprocessor?
4. How many port pins available in 8051?
5. What is full form of EEPROM?
6. What is Assembler?
7. True or false. Assembly language is a high-level language.
8. What is the purpose of pseudo-instructions?

NOV24-1-698

M.Sc Semester-III Examination

November -2024

MSPHY-303CC :Physics-Quantum Mechanics-3. Solid State Physics-3

Total Marks :70 **Time: $2^1/_2$Hours**

Instruction : 1. Symbols have their usual meaning

1.(a) Attempt any one 08

1. Explain wave mechanical picture of scattering. Obtain relation differential scattering cross section and scattering amplitude.
2. Explain Validity of Born approximation and discuss it.

1.(b) Attempt any two 08

1. Write a note on Born series
2. Briefly describe Eikonal approximation
3. Draw a schematic diagram of a scattering event. Obtain differential scattering cross section and total scattering cross section

1.(c) Attempt any one 02

1. Give one of the importance of scattering experiment
2. Write the most important feature of the Born approximation
3. Write the dimension of differential scattering cross section

2.(a) Attempt any one 07

1. Explain the asymptotic behaviour of partial wave and obtain formula for the phase shift for the 1^{th} partial wave
2. Discuss the Scattering by a Coulomb potential

2.(b) Attempt any two 08

1. Explain Optical theorem
2. Obtain Scattering Amplitude in terms of phase shifts
3. Explain reduction of two body problem in the centre of mass frame.

2.(c) Attempt any one 02

1. Partial wave analysis is good for _____ energy
   A. Low B. High C. Medium D. None of these
2. The total cross section is the same in both the frame the centre of mass frame and laboratory frame of reference. Is it true of false?
3. In the case of spinless identical particles the wave function must be symmetric. It is true or false?

3.(a) Attempt any one 08

1. Discuss Transition region between domains. What is origin of domain? Explain it.
2. Derive Curie point and the exchange in integral in detail

3.(b) Attempt any two 08

1. Write short note on Thermal excitation of Magnons.
2. Write short note on Ferromagnetic order.
3. Explain Geomagnetism and Bio magnetism

3.(c) Attempt any one 02

1. Define Anisotropy energy?
2. What is magnetic Coercivity?

4.(a) Attempt any one 07

1. Give the fundamental condition for magnetic resonance absorption and derive equation for power absorption
2. Explain and derive an equation of motion for nuclear magnetisation with necessary equations

4.(b) Attempt any two 08

1. Write short note on Hyperfine splitting
2. Write note on motional Narrowing
3. Describe shape effects in FMR

4.(c) Attempt any one 02

1. Write full name of NMR,CESR,AFMR,NQR.
2. Define zero field splitting

NOV24-1-699

M.Sc Semester-III Examination

November -2024

MSPHY-304CC :Physics-Electronics-3

Total Marks :70 **Time: $2^{1}/_{2}$Hours**

1.(a) Attempt any one

1. What is Pulse Modulation? Give its advantages and explain Pulse Amplitude Modulation (PAM) in detail 08
2. State different types of digital modulation techniques Explain Frequency Shift Keying(FSK) in detail

1.(b) Attempt any two

1. Write note on Amplitude Shift Keying (ASK) 08
2. Explain PCM Receiver
3. Explain Pulse Width Modulation

1.(c) Attempt any one

1. Give advantages of Phase Shift Keying (PSK) 02
2. Explain what do you mean by matched filter?

2.(a) Attempt any one

1. Explain working and importance of amplitude limiter with proper diagram 07
2. What is detector? Explain liner diode detector in brief.

2.(b) Attempt any two

1. Give merits and demerits of balanced slope detector 08
2. Write a note on op-amp envelope detector
3. Explain quadrature detector.

2.(c) Attempt any one

1. Define detectors. State different type of basic demodulators. 02
2. Define efficiency of detection. On which factors it depends?

3.(a) Attempt any one

1. Discuss the importance and advantages of GIS 08
2. Explain different type of platforms

3.(b) Attempt any two

1. Explain spatial and spectral resolution 08
2. Explain passive remote sensing
3. Explain spectral signatures.

3.(c) Attempt any one

1. Discuss radiation laws in short 02
2. What are types of resolution?

4.(a) Attempt any one

1. Discuss about induction motor with principles, construction and advantages-disadvantages 07
2. What is convertor? Explain about single phase dual convertor

4.(b) Attempt any two

1. Write a note on three phase dual convertor 08
2. Discuss Laplace transform
3. Discuss about DC servo motor

4.(c) Attempt any one

1. Define series convertors 02
2. Discuss discrete Fourier transform

Nov.-24-1-676

M.Sc. Semester-III (New Course) Examination

November-2024

Botany : Biology and Diversity-III (Gymnosperms and Fossils) BOC-301

Total Marks : 70 **Time : $2^1/_2$ Hours**

Instructions :

1. This question paper consists total four questions.
2. All questions are compulsory and caring 18,17,18 and 17 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.....** 18

A. **Explain in detail Any One.** 08

1. Economics importance of gymnosperms.
2. Comparison between angiosperms and gymnosperms.

B. **Explain in brief Any One.** 07

1. Evolution of gymnosperms.
2. General characters of gymnosperms.

Give short answers – Any Three. 03

1. In Gymnosperms ovule is always_____
2. Which era is golden period of gymnosperm ? (Jurassic / Peleozoic / Coenozoic)
3. Cycads belong to family _____
4. Endosperm of Gymnosperm _____ (n / 2n / 3n)
5. Tallest known gymnosperm is _____

2. **Answer the following as per instruction.....** 17

A. **Explain in detail Any One.** 08

1. Internal structure of Cycas leaflet
2. Gnetum female cone

Explain in brief Any One. 06

1. Male cone of Pinus
2. Internal structure of Ephedra stem.

Give short answers – Any Three. 03

1. _____is the living fossil.
2. Coralloid root found in _____
3. Which plant having largest ovule in plant kingdom.
4. Source of ephedrine is obtained from _____
5. "Biloba" is a Latin word which means_____

3. **Answer the following as per instruction.....** 18

A. **Explain in detail Any One.** 08

1. Geological timescale.

2. Factors affecting fossilization.

B. **Explain in brief Any One.** 07

1. Methods of fossil study.
2. Petrification.

C. **Give short answers – Any Three.** 03

1. Define : Fossil.
2. Which era is known as the "age of cycads"?
3. Fossils are formed in which types of rocks?
4. What is palcobotany?
5. Petrified plant organs of roughly spherical shape are known as ____

4. **Answer the following as per instruction.....**

A. **Explain in detail Any One.** 08

1. Lepidodendron.
2. Internal structure of Rhynia stem.

B. **Explain in brief Any One.** 06

1. Bennettitales reproductive organs.
2. Internal structure of Calamites stem.

Give short answers – Any Three. 03

1. Lepidodendron belongs to the class ____
2. Lyginopteris is a fossil of ____ (Pteridophytes / Bryophytes / Gymnosperm)
3. Lepidodendroid plants formed dominant vegetation in ____ era.
4. Bennettitales also known as ____
5. Gymnosperm fossils are ____ (Heterosporous or Homosporous)

Nov.-24-1-680

M.Sc. Semester-III (New Course) Examination
November-2024
Botany : Air Pollution and Climate Change BOE-301

Total Marks : 35 **Time : 1½ Hours**

Que. 1 **Answer the following as per Instruction :** 14

A. **Explain in detail. (Any One)** 08

1. Nitrogen derivatives : Source, effects on plants and human health.
2. Photochemical smog.

B. **Explain in Brief. (Any One)** 06

1. Atmospheric composition of gases and particulate matter.
2. Fluoride derivatives: Source, effects on plants and human health.

Que. 2 **Answer the following as per Instruction :** 14

A. **Explain in detail. (Any One)** 08

1. Acid rain.
2. Ozone depletion.

B. **Explain in Brief. (Any One)** 06

1. Green house effects.
2. Active biomonitoring of air pollution.

Que. 3 **Give short answers (Any Seven)** 07

1. Define : Toxicity of atmosphere.
2. Lighting is the source of _____ oxides.
3. What is indoor air pollution?
4. How to detect Fluorosis?
5. $SO_3 + H_2O \rightarrow$ _____
6. What is passive biomonitoring of air pollution?
7. CH_4 gas is responsible for _____.
8. Lichens are bioindicators of _____.
9. In which case UV radiation is beneficaial for human being?
10. Effects of acid rain on Taj Mahal.

Nov.-24-1-681

M.Sc. Semester-III (New Course) Examination
November-2024
Botany : Herbal Medicine BOE-302

Total Marks : 35 **Time : 1½ Hours**

Que. 1	A.	**Answer the following Long answer question. (One out of Two)**	14
	1.	Write types of secondary metabolies.	08
	2.	Write note on diagnostic features and therapeutic values of Aloe Vera.	08
	B.	**Answer the following Medium answer question. (One out of Two)**	
	1.	Describe: Therapeutic vale of Sarpagandha.	06
	2.	Discuss briefly the role of herbal plants in human welfare.	06
Que. 2	A.	**Answer the following Long answer question. (One out of Two)**	14
	1.	Write short note on Nutraceuticals and medicinal foods.	08
	2.	Write note on analytical technique HPTLC.	08
	B.	**Answer the following Medium answer question. (One out of Two)**	
	1.	Write note on IPR for protection of medicinal plants.	06
	2.	Conservation of medicinal plant by tissue culture.	06
Que. 3		**Answer following Very short answer question. (Seven out of Ten)**	07
	1.	What is Herbal drug?	
	2.	Name class of secondary metabolites which is characterized by the presence of the hydroxyl group with an aromatic ring.	
	3.	Give the scientific name of Guggle plants.	
	4.	Write full form of GC-MS.	
	5.	Beta-carotene falls under which classes of secondary metabolites.	
	6.	Mention the medicinal uses of Satavari.	
	7.	Give name of two plant steroids.	
	8.	Which plant is used in memory enhancement?	
	9.	Write scientific name of Giloy.	
	10.	What is Bio piracy?	

Nov.-24-1-677

M.Sc. Semester-III (New Course) Examination
November-2024
Botany : Molecular Biology of Plants BOC-302

Total Marks : 70 **Time : $2^1/_2$ Hours**

Instructions :

1. The question paper consists four questions, each has three sub-questions A,B and C.
2. All questions are compulsory. In each section 1st and 3rd questions carry 18 marks and 2nd and 4th carry 17 marks.
3. There is no overall choice. However, an internal choice has been provided in each sub-question
4. Illustrate your answers with necessary diagrams, if required.

Que. 1 **Answer the following:** 18

A. **Describe in detail : (One out of Two)** 08

1. Enzymes involve in DNA replication.
2. Protein synthesis.

B. **Write a short note on : (One out of Two)** 07

1. Transcription phenomena in eukaryote.
2. Chemical structure of DNA.

C. **Do as directed : (Three out of five)** 03

1. Thymidine is a nucleoside .... True or False
2. B form DNA is a ..... handed. Left or Right
3. Define : replication.
4. Which of the following bases contain two keto groups?

   a. Uracil b. Thymine c. Guanine
5. Explain the word : Central dogma.

Que. 2 **Answer the following:** 17

A. **Describe in detail : (One out of Two)** 08

1. Regulation of gene expression in eukaryotes.
2. Application of proteomics.

B. **Write a short note on : (One out of Two)** 06

1. Protein digestion technique.
2. Human Genome Project.

C. **Do as directed : (Three out of five)** 03

1. Define : Proteome.
2. Restriction enzymes belong to a larger class of enzymes called:

   a. Protein b. Iso-enzymes c. Nucleases
3. The repressor protein is encoded by structural gene.... True or Flase
4. The term transcriptomics refers to the study of :

   a. RNA molecules b. DNA molecules c. ATP molecules
5. Explain the word: mass spectrometry.

Que. 3 **Answer the following:**

A. **Describe in detail : (One out of Two)** 18

1. Genome library. 08
2. Plasmid as a vector.

B. **Write a short note on : (One out of Two)**

1. Recombinant DNA technology. 07
2. Northern blot analysis.

C. **Do as directed : (Three out of five)**

1. Define : cDNA library. 03
2. Blotting enables specific and sensitive detection of a lipid : True or False
3. What do you meant by vectors in biotechnology?
4. Explain the term : gene cloning.
5. Which antibiotic resistance is present in pBR322 vector?

a. Streptomycin b. Ampicillin c. Kanamycin

Que. 4 **Answer the following:**

A. **Describe in detail : (One out of Two)** 17

1. DNA synthesis. 08
2. RFLP-DNA fingerprinting

B. **Write a short note on : (One out of Two)**

1. DNA microarray 06
2. Polymerase Chain Reaction (PCR)

C. **Do as directed : (Three out of five)**

1. Explain the term : DNA sequencing. 03
2. Phosphodiester bonds broken in denaturation... True or False
3. Polymerase used for PCR is extracted from:

a. Salmonella typhe b. Thermus aquaticus c. Escherichia coli

4. Write the full form of : RAPD
5. The technique used to analyze gene expression on a large scale is called:

a. Fingerprinting b. Electrophoresis c. Microarray

Nov.-24-1-678

M.Sc. Semester-III (New Course) Examination
November-2024
Botany : Plant Ecology BOC-303

Total Marks : 70 **Time : $2^{1}/_{2}$ Hours**

Instructions :
1. The numbers to the right of the each question shows the marks of that question.
2. Illustrate Your answer with neat and labelled diagram if required.

Que. 1 18

A. **Describe Any One.** 08

1. Mechanism of Ecological Succession.
2. Major Biomes of the world.

B. **Write short notes on Any One.** 07

1. Synthetic Characters of Plant Community.
2. Vegetation patterns of India.

C. **Answer in Short Any Three.** 03

1. Definition : Phytogeography.
2. Definition : Succession.
3. Definition : Ecological Niche.
4. Which method used for Plant Community Analysis.
5. Give the name of Ecologist who give life form method in 1934.

Que. 2 17

A. **Describe Any One.** 08

1. Y shaped Energy Flow pathway.
2. Structure and Function of Ecosystem.

B. **Write short notes on Any One.** 06

1. Carbon Cycle.
2. Leaf area index method for Measurement of Productivity.

C. **Answer in Short Any Three.** 03

1. Definition : Primary Productivity.
2. Definition : Ecosystem.
3. Give the full form of NPP.
4. Give the flow Chart of Single Chanel Energy pathway.
5. Definition : Trophic Structure.

Que. 3 18

A. **Describe Any One.** 08

1. Kind and Source of Air Pollution.
2. Role of Biodiversity in Ecosystem functions and Stability.

B. **Write short notes on Any One.** 07

1. Biological Diversity concepts and levels.
2. Effect of water Pollution on Plants and Ecosystem.

C. **Answer in Short Any Three.** 03

1. Write full form of IUCN.
2. Definition : Biodiversity hot spots.
3. Definition : Pollution.
4. Definition : Speciation.
5. Write the source of Soil Pollution.

Que. 4 17

A. **Describe Any One.** 08

1. Ecological Perturbations and their impact on Plants and ecosystem.
2. Green house gases-sources, trends and role.

B. **Write short notes on Any One.** 06

1. Ozone layer and Ozone hole.
2. Concepts of Ecological Management.

C. **Answer in Short Any Three.** 03

1. Definition : Plant Invasion.
2. Define : Climate Change.
3. Define : Sustainable Management.
4. Which are the sustainability indicators?
5. Define : Ecological restoration.

Nov.-24-1-682

M.Sc. Semester-III (New Course) Examination

November-2024

Botany : Biostatistics BOE-303

Total Marks : 35 **Time : 1 1/2 Hours**

Instructions :

1. This question paper consists total four questions.
2. All questions are compulsory and caring 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.

Que. 1 **Answer the following as per instruction.....** 14

A. **Explain in detail Any One.** 08

1. Chi-Square test.
2. Normal distribution.

B. **Explain in brief Any One.** 06

1. Sampling method.
2. T-test

Que. 2 **Answer the following as per instruction.....** 14

A. **Explain in detail Any One.** 08

1. Analysis of variance.
2. Types of correlation.

B. **Explain in brief Any One.** 06

1. Parametric test.
2. Regression.

Que. 3 **Give short answers Any Seven** 07

1. What is means in statistics?
2. To compare the means between two group is _____ (T-test or U-test)
3. How is the degree of freedom calculated?
4. Define: biostatistic.
5. What are the primary and secondary data?
6. Give the any one example of non-parametric test.
7. What formula is used to represent regression?
8. The shape of the normal curve is ____
9. Explain the term: data analysis.
10. _____ symbol represents the test statistic for the Mann-Whitney test.

Nov.-24-1-679

M.Sc. Semester-III (New Course) Examination

November-2024

Botany : Plant Physiology BOC-304

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

Que. 1 A. **Answer the following Long answer question. (One out of Two)** 08

1. Write note on hormonal control process of seed germination.
2. Describe various causes seed dormancy and its overcoming mechanisms.

B. **Answer the following. Short Notes. (One out of Two)** 07

1. Describe the metabolic changes associated with plant senescence.
2. Write note on bud dormancy.

C. **Answer the following. Short question. (Three out of Five)** 03

1. What is Bud dormancy?
2. Name two hormones which promote seed germination?
3. Which hormone is known as anti gibberalline hormone?
4. What is scarification?
5. Name two factors affecting senescence.

Que. 2 A. **Answer the following Long answer question. (One out of Two)** 08

1. Describe the mechanisms of water transport though xylem.
2. Write note on absorption and transport of Potassium (K) nutrients in plant.

B. **Answer the following. Short Notes. (One out of Two)** 06

1. Describe briefly physiological effect of salinity stress.
2. Write note on biotic stress tolerance.

C. **Answer the following. Short question. (Three out of Five)** 03

1. What is symplast and apoplast movement of water and minerals?
2. Write two role of Zinc (Zn) in plants.
3. What is chilling injury during stress?
4. Define oxidative stress.
5. Define siderophores.

Que. 3 A. **Answer the following Long answer question. (One out of Two)** 08

1. Write note on cyclic and non cyclic photo-phosphorylation.
2. Describe TCA cycle.

B. **Answer the following. Short Notes. (One out of Two)** 07

1. Describe the various steps of glycolysis.
2. Write note on the Cryptochromes.

C. **Answer the following. Short question. (Three out of Five)** 03

1. Give significance of Photorespiration.
2. Define Photo-oxidation.
3. Name two C4 plants.
4. What are phytochromes?
5. Write full form of CAM pathway.

Que. 4 A. **Answer the following Long answer question. (One out of Two)** 08

1. Describe the structure, physiological effects and mechanism action of Auxin.
2. Write note on vernalization.

B. **Answer the following. Short Notes. (One out of Two)** 06

1. Discuss about the hormone Polyamines.
2. Describe various application of hormones.

C. **Answer the following. Short question. (Three out of Five)** 03

1. Role of florigen.
2. Which hormone control apical dominance?
3. What is photoperiodism?
4. Give the function of ABA.
5. What is elicitors?