Kuvempu University **Date: 25/11/2022**
Sahyadri Science College
B Sc Degree First Internal Examination: November 2022
Academic Year: 2022-2023
Department of Biochemistry

Time: 1hrs I-Semester **Maximum Marks: 20**

I. Answer the following **1×4=4**

1) Define Electrode Potential.
2) What are Buffers?.
3) Define Electrode.
4) Define unicellular organism?. Give an example .
5) Give an example for Bronsted Lowry with an chemical reaction.

II. Answer any four of the Following **2×4=8**

1) Write three laws of Thermodynamics.
2) Explain Standard Electrodes.
3) Describe phase diagram of water.
4) Write a note on Acids?
5) Write a short note on origin of life.

III. Answer any two of the following **4×2=8**

1) Write a note on colligative property of solution.
2) Draw a neat labelled diagram of Galvanic cell and explain in brief.
3) What is SI unit?List out the fundamental units with example.

Kuvempu University **Date: 23/12/2022**
Sahyadri Science College
B Sc Degree First Internal Examination: December 2022
Academic Year: 2022-2023
Department of Biochemistry

Time: 1hrs I-Semester **Maximum Marks: 20**

I. Answer the following **1×4=4**

1) Define Electrolysis.
2) What is pH?
3) Define Entropy.
4) Brief on Ionisation of H_2SO_4.
5) What are multicellular organisms?

II. Answer any four of the Following **2×4=8**

1) Write the first and second laws of Thermodynamics.
2) What are solutions and classify the types.
3) Write the rules of SI Units.
4) Write the equation relating to entropy, enthalpy and free energy. Explain the terms
5) Write a short note on metric system.

III. Answer any two of the following **4×2=8**

1) Define redox reaction? Write the oxidation & reduction of iron in haemoglobin.
2) Explain Henderson-hasselbalch equation
3) What are atomic weight, molecular weight and equivalent weight with an example?

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Kuvempu University
Sahyadri Science College
B Sc Degree First Internal Examination: Jan 2023
Department of Biochemistry
III semester (Paper III)

Date: 31.01.2023

Time: 1hr **Maximum Marks: 20**

I. Answer any Four of the following 1×4=4

1) Define aromatic compounds.
2) Write the term of reaction mechanism.
3) What is kinetic reaction mechanism?
4) Define Alcohols.
5) Give a general formula for Tri hydric alcohol.

II. Answer any Four of the following 2×4=8

1) Explain the criteria for aromaticity
2) Define halogenations? Write the general reaction of Halogenation?.
3) Write a note on homo and heterolytic cleavage
4) Brief on properties and uses of glycerol.
5) What are phenols? Classify them in brief.

III. Answer any two of the following 4×2=8

1) Explain Friedal crafts alkylation and mechanism involved?.
2) Explain the concepts of inductive, mesomeric and resonance effect.
3) Describe synthesis of glycerol from propene.

Kuvempu University
Sahyadri Science College
B Sc Degree Second Internal Examination: Feb 2023
Department of Biochemistry
III semester (Paper III)

Date: 22.02.2023

Time: 1hr **Maximum Marks: 20**

I. Answer any Four of the following 1×4=4

1) What are coenzymes?
2) Write the importance of citric acid.
3) Write any one structure of ketoacids?
4) What is nucleophiles.
5) What are carbocation?

II. Answer any Four of the following 2×4=8

1) Describe relative reactivity of substituted benzene
2) Write a note on overall view of metabolism?.
3) Write the general properties of carbonyl compounds.
4) Write any two classification organic reactions with two examples.

III. Answer any two of the following 4×2=8

1) Write the structure of biotin and its role in carboxylation?
2) Explain the role of TPP in decarboxylation of alpha keto acids
3) Explain Reimer Tiemann reaction

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Kuvempu University
Sahyadri Science College
B Sc Degree First Internal Examination: Jan 2023
Department of Biochemistry
V semester (Paper V)

Time: 1hr **Maximum Marks: 20**

I. Answer any Four of the following 1×4=4

1) Define centrifugation.
2) What is ozone layer?
3) Expand HPLC?
4) Write the principle of chromatography. 2×4=8

II. Answer any Four of the following

1) Explain any four types of centrifuge.
2) State Beer-Lamberts law.
3) Write the principle and solvents utilised in paper chromatography.
4) Brief on Applications of HPLC. 4×2=8

III. Answer any two of the following

1) Write the principal, procedure and application of Differential centrifugation with neat label diagram.
2) Give an account on any two air pollutant and their control.
3) Explain affinity chromatography.(Principle, Methodology with neat labelled Diagram, Applications)

Date: 31.01.2023

Kuvempu University
Sahyadri Science College
B Sc Degree First Internal Examination: Jan 2023
Department of Biochemistry
V semester (Paper VI)

Time: 1hr **Maximum Marks: 20**

I. Answer any Four of the following 1×4=4

1) Define allele?
2) Define Genetic Engineering.
3) Define gene.
4) Define Pseudo alleles. 2×4=8

II. Answer any Four of the following

1) State Mendels I and II laws of inheritance?
2) Explain co-Dominance with an example.
3) Brief on history of genetic engineering.
4) What is trisomy. 4×2=8

III. Answer any two of the following

1) Write a note on chromosomal aberrations.
2) Expalin any two enzyme using in r-DNA technology.
3) Explain complementation test and its significance.

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Kuvempu University
Sahyadri Science College
B Sc Degree Second Internal Examination: Feb 2023
Department of Biochemistry
V semester (Paper V)

Date: 22.02.2023

Time: 1hr **Maximum Marks: 20**

I. Answer any Four of the following 1×4=4

1) Expand SDS PAGE.
2) Define colorimeter?
3) What is water pollution? Give an example.
4) Write the principle of electrophoresis.

II. Answer any Four of the following 2×4=8

1) What is atomic absorption spectra?
2) Write the principle of NMR.
3) Write the Applications of SDS and β Mercaptaethanol.
4) Write the importance of Bioinformatics in biological system.

III. Answer any two of the following 4×2=8

1) Write the principal, procedure and application of isoelectric focussing.
2) Explain UV Visible Absorption spectra.
3) Write a note on COD.

Kuvempu University
Sahyadri Science College
B Sc Degree Second Internal Examination: Feb 2023
Department of Biochemistry
V semester (Paper VI)

Date: 22.02.2023

Time: 1hr **Maximum Marks: 20**

I. Answer any Four of the following 1×4=4

1. What is DNA damage
2. What is rDNA technology?
3. What are cosmid vector?
4. Write any one application of rDNA technology.

II. Answer any Four of the following 2×4=8

1. Explain Types of DNA replication?
2. Explain any one method of DNA repair.
3. Write a note on plasmid vector
4. Write a note on bacteriophage.

III. Answer any two of the following 4×2=8

1. Explain Griffith transformation experiment.
2. Explain semi conservative mode of DNA replication.
3. Write the salient features of vectors.

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Even Sem

Time: 1.30-2.30 PM

Date: 26-06-2023

KUVEMPU UNIVERSITY

Sahyadri Science College

Department of Biotechnology

B.Sc., First Year - II Semester

I Internals

Paper: DSC-2T, BTC 102, Microbiological Methods

Duration: 1 Hour

Total Marks: 20

I. Answer the following **4x1=4M**

1. Which of the following antibacterial agent targets cell wall of bacteria.
   a) Erythromycin
   b) Sulphanilamide
   c) Rifampicin
   d) Penicillin
2. Small pox vaccine was discovered by
   a) Louis Pasteur
   b) Edward Jenner
   c) Robert Koch
   d) Joseph Lister
3. Blood agar is an example for
   a) Simple media
   b) Basal media
   c) Complex media
   d) Differential media
4. Which of the following is not a solidifying agent
   a) Gelatine
   b) Agar-agar
   c) Agarose
   d) Peptone

II. Answer any TWO the following **2x3=6M**

1. Explain disc diffusion method of antimicrobial susceptibility test.
2. Write a brief note on contributions of Louis Pasteur.
3. Briefly explain the components of a typical microbial culture media.

III. Answer any TWO the following **2x5=10M**

1. Explain mode of action of antibacterial agents with examples.
2. Explain morphological and taxonomical classification of microorganisms.
3. What is pure culture? Explain different methods of obtaining pure culture.

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Time: 4.30 -5.30 PM **Date: 27-06-2023**

KUVEMPU UNIVERSITY
Sahyadri Science College
Department of Biotechnology
B.Sc., Third Year - VI Semester
I Internals
Paper: Animal Biotechnology

Duration: 1 Hour **Total Marks: 20**

I. Answer the following in a word/phrase or sentence. **4x1=4M**

1. Name any two-medium used in Cell culture.
2. Define Tissue Engineering.
3. Who is the father of Animal Cell Culture?
4. Expand BSS

II. Answer any TWO the following **2x3=6M**

1. Schematically represent the Animal Cell Culture Laboratory.
2. Give the applications of Tissue engineering.
3. Write a note on Artificial skin.

III. Answer any TWO the following **2x5=10M**

1. What is Primary Culture? Explain the method of cell Segregation.
2. What is Artificial insemination? Explain.
3. Write a note on embryo transfer technique.

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Time: 12.00-1.00PM

Date: 27-06-2

Time: 1.30-2.30

KUVEMPU UNIVERSITY

Sahyadri Science College

Department of Biotechnology

B.Sc., Third Year - VI Semester

I Internals

Paper: Plant and Agricultural Biotechnology

Duration: 1 Hour

Total Marks: 20

I. Answer the following in a word/phrase or sentence. **4x1=4M**

1. Define Suspension Culture.
2. What are synthetic seeds?
3. Define totipotency
4. Expand PEDC and IEDC

II. Answer any TWO the following **2x3=6M**

1. Explain applications of Cell suspension culture.
2. Write a note on Callus Culture.
3. Give the protocol to study cytodifferentiation.

III. Answer any TWO the following **2x5=10M**

1. Explain the initiation and maintenance of cell suspension culture from explant.
2. Explain Murashige Skoog media.
3. What is somatic Embryogenesis? Give the protocol and add a note on its importance.

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Time: 1.30-2.30 PM

Date: 31-07-2023

KUVEMPU UNIVERSITY

Sahyadri Science College

Department of Biotechnology

B.Sc., First Year - II Semester

II Internals

Paper: DSC-2T, BTC 102, Microbiological Methods

Duration: 1 Hour

Total Marks: 20

I. Answer the following **4x1=4M**

1. Which instrument is more useful in studying the Topography/surface details of a specimen.....
   a) Dark field microscope
   b) Confocal microscope
   c) Fluorescent microscope
   d) Electron microscope
2. The gene responsible for the antibiotic resistance in MRSA
   a) mec A gene
   b) gtf B gene
   c) adh E gene
   d) pdh D gene
3. The ideal conditions for effective sterilization in an autoclave is
   a) 121^0C & 15 lbs
   b) 150^0C & 15 lbs
   c) 110^0C & 05 lbs
   d) 101^0C & 10 lbs
4. The time required by the cell to divide and population to get doubled is called
   a) Doubling time
   b) incubating time
   c) Generation time
   d) Both a and c

II. Answer any TWO the following **2x3=6M**

1. Write the applications of thin layer chromatography
2. Write a note on NDM-1 Strains
3. Explain dry heat sterilization.

III. Answer any TWO the following **2x5=10M**

1. Explain Scanning Electron microscope with schematic diagram.
2. Explain mechanisms of Resistance.
3. What is differential staining technique? Explain with examples.

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Date: 31-07-2023

Time: 3.00-4.00 PM

KUVEMPU UNIVERSITY

Sahyadri Science College

Department of Biotechnology

B.Sc., Second Year - IV Semester

II Internals

Paper: DSC 4T-Molecular Biology

Duration: 1 Hour **Total Marks: 20**

I. Answer the following **4x1=4M**

1. Which of the following ststement is not correct with reference to t-RNA
   A) t-RNA has nucleotide length of 72-75
   B) t-RNA has many unusual bases
   C) t-RNA does not follow typical Watson Crick Rule
   D) Amino acid acceptor has 5'ACC 3'sequence
2. Interaction between m-RNA and 16S RNA during protein synthesis happens through
   A) Kozak sequence
   B) Shine Dalgarno sequence
   C) Pribnow box
   D) None of these
3. In eukaryotes the gene regulation could be exerted at
   A) transcriptional and processing level
   B) Processing and translational level
   C) Transport of m-RNA from nucleus to cytoplasm
   D) All the above
4. The miRNAs are transcribed from non-protein encoding genes and are typically _____ nucleotides long.
   A) 10 – 15
   B) 12 – 15
   C) 18 – 20
   D) 20 – 25

II. Answer any TWO the following **2x3=6M**

1. Write a note on Wobble Hypothesis
2. Write a note on inhibitors of translation
3. What is DNA methylation? Explain

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III. Answer any TWO the following **2x5=10M**

1. Explain the process of translation in prokaryotes
2. Write a note on gene regulation in eukaryotes.
3. Explain the role of mi RNA and Si RNA in RNA interference.

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Time: 12.00-1.00PM Date: 01-08-2023

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Sahyadri Science College

Department of Biotechnology

B.Sc., Third Year - VI Semester

II Internals

Paper: Plant and Agricultural Biotechnology

Duration: 1 Hour **Total Marks: 20**

I. Answer the following in a word/phrase or sentence. **4x1=4M**

1. Define Androgenesis.
2. What are phosphate solubilizing biofertilizers? Give examples
3. Define adventitious organs
4. What is RNA interference?

II. Answer any TWO the following **2x3=6M**

1. What are homozygous diploids? Explain
2. Mention the applications of Flower culture.
3. Write a note on nif genes.

III. Answer any TWO the following **2x5=10M**

1. Give the protocol for pollen culture.
2. Describe Meristem culture with a neat labelled diagram.
3. Explain nitrogen fixing biofertilizers with examples.

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Time: 4.30 -5.30 PM

Date: 01-08-2023

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Sahyadri Science College

Department of Biotechnology

B.Sc., Third Year - VI Semester

II Internals

Paper: Animal Biotechnology

Duration: 1 Hour

Total Marks: 20

I. Answer the following in a word/phrase or sentence. **4x1=4M**

1. Name any two forms of cell death.
2. Mention any two cancer cell lines
3. Name the first pharmaceutical product produced using mammalian culture.
4. What is erythropoietin?

II. Answer any TWO the following **2x3=6M**

1. Explain the principle of Dye exclusion method.
2. Classify the cancer types based on their origin.
3. Write the therapeutic applications of interferons

III. Answer any TWO the following **2x5=10M**

1. What is Primary Culture? Explain its methods of preparation.
2. What are the properties of cancer cells.
3. Explain the production of recombinant tissue plasminogen activator. Add a note on its applications.

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08-2023

Odd Sem

Date: 23-11-2022

KUVEMPU UNIVERSITY

Sahyadri Science College

Department of Biotechnology

B.Sc., First Year - I Semester

I Internals

DSC 1T

Duration: 1 Hour **Paper: Cell Biology and Genetics** **Total Marks: 20**

I. Answer for following in word/ phrase/ sentence **4x1=4M**

1. What is the genotype of the person suffering from Klinefelter's syndrome?
   a) 44 + XXX
   b) 42 + XXX
   c) 44 + XXY
   d) 42 + XXY
2. Which is the longest phase of Cell Cycle?
   a) G1
   b) S
   c) G2
   d) M
3. .....are the Protein factories of the Cell.
   a) Mitochondria
   b) Nucleus
   c) Ribosomes
   d) Golgi complex
4. Mendel's Monohybrid genotypic ratio is
   a) 3:1
   b) 1:1
   c) 1:2:1
   d) None of the above

II. Answer any TWO the following **2x3=6M**

1. Write short notes on chromosomal theory of inheritance.
2. Diagrammatically represent the different stages of mitosis.
3. Differentiate b/w plant & animal Cell.

III. Answer any TWO the following **2x5=10M**

1. Explain different types of chromosomal sex determination.
2. Explain the principle of independent assortment by citing an example.
3. Explain the structure & functions of Mitochondria.

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Sahyadri Science College

Department of Biotechnology

B.Sc., Second Year - III Semester

I Internals

Duration: 1 Hour **Paper: DSC 3T-Biomolecules** **Total Marks: 20**

I. Answer the following **4x1=4M**

1. Which class of carbohydrates are called Non-Sugars?
   A) Monosaccharides
   B) Disaccharides
   C) Polysaccharides
   D) Oligosaccharides
2. In SDS-PAGE separation is based on
   A) Molecular Weight
   B) Shape
   C) Charge
   D) None of the above
3. Segment of a chromosome that lacks a centromere is called……..
   A) Acrocentric
   B) Acentric
   C) Submetacentric
   D) Metacentric
4. Biotin is an example for
   A) Metalloenzyme
   B) Cofactor
   C) Co-enzyme
   D) Apoenzyme

II. Answer any TWO the following **2x3=6M**

1. List the properties of enzymes
2. Write a note on applications of paper chromatography.
3. Write a note on nucleosomes.

III. Answer any TWO the following **2x5=10M**

1. Explain glycolysis with neat flow chart.
2. Explain agarose gel electrophoresis and add a note on its applications.
3. Classify enzymes as IUB system with examples.

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Date: 31-01-2023

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Sahyadri Science College

Department of Biotechnology

B.Sc., Third Year - V Semester

I Internals

Paper: Microbial Biotechnology and Bioprocess Engineering

Duration: 1 Hour **Total Marks: 20**

I. Answer the following in a word/phrase or sentence. **4x1=4M**

1. Mention the microbial preservation techniques.
2. What is food poisoning?
3. Who is the father of Virology?
4. Write the causative agent of Tuberculosis?

II. Answer any TWO the following **2x3=6M**

1. Explain any two food preservation techniques.
2. Explain briefly contributions of Louis Pasteur.
3. Write a note on Spirulina.

III. Answer any TWO the following **2x5=10M**

1. Write a note on Malaria.
2. With a neat diagram labelled explain bacterial growth curve.
3. Write a note on microorganisms associated with food.

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Date: 31-01-2023

KUVEMPU UNIVERSITY
Sahyadri Science College
Department of Biotechnology
B.Sc., Third Year - V Semester
I Internals
Paper: Immunology and Medical Biotechnology

Duration: 1 Hour **Total Marks: 20**

I. Answer the following in a word/phrase or sentence. **4x1=4M**

1. Name the fluorescent compounds used in Immunofluorescence.
2. What is OPV?
3. What are DNA Vaccines?
4. Name the detector exam used in ELISA.

II. Answer any TWO the following **2x3=6M**

1. Explain the principle of western blot.
2. What are antigen presenting cells? Name them.
3. Explain the therapeutic role of streptokinase.

III. Answer any TWO the following **2x5=10M**

1. Explain the production of recombinant HBSAg.
2. Write and explain the Thymus structure and functions.
3. Explain the process of haematopoiesis.

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01-2023

KUVEMPU UNIVERSITY

Sahyadri Science College
Department of Biotechnology
B.Sc., First Year - I Semester
II Internals
DSC 1T

Duration: 1 Hour **Paper: Cell Biology and Genetics** **Total Marks: 20**

I. Answer for following in word/ phrase/ sentence **4x1=4M**

1. The meiotic division takes place in.....
(a) Meristematic cells (b) Conductive cells (c) Reproductive cells (d) Vegetative cells
2. Power House of the Cell is .....
(a) Chloroplast b) Mitochondria c) Cytoskeleton d) Cell Membrane
3. Enzymes that catalyse site-specific recombination events within DNA are.....
(a) Recombinase (b) Primase (c) polymerase (d) helicase
4. Which of the following is the primary growth phase of a cell?
(a) G1 (b) G2 (c) M (d) G0

II. Answer any TWO the following questions **2x3=6M**

1. Explain briefly the structure and function of Chloroplast.
2. Write short notes on chromosomal theory of inheritance.
3. What are the 3 main differences between mitosis and meiosis?

III. Answer any TWO the following questions **2x5=10M**

1. Explain the mechanism of crossing over (Holliday model)
2. Explain Multiple alleles with reference to ABO Blood grouping
3. Explain Complementary factors in Sweet Pea.

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KUVEMPU UNIVERSITY

Sahyadri Science College

Department of Biotechnology

B.Sc., Second Year - III Semester

II Internals

Paper: Molecular Biology, Bioinformatics and Biostatistics

Duration: 1 Hour **Total Marks: 20**

I. Answer for following in word/ phrase/ sentence **4x1=4M**

1. FASTA
2. Define attenuation
3. What is mutation?
4. Which enzyme is called as proof reading enzyme?

II. Answer any TWO the following questions **2x3=6M**

1. Write a brief note on Protein Data Bank.
2. Write a note on Base substitution type of mutation.
3. Describe the features of Genetic code.

III. Answer any TWO the following questions **2x5=10M**

1. What is Gene Bank? Explain applications of gene Bank
2. Write a note on Lac Operon of *E. Coli*.
3. Explain the process of transcription in prokaryotes.

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Sahyadri Science College

Department of Biotechnology

B.Sc., Third Year - V Semester

II Internals

Paper 5.1: Microbial Biotechnology and Bioprocess Engineering

Duration: 1 Hour **Total Marks: 20**

I. Answer for following in word/ phrase/ sentence **4x1=4M**

1. Rust of Wheat
2. Define Fermentation
3. Name the organism used in Vinegar Production.
4. What is SCP?

II. Answer any TWO the following questions **2x3=6M**

1. Write a note on Candidiasis.
2. Explain briefly the production of Lysine.
3. Write a note on corn steep liquor.

III. Answer any TWO the following questions **2x5=10M**

1. Explain the causative agent, pathology, diagnosis and treatment of Malaria.
2. Write a note on controlling microbial activity in contintious fermentation.
3. Explain Industrial production of Ethanol.

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Sahyadri Science College

Department of Biotechnology

B.Sc., Third Year - V Semester

II Internals

Paper 5.2: Immunology and Medical Biotechnology

Duration: 1 Hour **Total Marks: 20**

I. Answer for following in word/ phrase/ sentence **4x1=4M**

1. Define Immunogenicity
2. What is Atherosclerosis?
3. Define antibody.
4. Name any two cytokines.

II. Answer any TWO the following questions **2x3=6M**

1. Write a note on immunogenic determinants of an antigen.
2. Write the role of creatine Kinase in Diagnosis.
3. Explain the inflammatory barriers in innate immunity.

III. Answer any TWO the following questions **2x5=10M**

1. With a neat labelled diagram explain basic structure of antibody.
2. Distinguish between T_H and T_C cells.
3. Give an outline of Human Genome Project.

****

Dr. Pradeepa K. M.Sc., Ph.D.,
Assistant Professor
Dept. of P.G. Studies & Research in Biotechnology
Sahyadri Science College
Kuvempu University, Shivamogga-577 203.

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II Internal B.Sc., Electronics,
III Semester (NEP)

Date: 22/02/2023
Total marks-20
4×5=20

Answer any FOUR:

1. With syntax and example, Explain simple if and if else statements
2. Explain switch statement with syntax and example
3. List-out the difference between while and do-while loop
4. Explain for loop with syntax and example
5. Apply the top-down design methodology to demonstrate the design of 4-bit ripple carry-counter
6. Explain module with syntax and instance
7. Write a program for 4- bit ripple carry counter

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SAHYADRI SCIENCE COLLEGE

Time: 9:00-10:00AM | I Internal B.Sc., Electronics | Date: 01/08/2023

II Semester (NEP) | Total marks-20

4×5=20

Answer any FOUR:

1. What is Integrator? Describe Op-Amp is an Integrator
2. Explain the construction and working of SCR
3. Describe the working of Full-adder
4. What is Multiplexer? Explain the working of 4:1 Multiplexer
5. With neat functional diagram and pin diagram Explain IC-555 timer
6. What is Shift Register? Mention its types and describe the SISO Register
7. a) Compare BJT & FET
   b) Derive Expression for Intrinsic Stand-Off Ratio

SAHYADRI SCIENCE COLLEGE

Time: 9:00-10:00AM | I Internal B.Sc., Electronics | Date: 01/08/2023

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SAHYADRI SCIENCE COLLEGE, SHIMOGA
I BSC I SEMESTER
II INTERNAL ASSESSMENT

SUBJECT: PHYSICS MARKS: 20 TIME: 1Hr

I. Answer any ONE of the following. 2 x 2= 4

1. Calculate the capacitance of a parallel plate capacitor having two square plates each of side 2cm and separated by a distance of 1cm.
2. Define coulomb's law. Write S.I unit for electric dipole moment.

II. Answer any TWO of the following. 4 x4 =16

3. Obtain the expression for Gauss's law in dielectrics.
4. a) Derive the expression for capacitance of a parallel plate capacitor with dielectric.
   b) How do you increase capacitance in a parallel plate capacitor?
5. Prove the Poynting theorem.
6. Obtain an expression for current in a case of an AC circuits containg in inductance and resistance in series with a phaser diagram.

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Chandrashekar 8.D.

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SAHYADRI SCIENCE COLLEGE, SHIMOGA
I BSC I SEMESTER
II INTERNAL ASSESSMENT

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I BSC I SEMESTER
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Chandra shekar. M.N

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SAHYADRI SCIENCE COLLGE, SHIMOGA
DEPARTMENT OF PHYSICS
B.Sc. III SEMESTER – 2022-23
PHYSICS: PAPER – 03
SECOND INTERNAL ASSESSMENT TEST

Time: 1 Hr.] *[Max. Marks: 10*

PART-I

Answer any TWO questions. Each question carries 3 marks. **3 x 2 = 6 Marks**

1. Give the theory of Lissajous figures with equal frequencies. Discuss the special cases.
2. Discuss the theory of interference by a plane parallel film illuminated by a plane monochromatic wave.
3. Give the theory of plane diffraction grating for normal incidence.

PART-II

Answer any TWO questions. Each question carries 2 marks. **2 x 2 = 4 Marks**

4. Two narrow and parallel slits 0.1 cm apart are illuminated with a monochromatic light of wave length 589.3 nm. The interference pattern is observed at a distance of 25 cm from the slits. Calculate the fringe width.
5. Two waves have wavelengths of 87 cm and 88.5 cm respectively. When superimposed they produce 10 beats per second. Calculate the velocity of the wave.
6. Write a brief note on normal modes of vibration in an open pipe.

SAHYADRI SCIENCE COLLGE, SHIMOGA
DEPARTMENT OF PHYSICS
B.Sc. III SEMESTER – 2022-23
PHYSICS: PAPER – 03
SECOND INTERNAL ASSESSMENT TEST

Time: 1 Hr.] *[Max. Marks: 10*

PART-I

Answer any TWO questions. Each question carries 3 marks. **3 x 2 = 6 Marks**

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Chandrashekar.GN

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SAHYADRI SCIENCE COLLEGE, SHIMOGA
DEPARTMENT OF PHYSICS
Academic Year-2022-23
B.Sc. FIRST SEMESTER (NEP Scheme)
FIRST IA TEST

Time: 1 Hr.] *[Max. Marks: 10*

PART-A

I. Answer any TWO questions. Each question carries 3 Marks. **3 x 2 = 6 Marks**

1. Write down the expression for position vector of centre of mass of a system of particles and hence obtain its equation of motion.
2. Distinguish between streamline flow and turbulent flow. Derive Stoke's law from dimensional formula.
3. Define the terms elasticity, stress, strain and elastic limit. Write a neat diagram of stress-strain curve and label its different parts/zones.

PART-B

II. Answer any TWO questions. Each question carries 2 Marks. **2 x 2 = 4 Marks**

4. Density of a substance is given by $\rho = \frac{M}{V}$ Where, $M = (20 \pm 0.2)kg$ and $V = (10 \pm 0.1)m^3$. Calculate the maximum possible relative error and percentage error in ρ.
5. State the number of significant figures in
   (i) 200.05 (ii) 0.0630 (iii) 6.320 (iv) 12500.
6. Why a gun recoils when a bullet is fired from it? Explain.

Chandrashekar. M.V.

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SAHYADRI SCIENCE COLLGE, SHIMOGA
DEPARTMENT OF PHYSICS
B.Sc. VI SEMESTER – 2022-23
PHYSICS: PAPER – 08
FIRST INTERNAL ASSESSMENT TEST

Time: 1 Hr.] *[Max. Marks: 10*

PART-I

Answer any TWO questions. Each question carries 3 marks. **3 x 2 = 6 Marks**

1. What are primary and secondary cosmic rays. Explain their altitude and latitude effects.
2. Give the classification of nuclear radiation detectors. With a neat diagram explain the constructing and working of GM counter.
3. Mention the characteristics of nuclear forces. Discuss Meson theory of nuclear forces.

PART-II

Answer any TWO questions. Each question carries 2 marks. **2 x 2 = 4 Marks**

4. Given the nuclear radius of Carbon-12 is 3 fm. Determine the nuclear radius of Oxygen-16.
5. Calculate the binding energy of He^4 nucleus in MeV. Given, mass of He^4 nucleus = 4.001506u, mass of proton = 1.007276u and mass of neutron = 1.008665u.
6. What are primary and secondary energy sources? Give examples.

SAHYADRI SCIENCE COLGE, SHIMOGA
DEPARTMENT OF PHYSICS
B.Sc. VI SEMESTER – 2022-23
PHYSICS: PAPER – 08
FIRST INTERNAL ASSESSMENT TEST

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SHIMOGA, Karnataka State

Time: 1 Hr.] *[Max. Marks: 10*

PART-I

Answer any TWO questions. Each question carries 3 marks. **3 x 2 = 6 Marks**

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Chandrashekar M N.

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I semester B. Sc/BCA I Internal Test, January 2022

ENGLISH LANGUAGE

Aspirations and Practising Language

Time: 1 hr **Max Marks: 20**

I. Annotate any One of the of the following: **1X5=05**

1. *"Once upon a time, son, they used to laugh with their hearts and laugh with their eyes: but now they only laugh with their teeth,"*
2. *"When I was sixteen and young he had looked*
   The prince of my dreams, this boy A hero excelling the qualities of gold."

II Select the most appropriate answer from the options provided: 2x1=02

1. _____ were the real culprits who destroyed coconut palms
   a) Birds. b) Butterflies. c) Bats. d) Foxes.
2. _____ was bought by Bahseer's wife to kill the rats
   a) Rat poison. b) Bread. c) Pizza. d) Samosa

III Answer any Two of the following questions in a page and half each: 2x5=10

1. Write a critical summary of the poem *Once Upon a Time*.
2. Summarize the advice of *Polonius* to his son *Laertes*.
3. How does the poet reveal the girl's feeling towards her dream boy in the three stages of her younger life in the poem *The Boy, I and Time*.
4. Show how the narrator comes to the conclusion that all creatures on earth are the real inheritors of this earth in the story *The Rightful Inheritors of the Earth*.

IV Do as directed : **2x1=02**

1. In his boyhood he was very ___ (greed).
   (Using the word in the bracket provide appropriate suffix).
2. Many people are fond of buying costly things_____
   (Replace the underlined word with suitable synonym)

V Fill in the blanks with proper forms of the verbs given in the brackets: **3x1=03**

1. The students of our college_____ playing cricket. (use appropriate 'be' form of the verb)
2. Puneeth_____ a song.(sing/sings)
3. Surabhi_____ not go to the college today. (use appropriate 'Do' form of the verb)

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III Semester B. Sc/BCA/ B.Sc Hon's/ I Internal Test, January 2022
ENGLISH LANGUAGE
Inventions II and Practicing Communication Skills

Time: 1 hr **MaxMarks: 20**

I: Annotate any One of the following : **1x5= 5**

1. *" The wild bear needs no book of doctrines,*
   and none of your holy Gita;"
2. *"------who best*
   Bear his mild yoke, they serve him best."

II: Answer any Two of the following questions : **2x5=10**

1. How does Lankesh describe his mother in the poem *Mother*?
2. summarize the poem *On His Blindness*.
3. Comment on the argument of Oscar Wilde that *"art has never once told us truth"*.
4. *Shooting an Elephant* is a comment on British Imperialism. Discuss

III: Answer any One the following : **1x5=5**

1. Write a paragraph of about 15 to 20 sentences on any **ONE** of the following:
   a) Empty Vessels make much noise.
   b) Students and Smart phones.
   c) Social media.

2. Write a letter to the principal of your college requesting her/him to give permission for an educational tour.

III Semester B. Sc/BCA/ B.Sc Hon's/ I Internal Test, January 2022
ENGLISH LANGUAGE
Inventions II and Practicing Communication Skills

Time: 1 hr **MaxMarks: 20**

I: Annotate any One of the following : **1x5= 5**

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II semester B. Sc/BCA II Internal Test, September 2022
ENGLISH LANGUAGE
Aspirations and Practising Language

Time: 1 hr **Max Marks: 20**

I. Fill in the blanks with the most appropriate answer from the option given: 1X02=02

1. One who believes that some races are superior to others.
   a) Rationalist b) Socialist c) Pessimist d) Racist
2. Rakshitha sings songs,_____
   a) does she? b) is she? c) doesn't she? d) isn't she?

II. Do as directed : 1X03=03

1. Likith is drinking coffee (change into a negative sentence)
2. Students wrote the examination (change into passive voice)
3. The ball is kicked by Sanjay (change into active voice)

III. Answer any ONE of the following: 1X05=05

1. Annotate the following.
   I have never owed a penny in my life-cash down, that's my motto.
2. Annotate the following.
   Just one more installment and baby's really ours.
3. Sketch the character of *Aunt Jane*.
4. Comment on element of consumerism and installment plan with reference to the play *The Never-Never Nest.*

IV. Answer any TWO of the following: 2X05=10

1. Critically analyze the poem *Refugee Blues.*
2. Explore the central theme of the poem *Father Returning Home.*
3. Comment on the character of the speaker's father in the poem *Father Returning Home.*
4. How does the poet bring out the plight of Jewish refugees in the poem *Refugee Blues.*

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IV Semester B. Sc/BCA/ B.Sc Hon's/ II Internal Test, September 2022

ENGLISH LANGUAGE

OTHELLO AND PRACTISING COMMUNICATION SKILLS

Time: 1 hr **Max Marks: 20**

I: Annotate any one of the following **1x5= 5**

1. " ...*it is not to make me jealous To say my wife is fair, feeds well, loves company Is free of speech, sings, plays and dances well"*
2. *"And his unkindness may defeat my life But never taint my love"*
3. *"And yet I fear you; for you are fatal then When our eyes roll so; why is should fear I know not"*
4. *"Moor, she was chaste, she loved thee, cruel Moor"*

II: Answer any two of the following questions **2x5=10**

1. Discuss the dramatic significance of **the Hand Kerchief Scene** in the play ***Othello***?
2. Explain the role of women characters in the play ***Othello***.
3. Write a short note on **the murder scene** in the play ***Othello***.
4. Consider the play ***Othello*** as a tragedy.

III: Answer any one the following **1x5=5**

1. You are the sports secretary of your college. Write a general enquire e-mail letter to sportsindia@gmail.com regarding sports equipments available in their shop.
2. As the Principal of Sahyadri Science College, Shivamogga, write an e-mail to gangarambooks@gmail.com about the damaged books that have been supplied to the college.

IV Semester B. Sc/BCA/ B.Sc Hon's/ II Internal Test, September 2022

ENGLISH LANGUAGE

OTHELLO AND PRACTISING COMMUNICATION SKILLS

Time: 1 hr **Max Marks: 20**

I: Annotate any one of the following **1x5= 5**

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III: Answer any one the following **1x5=5**

1. You are the sports secretary of your college. Write a general enquire e-mail letter to sportsindia@gmail.com regarding sports equipments available in their shop.
2. As the Principal of Sahyadri Science College, Shivamogga, write an e-mail to gangarambooks@gmail.com about the damaged books that have been supplied to the college.

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Sahyadri Science College, Shivamogga

NEP - II Semester Microbiology **Date : 27/06/2023**

FIRST INTERNAL TEST

Time: 1 hour **Paper II : Microbial Biochemistry and Physiology** **Max Marks: 20**

I. Answer the following questions: Multiple Choice Questions **1x4=04 Marks**

1. Glycolysis phenomenon was discovered by _____
A) Robert Koch B) Edward Jenner C) Joseph Lister D) G Embden and Meyerhoff
2. Oligosaccharides are formed by
A) Glycosidic bond B) Covalent bond C) Hydrogen bond D) Ionic bond
3. What is the The valency of Carbon
A) 3 B) 4 C) 6 D) None of the above
4. Which of these considered as Macronutrient
A) Carbon B) Manganese C) Zinc D) Cobalt

II. Answer any TWO of the following **2x3 =06 Marks**

5. Macronutrients.
6. Molish's Test.
7. Van der Waals Force.

III. Answer any TWO of the following **2x5 =10 Marks**

8. Explain the Classification of Microorganisms based on Carbon, Energy, and Electron Source.
9. Explain the structure and properties of Disaccharides.
10. Electron Transport Chain in Bacteria

Sahyadri Science College, Shivamogga

NEP - IV Semester Microbiology **Date : 27/06/2023**

FIRST INTERNAL TEST

Time: 1 hour **Paper IV : Microbial Enzymology and Metabolism** **Max Marks: 20**

I. Answer the following questions: Multiple Choice Questions **1x4=04 Marks**

1. Non Protein part of the Enzyme is _____
A) Holoenzyme B) Apoenzyme C) Prosthetic Group D) Co - Factor
2. Example for Endoenzyme is _____
A) Protease B) Amylase C) Cellulase D) β- Galactosidase
3. One molecule of NADH is equal to _____ ATP.
A) 2 B) 3 C) 6 D) 10
4. The High energy compound produced during Oxidation of Succinate to Fumarate in Kreb's Cycle is __
A) FADH B) NADH C) ATP D) ADP

II. Answer any TWO of the following **2x3 =06 Marks**

5. Alcoholic Fermentation.
6. Induced Fit Theory.
7. ED Pathway.

III. Answer any TWO of the following **2x5 =10 Marks**

8. Classification of Enzymes.
9. Explain TCA Cycle.
10. Multi Enzyme Complex.

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Sahyadri Science College, Shivamogga

NEP - II Semester Microbiology **Date: 01/08/2023**

SECOND INTERNAL TEST

Time: 1 hour **Paper II : Microbial Biochemistry and Physiology** **Max Marks: 20**

I. Answer the following questions: Multiple Choice Questions **1x4=04 Marks**

1. Membrane bound transport proteins are also known as _____
A) Carrier proteins B) Liposomes C) Carrier carbohydrates D) ATP's
2. Range of pH scale is _____
A) 7-10 B) 0-10 C) 0-14 D) 7-14
3. Proteins are made up of_____
A) Glucose B) Polypeptide C) Triglycerides D) Glycogen
4. Change in Gibb's free energy is denoted by _____
A) ΔG B) ΔS C) ΔV D) ΔH

II. Answer any TWO of the following **2x3 =06 Marks**

5. Explain measurement of growth by direct microscopic count using Haemocytometer.
6. Explain Passive transport.
7. Explain the properties of amino acids.

III. Answer any TWO of the following **2x5 =10 Marks**

8. Explain the mechanism of facilitated diffusion.
9. Classification of proteins based on Chemical nature & solubility.
10. Explain Reductive TCA Cycle.

Sahyadri Science College, Shivamogga

NEP - IV Semester Microbiology **Date : 01/08/2023**

SECOND INTERNAL TEST

Time: 1 hour **Paper IV : Microbial Enzymology and Metabolism** **Max Marks: 20**

I. Answer the following questions: Multiple Choice Questions **1x4=04 Marks**

1. When the velocity of enzyme activity is plotted against substrate concentration, which of the following is obtained?
A) Hyperbolic curve B) Parabola C) Sigmoid curve D) Straight line
2. The molecule which acts as directly on enzyme to lower catalytic rate is_____
A) Repressor B) Inhibitor C) Modulator D) Regulator
3. Before the biosynthesis of pyrimidine _____ formation takes place.
A) Orotate B) Glycine C) Ribose D) Purine
4. Products of heterolactic fermentation is_____
A) Ethanol, Acetic acid & CO_2 B) Ethanol & CO_2 C) Acetic acid & CO_2 D) Acetic acid & amine

II. Answer any TWO of the following **2x3 =06 Marks**

5. Explain Koshland-Nemethy Model.
6. Chemolithotrophic metabolism of Sulphate reduction.
7. Explain Hill's Equation.

III. Answer any TWO of the following **2x5 =10 Marks**

8. Explain nitrogen metabolism.
9. Effect of pH and temperature on enzyme catalyzed reaction.
10. Schematic representation of biosynthesis of purines.

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Sahyadri Science College, Shimoga.

NEP- I semester Microbiology

FIRST INTERNAL TEST

General Microbiology

Time: 1hour **Max Marks: 20**

I. Answer any the following **1x4 = 04 marks**

01) The term 'animalcules' was coined by .....

a) Louis Pasteur b) Robert Koch c) Edward Jenner d) Anton Van Leeuwenhoek

02) Decolorizing agent used in Gram's staining is .....

a) Acid-alcohol b) 95% alcohol c) 70% alcohol d) Water

03) Refractive index of cedar wood oil is .....

a) 3.5 b) 2.5 c) 1.0 d) 1.5

04) A jellylike substance floating inside the plasma membrane is.....

a) Cell sap b) Cytoplasm c) Karyoplasm d) Mitochondria

II. Answer any two of the following **2x3 = 06 marks**

5. Biogenesis Theory
6. Optical parts of Compound Microscope
7. Explain Structure and Function of cytoplasmic matrix

III. Answer any two of the following **2x5 = 10 marks**

8. Contributions of Louis Pasteur
9. Explain principle, construction and application Dark field microscope
10. Explain Ultra structure of prokaryotic cell

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(26)

Sahyadri Science College, Shimoga.

I semester Microbiology

SECOND INTERNAL TEST

Paper I-General Microbiology

Time: 1hour **Max Marks: 20**

I. Answer the following questions 1x4=04 Marks

01) Which of the following is a fat soluble dye?

a) Methylene blue b) Sudan Dye c)Malachite Green d)Iodine

02) Who discovered Phagocytosis?

a) Edward Jenner b) Elie Metchnikoff c) Robert Koch d) Louis Pasteur

03) Phase Contrast Microscope was discovered by _____.

a) Edward Jenner b) Joseph Lister c) Antony Van Leuwen Hook d) Federric Zernike

04) The inner membrane of Chloroplast contain Flattened membrane sac like structure called _____

a) Grana b) Thylakoids c) Stroma d) Matrix

II. Answer any TWO of the following 2x3=06 Marks

5. Contributions of Joseph Lister
6. Optical parts of Compound Microscope
7. Explain Structure and Function of ~~Microscope~~ Mitochondria

III. Answer any TWO of the following 2x5=10 Marks

8. Contributions of Alexander Fleming and Edward Jenner.
9. Explain Principle, Construction And Application Of TEM.
10. Explain Vegetative type of Reproduction in Bacteria.

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II Internal Assessment—I B.Sc.2nd Sem
Sub: Mathematics

Time: 1 Hr
Date: 02-08-2023

Max. Marks: 10

$1 \times 2 = 2$

I Answer any 2 of the following:

1. If a and b are two real numbers such that a<b then the set $S = \{x; a < x < b\}$ is called

A) open interval B) closed interval C) semi closed interval D)semi open interval

2. If G is a finite group and H is any subgroup of G then

A) O(H) / O(G) B) O(G) / O(H) C) O(H)=O(G) D) O(H)≠O(G)

3. Jacobian is A) $\begin{vmatrix} \frac{\partial u}{\partial x} & \frac{\partial v}{\partial x} \\ \frac{\partial u}{\partial y} & \frac{\partial v}{\partial y} \end{vmatrix}$ B) $\begin{vmatrix} \frac{\partial u}{\partial x} & \frac{\partial u}{\partial y} \\ \frac{\partial v}{\partial x} & \frac{\partial v}{\partial y} \end{vmatrix}$ C) $\begin{vmatrix} \frac{\partial v}{\partial x} & \frac{\partial v}{\partial y} \\ \frac{\partial u}{\partial x} & \frac{\partial u}{\partial y} \end{vmatrix}$ D) $\begin{vmatrix} \frac{\partial v}{\partial x} & \frac{\partial u}{\partial x} \\ \frac{\partial v}{\partial y} & \frac{\partial u}{\partial y} \end{vmatrix}$

4. Surface area of the sphere z = f(x,y) in XY- plane is

A) $\iint_A \sqrt{\left(\frac{\partial z}{\partial x}\right)^2 + \left(\frac{\partial z}{\partial y}\right)^2 + 1}\, dx\, dy$ B) $\iint_A \sqrt{\left(\frac{\partial x}{\partial y}\right)^2 + \left(\frac{\partial z}{\partial z}\right)^2 + 1}\, dy\, dz$ C) $\iint_A \sqrt{\left(\frac{\partial y}{\partial z}\right)^2 + \left(\frac{\partial y}{\partial x}\right)^2 + 1}\, dz dx$

D) NONE

$2 \times 4 = 8$

II Answer any 2 of the following:

1.Show that a set is closed if and only if its complement is open.

2. Find all the right cosets of the subgroup $H = \{0,4,8\}$ of the group $\{z_{12}, +_{12}\}$.

3. Find $\frac{dy}{dx}$ using partial differentiation if $x^y = y^x$.

4. Evaluate $\iint_R \frac{x^2y^2}{x^2+y^2}\, dx\, dy$ where R is the annular region b/w the circles $x^2+y^2 = 1$ & $x^2+y^2 = 4$

II Internal Assessment—I B.Sc.2nd Sem
Sub: Mathematics

Time: 1 Hr
Date: 02-08-2023

Max. Marks: 10

$1 \times 2 = 2$

I Answer any 2 of the following:

1. If a and b are two real numbers such that a<b then the set $S = \{x; a < x < b\}$ is called

A) open interval B) closed interval C) semi closed interval D)semi open interval

2. If G is a finite group and H is any subgroup of G then

A) O(H) / O(G) B) O(G) / O(H) C) O(H)=O(G) D) O(H)≠O(G)

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D) NONE

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4. Evaluate $\iint_R \frac{x^2y^2}{x^2+y^2}\, dx\, dy$ where R is the annular region b/w the circles $x^2+y^2 = 1$ & $x^2+y^2 = 4$

$2 \times 4 = 8$

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II Internal Assessment
Sub: Mathematics

II B.Sc., IV SEM(NEP) **Max. Marks: 10**
Time: 1 Hour **Date: 02-08-2023**

2x1=2

I. Answer any TWO questions

1. One dimensional wave equation of the form
   a) $\frac{\partial^2 u}{\partial t^2} = c\frac{\partial^2 u}{\partial x^2}$ b) $\frac{\partial^2 u}{\partial t^2} = c^2\frac{\partial u}{\partial x}$ c) $\frac{\partial u}{\partial t} = c^2\frac{\partial^2 u}{\partial x^2}$ d) $\frac{\partial^2 u}{\partial t^2} = c^2\frac{\partial^2 u}{\partial x^2}$
2. The complimentary function of $(D-1)(D-D'+1)z = 0$ is
   a) $e^x f_1(y) + e^x f_2(y+x)$ b) $e^x f_1(y) + e^{-x} f_2(y+x)$
   c) $e^{-x} f_1(y) + e^{-x} f_2(y+x)$ d) $e^{-x} f_1(y) - e^{-x} f_2(y+x)$
3. The value of $L^{-1}\left[\frac{s+a}{(s+a)^2+1}\right]$ is
   a) $e^{at}sinat$ b) $e^{at}cosat$ c) $e^{-at}sinat$ d) $e^{-at}cosat$
4. The convolution of two functions $f(t)$ and $g(t)$ is given by
   a) $L\{f(t)\}\cdot L\{g(t)\} = L\{f(t) * g(t)\}$ b) $L\{f(t)\} + L\{g(t)\} = L\{f(t) + g(t)\}$
   c) $L\{f(t)\} \div L\{g(t)\} = L\{f(t) - g(t)\}$ d) $L\{f(t)\} + L\{g(t)\} = L\{f(t) * g(t)\}$

4x2=8

II. Answer any TWO questions

5. Solve $\frac{\partial^2 z}{\partial x^2} - 2\frac{\partial^2 z}{\partial x\,\partial y} + \frac{\partial^2 z}{\partial y^2} = 12xy$
6. Solve $(D^2 - 2DD' + D'^2 - 5D + 5D' + 6)z = e^{3x-2y}$.
7. Evaluate $L^{-1}\left[\frac{1}{s(s+1)(s+2)}\right]$
8. Solve the integral equation $f(t) = at + \int_0^t f(u)\sin(t-u)\,du$

II Internal Assessment
Sub: Mathematics

II B.Sc., IV SEM(NEP) **Max. Marks: 10**
Time: 1 Hour **Date: 02-08-2023**

2x1=2

I. Answer any TWO questions

1. One dimensional wave equation of the form
   a) $\frac{\partial^2 u}{\partial t^2} = c\frac{\partial^2 u}{\partial x^2}$ b) $\frac{\partial^2 u}{\partial t^2} = c^2\frac{\partial u}{\partial x}$ c) $\frac{\partial u}{\partial t} = c^2\frac{\partial^2 u}{\partial x^2}$ d) $\frac{\partial^2 u}{\partial t^2} = c^2\frac{\partial^2 u}{\partial x^2}$
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   c) $e^{-x} f_1(y) + e^{-x} f_2(y+x)$ d) $e^{-x} f_1(y) - e^{-x} f_2(y+x)$
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II Internal Assessment
Sub: Mathematics

II B.Sc., IV SEM(NEP)
Time: 1 Hour

Max. Marks: 10
Date: 02-08-2023

2x1=2

I. Answer any TWO questions

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II Internal Assessment
Sub: Mathematics

II B.Sc., IV SEM(NEP)
Time: 1 Hour

Max. Marks: 10
Date: 02-08-2023

2x1=2

I. Answer any TWO questions

1. One dimensional wave equation of the form

a) $\frac{\partial^2 u}{\partial t^2} = c\frac{\partial^2 u}{\partial x^2}$ b) $\frac{\partial^2 u}{\partial t^2} = c^2\frac{\partial u}{\partial x}$ c) $\frac{\partial u}{\partial t} = c^2\frac{\partial^2 u}{\partial x^2}$ d) $\frac{\partial^2 u}{\partial t^2} = c^2\frac{\partial^2 u}{\partial x^2}$

2. The complimentary function of $(D-1)(D-D'+1)z = 0$ is

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3. The value of $L^{-1}\left[\frac{s+a}{(s+a)^2+1}\right]$ is

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c) $L\{f(t)\} \div L\{g(t)\} = L\{f(t) - g(t)\}$ d) $L\{f(t)\} + L\{g(t)\} = L\{f(t) * g(t)\}$

4x2=8

II. Answer any TWO questions

5. Solve $\frac{\partial^2 z}{\partial x^2} - 2\frac{\partial^2 z}{\partial x\,\partial y} + \frac{\partial^2 z}{\partial y^2} = 12xy$

6. Solve $(D^2 - 2DD' + D'^2 - 5D + 5D' + 6)z = e^{3x-2y}$.

7. Evaluate $L^{-1}\left[\frac{1}{s(s+1)(s+2)}\right]$

8. Solve the integral equation $f(t) = at + \int_0^t f(u)\sin(t-u)\,du$

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II Internal Assessment
Sub: Mathematics

Time: 1 Hour | **III B.Sc. (V SEM) - Paper VI** | **Max. Marks: 20**

Date:21-02-2023

I. Answer any TWO questions **2x2=4**

1. Evaluate $\iint_R xy\,dx\,dy$ where R is the Region bounded by $x^2+y^2=a^2$ where $x \geq 0$, $y \geq 0$.
2. Find the surface area of the surface $Z=\frac{2}{3}x\sqrt{x}$, $0<x<1$ and $1<y<2$.
3. Evaluate $L^{-1}\left[\frac{S}{(S+4)^2}\right]$ 4. Evaluate $L^{-1}\left[\frac{S+3}{(S+3)^2+36}\right]$

II. Answer any FOUR questions **4x4=16**

5. Evaluate $\iint_D x^2y\,dx\,dy$ where D is the interior of triangle with vertices (0,0), (0,1) *and* (1,0).
6. Evaluate $\iint_D \frac{x^2y^2}{x^2+y^2}\,dx\,dy$ where D is the annular region between the circle $x^2+y^2=1$ and $x^2+y^2=2$.
7. Find the surface area of cylinder $x^2+y^2=4$ cut by the cylinder $x^2+y^2=4$.
8. Evaluate $L^{-1}\left[\frac{S}{S(S+1)(S+2)}\right]$
9. If $f(t)$ is continuous function for $t \geq 0$ and $f(t)=L^{-1}\left[\frac{e^{-3s}}{(S+1)^3}\right]$ then find $f(2), f(4)$ *and* $f(6)$.
10. Evaluate $L^{-1}\left[\log\left(\frac{s-a}{s-b}\right)\right]$.

II Internal Assessment
Sub: Mathematics

Time: 1 Hour | **III B.Sc. (V SEM) - Paper VI** | **Max. Marks: 20**

Date:21-02-2023

I. Answer any TWO questions **2x2=4**

1. Evaluate $\iint_R xy\,dx\,dy$ where R is the Region bounded by $x^2+y^2=a^2$ where $x \geq 0$, $y \geq 0$.
2. Find the surface area of the surface $Z=\frac{2}{3}x\sqrt{x}$, $0<x<1$ and $1<y<2$.
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II. Answer any FOUR questions **4x4=16**

5. Evaluate $\iint_D x^2y\,dx\,dy$ where D is the interior of triangle with vertices (0,0), (0,1) *and* (1,0).
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10. Evaluate $L^{-1}\left[\log\left(\frac{s-a}{s-b}\right)\right]$.

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II Internal Assessment
Sub: Mathematics

Time: 1 Hour **III B.Sc. (V SEM) - Paper V** **Max. Marks: 20**

Date:21-02-2023

I. Answer any TWO questions **2x2=4**

1. Prove that $S=\left\{\begin{bmatrix} a & 0 \\ b & 0 \end{bmatrix} / a,b \in Z\right\}$ is a left ideal of $M_2(Z)$.
2. If $f: R \to R'$ is homomorphism then prove that
   (i) $f(0) = 0'$ (ii) $f(-a) = -[f(a)]$.
3. Form the partial differential equation from $Z = (x^2 + a)(y^2 + b)$ by eliminating arbitrary constants.
4. Verify whether $f(x) = x(2\pi - x)$ is even or odd in $(0, 2\pi)$.

II. Answer any FOUR questions **4x4=16**

1. If p is an integer then pz is a maximal ideal of $(Z, +, .)$ iff p is a prime number.
2. If I is a maximal ideal of a commutative ring with unity R then prove that R/I is a field.
3. Let A and B be any two ideals of a ring R, then prove that $A + B = \{a + b / a \in A, b \in B\}$ is an ideal of R.
4. Solve the differential equation $(y^2 + z^2)p - xyq + xz = 0$ by Lagrange's method.
5. Solve: $Z = px + qy + \log(pq)$.
6. Obtain the Fourier series of $f(x) = 1 - x^2$ in $-1 < x < 1$.

II Internal Assessment
Sub: Mathematics

Time: 1 Hour **III B.Sc. (V SEM) - Paper V** **Max. Marks: 20**

Date:21-02-2023

I. Answer any TWO questions **2x2=4**

1. Prove that $S=\left\{\begin{bmatrix} a & 0 \\ b & 0 \end{bmatrix} / a,b \in Z\right\}$ is a left ideal of $M_2(Z)$.
2. If $f: R \to R'$ is homomorphism then prove that
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3. Form the partial differential equation from $Z = (x^2 + a)(y^2 + b)$ by eliminating arbitrary constants.
4. Verify whether $f(x) = x(2\pi - x)$ is even or odd in $(0, 2\pi)$.

II. Answer any FOUR questions **4x4=16**

1. If p is an integer then pz is a maximal ideal of $(Z, +, .)$ iff p is a prime number.
2. If I is a maximal ideal of a commutative ring with unity R then prove that R/I is a field.
3. Let A and B be any two ideals of a ring R, then prove that $A + B = \{a + b / a \in A, b \in B\}$ is an ideal of R.
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II Internal Assessment
Sub: Mathematics

Time: 1 Hour | **III B.Sc. (V SEM) - Paper V** | **Max. Marks: 20**

Date:21-02-2023

I. Answer any TWO questions **2x2=4**

1. Prove that S= $\left\{\begin{bmatrix} a & 0 \\ b & 0 \end{bmatrix} / a, b \in Z\right\}$ is a left ideal of $M_2(Z)$.
2. If $f: R \to R'$ is homomorphism then prove that
   (i) $f(0) = 0'$ (ii) $f(-a) = -[f(a)]$.
3. Form the partial differential equation from $Z = (x^2 + a)(y^2 + b)$ by eliminating arbitrary constants.
4. Verify whether $f(x) = x(2\pi - x)$ is even or odd in $(0, 2\pi)$.

II. Answer any FOUR questions **4x4=16**

1. If p is an integer then pz is a maximal ideal of $(Z, +, .)$ iff p is a prime number.
2. If I is a maximal ideal of a commutative ring with unity R then prove that R/I is a field.
3. Let A and B be any two ideals of a ring R. then prove that $A + B = \{a + b \ / a \in A, b \in B\}$ is an ideal of R.
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II Internal Assessment
Sub: Mathematics

Time: 1 Hour | **III B.Sc. (V SEM) - Paper V** | **Max. Marks: 20**

Date:21-02-2023

I. Answer any TWO questions **2x2=4**

1. Prove that S= $\left\{\begin{bmatrix} a & 0 \\ b & 0 \end{bmatrix} / a, b \in Z\right\}$ is a left ideal of $M_2(Z)$.
2. If $f: R \to R'$ is homomorphism then prove that
   (i) $f(0) = 0'$ (ii) $f(-a) = -[f(a)]$.
3. Form the partial differential equation from $Z = (x^2 + a)(y^2 + b)$ by eliminating arbitrary constants.
4. Verify whether $f(x) = x(2\pi - x)$ is even or odd in $(0, 2\pi)$.

II. Answer any FOUR questions **4x4=16**

1. If p is an integer then pz is a maximal ideal of $(Z, +, .)$ iff p is a prime number.
2. If I is a maximal ideal of a commutative ring with unity R then prove that R/I is a field.
3. Let A and B be any two ideals of a ring R. then prove that $A + B = \{a + b \ / a \in A, b \in B\}$ is an ideal of R.
4. Solve the differential equation $(y^2 + z^2)p - xyq + xz = 0$ by Lagrange's method.
5. Solve: $Z = px + qy + \log(pq)$.
6. Obtain the Fourier series of $f(x) = 1 - x^2$ in $-1 < x < 1$.

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II Internal Assessment
Sub: Mathematics

Time: 1 Hour | **III B.Sc. (V SEM) - Paper VI** | **Max. Marks: 20**

Date:21-02-2023

I. Answer any TWO questions **2x2=4**

1. Evaluate $\iint_R xy\,dx\,dy$ where R is the Region bounded by $x^2+y^2=a^2$ where $x \geq 0$, $y \geq 0$.
2. Find the surface area of the surface $Z=\frac{2}{3}x\sqrt{x}$, $0<x<1$ and $1<y<2$.
3. Evaluate $L^{-1}\left[\frac{S}{(S+4)^2}\right]$ 4. Evaluate $L^{-1}\left[\frac{S+3}{(S+3)^2+36}\right]$

II. Answer any FOUR questions **4x4=16**

5. Evaluate $\iint_D x^2y\,dx\,dy$ where D is the interior of triangle with vertices $(0,0),(0,1)$ *and* $(1,0)$.
6. Evaluate $\iint_D \frac{x^2y^2}{x^2+y^2}\,dx\,dy$ where D is the annular region between the circle $x^2+y^2=1$ and $x^2+y^2=2$.
7. Find the surface area of cylinder $x^2+y^2=4$ cut by the cylinder $x^2+y^2=4$.
8. Evaluate $L^{-1}\left[\frac{S}{S(S+1)(S+2)}\right]$
9. If $f(t)$ is continuous function for $t \geq 0$ and $f(t)=L^{-1}\left[\frac{e^{-3s}}{(S+1)^3}\right]$ then find $f(2), f(4)$ *and* $f(6)$.
10. Evaluate $L^{-1}\left[\log\left(\frac{s-a}{s-b}\right)\right]$.

II Internal Assessment
Sub: Mathematics

Time: 1 Hour | **III B.Sc. (V SEM) - Paper VI** | **Max. Marks: 20**

Date:21-02-2023

I. Answer any TWO questions **2x2=4**

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I Internal Assessment—III B.Sc., (Paper-7)

Time: 1 Hr **Sub: Mathematics** **Max. Marks: 20**

Date: 30-06-2023

I Answer any 2 of the following: $2 \times 2 = 4$

1. In a vector space $V(F)$ prove that $c\,\alpha = \vec{0} \Rightarrow$ either $c = 0$ *or* $\alpha = \vec{0}$.
2. For what value of K the vectors $(1,2,K),(3,4,5)$ *and* $(-1,-2,-3)$ are linearly dependant.
3. Find the first approximated root of $\sqrt{3}$.
4. Find $\Delta(ax^2 + bx + c)$ with $h = 1$.

II Answer any 4 of the following: $4 \times 4 = 16$

1. PT non-empty subset w of a vector space $V(F)$ is a subspace of V iff $\forall\, a, b \in F$ *and* $\alpha, \beta \in w \Rightarrow a\alpha + b\beta \in w$.
2. The set $S = \{\alpha_1, \alpha_2, \ldots\ldots \alpha_n\}$ is linearly dependant if and only if some vectors α_k is a linear combination of preceeding vectors.
3. In $V_3(Z_3)$ how many vectors are spanned by $(1,2,1)$ *and* $(2,1,2)$.
4. Evaluate $\Delta^n \sin(ax + b)$.
5. Find the real root of $x^3 - 3x + 1 = 0$ lying between 1 and 2 correct to 4 decimal places by Newton- Raphson method.

I Internal Assessment—III B.Sc., (Paper-7)

Time: 1 Hr **Sub: Mathematics** **Max. Marks: 20**

Date: 30-06-2023

I Answer any 2 of the following: $2 \times 2 = 4$

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II Internal Assessment – 2022-23
Sub: Mathematics

Time: 1 Hr **B.Sc. VI Semester Paper – VII** **Max.Marks: 20**

02.08.2023

I Answer any TWO questions: $2 \times 2 = 4$

1. Find the Vectors (1,1,1), (1,2,3) and (-1,0,1) are Basis or not.
2. Find the matrix of Linear Transformation $T: V_2(R) \to V_2(R)$ defined by $T(x, y) = (x - y,\ x)$.
3. Prove that $\Delta = \nabla E$.
4. Construct the Divided difference Table for the data

x	1	2	4	7	12
f(x)	22	30	82	106	216

II Answer any FOUR questions: $4 \times 4 = 16$

6. Find the Basis and dimension of the Subspace Spanned by the Vectors (2,4,2), (1,-1,0) and (0,3,1) in $V_3(R)$
7. The set of Vectors $\{\alpha_1, \alpha_2, \alpha_3, \ldots\ldots, \alpha_m\}$ is a Basis of Vector Space V and $\{\beta_1, \beta_2, \beta_3, \ldots\ldots, \beta_m\}$ are any 'm' vectors of a Vector Space W. then Prove that $\exists$ a Unique Linear Transformation $T: V \to W$ then Show that $T(\alpha_i) = \beta_i$,where i=1,2,3,....,m.
8. Find the matrix of Linear Transformation $T: V_3(R) \to V_2(R)$ defined by $T(x, y, z) = (x + y,\ y + z)$ with respect to the Basis $B_1 = \{(1,1,0), (1,0,1), (1,1,-1)\}$ and $B_2 = \{(2,-3), (1,\ 4)\}$
9. Estimate the inceasing in the population during the period 1955 to 1961

year	1921	1931	1941	1951	1961	1971
population in lakh	20	24	29	36	46	51

10. The following table gives the correspond values of pressure P and a specific volume V of a Super heated steel then find the rate of change of pressure P with respect to Volume V at V=2

V	2	4	6	8	10
P	105	42.7	25.7	16.7	13

II Internal Assessment : 2022-23
Sub: Mathematics

Time: 1 Hr **B.Sc. VI Semester Paper – VII** **Max.Marks: 20**

02.08.2023

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x	1	2	4	7	12
f(x)	22	30	82	106	216

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II Internal Assessment

Sub: Mathematics

Time: 1 Hour | **III B.Sc. (VI SEM) - Paper VIII** | **Max. Marks: 20**

Date:02-08-2023

I. Answer any TWO questions **2x2=4**

1. Prove that every continuous function is R-integrable.
2. Prove that div(f + g) = div(f) + div(g).
3. Verify whether the given function $f(z) = sinz$ is analytic or not.
4. Verify whether the given function $u = sinhx\ cosy$ is harmonic or not.

II. Answer any FOUR questions **4x4=16**

5. Let f and g are bounded and R-integrable over $[a, b]$ then $f + g$ is also R-integrable.
6. If $\vec{r} = xi + yj + zk$ and $r = |\vec{r}|$ then show that $div(r^n\vec{r}) = (n+3)r^n$ and hence prove that $\nabla^2(r^n.\vec{r}) = n(n+3)r^{n-2}\,\vec{r}$.
7. If $'r'$ represents the position vector of a point P then show that
   a) $div\, r = 3$
   b) $curl\, r = 0$
8. State and prove sufficient condition for the function $f(z)$ to be analytic.
9. If $f(z) = u + iv$ is analytic and Ø is any differentiable function of$x$ and y then show that

$$\left(\frac{\partial \varnothing}{\partial x}\right)^2 + \left(\frac{\partial \varnothing}{\partial y}\right)^2 = \left[\left(\frac{\partial \varnothing}{\partial u}\right)^2 + \left(\frac{\partial \varnothing}{\partial v}\right)^2\right][|f^1(z)|^2].$$

II Internal Assessment

Sub: Mathematics

Time: 1 Hour | **III B.Sc. (VI SEM) - Paper VIII** | **Max. Marks: 20**

Date:02-08-2023

I. Answer any TWO questions **2x2=4**

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FIRST INTERNAL TEST, MARCH, – 2022

ZOOLOGY, B.Sc– Ist Semester

Cytology, Genetics and Infectious Diseases

I. Answer the following **1X4=4**

1. Barr body is found in the cell nucleii of
   a. Male b. both
   c. female d. none of the above

2. Disease albinism is due to
   a. autosomal dominant b.autosomal recessive
   c. X linked recessive d. X linked dominant

3. Synapsis occur in
   a. Leptotene b. diplotene
   c. pachytene d. zygotene

4. Lysosome contains
   a. Proteins b. Hydrolytic enzymes
   c. lipids d. carbohydrates

II. Answer any TWO of the following **2X3=06**

5. Mention numerical anomolies.

6. Write the significance of meiosis

7. Write a note on functions of golgi complex

8. Define Penetrace and expressivity.

II. Answer any TWO of the following **2X5=10**

9. Explain recessive epistasis.

10. Explain the characteristics of kleinfilters syndrome

11. Explain prophase I of meiosis.

12. Explain the structure of lysosome.

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SAHYADRI SCIENCE COLLEGE

DEPARTMENT OF ZOOLOGY

FIRST INTERNALS III SEMESTER PAPER- III (2022-23)

I. Answer the following questions :- 4X1=4Marks

1. Beer's law states that the intensity of light decreases with respect to ____

a) Concentration b) Distance

c) Composition d) Volume

2. The enzyme which helps to unwind the DNA strands.

a) Primase b) Helicase

c) Ligase d) DNA Polymerase

3. Which of these operon is anabolic

a) trp-operon b) lac-operon

c) Ara-operon d) Both a & b

4. Who discovered light microscope?

a) Ernst Ruska b) Antony Van Leeuwen hook

c) Marvin Minsky d) Carl zeiss

II. Answer any TWO of the following 2X3=06Marks

5. Define Colorimetry & Spectrophotometry.

6. Mention the types of DNA Polymerases in Eukaryotes.

7. Mention the applications of Fluoroscent microscope.

8. Name the structural genes of trp-Operon.

III. Answer any TWO of the following 2X5=10Marks

9. Write the principle and applications of Radio-tracer techniques.

10. Explain the mechanism of DNA Replication in Prokaryotes.

11. Explain the working principle of Phase contrast microscope.

12. Describe the lac-operon.

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DEPARTMENT OF ZOOLOGY

FIRST INTERNALS V SEMESTER PAPER-5.1 (2022-23)

I. Answer any FIVE of the following: **2x5=10Marks**

1. Define: a) Euchromatin b) Heterochromatin
2. Define Innate immunity. Mention two functions of T-cells.
3. Mention the types of chromosomes on the basis of position of centromere.
4. What are Mitotic inhibitors?
5. Define Cell mediated immune response and Humoral immune response.
6. Mention the significance of Meiosis.

II. Answer any TWO of the following : **5X2=10Marks**

7. Describe the structure of Polytene chromosomes.
8. Explain different mechanisms of Antigen-Antibody reaction.
9. Describe Mitosis.

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DEPARTMENT OF ZOOLOGY

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FIRST INTERNALS V SEMESTER PAPER-5.2 (2022-23)

I. Answer any FIVE of the following: **2x5=10Marks**

1. List any four functions of Liver.
2. Name a) Any two indigenous carp b) Define Hapa
3. Draw a neat labelled diagram of Graafian follicle.
4. What is non-mulberry silkworm? Add a note on Eri.
5. What is Chawki rearing? Mention its types.
6. Define polyculture and monoculture.

II. Answer any TWO of the following : **5X2=10Marks**

7. Explain the histology of Testis with a labelled diagram.
8. Explain rearing techniques of Indian major carps.
9. Explain the life cycle of Mulberry Silkworm.

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I INTERNALS PAPER- II (2021-22)

I. Answer the following questions:- 4X1=4Marks

1. When the nerve impulse is introduced into the axon condition is,

a) Action potential b) Resting potential

c) Repolarised condition d) Sodium pump

2. The following is a disaccharide and non-reducing sugar.

a) Lactose b) Fructose

c) Maltose d) Sucrose

3. Where glycogenesis takes place?

a) Cytosol b) Mitochondria

c) Ribosomes d) Endoplasmic reticulum

4. Digestive enzymes are absent in

a) Gastric juice b) Bile juice

c) Pancreatic juice d) Saliva

II. Answer any two of the following 2X3=06 Marks

5. Mention the 3 types of synapse.

6. Explain carbohydrates digestion in mouth.

7. Mention the types of carbohydrates with example.

8. Write the pathway of glycogenolysis of carbohydrate metabolism.

III. Answer any two of the following 2X5=10Marks

9. Describe Mutipolar Neuron with a neat labelled diagram.

10. Explain human digestive system with a neat labelled diagram.

11. Explain the biological importance of carbohydrates.

12. Explain the glycolysis pathway of carbohydrate metabolism.

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II INTERNALS PAPER- II (2022-23)

I. Answer the following questions:- 4X1=4 Marks

1. A common pH scale extends from

a) 0-14 b) 1-12

c) 0-7 d) 1-14

2. In centrifugation, which of the following force is not used?

a) Electrostatic force b) Gravitational force

c) Centrifugal force d) Centripetal force

3. Histones are,

a) Positively charged proteins b) Negatively charged proteins

c) Neutral d) Both a & b

4. Transalation is the process of synthesis of

a) mRNA b) Ribosome

c) Proteins d) Carbohydrates

II. Answer any TWO of the following 2X3=06 Marks

5. Define solution and mention the types of solution.

6. Explain high speed centrifugation?

7. Point out the differences between Heterochromatin and Euchromatin.

8. Write a short note on eukaryotic Ribosome?

III. Answer any TWO of the following 5X2=10 Marks

9. Explain PCR techniques & mention its application.

10. Explain the types of rotor's.

11. Explain the role of chromatin in gene expression.

12. Mention the properties of genetic code?

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DEPARTMENT OF ZOOLOGY
II INTERNALS PAPER-V (5.1) (2022-23)

I. Answer any FIVE of the following:- **5X2=10 Marks**

1. Define vaccine? Mention the types of vaccine.
2. Mention the general characteristics of cancer.
3. Differenciate between 70S & 80S Ribosomes.
4. Write the functions of plasma membrane.
5. Classify the types of bacteria based on shape.
6. Draw a labelled diagram of Bacteria.

II. Answer any TWO of the following:- **2X5=10 Marks**

7. Describe the structure of IgG.
8. Explain Fluid Mosaic Model of Plasma membrane.
9. Explain the process of conjugation in Bacteria.

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II INTERNALS PAPER-VI (5.2) (2022-23)

I. Answer any FIVE of the following:- **5X2=10 Marks**

1. Why the Earthworms called cindrella of organic farming.
2. Write the role and importance of vermiculture.
3. Classify the types of Earthworms with an example.
4. Mention any two types of milch & draught breeds of cattle
5. **a)** Define dairy **b)** Artificial insemination
6. List the functions of Thyoxine

II. Answer any TWO of the following:- **2X5=10 Marks**

7. Explain preparation of vermicompost by Indoor method of vermiculture.
8. Describe dairy cattle breeding technique.
9. Explain the histology of pancreas.

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II INTERNALS PAPER- VI (5.2) (2022-23)

I. Answer any FIVE of the following:- **5X2=10 Marks**

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2. Write role and importance of vermiculture.
3. Classify the types of Earthworms with an example.
4. Mention any two types of milch & draught breeds of cattle
5. **a)** Define dairy **b)** Artificial insemination
6. List the functions of Thyoxine

II. Answer any TWO of the following:- **2X5=10 Marks**

7. Explain preparation of vermicompost by Indoor method of vermiculture
8. Describe dairy cattle breeding technique.
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Kuvempu University

Sahyadri Science College Shivamogga

PG Department of Biotechnology

I Internal Assessment Test

Hard core: 2.3.1: Enzymology

Total Marks 25

I. Answer the following questions **5x2=10 Marks**

1. FMN
2. Enzyme commission number
3. Zero order reactions
4. Arrhenius equation
5. PLP

II. Answer any 3 of the following question. **3x5=15 Marks**

1. Explain in detail coenzyme form of Niacin
2. Write a note on properties of enzymes?
3. Derive Michaelis Menten equation.
4. Give a brief account on classification of enzymes according to IUBMB.

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Sahyadri Science College Shivamogga

PG Department of Biotechnology

I Internal Assessment Test

Hard core: 2.1: Recombinant DNA Technology

Total Marks 25

I. **Answer the following questions** **5x2=10 Marks**

1. Application of genomic library.
2. CTAB
3. Reverse Transcriptase
4. Cloning site of pBR322
5. Selectable markers

II. **Answer any 3 of the following question.** **3x5=15 Marks**

1. Give an account on construction of Genomic libraries.
2. Give a detailed account on Type II Restriction Endonucleases.
3. Explain TRIzol method of RNA isolation?
4. Screening of recombinants by replica plate technique

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I Internal Assessment Test

Hard core: 2.2: Immunotechnology

Total Marks 25

I. Answer the following questions **5x2=10 Marks**

1. ADCC Mechanism
2. Attributes of adaptive immunity
3. Haptens
4. Epitopes
5. Adjuvents

II. Answer any 3 of the following question. **3x5=15 Marks**

1 Discuss how HSC's are going to differentiate into unipotent cells.

2 Describe how CD4 Cells regulate the immune function.

3 Explain the factors influencing antigenicity.

4 Write a note on cross reactive antigens.

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SAHYADRI SCIENCE COLLEGE

I INTERNALS, I SEMESTER, DEPARTMENT OF ENVIRONMENTAL SCIENCE,

PAPER-I,

07-12-2023

Time: 1 1hour **Max. Marks: 20**

I. Answer any **Four** of the following 1x4=4

1. The main constituents of atmosphere are

   a) N_2 and O_2 b) CO_2 and N_2 c) CO and CO_2 d) O_2 and SO_2

2. The uppermost layer of atmosphere is known as

   a) Ionosphere b) Troposphere c) Stratosphere d) exosphere

3. The branch of science which deals with study of organisms, the environment and how the organisms interact with each other and their environment called--

   a) Biology b)Ecology c) Zoology d) None of these

4. In the following which one of the component included in environmental Education.

   a) Management b) Development c) Research d) Awareness and Sensitivity

5 The stratosphere comprises----------

a)O2 b)Co2 c)O3 d) NO2

II. Answer any **Two** of the following 3x2=6

1. Briefly explain structure of Troposphere
2. Brief a note on effects of ozone layer depletion
3. Brief a note on any two scopes of Environmental Science

III. Answer any **Two** of the following 5x2=10

1. Explain structure of atmosphere on the basis of temperature.
2. Explain the objectives of Environmental Education
3. Write difference between weather and climate.

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SAHYADRI SCIENCE COLLEGE

I INTERNALS, III SEMESTER, DEPARTMENT OF ENVIRONMENTAL SCIENCE,

PAPER-III,

07-12-2023

Time: 1 1hour **Max. Marks: 20**

I. Answer any **Four** of the following 1x4=4

1. Which of the following is not belongs to examples for lotic water bodies
   b) River b) Streams c) pond d) brooks
2. The balance between the input and output of water in a particular area called.
   a) Water allocation b) water budget c) water infiltration d) runoff
3. The travel that focuses on exploring natural environments, conserving them, and supporting local communities
   a) Management b) wildlife tourism c) Ecotourism d) Adventures tourism
4. Which one of the following are negative impacts of Ecotourism.
   a) Resource overuses b) cultural preservation c) conservation d) economic Benefit
5. The water moves downward from the land surface into the soil called
   a) Infiltration b) Runoff c) Seepage d)None of these

II. Answer any **Two** of the following 3x2=6

1. Briefly note factors affecting water budget of a watershed.
2. What is Ecotourism? Mention its objectives
3. List out merits of dam's construction.

III. Answer any **Two** of the following 5x2=10

3. Explain impacts of dams on Environment.
4. Explain water budget.
3. Describe positive impacts of ecotourism

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SAHYADRI SCIENCE COLLEGE

I INTERNALS, V SEMESTER, DEPARTMENT OF ENVIRONMENTAL SCIENCE,

PAPER-V,

09-12-2023

Time: 1 1hour **Max. Marks: 20**

I. Answer any **Four** of the following 1x4=4

1. The instrument used to measure solar radiation

   a) Hygrometer b) Psychrometer c) Pyranometer d) brooks

2. The actual amount of water vapour present in the air

   a) Specific Humidity b) Relative Humidity c) Absolute Humidity d) None of these

3. Which one of the following sources not belongs point sources of Air Pollution.

   a) Transportation b) Smoke stacks c) Industries d) Thermal plants

4. Plumbism is caused due to

   a) Arsenic b) Cadmium c) Nickel) Lead

5. Enrichment of nitrate and phosphate in water body influences ---

   a) Growth of fishes b) Growth of Algal blooms c) Increases oxygen Concentration d) All are correct

II. Answer any **Two** of the following 3x2=6

1. List. out meteorological parameters.
2. Write a note on thermal pollution.
3. Write a note on particulate maters.

III. Answer any **Two** of the following 5x2=10

1. Explain plume behaviours.
2. Explain significance of meteorology.
3. Define water pollution. Explain the sources of water pollution.

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SAHYADRI SCIENCE COLLEGE

I INTERNALS, V SEMESTER, DEPARTMENT OF ENVIRONMENTAL SCIENCE,

PAPER-VI,

09-12-2023

Time: 1 1hour **Max. Marks: 10**

I. Answer the any two of following questions.. **1X2=2**

1. The degradable solid waste will decompose

a) By soil particles b) By oxidation c) By rain d) By micro organisms.

2. Which of the waste is called the municipal waste?

a) Vegetable waste b) Food waste c) plastics d) All of the above

3. The infectious waste comes under

a) Hazardous waste b) Non hazardous waste c) Industrial waste d) Municipal solid waste.

II. Answer any Two of the followings. **4X2=8**

1. What are solid wastes? Describe its Sources.
2. Describe classification of Soil waste.
3. Write a note on industrial solid waste and hazardous solid waste

SAHYADRI SCIENCE COLLEGE

I INTERNALS, V SEMESTER, DEPARTMENT OF ENVIRONMENTAL SCIENCE,

PAPER-VI,

09-12-2023

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Kuvempu University
Sahyadri Science College
B Sc Degree First Internal Examination - **I Semester**
Department of Biochemistry; Date: 05-11-2023

Time: 1hrs **Maximum Marks: 20**

I. Answer the following **1×4=4**

1) Define electrolysis?
2) What are acids give an example?
3) What is Avogadro's number?
4) Define electrochemistry.
5) What is a unicellular organism? Give an example.

II. Answer any four of the Following **2×4=8**

1) What are electrolytes? Explain types with example.
2) Differentiate prokaryotes and eukaryotes.
3) Define electrode potential and its measurement.
4) Define molarity and normality.
5) Explain Arrhenius concept of acids and bases.

III. Answer any two of the following **4×2=8**

1) Explain Galvanic Cell with neat labelled diagram.
2) Explain in detail SI units.
3) Derive Henderson- Hasselbalch equation. Give an importance of equation.

Kuvempu University
Sahyadri Science College **Date: 05-11-2023**
B Sc Degree First Internal Examination-III semester
Department of Biochemistry

Time: 1hr **Maximum Marks: 20**

I. Answer any Four of the following 1×4=4

1) Define aromaticity.
2) What is reaction mechanism?
3) What is kinetic reaction?
4) Define Alcohols.
5) Write the structure of any one Tri-hydric alcohol.

II. Answer any Four of the following 2×4=8

1) Explain the criteria for aromaticity
2) Give an account on dihydric alcohol.
3) Differentiate homo and heterolytic cleavage.
4) Brief on classification of alcohols with structures.
5) What are aromatic and antiaromatic compounds with example.

III. Answer any two of the following 4×2=8

1) Explain mechanism of electrophillic aromatic substitution reaction of nitration
2) Describe synthesis of glycerol from propene.
3) Explain nucleophiles and electrophiles with an example.

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Kuvempu University **Date: 04-12-2023**

Sahyadri Science College

B Sc Degree First Internal Examination: Dec 2023

Department of Biochemistry

Time: 1hr V semester (Paper V) **Maximum Marks: 20**

I. Answer any Four of the following 1×4=4

1) What are essential amino acids?
2) Define lipids.
3) Write the structure of tyrosine.
4) What are epimers?
5) Expand PUFA

II. Answer any Four of the following 2×4=8

1) What are essential fatty acids give any two examples?
2) Brief on importance of amino acids in biological system.
3) Define saturated and unsaturated fatty acid with an example.
4) Write structure of any two basic amino acids.
5) Elucidate open and ring structure of glucose

III. Answer any two of the following 4×2=8

1) Write the classification of monosaccharides.
2) Explain classification of amino acids based on polarity with structure.
3) Describe the classification of lipids with example.

Kuvempu University **Date: 05-12-2023**

Sahyadri Science College

B Sc Degree First Internal Examination: Dec 2023

Department of Biochemistry

Time: 40min V semester (Paper VI) **Maximum Marks: 10**

I. Answer the following 1×2=2

1) What are collagens?
2) Name the cementing material present in bone

II. Answer the following 2X2=2

1) Brief on composition of bone
2) Describe the characteristic of different cells of bone

III. Answer the following 4X1=4

1) Write a neat labelled diagram of Long bone and brief on inorganic constituents of bone

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Kuvempu University,
Sahyadri Science College
B Sc Degree Second Internal Examination- I Semester,
Department of Biochemistry

Time: 1hrs **Maximum Marks: 20**

I. Answer the following **1×4=4**

1) Define entropy?
2) What are Buffers?
3) What are atoms? Give an example.
4) Define reverse osmosis.
5) Define atomic number.

II. Answer any four of the Following **2×4=8**

1) What is Colligative Property? Explain any one.
2) Write the laws of thermodynamics.
3) Write the special properties of water.
4) What is redox reaction? Give an example.
5) Write a short note on Dalton concept.

III. Answer any two of the following **4×2=8**

1) Explain biological active forms of zinc and calcium.
2) Explain titration curve of H_3PO_4.
3) Discribe density and their significance.

Kuvempu University
Sahyadri Science College, **Date: 12-1-2024**
B Sc Degree Second Internal Examination-III semester
Department of Biochemistry

Time: 1hr **Maximum Marks: 20**

I. Answer any Four of the following **1×4=4**

1) Define Co enzymes.
2) What are phenols?
3) What are hydrocarbons?
4) What are alkenes? Give an example.
5) Write the structure of lactic acid.

II. Answer any Four of the following **2×4=8**

1) Write the structure of TPP.
2) Write the classification of Phenols with examples.
3) Write a note on Markownikoffs rule.
4) Brief on relative reactivity of substituted benzene.
5) Write the structure of maleic and fumaric acid.

III. Answer any two of the following **4×2=8**

1) Explain mechanism of Reimer tiemann reaction.
2) Explain the role of TPP in decarboxylation of alpha keto acid .
3) Explain the classification of organic reactions with examples.

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I Internal Assessment : Sub: Mathematics(NEP)

Date: 07/12/2023 | I B.Sc. (I SEM) - Paper-I | Max. Marks: 10
Time: 1 Hour

2x1=2

I. Answer any TWO questions

1.Addition of matrices is :
a) commutative b) associative c) Both a) and b) d) Neither a) nor b)

2. The nth derivative of e^{ax} is
a) $a^n\ e^{ax}$ b) $e^{ax}\ n!$ c)ax d)$x\ e^{ax}$

3. Every differential function is
a) Discontinuous b) Continuous c) not continuous d) None of these

4.If the curves $r_1 = f(\theta)$ and $r_2 = g(\theta)$ intersect orthogonally then
a) $\tan\Phi_1.\tan\Phi_2 = -1$ b) $\tan\Phi_1.\tan\Phi_2 = 1$ c) $\tan\Phi_1.\tan\Phi_2 = 0$ d) $\tan\Phi_1 = \tan\Phi_2$

2x4=8

II. Answer any TWO questions

1.Find the rank of the given matrix A= $\begin{bmatrix} 1 & 2 & -1 & 4 \\ 2 & 4 & 3 & 5 \\ 3 & 2 & 6 & 7 \end{bmatrix}$

2. Verify Rolle's theorem for the function $f(x) = x^2 - 6x + 8$ in $[2,4]$

3.Find the nth derivative of $e^{ax}\sin(bx + c)$.

4.Show that the curves $r = a(1 + \cos\theta)$ and $r = b(1 - \cos\theta)$ intersect orthogonally.

I Internal Assessment : Sub: Mathematics(NEP)

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I Internal Assessment : Sub: Mathematics(NEP)

Date:07/12/2023 **II B.Sc. (1II SEM) - Paper-III** **Max. Marks: 10**
Time: 1 Hour

I. Answer any TWO questions 2x1=2

1.The supremum and infimum of the sequence $\left\{\frac{1}{n}\right\}$ are respectively

a) 0 and 1 b) 1 and -1 c) 1 and 0 d) -1 and 1

2. The sequence $\{x^n\}$ is convergent if

a)$|x| < 1$ b) $|x| > 1$ c)$x = -1$ d) None of these

3. Solution of the differential equation $xdy - ydx = 0$ is

a) $y = cx$ b) $x = cy$ c) $x = y$ d)$y = c + x$

4.The order and degree of the differential equation $\left[1 + \left(\frac{dy}{dx}\right)^2\right]^{\frac{3}{2}} = \frac{d^2y}{dx^2}$

a) Order =2, degree=2 b) Order =2, degree=1 c) Order =1, degree=2 d) None of these

II. Answer any TWO questions 2x4=8

1. Solve $x\frac{dy}{dx} - y = \sqrt{x^2 + y^2}$

2. If $\lim_{n\to\infty} a_n = a$ and $\lim_{n\to\infty} b_n = b$ then prove that $\lim_{n\to\infty}(a_n + b_n) = a + b$

3. Prove that limit of the convergent sequence is unique

4. Show that the sequence $\{x_n\}$ defined by $x_1 = \sqrt{7}, x_{n+1} = \sqrt{7 + x_n}$ is convergent.

I Internal Assessment : Sub: Mathematics(NEP)

Date:07/12/2023 **II B.Sc. (1II SEM) - Paper-III** **Max. Marks: 10**
Time: 1 Hour

I. Answer any TWO questions 2x1=2

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Hypothecation Details: NA

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I Internal Assessment
Sub: Mathematics(NEP)

Time: 1 Hour | III B.Sc. (V SEM) - Paper-5 | Max. Marks: 10

Date:

I. Answer any TWO questions 2x1=2

1.If δ_r is the length of subintervals of the partition P then norm of a partition P is given by

a) $\| P \| < max\ \delta_r$ b) $\| P \| = max\ \delta_r$ c) $\| P \| > max\ \delta_r$ d) $\| P \| = min\ \delta_r$

2. If P_1 and P_2 are two partition of a $[a, b]$ then P_2 is the refinement of P_1 if

a) $P_1 \subset P_2$ b) $P_2 \subset P_1$ c) both (a) and (b) d) None

3. The modulus of a complex number $\frac{1-i}{1+i}$ is

a) i b) $-i$ c) 1 d) -1

4. If $z = -5 + 8i$ then $\bar{z} =$

a) $5 - 8i$ b) $-5 + 8i$ c) $-5 - 8i$ d) $8 + 5i$

II. Answer any TWO questions 4x2=8

1.If P^* is the refinement of P then Prove that $L(P^*, f) \geq L(P, f)$

2.Prove that lower Riemann sum cannot exceed upper Riemann sum.

3.(a) Find the real and imaginary parts of the function $\exp(1 + i\frac{\pi}{3})$.

(b) Find the equation of a circle centre at $-1 + 4i$ and $r = 1$.

4. Show that $\arg\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}$ represents a circle and also find its centre and radius.

**********All the Best**********

I Internal Assessment
Sub: Mathematics (NEP)

Time: 1 Hour | III B.Sc. (V SEM) - Paper-5 | Max. Marks: 10

Date:

I. Answer any TWO questions 2x1=2

1.If δ_r is the length of subintervals of the partition P then norm of a partition P is given by

a) $\| P \| < max\ \delta_r$ b) $\| P \| = max\ \delta_r$ c) $\| P \| > max\ \delta_r$ d) $\| P \| = min\ \delta_r$

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SAHYADRI SCIENCE COLLEGE
I INTERNALS, II SEMESTER, DEPARTMENT OF ENVIRONMENTAL SCIENCE,
PAPER-I, Ecology-Theory and Practice
28-06-2024.

Time: 1 1hour **Max. Marks: 20**

I. Answer any **Four** of the following 1x4=4

1) The tissue level of organization comes_____
   a) After cells b) After organs c) After cells before organs d) After populations

2) How much energy is consumed from one trophic level to another trophic level?
   a) 5% b) 80% c) 90% d) 10%

3) The process of formation of bare area in Ecological succession called --------
   a) Nudation b) Ecesis c) Reaction d) climax

4) The Role and position of organisms in its habitat called --------
   a) Ecotypes b) Ecophene c) Ecological Niches d) Ecotones

5) Each step of food chain is called
   a) Trophic structure b) trophic level c) trophic function d) food chain

6) The physical shape, size and form of the plant in a community called
   a) Dominance b) Abundance c) Growth form d) Dispersion

II. Answer any **Two** of the following 3x2=6

1. Define food chain. Write its types with example for each.
2. What is primary and Secondary Ecological Succession?
3. Write a brief note on characteristic population.

III. Answer any **Two** of the following 5x2=10

1) Write a short note on the followings
   a) Structure of an ecosystem
   b) Energy flow in the ecosystem

2) Write a short on the following;
   a) Ecological Indicators.
   b) Climax vegetation and their theories.

3) Briefly explain factors affecting population dispersion

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SAHYADRI SCIENCE COLLEGE

I INTERNALS, IV SEMESTER, DEPARTMENT OF ENVIRONMENTAL SCIENCE,

PAPER-IV, Biodiversity, Wildlife and Conservation

28-06-2024.

Time: 1 1hour **Max. Marks: 20**

I. Answer any **Four** of the following 1x4=4

1. Loss of habitat in instalments leading to small scattered patches is known as____
   a. Habitat formation b. Habitat fragmentation
   c. Habitat reclamation d. Habitat restoration
2. Which of the following is not the common character of invasive species?
   a. Rapid growth and reproduction b. Don't cause ecological damage
   c. High dispersal ability d. High adoptable capacity to wide range of -environmental conditions
3. The crop damage and wild life diseases to man comes under the ----------values of wild life
   a. Positive values b. Negative values c. monetary value d. existence value
4. Non native species are also called as--------
   a) Endemic species b) Keystone species c) Invasive species d) Umbrella species
5. Purification of water and carbon sequestration are ---------- Services
   a. Cultural services b. supporting services c. provisioning services d. regulating services
6. Examples for cultural service of Biodiversity
   a. Food b. pest control c. soil formation d.National symbols

II. Answer any **Two** of the following 3x2=6

1. Write a note on biodiversity Hot-spots of India
2. What are endemic species? Mention its characteristics.
3. Give a note on supporting services biodiversity.

III. Answer any **Two** of the following 5x2=10

1. Write a short note on the followings
   a. Values of biodiversity (any four)
   b. Bio-geographical classification of India (any four)
2. Write a short note on the followings
   a. positive values of wild life
   b. Threats to wild life
3. Give a note on provisioning services of biodiversity.

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FIRST INTERNAL TEST, JUNE, NEP – 2024

ZOOLOGY, B.Sc– IInd Semester Date:28-06-2024

Biochemistry and Physiology

I. Answer the following **1X4=4**

1. Glycolysis is also called as
   a. TCA Cycle
   b. EMP Pathway
   c. Citric acid cycle
   d. None of the above

2. When the nerve impulse is introduced into the axon, the conduction is
   a. Action Potential
   b.Resting Potential
   c. Repolarised condition
   d. Sodium Pump

3. Lecithin is an example for
   a. Glycolipids
   b. Polysaccharide
   c. Phospholipids
   d. Disaccharide

4. Functional unit of kidney is ---------
   a. Neurons
   b. Nephrons
   c. Alveoli
   d. Hepatic lobules

II. Answer any TWO of the following **2X3=06**

5. Describe L.S. of human kidney with a labelled diagram.

6. Write the Pathway of Glycogenesis.

7. Mention the three types of Synapses.

8. Differentiate between Saturated and Unsaturated Fatty Acids.

III. Answer any TWO of the following **2X5=10**

9. Explain the Glycolysis.

10. Explain Ultra filtration.

11. Describe Multipolar Neuron with a neat labelled diagram.

12. Mention the biological importance of Carbohydrates.

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FIRST INTERNAL TEST, JUNE, NEP – 2024

ZOOLOGY, B.Sc– IVth Semester **Date:28-06-2024**

Gene Technology, Immunology and Computational Biology

I. Answer the following **1X4=4**

1. What is the Mean of the following numbers 23, 45, 87, 40, 50
   a. 49 b. 34
   c. 56 d. None of the above

2. Taeniasis is caused by the parasite
   a. Round worm b. Tape Worm
   c. Schistosoma d. Liver Fluke

3. Secretory product of B-Lymphocytes_____
   a. Antibody b. Histamine
   c. Macrophages d. Interleukins

4. Molecular knife is called for
   a. Restriction enzyme b. Ligase enzyme
   c. Polymerase enzyme d. None of the above

II. Answer any TWO of the following **2X3=06**

5. Mention the role of T - Lymphocytes?

6. Write the characteristic of vector and give one suitable example.

7. Write a note on Pneumonia.

8. Marks obtained by the **20** students in Zoology internals are as follows. Prepare a grouped frequency table.
   5, 10, 20, 15, 5, 18, 20, 20, 15, 15, 15, 10, 10, 10, 20, 15, 5, 18, 18, 18

III. Answer any TWO of the following **2X5=10**

9. Population of Carp fishes in 100 ponds are as follows. Draw a Histogram for this data.

No. of Carp / Pond	0-100	100-200	200-300	300-400	400-500	500-600
No. of Ponds	12	18	27	20	17	6

10. Explain Vaccination Schedule for Children.

11. Explain the Mechanism of Humoral Immunity.

12. Explain restriction enzyme.

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SECOND INTERNAL TEST, JULY, NEP – 2024

ZOOLOGY, B.Sc–VIthSemester (Paper-7) Date:26-07-2024

Evolutionary and Developmental Biology

I. Answer the following **1X4=4**

1. The process in which three layers are formed is called_____
   a. Fertilization b.Cleavage
   c. Gastrulation d.Organogenesis

2. "Ontogeny recapitulates phylogeny" this statement is said by
   a. Haeckel b. Lamarck
   c. Darwin d. None of the above

3. Which one do not belongs to the factors affecting the Hardy- Weinberg Law
   a. Gene Flow b. Mutation
   c. Genetic Drift d. Genetic Drop

4. During placentation which foetal membrane is not involved
   a. Allantois b. Amnion
   c. Yolk sac d. Chorion

II. Answer any TWO of the following **2X3=06**

5. Describe the structure of Blastula.

6. Write a short note on ecological isolation of post zygotic isolation mechanism.

7. Write a note on convergence with an example

8. Mention the functions of placenta.

III. Answer any TWO of the following **2X5=10**

9. Explain the process of cleavage in frog.

10. Give embryological evidences in favour of organic evolution.

11. Explain modern synthetic theory of evolution.

12. Classify & explain the placenta based on the distribution of villi.

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SECOND INTERNAL TEST, JULY, NEP – 2024
ZOOLOGY, B.Sc-VIth Semester (Paper- 8) Date: 26-07-2024

Environmental Biology, Wildlife Management and Conservation

I. Answer the following **1X4=4**

1. The permanent atmospheric condition of any place is called _____
   a. Climate
   b. Weather
   c. Temperature
   d. Ozone

2. Project Elephant was launched in the year
   a. 1998
   b. 1989
   c. 1992
   d. 1996

3. The expansion of GIS is _____
   a. Geographic Information System
   b. Global Information System
   c. Geometric Information System
   d. Both a & b

4. The bioremediation process involving the usage of plants to degrade pollutants is
   a. Composting
   b. Biopile
   c. Both a & b
   d. Phytoremediation

II. Answer any TWO of the following **2X3=06**

5. Explain breeding in captivity.

6. Write a note on terrestrial environment.

7. Write the differences between Biomagnification & Bioaccumulation.

8. Mention the applications of GIS.

III. Answer any TWO of the following **2X5=10**

9. Explain adaptive features of animals to temperature.

10. Write a note on Wildlife Protection Act- 1972.

11. Expalin Green House Effect.

12. Write a note on Remote Sensing.

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