SYBSc - Zoology

251007

NS2325

[Time: 01 Hour.] Semester -III (Zoology Major) [Marks: 30]

SYBSc : Biochemistry

N.B: 1. Attempt any two questions out of four

2. Figures to the right indicate full marks.

3. Draw neat and labelled diagrams wherever necessary.

Q. 1	**Write short note on the following:**	**15**
a)	Concept of micromolecules and macromolecules.	05
b)	Biological role and clinical significance of carbohydrates.	05
c)	Properties of lipids	05
Q. 2	**Write short note on the following:**	**15**
a)	Vitamin B	05
b)	Properties of enzymes	05
c)	Explain the non-covalent bond and vander waal forces .	05
Q. 3	**Answer the following:**	**15**
a)	Structure and properties of amino acids.	08
b)	Explain factors affecting enzymes activity	07
Q. 4	**Answer the following:**	**15**
a)	Describe any two fat soluble Vitamins.	08
b)	Explain the structure of cellulose and starch.	07

SYBSc 200

251006

NS23325

[Time: 01 Hour.] Semester -III (Zoology Major) [Marks: 30]

SYBSc : Cell biology

N.B: 1. Attempt any two questions out of four

2. Figures to the right indicate full marks.

3. Draw neat and labelled diagrams wherever necessary.

Q. 1	**Write short note on the following:**	**15**
a)	Describe the prokaryotic and eukaryotic cell	05
b)	Give definition and history of cell biology.	05
c)	Functions of RER	05
Q. 2	**Write short note on the following:**	**15**
a)	Kinesin	05
b)	Leptotene	05
c)	Functions of plasma membrane .	05
Q. 3	**Answer the following:**	**15**
a)	Describe the size, shape and structure of the nucleus.	08
b)	Structure and polymorphism in lysosome	07
Q. 4	**Answer the following:**	**15**
a)	Microfilaments and motor proteins associated with microfilaments.	08
b)	Describe structure and functions of mitochondria.	07

SYBSc Zoology

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NS 2325

[Time: 01 Hour.] Semester -III (Zoology Minor) [Marks: 30]

SYBSc : Cytology

N.B: 1. Attempt any two questions out of four

2. Figures to the right indicate full marks.

3. Draw neat and labelled diagrams wherever necessary.

Q. 1	**Write short note on the following:**	**15**
a)	Functions of nucleolus	05
b)	Fluid mosaic model of plasma membrane	05
c)	Types of vacuoles	05
Q. 2	**Write short note on the following:**	**15**
a)	Intermediate filaments	05
b)	Diplotene	05
c)	Functions of membrane receptors.	05
Q. 3	**Answer the following:**	**15**
a)	Describe the structure and functions of the nucleus.	08
b)	Describe structure, mechanism , process and functions of exocytosis and endocytosis.	07
Q. 4	**Answer the following:**	**15**
a)	Describe the mitosis.	08
b)	Explain cytoskeletal structure and its functions.	07

251007

SYBSc - Botany

NS 2325

Rizvi Education Society's
RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE
SEMESTER III,(NEP2020) REGULAR/ ATKT EXAMINATION SEPTEMBER-OCTOBER, 2025-26
SUBJECT: BOTANY (THEORY)
Functional Botany I

Class: SY-BSc (Major) **Time: 1 Hr** **Marks = 30**

NB:

1. Attempt any 2 questions out of 4 questions
2. All questions carry equal marks
3. Draw neat and labelled diagrams wherever necessary.

Q. No.	Descriptor	Module	Marks
Q. 1	Answer the Following:		
A.	a) Describe the types, structure and functions of DNA and RNA in plants.	1	8
B.	Describe the mechanism of DNA replication in prokaryotes, with the role of various enzymes involved in replication.	2	7
Q. 2	Answer the Following:		
A.	Explain meiosis in plant cells with diagrams and highlight its significance.	1	8
B.	Explain transcription in eukaryotes under the headings: initiation, elongation, and termination.	2	7
Q. 3	Answer the Following:		
A.	What is plant breeding? Explain the concept and various techniques of plant breeding	1	8
B.	Write down a detailed note on RNA processing in eukaryotes. What is plant breeding? Explain the concept and various techniques of plant breeding	2	7
Q. 4	Answer the Following:		
A.	What are chromosomal aberrations? Discuss in detail deletions, duplications, inversions, and translocations and their genetic effects.	1	8
B.	What is the chi-square test? State its applications in botany. b) Calculate the standard error for the following: Standard deviation = 10 Sample size = 25	2	7

SYBSc Botany

251006

NS2325

Rizvi Education Society's

RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE

SEMESTER- III, (NEP2020),REGULAR/ ATKT EXAMINATION SEP-OCTOBER, 2025-26

SUBJECT: BOTANY(Theory)

Plant Diversity I

CLASS: S.Y.B.Sc.(Major) TIME: 1:00 Hour MARKS: 30

DATE:

NB:

1. Attempt any 2 questions out of 4 questions
2. All Questions carry equal marks.
3. Draw neat and labelled diagrams wherever necessary.

Q.No.	Descriptor	Module	Marks
Q1	Answer the following:		
A	Write interesting facts about bacteria with examples.	1	08
B	Describe the thallus structure of liverworts with one example.	2	07
Q2	Answer the following:		
A	Explain the systematic position and life cycle (excluding sex organs) of Xylaria.	1	08
B	Explain the role of bryophytes as "Amphibians of the Plant World."	2	07
Q3	Answer the following:		
A	Write a detailed note on the habitat of pteridophytes (aquatic, terrestrial, xerophytic).	2	08
B	Write interesting facts about bacteria with suitable examples.	1	07
Q4	Answer the following:		
A	Explain stelar evolution in pteridophytes with diagrams.	2	08
B	Explain the economic importance of algae in human life.	1	07

251008 SYBSc Botany NS2325

Rizvi Education Society's

RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE
SEMESTER- III, (NEP2020) REGULAR/ ATKT EXAMINATION SEP-OCTOBER, 2025

SUBJECT: BOTANY
(For Minor)

CLASS: S.Y.B.Sc. **Integrated Approaches in Plant Sciences I**
DATE: **TIME: 1:00 Hour** **MARKS: 30**

N.B:

- Attempt **any two** questions out of four questions.
- All questions carry equal marks.
- Draw **neat and labelled** diagrams wherever necessary

Q.1) Answer the following:

A. What are some ecological and economic importance of algae? **08 M**

B. Explain the ultrastructure of Golgi bodies. **07 M**

Q.2) Answer the following:

A. Write short notes on Interesting facts about Fungi. **08M**

B. Define euploidy and explain its types **07M**

Q.3) Answer the following:

A. Describe the ultrastructure of the Nucleus. **08 M**

B. Give an example of an aquatic pteridophyte and describe its habitat. **07M**

Q.4) Answer the following:

A. Describe the process of transcription in eukaryotes. **08M**

B. Give a short on life cycle of *Vaucheria*. **07M**

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S4B82 Chem

251008 **RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE** NS2325

S.Y.B.Sc. Minor (NEP 20 -)
S3MN31
SEMESTER-III
Paper I – General Principles of Chemistry I
(Time: 1 Hour)

Total Marks: 30

1.

A. Attempt any 4 objective questions out of 6 8M

Multiple Choice Question: 4M

i. A Polymer is formed when simple chemical units.
   a. Combine to for long chains
   b. Combine to form helical chains
   c. Become round

ii. Which is naturally occurring polymer
   a. Polythene
   b. Proteins
   c. PVC
   d. Polypropylene

iii. The monomer of PVC is
   a. Succinic acid
   b. Vinyl chloride
   C Vinyl acetate
   d. Glycol

State Whether True or False

(iv) Nylon is an example of synthetic polymer
(v) The strength of the polymer increase with increase in molecular weight.
(vi) A polymer is a multiple form of monomer.

B. Attempt any 1 subjective question out of 2 4M

i. Write 3 main difference between Addition polymerization and Condensation polymerization.
ii. Calculate number average molecular weight of polymer sample have molecules of molar mass 20000, 15000 and 10000 ?

Q2.

A. Attempt any 3 objective questions out of 6 7M

State whether True or False 3M

i. Gravimetric method is an example qualitative analysis.
ii. In micro analysis, the amount of sample taken is less than 10 mg.
iii. Gross sample is a mixing of increments

Multiple choice question

iv. Sample containing organic materials of flowing liquids.
(a) Reaction with air
(b) dry combustion
(c) combustion with oxygen

v. Which of the following is true about endpoint ?
(a) It always matches equivalence point
(b) It is where titration should stop
(c) It is not visible

vi. Phenolphthalein turn pink in:
(a) Acidic solution (b) Neutral solution
(c) Basic solution

B. Attempt any 1 subjective question out of 2 **4M**

i. Describe briefly gravimetric and titrimetric method
ii. Write the main difference between end point and equivalence point in titration

Q3. **8M**

A. Attempt any 4 objective questions out of 6 **4M**

State whether True or False

i. The potential energy is increases at increase in bond length of H_2.
ii. Covalent bond in H_2 molecules
iii. Borax is also known as quartz.
iv. Crystal growth is the final step for the preparation of extrapure silicon.
v. Atomic Number of Silicon is 15.
vi. Borax, chemically known as sodium hydroborate tetra acetate ($Na_2B_4O_7.10H_2O$)

B. Attempt any 1 subjective question out of 2 **4M**

i. Write the chemical reaction involved in the formation of Borax
ii. Draw the potential energy diagram of H_2 bond formation.

Q4. **7M**

A. Attempt any 3 objective questions out of 6 **3M**

State whether True or False

i. Amines are derivatives of ammonia.
ii. 'N' atom in amines can donate a pair of electron
iii. The charge on the 'N' atom in a quaternary ammonium salt is negative.
iv. Trimethyl amine is a tertiary amine.
v. Dimethyl amine is a secondary amine.
vi. Primary amine contains the $-NH_2$ group

B. Attempt any 1 subjective question out of 2 **4M**

i.
(a) How is Aminobenzene prepared from Nitrobenzene
(b) Give Any two example of Sandmeyer reaction.

ii.
A) Draw structure for the following:
(a) 1-propanamine (b) ethanamine
B) Explain the N-acylation reaction of the primary Amines

S4BSc Chem

251006

RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE

NS2325

S.Y.B.Sc. Major (NEP 2025-26)
S3MJ3
SEMESTER-III
PAPER I: PROGRESSIVE PHYSICAL AND ANALYTICAL CHEMISTRY

(Time: 1 Hour) Total Marks: 30

Q1. **15M**

A) **Attempt any 06 objective questions out of 10.** [6M]

State whether True or False

(i) The partial molal free energy is also known as chemical potential.

(ii) For strong electrolyte, degree of dissociation is nearly equal to one.

(iii) KNO_3 is better electrolyte than NH_4OH.

(iv) A homogenous mixture consists of two or more phases.

(v) Raoult's Law is applicable only for ideal solutions

Match the following

Column A		Column B
vi.	$P_i = x_i . p_i^o$	A. Immiscible liquid pair
vii.	For spontaneous process	B. $\Delta G = 0$
viii.	Cell constant	C. Raoult's Law
ix.	Nernst Distribution Law	D. cm^{-1}
x.	For system at equillibrium	E. $\Delta G < 0$

B) **Attempt any 3 question out of 5** [9M]

(i) Write down the significace of Gibbs Free Energy change.

(ii) What are the main factors affecting electrolyte conduction

(iii) Define *(a) Electrolyte* *(b) Strong electrolyte* *(c) Weak electrolyte*

(iv) Illustrate the transport number in electrochemistry.

(v) Calculate the free energy change for a system where entropy is $-2.602\ JK^{-1}$ and enthalpy change is -5031 J at 450 K

Q2 **15M**

A) **Attempt any 06 objective questions out of 10.** 6M

Multiple Choice questions

(i) Flame test is an example of _____.
(b) Quantitative analysis (b) Partial analysis (c) Qualitative Analysis

(ii) Difference between end point and equivalence point is called as _____.

(b) Absolute error (b) relative error (c) Titration error

(iii) Solution in the flask is called as _____.
(a) Titrant (b) Titrand (c) Base

(iv) Iodometry is one of the most important _____ titration method.
(b) Neutralization (b) Complexometry (c) Redox

State whether True or False

(v) UV-radiations are absorbed by coloured as well as colourless solutions.

(vi) Unit of molarity is equivalent per liter (*eq/L*)

(vii) NaOH is a primary standard solution.

(viii) Gravimetric method is comprises in classical methods.

(ix) Titrimetry method comes under qualitative analysis.

(x) Beer Lambert law is applied for electrical conductance of an acetic acid.

B) **Attempt any 3 question out of 5.** 9M

(i) Write and briefly explain the components of single beam spectrophotometer with block diagram.

(ii) Write down the difference between iodometry and iodimetry

(iii) Define Beer Lambert Law.

(iv) Calculate the weight of NaOH used for the preparation of 0.1 N NaOH in 100 mL. (Molecular Weight of NaOH = 40 g/mol)

(v) Write short notes on (a) Titrant (b) Titrand (c) Transmittance

SYBSc Chem

251007 NS2325

RIZVI COLLEGE OF ARTS, SCIENCE AND COMMERCE

S.Y.B. Sc. Semester III, (NEP-2020)

Paper II: Progressive Inorganic and Organic Chemistry I (S3MJ4)

Total Marks: 30
Duration: 1 Hour

Q.1 A) Objective (Any 6 out of 10, 1 mark each)

1. Ionic bond is formed due to:
a) Sharing of electrons b) Transfer of electrons c) Overlapping of orbitals d) None

2. Hybridization in CH_4 is: a) sp b) sp^2 c) sp^3 d) sp^3d

3. Radius ratio rule is used to:
a) Calculate bond order b) Predict ionic structures c) Measure electronegativity d) Explain VBT

4. Born-Haber cycle is used to calculate:
a) Lattice energy b) Ionization energy c) Electronegativity d) Atomic radius

5. Bond order of N_2 is: a) 1 b) 2 c) 3 d) 4

6. Which bond is non-directional?
a) Covalent b) Metallic c) Ionic d) Hydrogen

7. Molecule with sp^2 hybridization: a) BF_3 b) H_2O c) CH_4 d) $BeCl_2$

8. Orbital overlap forming sigma bond: a) p-p sideways b) s-s head-on c) d-d sideways d) None

9. Example of sp hybridization: a) CO_2 b) NH_3 c) CH_4 d) H_2O

10. One limitation of VBT is:
a) Cannot explain resonance b) Cannot explain ionic bonds c) Cannot explain sigma bond d) None

B) Subjective (Any 3 out of 5, 3 marks each)

1. Explain Radius Ratio Rule with example.

2. Draw and explain formation of NaCl crystal using Born-Haber cycle.

3. State and explain Valence Bond Theory (VBT).

4. Explain sp^3 hybridization with neat diagram.

5. Write the MOT diagram for O_2 molecule.

Q.2 A) Objective (Any 6 out of 10, 1 mark each)

1. IUPAC name of CH_3-CHO is: a) Acetone b) Formaldehyde c) Ethanal d) Ethanol

2. SN1 reaction is: a) Uni-molecular b) Bimolecular c) Trimolecular d) None

3. Oxidation of primary alcohol gives: a) Aldehyde b) Ketone c) Carboxylic acid d) Amine

4. Example of nucleophile: a) H_2O b) NH_3 c) BF_3 d) $AlCl_3$

5. Aldehyde + HCN forms: a) Cyanohydrin b) Alcohol c) Ketone d) Acid

6. IUPAC name of CH_3-CO-CH_3 is: a) Acetone b) Ethanal c) Propanal d) Propanol

7. Oxidation of secondary alcohol gives: a) Ketone b) Aldehyde c) Carboxylic acid d) Amine

8. Full form of PCC is:
a) Pyridinium Chlorochromate b) Potassium Chloride c) Phenyl Copper Compound d) None

9. Example of Grignard reagent: a) CH_3MgBr b) NaCl c) C_2H_5OH d) HCl

10. Reaction of aldehyde with 2,4-DNP gives: a) Orange ppt b) Green solution c) Gas d) None

B) Subjective (Any 3 out of 5, 3 marks each)

1. Explain mechanism of SN1 reaction.

2. Explain mechanism of SN2 reaction.

3. Write IUPAC rules for naming aldehydes.

4. Write reaction of aldehyde with sodium bisulfite.

5. Write reaction of acetone with Grignard reagent.

251006 SUBSc - Maths NS2325

SYBSC (NEP) SEM III (EXTERNAL) EXAMINATION OCTOBER 2025

MAJOR : Real Analysis and Linear Algebra I **Duration : 1 hr**

Marks : 30

N.B: 1) Attempt any TWO questions out of THREE.

2) Figures to the right indicate full marks.

Q.1 Attempt any **THREE** out of **FOUR**. (5 marks each) **15**

(a) Show that if the series $\sum_{n=1}^{\infty} a_n$ *converges then* $a_n \to 0$.

(b) Discuss the convergence of $\sum[\frac{1}{n^n}]$ by using Ratio Test.

(c) Find the solution set for the following system of equations. Also interpret the system and its solution geometrically.

$$x + y + 3z = 0 \ ; \ 3x - y + z = 0$$

(d) Reduce the following matrix into Row Echelon form.

$$\begin{bmatrix} 1 & -1 & 3 & 4 \\ 2 & 3 & 5 & -1 \\ 1 & 2 & -1 & 2 \\ 3 & 4 & -1 & 5 \end{bmatrix}$$

Q.2 Attempt any **THREE** out of **FOUR**. (5 marks each) **15**

(a) *Let* $f(x) = 6x - 1, I = [0,4], P = \{0,1,2,3,4\}$.

Find the value of $L(P,f)$ *and* $U(P,f)$.

(b) *Show that if* f *is integrable on* $I = [a,b]$ *and* $f(x) \geq 0$

for all $x \in I$ *then* $\int_a^b f \geq 0$

(c) Let V be a real vector space for any $x, y, z \in V$,
Prove that (a) $x + z = y + z$ then $x = y$
(b) Identity element is unique.

(d) A subset W of a real vector space V is a subspace of V iff for every $x, y \in W$ and $\alpha, \beta \in \mathbb{R}$, $\alpha x + \beta y \in W$

Q.3 Attempt any **THREE** out of **FOUR**. (5 marks each) **15**

(a) *Show that* $\beta(m,n) = 2\int_0^{\pi/2} (sin^{2m-1}\theta)(cos^{2n-1}\theta)d\theta$.

(b) Prove that $\Gamma\left(\frac{1}{2}\right) = \sqrt{\pi}$

(c) Check whether the set $S = \{(3,2,4), (-1,3,6)\}$ is linearly independent in $\mathbb{R}^3$.

(d) Solve the following equations by Gauss Elimination Method.

$$x + y + z = 1 \ ; x + 2y + 3z = 5 \ ; 2x + 3y + 4z = 6$$

S4BSc Maths

251007 NS2325

S. Y. B. Sc. SEM I (EXTERNAL) EXAMINATION OCTOBER 2025

SUBJECT: INDIAN MATHEMATICS

MARKS: 30 **DURATION:** 1 hour

N.B.: 1) ATTEMPT ANY TWO QUESTIONS OUT OF THREE

2) EACH QUESTION CARRIES 15 MARKS

3) USE OF A CALCULATOR IS ALLOWED

Q. No. 1 Attempt any **THREE** out of **FOUR** (Each question of 5 marks) 15 marks

(a) Find the square root of 55225 using *Aryabhata's* method.

(b) Solve the Kuttak $(221x+65)/195 = y$

(c) Find the lengths of the two diagonals of the cyclic quadrilateral, if the sides of a cyclic quadrilateral are 2,3,4,5.

(d) By using the formula given by Bhaskara-I, find the values of sin of the angles 40°

Q. No. 2 Attempt any **THREE** out of **FOUR** (Each question of 5 marks) 15 marks

(a) Find the cube root of 1771561 using *Aryabhata's* method.

(b) Show that $S= n/2(2a+(n-1)\ d)$ if $n=1/2\ [((\sqrt{(8ds+(2a-d)^2)}-2a)/d)+1]$

(c) Find the volume of a pyramid according to Brahmagupta if the area of the base is 25 and the height is 4.

(d) If the ellipse has a major axis of length 12 cm and a minor axis of length 10 cm, find the approximate value of the circumference by using the formula given by Mahaviracharya.

Q. No. 3 Attempt any **THREE** out of **FOUR** (Each question of 5 marks) 15 marks

(a) Find the square root of 299209 using *Aryabhata's* method.

(b) Solve the Kuttak $(100x+90)/63 = y$

(c) Find the length of $2\sqrt{2}$, in a circle whose diameter is 10 and a chord (perpendicular to the diameter) is 8.

(d) By using the formula in the Shulbasootras, find the approximate length of a square whose area would be equal to that of a circle whose radius is 6 units.

S4BSc Physics

251006

NS2325

S.Y.B.Sc. (Physics)– major
Sem-III (Set-III)
Term End Exam (NEP) (2025-2026)
Paper-I (Mathematical Methods for Physics)

Max. Marks 30 **Time: 1 Hour**

Notes:-

1. **All questions are compulsory.**
2. **Figures to the right indicate full marks.**
3. **Draw neat diagrams wherever necessary**
4. **Symbols have usual meaning unless otherwise stated.**
5. **Use of non-programmable calculator is allowed.**

Q.1 (A) Attempt any **TWO** of the followings:- 10

(i) Classify (order, degree, homogeneous or non-homogeneous, linear or nonlinear) the following differential equations:-

(a) $\left(\frac{d^3y}{dx^3}\right)^2 + x\frac{dy}{dx} + 2y = 0$

(b) $(1-y)\frac{d^2y}{dx^2} + x\frac{dy}{dx} + x = e^x$

(c) $\frac{dN}{dt} = -\lambda N$

(ii) Determine whether the following equation is exact or not and find its solution if it exact,

$$(5x^4 + 3x^2y^2 - 2xy^3)dx + (2x^3y - 3x^2y^2 - 5y^4)dy = 0$$

(iii) Write down the second order homogeneous differential equation and obtain its solution for (a) real and unequal roots
(b) real and equal roots.

(iv) Solve the following differential equation

$$\frac{dy}{dx} + y = e^{-x}$$

(B) Attempt any **ONE** of the followings:- 05

(i) A condenser of capacity C is charged through a resistance R in series. Show that the charge on the capacitor at an instant t is given by

$$q = q_0(1 - e^{-\frac{t}{RC}})$$

(ii) Solve the following differential equation subject to the indicated condition

$$\frac{dy}{dx} = e^y \sin x \; ; \quad y\left(x = \frac{\pi}{2}\right) = 0$$

Q.2 (A) Attempt any **TWO** of the followings:- 10

(i) Classify (Parabolic, Hyperbolic or Elliptical) the following partial differential equations

(a) $2\frac{\partial^2 u}{\partial x^2} + 4\frac{\partial^2 u}{\partial x \partial y} + 3\frac{\partial^2 u}{\partial y^2} = 0$

(b) $\frac{\partial^2 u}{\partial x^2} = \frac{\partial^2 u}{\partial y^2}$

(ii) Explain the following important partial differential equations

(a) Wave equation

(b) Poisson's and Laplace's equation

(c) Heat conduction equations

(iii) Obtain the solution of the wave equation of the vibrating string in one dimension by variable separation method (assuming separable constant negative).

(iv) Define Helmholtz's equation in three dimension and solve it.

(B) Attempt any **ONE** of the followings:- 05

(i) By use of separation of variable method, solve the following partial differential equation

$$\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y} \quad \text{when} \quad u(0,y) = 8e^{-3y}$$

(ii) Discuss the modeling of vibrating stretched string in one dimension wave equation.

~~~~~~ **END** ~~~~~~
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S4BSc - Phy

251007

S.Y.B.SC PHYSICS – SEM III

NS 2325

SEMESTER END EXAMINATION – NEP

PAPER -II – ELECTRODYNAMICS -1

MARKS : 30

TIME : 1 HOUR.

Notes:

1. **All questions are compulsory.**
2. **Figures to the right indicates full marks.**
3. **Draw necessary diagram wherever necessary**
4. **Use of non-programmable scientific calculator is allowed.**
5. **Symbols have there usual meanings otherwise specified.**

Q. 1 (A) Attempt any TWO of the following. **(10)**

1. Explain with geometrical interpretation what is line or path integral. Give suitable example.
2. (a) Elucidate geometrical interpretation of gradient of a scalar function. (b) State and explain Coulomb's law in electrostatics and state its limitations.
3. Obtain an expression for electric field due to continuous distribution of charge (i) along the line, (ii) along the surface and (iii) along the volume.
4. Show that $\vec{\nabla} \times \vec{E} = 0$

(B) Attempt any ONE of the following. **(05)**

1. Show that $\oint_s \vec{F} \cdot ds = 6V$, where S is the closed surface enclosing the volume $\vec{F} = x\hat{\imath} + 2y\hat{\jmath} + 3z\,\hat{k}$
2. Find the curl of V, if $V = -y\hat{\imath} + x\hat{\jmath}$

Q. 2 (A) Attempt any One of the following. **(10)**

1. Derive an expression for the magnetic field at the centre and end of solenoid which is infinitely long.
2. Solve 1-D Laplace's equation. Discuss its properties.
3. Derive an expression for $E = -\nabla V$
4. Comment on electric potential.

(B) Attempt any One of the following. **(05)**

1. If $\nabla^2 V = \frac{\rho}{\varepsilon_0}$ and V (x, y, z) = $x^2 + y^2$, find the charge density ρ (x, y , z)
2. A solenoid has 1000 turns and 0.5 m long. It carries a current of 2 A Find the magnetic field inside the solenoid.

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SYBSc - Physics

251008

S.Y.B.Sc. (Physics-Minor)
Sem-III (Set-I)
Term End Exam (NEP) (2025-2026)
Paper (Mechanics)

NS2325

Max. Marks 30 **Time: 1 Hour**

Notes:-

1. **All questions are compulsory.**
2. **Figures to the right indicate full marks.**
3. **Draw neat diagrams wherever necessary**
4. **Symbols have usual meaning unless otherwise stated.**
5. **Use of non-programmable calculator is allowed.**

Q.1 (A) Attempt any **TWO** of the followings:- 10

(i) State and prove Work Energy Theorem

(ii) Define non-conservative force. With suitable example show that work done by non-conservative force during a round trip journey or closed path is not equal to zero..

(iii) Show that for homogeneous isotropic material $\sigma=(3K-2\eta)/(6K+2\eta)$ where symbol have usual meaning

(iv) Define work done by constant force.Hence discuss the different condition when work done is positive,zero and negative

(B) Attempt any **ONE** of the followings:- 05

(i) Find the work done in moving a particle along a vector $r = (3\hat{i}-\hat{j}+6\hat{k})$ metre, if the applied force is $F = (\hat{i}+3\hat{j}+2\hat{k})$ newton.

(ii) For a steel material, Youngs modulus is 2×10^{11} N/m² and Bulk modulus is 13.3×10^{10} N/m² .Calculate the value of Poisson's ratio

Q.2 (A) Attempt any **TWO** of the followings:- 10

(i) Explain the relation between gravitational field and potential

(ii) Define coefficient of restitution(e).Mention the condition under which

a)e=0 b)e=1 c)0<e<1

(iii) Derive the expression for gravitational potential energy of two mass system

(iv) Obtain relation between torque and angular momentum of a particle

(B) Attempt any **ONE** of the followings:- 05

(i) The gravitational field due to a mass distribution is given by $E = \frac{K}{x^3}$ in X-direction. Taking the gravitational potential to be zero at infinity, find value of potential at a distance x.

(ii)Masses 2 kg, 2 kg and 4kg are located at (2,0)m,(3,0)m and (0,2)m.Find the position of the center of mass of the system

~~~~~~ **END** ~~~~~~
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251011 S4BSC - English NS2325

OE - Tales of Inspiration and Courage **Semester: III**

Time: 2 Hours **Total Marks: 60**

Q1.A Write Short Notes:- **(Any Three):-** **(15 Marks)**

1. Themes in 'The Lost Child'.
2. Gender Suppression in Justice (Nyaay) by Urmila Pawar.
3. Patriarchy in 'The Library girl' by Vishwapriya Iyengar.
4 Explore the theme of "appearance versus reality" in The Eyes Have It.

OR

Q.1 B. Answer in Detail:- **(Any One)** **(15 Marks)**

1. Explain the themes in 'The Lost Child' by Mulk Raj Anand.
2. How does *The Library Girl* portray the transformative power of books and education?

Q2.A Write Short Notes:- **(Any Three)** **(15 Marks)**

1. Self-control of the protagonist in the Chapter eight of 'The Race of My Life'
2. Early Childhood of Daya Pawar as narrated in the excerpt
3. Inspiration you received after reading 'When I failed'
4. Social Stigma faced by Transgender in the excerpt from 'Me Hijra, Me Laxmi.

OR

Q2B. Answer in Detail:- **(Any One)** **(15 Marks)**

1. Comment on Caste based discrimination and marginalisation in 'Baluta' by Daya Pawar.
2. What are the key takeaways from Dr Kalam's ' When I failed'

Q.3 A Write Short Notes **(Any Three):-** **(15 Marks)**

1. Define the character of Jimmy Valentine.
2. Poverty and hardships in 'Thankyou, ma'am' by Langston Hughes
3. Define the character of Emily in 'I Stand Here Ironing'
4. Social Stigma faced by Transgender in the excerpt from 'Me Hijra, Me Laxmi.

OR

Q3B. Answer in Detail: **(Any One)**

1. Examine how love is a transformative force in 'A Retrieved Reformation'.
2. Explore the key themes in 'To Build a Fire' by Jack London.

Q4A. Write Short Notes **(Any Three)** **(15 Marks)**

1.Importance of Teacher in Hellen Keller's 'The Story of my Life'.
2. Significance of connecting dots in 'Stay Hungry, Stay Foolish'.
3.Themes in the excerpt from 'Long Walk to Freedom'.
4.Education and resistance in 'I am Malala'.

OR

Q4.B Answer In Detail:- **(Any One)** **(15 Marks)**

1. Discuss the themes and teachings from 'I am Malala'. How is she a role model for you?
2. Explore the themes and key takeways in 'Stay Hungry, Stay foolish'

SUBA/BSc/BCom

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NA2325

द्वितीय वर्ष/सेमिस्टर - III / AEC- हिंदी भाषा व्यावहारिक प्रयोग

(Hindi Language Practical Usage)

समय : 01 घंटे **अंक : 30**

सूचना:1) निम्नलिखित तीन प्रश्नों में से कोई भी दो प्रश्नों के उत्तर लिखिए

2) दायीं ओर के अंक गुण दर्शाते हैं।

प्रश्न 1. निम्नलिखित प्रश्नों के उत्तर लिखिए **15**

अ) शब्दभेद का सामान्य परिचय देते हुए सर्वनामों प्रकाश डालिए ?

आ) मौलाना आज़ाद स्कूल में सहायक कंप्यूटर शिक्षक पद हेतु आवेदन प्रस्तुत कीजिए?

प्रश्न 2. निम्नलिखित प्रश्नों उत्तर लिखिए **15**

अ) राजभाषा हिंदी की संवैधानिक स्थिति एवं महत्व पर अपने शब्दों में प्रकाश डालिये ?

आ) कारक का अर्थ एवं प्रकार बताकर विराम चिन्हों पर प्रकाश डालिए ?

प्रश्न 3. निम्नलिखित प्रश्नों के उत्तर लिखिए **15**

अ) स्वर एवं व्यंजन को परिभाषित करते हुए हिंदी वर्णमाला लिखिए ?

आ) राजभाषा विभाग में आर टी आई (RTI) के तहत हिंदी भाषा के प्रयोग एवं स्थिति के संदर्भ में जानकारी का प्रारूप बनाइये ?

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SY SEM-III/AEC-URDU

Urdu Communication Skill- II

Timing: 01 hours **Marks: 30**

Note:- Attempt Any Two

ہدایات:

1. تین سوالات میں سے کسی دوکے جواب مطلوب ہیں۔
2. تمام سوالات کے نمبر مساوی ہوں گے۔
3. ہر جواب سے پہلے متعلقہ سوال ضرور نقل کریں۔
4. ہر جواب نئے صفحہ سے شروع کریں۔

سوال نمبر 1):-اردو گنتی بندسوں اور عبارتوں میں بیس سے اسی تک لکھیئے۔ 15

سوال نمبر 2):-اردوضرب الامثال کی وضاحت کرتےہوئےاس کی چند مثالیں پیش کیجیئے۔ 15

سوال نمبر3):-تذکیر و تانیث کے اصول بیان کرتے ہوئے اس کی کم سے کم پچیس مثالیں دیجیئے ۔ 15