42642/35642/F420

Reg. No. | | | | | | | | | |

VI Semester B.Sc.4/B.Sc.3 Degree Examination, September/October - 2022

PHYSICS (Optional)

Paper - I

(Repeater/Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : 1. Student can use calculator to solve problems.
2. Write intermediate steps.

PART - I

Answer any Ten of the following questions. **(10×2=20)**

1. a) What is meant by unit cell?

b) Write any two properties of free electrons in metal.

c) Distinguish between intrinsic and extrinsic semiconductor.

d) Mention any two uses of super conductivity.

e) Write any two properties of r - rays.

f) Mention semi - empirical mass formula.

g) What is meant by secondary energy source?

h) What is declination (f)?

i) Write the truth table of NAND gate.

j) Convert $(1010)_2$ binary to decimal.

k) Calculate the interplanar spacing for (3,2,2) plane in a simple cubic lattice, where lattice constant is 4×10^{-10}m.

l) If the solar attitude angle at a place is $45^{o}20'$ calculate the value of zenith angle.

PART - II

Answer any Four of the following questions. **(4×5=20)**

2. Explain x-ray diffraction by powder crystal method.

[P.T.O.

3. What is the transition temperature? Mention any three applications of super conductivity.
4. Explain nucler fission on the basis of liquid drop model.
5. Describe Angstrom pyrheliometer.
6. Prove the Boolean expression.

   $(\bar{A}+B+C).(A+B)=A+B$.

7. Protons are accelerated in cyclotron with dees of radius 0.4 m and frequecny of the alternating potential is 10 Mega cycle per second at 10,000 volts. Calculate the

   a) Speed of proton and

   b) Kinetic energy of proton (Given - applied field B = 0.66 weber/metre^2).

PART - III

Answer any Four of the following questions. **(4×10=40)**

8. Give Debye's theory of specific heat - capacity of a solid.
9. What is Hall effect? Derive an expression for Hall coefficient. Mention any two applications of Hall effect.
10. Describe the construction and working of a linear accelerator. Derive the expression for the length of n^{th} tube.
11. Explain tidal energy. Mention advantages and disadvantages of tidal energy.
12. Construct the basic gates using NAND gate and write the truth tables.

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42643/35643/F430

Reg. No. | | | | | | | | |

VI Semester B.Sc. Degree Examination, September/October - 2022

PHYSICS (OPTIONAL)

Paper - II

(Repeater/Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *1) USe calculators for calculations.*
2) Write intermediate steps.

PART - I

Answer any Ten questions. **(10×2=20)**

1. a) Define Fourier transform.

b) Find the Laplace transform of e^{at}.

c) What is PIN - diode?

d) Mention the applications of optical fibre.

e) What is modulation?

f) What are key words in C-language.

g) What is D-layer.

h) Draw the neat symbol of Op-amp.

i) Mention applications of IC-555 timer.

j) Write a C - program to print "Good morning".

k) An optical fibre has following R1.
$n_1 = 1.5$ and $n_2 = 1.45$ calculate critical angle.

l) Calculate the modulation factor for AM wave if $V_{max} = 4V$ and $V_{min} = 2V$.

[P.T.O.

PART - II

Answer any Four of the following. **(4×5=20)**

2. Find the Laplace transform of $f(t) = t^2$ using transform derivative.
3. Distinguish between step index and graded index optical fibre.
4. Explain space wave propagation.
5. Explain the function of various pins of IC-7400 NAND - gate.
6. Write a C- program to convert Fahrenheit to centigrade using the relation $C = (F - 32)/1.8$.
7. An audio signal of 5KHz is used to amplitude modulate of 600 KHz. Find.
   a) Side band frequency.
   b) Band width.

PART - III

Answer any Four of the following. **(4×10=40)**

8. State and explain basic properties of Laplace transform.
9. Classify optical fibre based on refractive index profile. Hence describe them with typical core and cladding diameter, refractive index profile and mode propagation sketches.
10. a) Explain basic data types used in C-language.
    b) Write a C - program to find largest of three numbers.
11. What is amplitude modulation? Derive expression for amplitude modulation.
12. a) What is an Op-amplifier? Whta are ideal properties of an Op-amplifier?
    b) Explain the working of summing amplifier using Op-amp.

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VI Semester B.Sc.3./B.Sc.4. Degree Examination, September/October - 2022

MATHEMATICS (OPTIONAL)

Differential Equations

Paper - I

(Repeater/Regulars)

(w.e.f. 2016-17)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *Answer all parts.*

PART - A

Answer any **Ten** of the following. **(10×2=20)**

1. a. Solve for y, $\frac{dx}{dt}+wy=0;\frac{dy}{dt}-wx=0$.

b. Solve $\frac{dx}{1+y}=\frac{dy}{1+x}=\frac{dz}{z}$.

c. Solve $dx+dy+(x+y+z+1)dz=0$.

d. Define singular and irregular singular point at $x=x_0$ for the equation $y''+P(x)y'+Q(x)y=0$.

e. Show that x = 0 is an regular singular point of $x^2y''+xy'+\frac{(x^2-1)}{4}y=0$.

f. With usual notation prove that $P_3(x)=\frac{1}{2}(5x^3-3x)$.

g. Prove that $\sum P_n(x)=\frac{1}{\sqrt{2-2x}}$.

h. Form the partial differential equation by eliminating arbitrary constants a and b from $az+b=a^2x+y$.

i. Find the complete integral of $p(q-\cot y)=\tan x$.

j. Solve $q\left(p^2z+q^2\right)=4$.

k. Solve $\left(D^3-3D^2D'+3DD'^2-D'^3\right)z=0$.

l. Find the particular integral of $\left(4D^2-4DD'+D'^2\right)z=e^{x+y}$.

P.T.O.

PART - B

Answer any **Four** of the following. **(4×5=20)**

2. Solve for x, $\frac{dx}{dt}+\frac{dy}{dt}-2y=2\cos t-7\sin t$; $\frac{dx}{dt}-\frac{dy}{dt}+2x=4\cos t-3\sin t$.

3. Solve $\frac{dx}{x^2}=\frac{dy}{y^2}=\frac{dz}{nxy}$.

4. Find the power series solution at x = 0 for $(1-x^2)y''+2xy'-y=0$.

5. Prove that $(1-2xz+z^2)^{-\frac{1}{2}}=\sum z^n P_n(x)$.

6. Find the singular integral of $z=px+qy+c\sqrt{1+p^2+q^2}$.

7. Solve $\frac{\partial^2 z}{\partial x^2}+\frac{\partial^2 z}{\partial x\partial y}-2\frac{\partial^2 z}{\partial y^2}=\cos(2x+y)$..

PART - C

Answer any **Four** of the following. **(4×10=40)**

8. a. Derive the condition for integrability of the equation $Pdx+Qdy+Rdz=0$, where P, Q and R are functions of x,y,z.

   b. Solve $(e^x y+e^z)dx+(e^y z+e^x)dy+(e^y-e^x y-e^y z)dz=0$.

9. a. Find the power series solution at x = 0 for $(1-x^2)y''+2y=0$.

   b. Solve on series for $4xy''+2(1-x)y'-y=0$ by Frobenius method at x = 0.

10. a. Prove that $nP_n=(2n-1)xP_{n-1}-(n-1)P_{n-2}, \forall n\geq 2$.

    b. Prove that $\int_{-1}^{1}[P_n(x)]^2\,dx=\frac{2}{2n+1}$, when m = n.

11. a. Explain the method of solving for linear partial differential equation of first order of the form $Pp+Qq=R$, where P, Q and R are the functions of x,y,z.

    b. Solve $(y+z)p+(z+x)q=x+y$.

12. a. Explain charpit's method for solving the partial differential equation $F(x,y,z,p,q)=0$.

    b. Solve $p=(qy+z)^2$ by charpit's method.

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VI Semester B.Sc.3./B.Sc.4. Degree Examination, September/October - 2022

MATHEMATICS (OPTIONAL)

Complex Analysis and Ring Theory

Paper - II

(Regular & Repeater w.e.f. 2016-17)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *Answer all parts.*

PART - A

Answer any **Ten** of the following. **(10×2=20)**

1. a. Show that $f(z)=\bar{z}$ is continuous but not analytic at z =0.
   b. Prove that an analytic function with constant real part is constant.
   c. Define harmonic function and show that x^2-y^2 is harmonic.
   d. Evaluate $\int_C \frac{1}{z-z_0}dz$, where $c:|z-z_0|=r$.
   e. State Morera's theorem.
   f. Expand $f(z)=e^z$ in the form of Taylor's series about z = 0.
   g. Find the residue of $f(z)=\frac{z^2}{z^2+a^2}$ at the pole $z=ai$.
   h. State Cauchy's inequality.
   i. Define :
      i. Zero's.
      ii. Singular point of an analytic function.
   j. State Jordan's lemma.
   k. Define
      i. Principle ideal and
      ii. Maximal ideal.
   l. In a ring $(R,+,\bullet)$ prove that $a(-b)=(-a)b\ \forall a,b\in R$.

PART - B

Answer any **Four** of the following. **(4×5=20)**

2. State and prove necessary condition for f(z) to be analytic.

P.T.O.

3. If f(z) is analytic, then prove that $\left[\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial y^2}\right]|f(z)|^2 = 4|f'(z)|^2$.

4. Show that $u(x,y) = e^x(x\cos y - y\sin y)$ is harmonic and find f(z) by Milne - Thomson method.

5. State and prove Liouvilles theorem.

6. Prove that $\int_0^{2\pi} \frac{1}{3+2\cos\theta}d\theta = \frac{2\pi}{\sqrt{5}}$ by using contour integration.

7. Show that the set of all matrices of the form $M = \left\{\begin{bmatrix} a & b \\ 0 & 0 \end{bmatrix} \forall a,b \in R\right\}$ is non commutative ring wihtout unity w.r.t addition and multiplication of matrices.

PART - C

Answer any **Four** of the following. **(4×10=40)**

8. a. State and prove cauchy's theorem for simply connected regions.

   b. Show that $f(z) = \frac{x^3(1+i)-y^3(1-i)}{x^2+y^2}, z \neq 0$ and f(0) = 0 satisfy C-R equations at z = 0 but f(z) is not analytic at z = 0.

9. a. State and prove cauchy's integral formula.

   b. Evaluate $\int_C \frac{z-\cos z}{\left(z-\frac{\pi}{2}\right)^3}dz$, where 'C' is a simple closed curve containing $z = \frac{\pi}{2}$.

10. a. State and prove Taylor's theorem.

    b. Expand $f(z) = \frac{1}{z(z-1)(z-2)}$ in the form of series valid for the regions

       i. $|z| < 1$ ii. $1 < |z| < 2$.

11. a. State and prove cauchy's residue theorem.

    b. Evaluate $\int_0^\infty \frac{1}{(x^2+1)(x^2+4)}dx$, by using contour integration.

12. a. Define Kernel of homomorphism. If $f : R \to R'$ be a homomorphism of R to R' with kernel K, then prove that
       i. K is subring of R.
       ii. K is an ideal of R.

    b. Find the principle ideal of ring R if $R = \{0,1,2,3,4,5\}$ with respect to addition modulo 6.

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VI Semester B.Sc.3./B.Sc.4. Degree Examination, September/October - 2022

MATHEMATICS (OPTIONAL)

Topology and Laplace Transforms

Paper - III

(Regular and Repeaters w.e.f. 2016-17)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *Answer ALL parts.*

PART - A

1. Answer any **Ten** of the following. **(10×2=20)**

a. Write the discrete and indiscrete topology an a set X = {a,b,c}.

b. Let X = {1,2,3} and $T = \{X, \phi, \{1\}, \{2\}, \{1,2\}, \{2,3\}\}$ be a topology on X. If A = {1,3} find $\overline{A}$.

c. Show that (R,U) is a T_2 - space.

d. Define interior and exterior point of A in (X,T).

e. Define base and sub base of topology.

f. Find $L(\cos^2 3t)$.

g. Find $L\left(\frac{\sin t}{t}\right)$.

h. Evaluate $L^{-1}\left[\frac{(1+2s)^2}{s^4}\right]$.

i. Evaluate $L^{-1}\left[\frac{S+1}{(S+2)^5}\right]$.

j. Show that $L[f'(t)] = SF(S) - f(0)$ where f(t) is continuous function.

k. Solve $y''+16y=0$ given $y(0)=0$, $y'(0)=2$.

l. Define Heaviside function $H(t-a)$ and find its Laplace transform.

[P.T.O.

PART - B

Answer any **Four** of the following. **(4×5=20)**

2. In a topological space (X,T) if $A, B \subset X$ then prove that

   i. If $A \subset B$ then $\overline{A} \subset \overline{B}$.

   ii. $\overline{A \cup B} = \overline{A} \cup \overline{B}$.

3. Prove that a non - empty subset A of X is open if and only if its neighbourhood of each of its points.

4. Find Laplace transform of the function $f(t) = \begin{cases} 2 & for\ 0 < t < 3 \\ t & for\ t > 3 \end{cases}$.

5. If f(t) is periodic function of period T>0 then prove that $L\{f(t)\} = \frac{1}{1-e^{-sT}} \int_0^T e^{-st} . f(t) dt$.

6. Find $L\{f(t)\}$ where $f(t) = e^{2t} . \cos^2 t + t . \cos 2t$.

7. Solve $\frac{d^2y}{dt^2} + 9y = 25e^{4t}$ given y(0) =3, $y'(0) = 7$ by using Laplace transform.

PART - C

Answer any **Four** of the following. **(4×10=40)**

8. a. Let A be a subset of a topological space (X,T). Then prove that $\overline{A} = A \cup d(A)$.

   b. In a topological space (X,T) of A and B are subsets of X then prove that

   i. $A \subset B \Rightarrow A^o \subset B^o$.

   ii. $(A \cap B)^o \Rightarrow A^o \cap B^o$.

9. a. Prove that every T_2 space is T_1 space but the converse is not true.

   b. If X = {a,b,c} and $T = \{X, \phi, \{a\}, \{a,c\}\{c\}, \{a,b\}\}$ is topology on X then prove that the set $B = \{\phi, \{a\}, \{c\}, \{a,b\}\}$ is base for T.

10. a. State and prove second shifting property.

b. Find

i. $L(sin5t.\cos 3t)$.

ii. $L(t.\cosh at)$.

11. a. If $L(f(t)) = F(S)$ then prove that $L\left[t^n.f(t)\right] = (-1)^n.\frac{d^n}{ds^n}[F(s)]$.

b. Find $L\left[\frac{e^{-at} - e^{-bt}}{t}\right]$.

12. a. State and prove convolution theorem.

b. Using convolution theorem find $L^{-1}\left[\frac{1}{(S+2)(S+4)}\right]$.

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VI Semester B.Sc.3./B.Sc. 4 Degree Examination, September/October - 2022

CHEMISTRY (OPTIONAL)

Paper - I

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

1. *All questions are compulsory.*
2. *Answer all question in the same answer book.*
3. *Draw neat diagram and give equations wherever necessary.*

SECTION - A

Answer **any Ten** of the following. **(10×2=20)**

1. a) Calculate the stability constant (K^1) of the complex ion $[Ag(NH_3)_2]^+$ whose dissociation constant is 6×10^{-8}.

b) What are chelates? Give an example.

c) Mention the factors affecting 10 Dq.

d) Give the structure of Ferrocene.

e) What is mutarotation?

f) Give the structure of fructosazone.

g) What do you mean by electrophoresis.

h) Write the importance of vitamin -A, B_{12} and E.

i) Give Einstein photo electric equation and explain the terms in it.

j) Define de-Broglie hypothesis.

k) State Frank condon principle.

l) Write the selection rule for electronic spectrum.

SECTION - B

Answer **any Four** of the following. **(4×5=20)**

2. Write a note on structure and bonding in zeise's salt.

3. Calculate crystal field stabilization energy (CFSE) for high spin and low spin d^5 octahedral complex. Mention which of the above complex shows Jahn - Teller distortion.

4. Explain Bergmann synthesis of a Dipeptide.

[P.T.O.

5. Give the constitution of citral.
6. Deduce Einstein photo electric equation.
7. How do you determine molar mass of macromolecules by viscometry method.

SECTION - C

Answer **any Four** of the following. **(4×10=40)**

8. a) Discuss 18 - electron rule with respect to $[Fe(CO)_5]$ and $[Ni(CO)_5]$.
   b) Describe the calculation of magnetic moment using Gouy's method.
9. a) Give the synthesis of α - terpineol.
   b) Using zwitter ionic structure of glycine, explain acid - base properties of amino acids.
10. a) Explain the concept of potential energy curve for bonding and anti bonding molecular orbitals.
    b) Describe the classification of polymers. Based on source, structure and formation.
11. a) Discuss the primary and secondary structure of proteins.
    b) What is dipole moment? Explain the measurement of dipole moment by temperature variation method.
12. a) How will you account for the purple colour of $[Ti(H_2O)_6]^{+3}$?
    b) Explain the synthesis of Vitamin - A by Vandrop etal method.

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VI Semester B.Sc.3./B.Sc.4. Degree Examination, September/October - 2022

CHEMISTRY (OPTIONAL)

Paper - II

(Repeater/Regulars)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

1. *All questions are compulsory.*
2. *Answer all question in the same answer book.*
3. *Draw neat diagram and give equation wherever necessary.*

SECTION - A

Answer any Ten of the following. **(10×2=20)**

1. a) Write any two factors affecting the R_f value.
   b) Mention the principle of electrogravimetry analysis.
   c) Name the micro and macro nutrients present in the soil.
   d) State selection rule for d-d transitions.
   e) What are antihistamine drugs? give an example.
   f) What are Anionic detergents? Give an example.
   g) What happens ketoximes treated with an acid? Give an example.
   h) Mention one advantage and structure of TMS.
   i) State Grothus - Draper Law.
   j) What is reversible and irreversible cell?
   k) Construct the cell for the reaction $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$. And indicate which one is anode and cathode.
   l) Write the conditions of standard cell.

SECTION - B

Answer any Four of the following. **(4×5=20)**

2. Give brief account of paper chromatography.
3. Explain the electronic spectrum of $[Ti(H_2O)_6]^{3+}$ complexion.
4. Write the synthesis and use of Novocaine.
5. Write the mechanism of Benzillic acid rearrangement reaction.

[P.T.O.

6. Write the construction of hydrogen electrode.

7. Explain with a suitable example.

   a) Photo chemical inhibition.

   b) Photosensitization.

SECTION - C

Answer any Four of the following. **(4×10=40)**

8. a) Explain principle and working of flame - photometry. Write two limitations of flame photometry.

   b) Explain the determination of Nitrogen present in the soil by alkaline permanganate method.

9. a) Explain the manufacture of soaps by hydrolyser process.

   b) Explain the following :

      i) Nuclear shielding and deshielding.

      ii) Spin - Spin - coupling.

10. a) Write electrolytic concentration cell without transfer with salt Bridge.

    b) Define quantum efficiency. Mention any two reasons for high and low quantum efficiency with an example.

11. a) Explain the estimation of copper present in the given solution by electrogravimetric method.

    b) Give the synthesis and use of chloroquine.

12. a) Calculate the e.m.f. of the following cell at 25°C

$Zn(s) / Zn^{2+}(0.1m) // Cu^{2+}(1.75M) / Cu(s)$.

Given :

$E^{\circ} Zn^{2+} / Zn = -0.76V$.

$E^{\circ} Cu^{2+} / Cu = +0.34V$.

   b) i) Write the Ideal characteristics of drugs.

      ii) Write Types of electrodes.

44304/F0240

Reg. No.

VI Semester B.Sc. (CBCS) Degree Examination, October - 2023

BOTANY

Analytical Methods in Plants

(Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

Draw a neat labelled diagram wherever necessary.

1. Answer any **Ten** of the following. **(10×2=20)**

1. Electrophorosis
2. Mean deviation
3. Fluorochromes
4. Freeze fracture
5. Cryofixation
6. Marker enzyme
7. Autoradiography
8. HPLC
9. SDS-PAGE
10. X-ray diffraction
11. Median
12. Standard deviation.

2. a) What are the principles of microscopy. **(5)**

b) Explain principles and applications of flow cytometry. **(10)**

(OR)

3. a) Explain the principles of TEM. **(5)**

b) Explain principles and applications of confocal microscopy. **(10)**

P.T.O.

4.	a)	Give an account of differential centrifugation techniques.	(5)
	b)	Write a note on ultracentrifugation.	(10)
		(OR)	
5.	a)	Explain pulse chase experiment.	(5)
	b)	Explain density gradient centrifugation.	(10)
6.	a)	What is autoradiography? Mention its uses.	(5)
	b)	Explain the principles and application of spectrophotometry.	(10)
		(OR)	
7.	a)	Describe the process of characterisation of proteins.	(5)
	b)	Explain AGE(Agarose Gel Electrophorosis).	(10)
8.	a)	Explain the methods of representation of data.	(5)
	b)	Explain Arithmetic mean, mode and median.	(10)
		(OR)	
9.	a)	Describe measures of dispersion.	(5)
	b)	Explain the measures of central tendency.	(10)

44306/F0260

Reg. No. | | | | | | | | | |

VI Semester B.Sc. (CBCS) Degree Examination, October - 2023

BOTANY

Biotertilizers and Organic Farming

Paper - II

(Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

Draw a neat labelled diagram wherever necessary.

1. Answer any **ten** of the following. **(10×2=20)**

1. Manures
2. Vermicomposting
3. Panchakavya
4. Azotobacter
5. Rhizobium
6. Symbiosis
7. Azospirillum
8. Nitrogen fixation
9. Isolation
10. Mycorrhiza
11. VAM
12. Ectomycorrhiza

2. a) Explain composition of Manure **(5)**

b) Explain types of Biocompost making **(10)**

(OR)

3. a) Explain Biological pest control **(5)**

b) Describe method of vermicomposting. **(10)**

P.T.O.

4. a) Write a note on the microbes used as biotertilizers. (5)

   b) Describe classification, characteristics of azotobacter and mass multiplication. (10)

(OR)

5. a) Write a note on actionrrhizal symbiosis. (5)

   b) Explain isolation and mass multiplication of Rhizobium (10)

6. a) Explain internal structure of azolla. (5)

   b) Describe cultivation of azolla in Rice field. (10)

(OR)

7. a) Explain isolation of azospirillum. (5)

   b) Explain significance of azolla in agriculture. (10)

8. a) General characters of Mycorrhiza. (5)

   b) Explain classification, distribution of VAM and its influence on growth of crop plants. (10)

(OR)

9. a) Explain types of Fungal biotertilizers. (5)

   b) Write a note arbuscular mycorrhizal fungi(VAM) as biotertilizers current trends & challenges. (10)

25624/35624/42624/F240

Reg. No. | | | | | | | | | |

VI Semester B.Sc. Degree Examination, September/October - 2023

BOTANY

Molecular Biology, Biotechnology and Immunology

Paper - II

(Repeater)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *Draw a neat labelled diagram wherever necessary.*

I. Answer any **Ten** of the following in 2-3 sentences. **(10×2=20)**

1. Vector.
2. C-DNA.
3. Ti - Plasmids.
4. Recombinant.
5. Blotting.
6. NBTB.
7. Knock out gene.
8. Fermenters.
9. REN.
10. MABS.
11. Proteomics.
12. Bt. tomato.

II. Answer any **six** of the following. **(6×5=30)**

13. Describe the Lac - operon concept.
14. Give an account of genomics concept.
15. Explain significance of Biotechnology.
16. Explain the selection methods of transformants.
17. Explain ecologica risks of transgenic plants.
18. Write a note on chemical composition of RNA.
19. What is genetic code? Explain features of genetic code.
20. Explain the plant disease, detected by ELISA method.

P.T.O.

III. Answer the following.

21. a. What are the types of RNA? Explain the structure and functions of tRNA. (1×10=10)

OR

b. Explain semi conservative method f Replication.

22. a. What is PCR? Explain the technique and its applications. (1×10=10)

OR

b. Describe the structure and applications of PBR322 plasmid.

23. a. Describe the role of Agrobacterium in genetic engineering. (1×10=10)

OR

b. Describe southern blotting technique.

44307/F0270

Reg. No. | | | | | | | | |

VI Semester B.Sc. 5 (CBCS) Degree Examination, September/October - 2023

CHEMISTRY - I (Optional)

Paper : I

(Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

1) All questions are compulsory.
2) Answer all questions in the same answer book.
3) Draw neat diagrams and give equations wherever necessary.

I. Answer any **Ten** Questions. **(10×2=20)**

1. Mention any two limitations of crystal field theory.
2. What are trace elements? Give two examples.
3. Mention any two biological role of sodium.
4. Write the D and L conformers of Alanine.
5. Define mutarotation.
6. What are epimers and epimerisation?
7. What is induced dipole moment?
8. What do you mean by symmetry forbidden transition?
9. Define de-Broglie hypothesis.
10. What are terpenes? Give two examples.
11. Write the structural formula of ferrocene.
12. Give the synthesis of barbituric acid.

II. Answer any **Three** Questions. **(3×5=15)**

1. Account for the crystal field splitting of d-orbitals in tetrahedral complexes.
2. Discuss the consequences of crystal field splitting on ionic radii of M^{+2} ions.
3. Write a note on colour and magnetic properties of co-ordinate complexes.
4. Discuss the structure and function of hemoglobin.

[P.T.O.

III. Answer any **Three** questions. **(3×5=15)**

1. Give Killiani's - Fischer synthesis.
2. Explain Bergmann synthesis of a dipeptide.
3. Give the synthesis of Vitamin - C from D(+) glucose.
4. Write a note on structure of proteins.

IV. Answer any **Three** questions. **(3×5=15)**

1. Explain respective electronic transitions.
2. Explain experimental verification of Davisson-Germen.
3. Discuss Franck-condon principle for electron transitions of diatomic molecule.
4. Describe the methods of determination of dipole moment by temperature variation method.

V. Answer any **Three** questions. **(3×5=15)**

1. Give the synthesis of citral.
2. Discuss 18-electron rule with respect to ferrocene and $[Mn(Co)_5]^+$.
3. How do you synthesize following from Diethylmalonate?
   i) Ketones
   ii) Dicarboxylic acids.
4. Discuss the advantages of organic reagents over inorganic reagents.

42626/F260

Reg. No. | | | | | | | | |

VI Semester B.Sc. Degree Examination, September/October - 2023

CHEMISTRY

Paper - II

(Repaters) (Non - CBCS)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :
1. *All questions are compulsory.*
2. *Draw neat diagrams and give questions whenever necessary.*

SECTION - A

1. Answer any **Ten** questions. **(10×2=20)**

a. What is R_f value? Mention two factors affecting it.

b. What are micro nutrients? Name micro nutrients of soil

c. What is thermogravimetry?

d. Mention the types of electronic transitions.

e. What is Barfoed reagent? Write its use.

f. Write two differences between soaps and detergent.

g. What is favorskii rearrangement? Give equation.

h. Write the standard reference of NMR spectra and why it is choosen as standard reference.

i. What is reversible cell? Give an example.

j. What is liquid junction potential?

k. State einstein's law of photochemical equivalence.

l. Define quantum efficiency.

SECTION - B

Answer any **Four** of the following questions. **(4×5=20)**

2. Give a brief account of column chromatography.

3. Explain the flame photometric determination of sodium.

[P.T.O.

4. What are drugs? Write about following with example
   i. Antipyretics.
   ii. Antibiotics.
5. Describe the manufacture of soap by modern process.
6. Derive an expression for EMF of concentration cell without transference.
7. Explain :
   i. Photosensitization.
   ii. Chemiluminescence.

SECTION - C

Answer any **Four** of the following questions. **(4×10=40)**

8. a. How Nitrogen present in soil is determined by alkaline permanganate method.
   b. Explain the electronic spectra of $[Ti(H_2O)_6]^{3+}$ complex ion.
9. a. Explain the mechanism of Benzidine rearrangement.
   b. Explain the nuclear shielding and deshielding with example.
10. a. Explain the determination of pH of solution using quinhydrone electrode.
    b. State Beer - Lambert's law and derive its mathematical expression.
11. a. Explain the electrogravimetric determination of copper.
    b. Interpret the PMR spectra of following
       i. Ethanol.
       ii. Acetaldehyde.
12. a. Give the synthesis and use of Novocaine.
    b. Write a note on Potentiometric redox titrations.

42625/F250

Reg. No. | | | | | | | | | |

VI Semester B.Sc. Degree Examination, September/October - 2023

CHEMISTRY - I

Paper : I (Optional)

(Non - CBCS Repeaters)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

1. *All sections are compulsory.*
2. *Answer all questions in the same answer book.*
3. *Draw neat diagrams and give questions whenever necessary.*

SECTION - A

Answer any **Ten** of the following. **(10×2=20)**

1. a) Mention the factors that affect 10 Dq.

b) Write any two characteristics of chelates.

c) What are strong field and weak field ligands?

d) Write the structural formula of zeise's salt.

e) Write the conformational formula of $\alpha - D(t)$ Glucose.

f) Write the configurational formula of L-alanine.

g) What are terpenes? Give examples.

h) What are epimers and epimerisation.

i) Write any two importance of vitamin B6.

j) What is thermoplastic polymer? Give an example.

k) What is meant by photoelectric effect?

l) Give Einstein photoelectric equation and explain the terms in it.

SECTION - B

Answer any **Four** of the following questions. **(4×5=20)**

2. Account for the crystal field splitting of d - orbitals in tetrahedral complexes.

3. Discuss 18-electron rule with respect to ferrocene and $[Mn(CO)_5]^+$.

4. Give the conversion of glucose into fructose.

P.T.O.

5. Explain the synthesis of vitamin - A by Van-dropetal method.
6. Give the classification of polymers.
7. Explain the measurement of dipole moment by temperature variation method.

SECTION - C

Answer any **Four** of the following questions. (4×10=40)

8. a) Explain the crystal field splitting of d-orbitals in square planar complexes according to crystal field theory.
   b) What are chelates? Explain the factors affecting chelate stability.

9. a) Write a note on color and magnetic properties of co-ordination complexes.
   b) Give the synthesis of citral.

10. a) Explain Bergmann synthesis of dipeptide.
    b) Give Kiliani - Fischer synthesis.

11. a) How do you determine the molar mass of macromolecules by Donnan - Membrane method?
    b) Explain with a suitable potential energy curve the Franck - Condon principle.

12. a) Deduce Einstein's photoelectric equation.
    b) Explain how the dipole moment helps in predicting shapes of molecules.

246105

47802/47152/48402

Reg. No. | | | | | | | | |

IV Semester B.Sc. Degree Examination, September/October - 2023

GENERIC ENGLISH

(Regular)

Time : 2 Hours **Maximum Marks : 60**

Text Book: Carvalho

I. Answer any FIVE of the following in one or two sentences. **(5×2=10)**

1) Who asked to get some honey from moodigeri?

2) Who were in the Beekeepers co-operative society when narrator visited there?

3) Who is pyara?

4) How much money did the narrator give for a tin of honey?

5) Who is the snake catcher?

6) Who is an expert tree climber?

II. Answer any TWO of the following: **(2×5=10)**

1) Sketch the character of Mandanna.

2) Bee - keeping

3) Narway Ramaih

III. 1) Describe Carvalho in an eco-logical novel. **(1×10=10)**

(OR)

2) Sketch the character of carvalho.

IV. Answer any TWO of the following selecting one from poetry and one from Ted Talk. **(2×5=10)**

1) Explain strength and tenacity expressed in the poem invictus'.

2) How does shashi Tharoes present his ideas in the Ted Talk 'A well educated Mind'?

3) Describe India's environmental Crisis.

[P.T.O.

V. a) How does Pecha kucha presentation sharpen public speaking? (1×5=5)

(OR)

b) What are the skills required for an interview.

VI. a) Write a brief note on your travel experience. (1×5=5)

(OR)

b) Write an article on one of the experiments you carried out in your college lab.

VII. a) Write an email to your office requesting two days leave citing reasons for leave. (1×5=5)

(OR)

b) Write an email of congratulations focussing on the achievements of your colleague in the office.

VIII. a) What is bloy and explain its importance. (1×5=5)

(OR)

b) What is podcast and how do you make a podcast?

44342

Reg. No. | | | | | | | | |

VI Semester B.Sc.Degree Examination, September/October - 2023

ETHNOBOTANY

Skill Enhancement Botany

Time : 2 Hours **Maximum Marks : 40**

Instructions to Candidates :

1) Question no. I compulsory
2) Student has to answer 2 or 3 or 4 or 5 questions.

I. Answer any FIVE of the following. **(5×2=10)**

1) Ancient literature
2) Ethnobotany
3) Biopiracy
4) Resins
5) Endangered taxa
6) Field work

II. a) Write significance of traditional knowledge. **(5)**

b) Describe ethnobotany as interdisciplinary science. **(10)**

(OR)

III. a) Ethnic or tribals of India. **(5)**

b) Write a note on plants used by tribals as food plants. **(10)**

IV. a) Describe Herbarium techniques. **(5)**

b) Describe significance of Ocimum sanctum in ethnobotanical practices. **(10)**

(OR)

V. a) Describe importance of temples and sacred places in Ethnobotany. **(5)**

b) Write a note on forest management. **(10)**

44324/F0440

Reg. No. | | | | | | | | | |

VI Semester B.Sc. 5 Degree Examination, October - 2023

MATHEMATICS(Optional)

Topology and Laplace Transforms

Paper : II B

(Fresh New Syllabus w.e.f. 2022-23)

(Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

Answer all parts.

PART - A

1. Answer any ten of the followings(2 marks each) **(10×2=20)**

a) Write the discrete and indiscrete topology on a set $X=\{1,2,3\}$

b) If $X=\{a,b\}$ *and* $T=\{x,\phi,\{a\}\{b\}\}$ find all neighborhoods of 'a'.

c) Let (X,T) be a topological space and $A\subseteq X$, then prove that A is always a subset of $\overline{A}$

d) Define base and sub-base for a topology.

e) Let $X=\{a,b,c\}$ and $T=\{X,\phi,\{a\}\{b\}\{a\,b\}\}$. Then show that (X,T) is not a T_1-space.

f) If $L[f(t)]=F(s)$ then $L(e^{at})=F(s-a)$.

g) Find $L(\sin 2t.\cos 3t)$

h) Find $L[\sinh at]$ using definition.

i) Prove that $L[f'(t)]=SF(s)-f(0)$. When f(t) is Continuous function

j) Evaluate $L^{-1}\left(\frac{1}{(s+4)^3}\right)$.

k) Define " Dirac-delta" function and find $L\{\delta(t-a)\}$.

l) Solve $y'+y=0$ given $y(0)=1$.

[P.T.O.

PART - B

Answer any FOUR of the following(5 marks each) **(4×5=20)**

2. In a topological space (X,J), If A,B,C then prove that

   i) If $A \subset B$ then $\overline{A} \subset \overline{B}$.

   ii) $\overline{A \cup B} = \overline{A} \cup \overline{B}$.

3. Prove that every subspace of T_1-space is also T_1-space.

4. Find the Laplace transform of the function $f(t) = \begin{cases} e^t & for \quad 0 < t < 5 \\ 3 & for \quad t > 5 \end{cases}$

5. If $L[f(t)] = F(s)$ then prove that $L(t^n f(t)) = (-1)^n \cdot \frac{d^n}{ds^n}[F(s)]$ and evaluate $L[te^t]$.

6. Prove that $\int_0^b te^{-2t} \cos t dt = \frac{3}{25}$

7. Solve by using Laplace transforms $\frac{d^2y}{dt^2} - 3\frac{dy}{dt} + 2y = e^{3t}$ given $y(0) = 0$ and $y'(0) = 0$. when t = 0

PART - C

Answer any FOUR of the following(each 10 marks) **(4×10=40)**

8. a) In a topological space (X,T) If $A, B \subset X$, then prove that

   i) $A \subset B \Rightarrow A^o \subset B^o$

   ii) $(A \cap B)^o = A^o \cap B^o$.

   b) Let $X = \{1,2,3,4\}$ and $T = \{X, \phi, \{2\}\{1,2\}\{1,2,3\}\{2,4\}\{1,2,4\}\}$ be a topology on X.

   Let $A = \{1,3,4\}$ then find

   i) A ii) $d(A)$ iii) A^o

9. a) Prove that $T_Y = \{Y \cap G : G \in T\}$ a topology on y in a topological space (X,T) where $Y \subset X$.

   b) Let $X = \{a,b,c,d\}$ and $T = \{X, \phi, \{a,b\}, \{c\}, \{a,b,c\}, \{c,d\}\}$. Then prove that $\beta = \{\phi, \{a,b\}, \{c\}, \{c,d\}\}$ is a base for T, and find its sub-base.

10. a) If $L[F(t)] = F(s)$ then prove that $L\left[\frac{F(t)}{t}\right] = \int_s^0 F(s)ds$. If $\lim_{t\to\infty}\left(\frac{1}{t}f(t)\right)$ exists.

b) Find

i) $L\left[(t^2+1)^2\right]$

ii) $L^{-1}\left(\frac{s+2}{s^2+4s-2}\right)$.

11. a) Derive the expression for Laplace Transform of a periodic function of period $T > 0$.

b) Find $L\left[\frac{\cos at - \cos bt}{t}\right]$

12. a) State and prove convolution theorem.

b) Verify convolution theorem for functions $f(t) = \sin t, g(t) = e^{-t}$.

42639/F390

Reg. No. | | | | | | | | |

VI Semester B.Sc.4. Degree Examination, October - 2023

MATHEMATICS (OPTIONAL)

Topology and Laplace Transforms

Paper - III

(Repeaters)

(w.e.f. 2016-2017 and 2019-20)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *Answer All parts.*

PART - A

1. Answer any Ten of the following. **(10×2=20)**

a. Define discrete and indiscrete topology on a set X.

b. Let $X=\{1,2,3\}$ and $T=\{X,\phi,\{1\},\{2\},\{1,2\}\}$ and let $A=\{1,3\}$ then find neighbourhood points of A.

c. Prove that $\overline{A\cap B}\subset\overline{A}\cap\overline{B}$.

d. Define T_1 and T_2 - spaee.

e. Prove that subspace of indiscrete space is indiscrete.

f. Define Laplace transformation and find $L(e^{at})$.

g. Find $L(Sin^2 4t)$.

h. State and prove first shifting property of laplace transformation.

i. Find $L^{-1}\left[\frac{1}{S^2-2S+5^-}\right]$.

j. Show that $L[f'(t)]=SF(s)-f(o)$ where f(t) is continuous function.

k. Define Heaviside function H(t-a) and find its Laplace transform.

l. Solve $y''+9y=0$ given $y(0)=0,\ y'(0)=2$.

PART - B

Answer any Four of the following. **(4×5=20)**

2. If (X,T) is a topological space and A, B are subsets of X, then prove that

i. $A\subset B\Rightarrow d(A)\subset d(B)$.

ii. $d(A\cup B)=d(A)\cup d(B)$

3. Prove that every T_2 - space in T_1 - space but the converse is not true.

P.T.O.

4. Find Laplace transform of the function $f(t)=\begin{cases} e^t \text{ for } 0<t<5 \\ 3 \text{ for } t>5 \end{cases}$.

5. Find the Laplace transform of
   i. $Sin5t.Cos3t$.
   ii. $e^{4t}(t^2-7t+3)$.

6. If L{f(t)}=F(S), then prove that $L\{t^n.f(t)\}=(-1)^n\frac{d^n}{ds^n}[F(S)]$.

7. Solve the equation using Laplace transformation $y''-2y'-3y=\sin t$, given y(0) = 0 and $y'(0)=0$.

PART - C

Answer any Four of the following. **(4×10=40)**

8. a. If (X,T) is a topological space, prove that
      i. Every intersection of closed set is a closed set.
      ii. Every finite union of closed set is a closed set.
   b. If X = {a,b,c,d,e} $T=\{X,\phi,\{a\},\{c,d\},\{a,c,d\},\{b,c,d,e\}\}$ is topology on X. A = {a,b,e} find derived set of A.

9. a. Prove that every subspace of T_2 - space is T_2 - space.
   b. If X = {a,b,c,d}, $T=\{X,\phi,\{a\},\{a,b\},\{a,b,c\}\}$ then find closure of the set {b,c}.

10. a. State and prove second shifting property.
    b. Find $L^{-1}\left[\frac{1}{(S+2)(S+4)}\right]$.

11. a. If f(t) is periodic function with period T>0, then prove that
    $$L\{f(t)\}=\frac{1}{1-e^{-ST}}\int_0^T e^{-st}f(t).dt$$
    b. Find $L\left[\frac{\cos at-\cos bt}{t}\right]$.

12. a. State and prove convolution theorem.
    b. Verify convolution theorem for f(t) = t and g(t) = cost.

44322/F0420

Reg. No. | | | | | | | | |

VI Semester B.Sc. 5 Degree Examination, October - 2023

MATHEMATICS

Complex Analysis And Ring Theory

Paper : I

(w.e.f. 2022-23)

(Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

1) Question paper has 3 parts. Namely A,B and C.
2) Answer **all** parts.

PART - A

Answer any TEN of the followings. **(10×2=20)**

1. a) Prove that an analytic function with constant imaginary part is constant.

b) Show that $f(z) = z(\operatorname{Im} z)$ is not analytic

c) Define 'Harmonic Conjugate'.

d) Evaluate $\int_C \frac{dz}{z-1}$ around the circle $|z-1| = 3$.

e) State 'Laurent's theorem'.

f) Prove that the poles of an analytic function are isolated.

g) Find the residue of $f(z) = \frac{e^z}{z(z-1)^2}$ at z=0.

h) Define :

i) Simple pole

ii) Removable singularity

i) State 'Jorden's lemma'.

j) State 'Cauchy's inequality'.

k) Define a Sub ring and give an example.

l) In a ring $(R, +, \bullet)$ prove that $a.0 = 0 \forall a \in R$ and 0 is the identity element w.r.t +.

P.T.O.

PART - B

Answer any FOUR of the followings. **(4×5=20)**

2. State and prove necessary condition for a function $f(z)$ to be analytic.

3. Prove that $3x^2y+2x^2-y^3-2y^2$ is harmonic.Find the harmonic conjugate.

4. State and prove Cauchy's integral formula.

5. If $z=a$ is a pole of order m of $f(z)$ then prove that

$$\text{Res}\{f(z):a\}=\lim_{z\to a}\left\{\frac{1}{(m-1)!}\frac{d^{m-1}}{dz^{m-1}}\left[(z-a)^m f(z)\right]\right\}$$

6. Using contour integration , prove that $\int_0^{2\pi}\frac{d\theta}{s+3\cos\theta}=\frac{\pi}{2}$

7. Show that the set $z(\sqrt{2})=\{a+b\sqrt{2}:a,b\in z\}$ is a ring w.r.t usual addition and multiplication.

PART - C

Answer any FOUR of the followings. **(4×10=40)**

8. a) If $f(z)=u+iv$ is an analytic function of $z=x+iy$ and ψ is any function of z with derivatives of first and second order exists, then prove that

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

b) If $f(z)=u+iv$ is analytic and $u-v=(x-y)(x^2+4xy+y^2)$ find $f(z)$ in terms of z.

9. a) State and prove 'Liouville's theorem'.

b) Let $f(z)$ be analytic in a region between two closed contours C_1 and C_2, then prove that $\oint_{C_1} f(z)\,dz=\oint_{C_2} f(z)dz$

10. a) State and Prove 'Taylor's theorem'.

b) Expand $f(z)=\frac{4z+3}{(z+2)(z+3)}$ by Laurent's series for

i) $2<|z|<3$

ii) $|z|>3$

11. a) State and Prove 'Cauchy's residue theorem'.

b) Prove by Contour integration that $\int_0^{\infty} \frac{dx}{(x^2+1)^3} = \frac{3\pi}{16}$

12. a) Define homomorphism of two rings. If $f : R \to R'$ is a homomorphism from the ring R into R', then prove that

i) $f(0) = 0'$ where 0 and $0'$ are the zeros of R and R'

ii) $f(-a) = -f(a)\ \forall\ a \in R$.

b) If $G = \{0,1,2,3,4\}$ then prove that G is an integral domain w.r.t addition and multiplication modulo S.

42637/F370

Reg. No. | | | | | | | | |

VI Semester B.Sc. 3 B.Sc.4. Degree Examination, October - 2023

MATHEMATICS

Differential Equations

Paper - I (Optional)

(Repeaters) (w.e.f. 2019-20)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *Answer all parts.*

Part - A

1. Answer any **ten** of the following. **(10×2=20)**

a. Solve for 'y', $\frac{dx}{dt}+ky=0$; $\frac{dy}{dt}-kx=0$.

b. Solve $\frac{dx}{1}=\frac{dy}{3}=\frac{dz}{5z+\tan(y-3x)}$.

c. Test the condition for integrability of $dx+dy+(x+y+z+1)dz=0$.

d. Define

i. Ordinary point.

ii. Singular point at $x=x_0$ for the equation $y''+P(x)y'+Q(x)y=0$.

e. Show that $x=0$ is a regular singular point of the equation $4xy''-2y'-y=0$.

f. Prove that $P_n(-1)=(-1)^n$.

g. Show that $\int_{-1}^{1} P_n(1)\,dx = 0$, if $n\neq 0$

h. Form the partial differential equation by eliminating arbitrary constants a and b from $z=(x+a)(y+b)$.

i. Solve $pq=k$.

j. Find the complete solution of $p^3+q^3=27z$.

k. Solve $\left(D^2-5DD'+6D'^2\right)z=0$.

l. Find the particular integral of $\frac{\partial^2 z}{\partial x^2}+4\frac{\partial^2 z}{\partial x\partial y}+4\frac{\partial^2 z}{\partial y^2}=e^{x+y}$.

P.T.O.

Part - B

Answer any **four** of the following. **(4×5=20)**

2. Solve $\frac{dx}{dt}-7x+y=0$; $\frac{dy}{dt}-2x+5y=0$.

3. Solve $\frac{dx}{x^2-y^2-z^2}=\frac{dy}{2xy}=\frac{dz}{2xz}$.

4. Find the power series solution of $y''+xy=0$ abut $x=0$.

5. Prove that $\left(1-2xh+h^2\right)^{-1/2}=\sum_{n=0}^{\infty}h^n P_n(x)$.

6. Find the complete solution of $p^2-q^2=x-y$.

7. Solve $\frac{\partial^2 z}{\partial x^2}-5\frac{\partial^2 z}{\partial x\partial y}+4\frac{\partial^2 z}{\partial y^2}=\cos(4x-y)$.

Part - C

Answer any **four** of the following. **(4×10=40)**

8. a. Obtain the condition of integrability of the equation $Pdx+Qdy+Rdz=0$, where P,Q,R are functions of x,y,z.

   b. Solve $3x^2dx+3y^2dy-(x^3+y^3+e^{2z})dz=0$.

9. a. Solve by power series solution of $y'+y=0$ about $x=0$.

   b. Solve $4xy''+2(1-x)y'-y=0$ by Frobenius method at $x=0$.

10. a. State and prove Rodrigue's formula.

    b. Show that $\int_{-1}^{1}\left[P_n(x)\right]^2dx=\frac{2}{2n+1}$ and also prove that $\int_{-1}^{1}\left[P_2(x)\right]^2dx=\frac{2}{5}$.

11. a. Explain the method of solving the partial differential equation $P_p+Q_q=R$, where P,Q,R are functions of x,y,z.

    b. Find the complete and singular solution of $z=px+qy-2\sqrt{pq}$.

12. a. Explain the charpit's method of solving the partial differential equation $F(x,y,z,p,q)=0$.

    b. Solve by charpit's method $pxy+pq+qy=yz$.

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VI Semester B.A. (CBCS) Degree Examination, October - 2023

OPTIONAL ENGLISH (DSEENG111)

English Language and Phonetics

Paper : I

(Regular)

Time : 3 Hours **Maximum Marks : 80**

I. Answer the following questions in a word, a phrase or a sentence each: **(10×1=10)**

1. Which family of languages English language belongs to?
2. What caused the word order to become less free during the Middle English Period?
3. Which are the three main periods of the history of the English language?
4. Who gave the phrase "blood bolstered" in his play 'Macbeth'?
5. During which period the English word order was relatively free?
6. Which language gave the words circus, album and ultimatum to the English language?
7. Which language enriched English vocabulary with the words: Irony, alphabet, drama and elegy?
8. Which language gave the legal terms plaintiff and defendant
9. Who gave the phrase "tender hearted"?
10. Which phrase Milton used for the 'gold'?

II. a) What are the qualities and characteristics inherent in the English language? **(1×10=10)**

(OR)

b) Analyze the changes taken place in the English language during the different periods of it history.

III. a) Which language elements in the English language are acquired from the Greek language? **(1×10=10)**

(OR)

b) 'French is one of the great fundamental formative influences on the English vocabulary'-Elaborate.

IV. a) Enumerate the words and phrases given by the Bible translators to the English language. **(1×10=10)**

(OR)

b) "Milton was a great moulder and exemplar of English language"-Substantiate.

[P.T.O.

V. a) What are the landmarks in the development of the English lexicography? **(1×10=10)**

(OR)

b) Write an essay on 'English as a global language'.

VI. Attempt any **two** of the following phonetic aspects/components: **(2×5=10)**

1. The back vowels positions in the cardinal vowel diagram and their three label description.
2. Plosives
3. The three label description of any five of the speech sounds:/b/m/h/t/d/f/k/p/
4. Dipthongs.

VII. Transcribe any **ten** of the following words: **(10×1=10)**

Progress, say, police, optional, landed, helped, dollar, cry, cycle, boys, application, ability, question, qualification, rabbit.

VIII. Mark the stressed syllable in the following words:(any **ten**): **(10×1=10)**

Apology, activity, attend, honesty, indication, matches, originality, present (N), essential, fundamental, calculate, below, danger, appointment, population.

39623/F230

Reg. No. | | | | | | | | | |

VI Semester B.A. Degree Examination, October - 2023

OPTIONAL ENGLISH

Paper : I

(Repeaters)

Time : 3 Hours **Maximum Marks : 80**

Text : English Language, Phonetics and ELT

I. Answer the following in a word, a phrase or a sentence each. **(10×1=10)**

1. Who were the forefathers of English race?
2. Who coined the term 'auspicious'?
3. Expand LSRW.
4. State any two general characteristics of English.
5. When was the authorized version of the Bible published?
6. Who translated 'The New Testament'?
7. Which period is called as the period of lost inflexions?
8. When was English 'pure' and "Unmixed"?
9. The pronous such as 'they', 'them' and 'their' borrowed from ___ language.
10. What was the standard dialect of old English?

II. A) Bring out the general characteristics of English language. **(1×10=10)**

(OR)

B) Explain the development of English during old Engilsh period.

III. A) Write in brief the development of Dictionaries in English. **(1×10=10)**

(OR)

B) Comment on modern approaches to ELT.

IV. A) Trace in the french influence on English. **(1×10=10)**

(OR)

B) Write a note on the importance of LSRW in English language learning.

[P.T.O.

V. A) Bring out the contribution of Bible translators on English language. (1×10=10)

(OR)

B) Write a note on Shakespeare's contribution to Englih vocabulary.

VI. Write short notes on any **two** of the following. (2×5=10)

1. The Plosives.
2. The Back Vowels.
3. The Pure Vowel.
4. The Vocal cords.

VII. Transcribe any **Ten** of the following : (10×1=10)

Play, English, Department, sweet, duty, try, school, think, text, journey, student.

VIII. Mark the stress on any **Ten** of the following. (10×1=10)

Advance, remark, postman, apple, conduct (N), Honesty, Absent (V), Combination, Futility, select, biological.

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VI Semester B.Sc. Degree Examination, September - 2023

PHYSICS (Skill Enhancement Course)

Electrical Circuits and Network Skills

PHYDECT - 6.3

(Regular)

Time : 2 Hours **Maximum Marks : 40**

Instructions to Candidates :

1) Use of calculaters for calculations.
2) Shows intermidate steps.
3) Give Physical Meaning for Symbols and Notations.

PART - A

I. Answer any **Five** Sub Questions. (5×2=10)

1. a) Define

i) Voltage

ii) Resistance

b) What is ohm's law?

c) What is direct current (DC)?

d) Draw the electrical symbol for

i) Light -emitting diode (LED)

ii) AND Gate

e) What is the principle of electric generator?

f) What is an electrical insulator?

g) What is an electric fuse?

h) What is soldering?

PART - B

II. Answer question no. 2 or question no. 3

2. a) Explain different types of DC power sources. (5)

b) What is transformer and its function? Explain it's types. (10)

(OR)

[P.T.O.

3. a) Discuss the ways to save electrical energy. (5)

b) Give the principle, construction and working of DC generator. (10)

PART - C

III. Answer question no 4 or question no 5.

4. a) Write a note on 'Instruments to measure current and voltage in AC and DC circuits. (5)

b) Explain in brief

i) Electric fuses

ii) Grounding and isolation. (10)

(OR)

5. a) Differentiate between star and Delta connection. (5)

b) Write a note on , any two of the following.

i) Properties and types of good conductor

ii) Electrical insulation

iii) Voltage drop and losses across cables and conductors. (10)

iv) Circuit breakers.

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VI Semester B.Sc. (CBCS) Degree Examination, September/October - 2023

PHYSICS

Paper : I

(Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

1) Calculators can be used to calculate problems.
2) Write intermediate steps
3) Give the physical meaning of symbols used.

I. Answer any **Ten** of the following. **(10×2=20)**

a) What are singular and ordinary points of second order differential equation?

b) What is generating function?

c) Write conditions for orthogonality of thermite function.

d) What is meant by spatial quantization?

e) State Panli's exclusion principle.

f) What is Paschen Back effect?

g) What is Rayleigh Scattering?

h) What is Tyndal effect?

i) What is coherence of laser light?

j) What is relative and absolute humidity?

k) What is greenhouse effect?

l) What are trade winds?

II. Answer 'a' and 'b' or 'c' and 'd' of the following

a) Explain frobeniuns method of solving differential equation. **(10)**

b) Find singular point of $(1-x^2)y''-5xy'-3y=0$. **(5)**

(OR)

c) Derive Rodrigues formula for legendre polynomials. **(10)**

d) State and prove condition for orthogonality of Bessel's functions. **(5)**

P.T.O.

III. Answer 'a' and 'b' or 'c' and 'd' of the following.

a) Obtain an expression for dipole moment for an electron and hence define bohr magneton. (10)

b) What are the selection rules for electron transition. (5)

(OR)

c) What is the Anomalous Zeeman effect? Give the quantum theory of normal zeeman effect. (10)

d) Derive an expression for the number of electrons in an orbit. (5)

IV. Answer 'a' and 'b' or 'c' and 'd' of the following.

a) Describe an experimental setup to study Raman effect. mention the applications of Raman effect. (10)

b) Calculate the value of rotational constant of HF molecule. Give that
Moment of Inertia = 1.38×10^{-47} Kg m^2.
h = 6.625×10^{-34} Js, c=3×10^{8} m/s^2 (5)

(OR)

c) Describe the construction and working of He-Ne laser, Draw the energy level diagram. (10)

d) Explain the terms
i) Absorption
ii) Spontaneous emission
iii) Stimulated emission. (5)

V. Answer 'a' and 'b' or 'c' and 'd' of the following.

a) Explain the temperature structure of the atmosphere. (10)

b) Derive an expression for Beer's law. (5)

(OR)

c) Derive an expression for Coriolis force and mention its applications. (10)

d) Derive an expression for centripetal force. (5)

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VI Semester B.Sc. Degree Examination, October - 2023

PHYSICS

Solid State Physics, Nuclear Physics. Energy Society Electronics and Special Materials

Paper - I

(Repeaters)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates : *1. Calculators are allowed to solve the problems.*
2. Write necessary intermediate steps.

PART - I

Answer any **TEN** of the following questions. **(10×2=20)**

1. a) What is lattice?

b) What is primitive cell?

c) Define energy gap.

d) What is Meissner effect.

e) What are magic numbers.

f) Mention Geiger - Nuttal law.

g) What is Zenith angle.

h) Write the truth table of NOR gate.

i) Mention any two applications of conducting polymers.

j) Find the lattice constant of NaCl when incident X-ray beam has wavelength of 1.15AV and glancing angle of 11.8° in the first order spectrum.

k) If the solar altitude angle at a place is 45°20' calculate the value of zenith angle.

l) Convert binary $(1101)_2$ to decimal.

PART - II

Answer any **FOUR** of the following questions. **(4×5=20)**

2. Describe Nacl crystal structure.

3. Write a short note on super - conductivity.

[P.T.O.

4. Mention the advantages of renewable energy sources.

5. A cyclotron with magnetic field B = 1.5 weber/meter ^{2} is used to accelerate proton. Calculate the frequency of the oscillator connected across the dees.

6. The electrical and thermal conductivity of silver at 303 K are 6.2×10^7 SI units and 425 SI units respectively. Calculate Lorentz number.

7. Prove the Boolean expression

$(A+B+C)(A+B) = A+B$.

PART - III

Answer any **FOUR** of the following questions. **(4×10=40)**

8. Give the Einstein's theory of specific heat of solids and mention its limitations.

9. Derive an expression for electrical and thermal conductivity on the basis of free electron theory.

10. Describe construction and working of a G.M. counter.

11. Describe the construction and working of a Angstrom's pyrheliometer.

12. State and prove Demorgan's first and second laws with circuit and truth tables.

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VI Semester B.Sc. Degree Examination, October - 2023

PHYSICS

Paper - II

(Repeaters 2019-20)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

i. Use calculators for calculations.
ii. Write intermediate steps.
iii. Give physical meaning for symbol and notations.

Part - I

Answer any **ten** questions. **(10×2=20)**

1. a. Define fourier transform.
   b. State parseval's identity of fourier transform.
   c. What is photo diode? Draw its circuit symbol.
   d. Mention applications of optical fibre.
   e. What is Modulation?
   f. What are key - words in C-language.
   g. What is flow chart?
   h. What is break statement? Where it is used?
   i. What is differential amplifier?
   j. Find the Lapalce - transform of e^{at}.
   k. In an optical fiber, refractive index of cladding is 1.4355 and retractive index of core is 1.4500.1. the numerical aperture.
   l. Calculate the modulation factor for AM wave if $V_{max} = 4V$ and $V_{min} = 2V$.

Part - II

Answer any **four** of the following. **(4×5=20)**

2. Distinguish between step index and grated index fit.
3. Find the lapalce transform of $F(t) = t^2$ using transform derivative.

P.T.O.

4. Explain the space wave propagation.
5. With neat circuit diagram, explain the working IC-555 as rectangular wave generator.
6. Write a C-program to find the sum of 'n' na numbers.
7. An audio signal of 5KHz is used to amplitude modulated of 600 KHz find.
   a. Side band frequence.
   b. Band width.

Part - III

Answer any **four** of the following. **(4×10=40)**

8. State and explain basic properties of Laplace transform.
9. Define acceptance angle and numerical aperture, obtain an expression for numerical aperture of optical fiber.
10. What is frequence modulation? Derive an expression for frequence modulation.
11. a. Explain basic data types used in C-language.
    b. Write a C - program to find largest of three numbers.
12. What is multivibrators? Mention any two uses of multivibrators. Explain the working monostable multivibrator with neat diagram.

44352/F5120

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VI Semester B.Sc. Degree (CBCS) Examination, September/October - 2023

ZOOLOGY

Sericulture

Paper - ZOO.SEC-6.3

(Regular)

Time : 2 Hours **Maximum Marks : 40**

Instructions to Candidates:

1. Answer all the questions.
   ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.
2. Draw diagrams wherever necessary.
   ಅವಶ್ಯವಿದ್ದಲ್ಲಿ ಚಿತ್ರ ಬಿಡಿಸಿರಿ.

I. Answer any Five of the following questions. (5×2=10)

ಯಾವುದಾದರೂ 5 ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

1. Define Sericulture.
   ರೇಷ್ಮೆ ಕೃಷಿ ಎಂದರೇನು ?
2. Name different types of Silkworms.
   ರೇಷ್ಮೆಹುಳುಗಳ ವಿವಿಧ ಬಗೆಗಳನ್ನು ಹೆಸರಿಸಿ.
3. Mention varieties of Mulberry.
   ಹಿಪ್ಪುನೇರಳೆಯ ವಿಧಗಳನ್ನು ತಿಳಿಸಿ.
4. What is Brushing?
   ಬ್ರಶಿಂಗ ಎಂದರೆನು ?
5. Name Pests of Silkworm.
   ರೇಷ್ಮೆಹುಳುಗಳನ್ನು ಬಾಧಿಸುವ ಕೀಟಗಳನ್ನು ಹೆಸರಿಸಿ.
6. Mention highest silk producing state in India.
   ಭಾರತದಲ್ಲಿ ಅತಿ ಹೆಚ್ಚು ರೇಷ್ಮೆ ಉತ್ಪಾದಿಸುವ ರಾಜ್ಯ ತಿಳಿಸಿ.

II. Answer the following questions. (3×5=15)

ಕೆಳಗಿನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

7. Describe Life-cycle of silkworm B. Mori.
   ರೇಷ್ಮೆಹುಳು (ಬಿ.ಮೋರಿ) ಜೀವನ ಚಕ್ರ ವಿವರಿಸಿ.

[P.T.O.

8. Explain Silk-gland structure.
ರೇಷ್ಮೆ ಗ್ರಂಥಿಯ ರಚನೆ ವಿವರಿಸಿ.

9. Explain the methods of Mulberry cultivation.
ಹಿಪ್ಪುನೇರಳೆ ಬೇಸಾಯದ ವಿಧಗಳನ್ನು ವಿವರಿಸಿ.

(OR/ಅಥವಾ)

10. Briefly explain Rearing appliances.
ರೇಷ್ಮೆ ಪಾಲನೆಯ ಸಲಕರಣೆಗಳನ್ನು ಸಂಕ್ಷಿಪ್ತವಾಗಿ ವಿವರಿಸಿ.

III. Answer the following questions. **(3×5=15)**
ಕೆಳಗಿನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

11. Explain Rearing of early age silkworms.
ಆರಂಭಿಕ ಹಂತದ ರೇಷ್ಮೆಹುಳುಗಳ ಪಾಲನೆ ವಿವರಿಸಿ.

12. Briefly explain silk reeling techniques.
ರೇಷ್ಮೆನೂಲು ತೆಗೆಯುವಿಕೆಯ ತಂತ್ರಗಳನ್ನು ಸಂಕ್ಷಿಪ್ತವಾಗಿ ವಿವರಿಸಿ.

13. Write a note on Protozoan and Fungal diseases of silk worms.
ರೇಷ್ಮೆ ಹುಳುವಿನ ಆದಿಜೀವಿ ಮತ್ತು ಶಿಲೀಂಧ್ರ ರೋಗಗಳ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

(OR/ಅಥವಾ)

14. Write a note on Stifling methods of silkworm cocoons.
ರೇಷ್ಮೆಗೂಡುಗಳ ಉಸಿರುಗಟ್ಟಿಸುವಿಕೆಯ ಕ್ರಮಗಳ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

44334/F0540

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VI Semester B.Sc. Degree (CBCS) Examination, October - 2023

ZOOLOGY

Reproductive Biology

Paper - I

(Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates:

1. Answer all questions.
   ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ.
2. Draw diagram wherever necessary.
   ಅವಶ್ಯಕತೆವಿದ್ದಲ್ಲಿ ಅಂದವಾದ ಚಿತ್ರಗಳನ್ನು ಬಿಡಿಸಿರಿ.

I. Answer any Ten of the following. **(10×2=20)**

1. What is Steroidogenesis?
   ಸ್ಟಿರಿಯಾಡುಜೆನಿಸಿಸ್ ಎಂದರೇನು ?
2. What is Implantation?
   ಅಳವಡಿಕೆ ಎಂದರೇನು ?
3. Name the Glycoprotein Hormones.
   ಗ್ಲೈಕೊಪ್ರೋಟಿನ್ ಹೆಸರಿಸಿ.
4. Expand IVF & GIFT.
   ಐ.ವ್ಹಿ.ಎಫ್. ಮತ್ತು ಗೀಫ್ಟ್ ವಿಸ್ತರಿಸಿ.
5. What are Prostaglandins?
   ಪ್ರೋಸ್ಟಗ್ಲಾಂಡಿನ್ ಎಂದರೇನು ?
6. What is bulbourethral glands? What is its function?
   ಬಲ್ಬಾರೆಥ್ರೆಲ್ ಗ್ರಂಥಿ ಎಂದರೇನು ? ಅದರ ಕಾರ್ಯವನ್ನು ತಿಳಿಸಿ.
7. What is demography?
   ಜನಸಂಖ್ಯಾಶಾಸ್ತ್ರ ಎಂದರೇನು ?
8. Define Ovulation. Name the hormone helps in ovulation.
   ಅಂಡೋತ್ಪತ್ತಿ ಎಂದರೇನು ? ಯಾವ ಹಾರ್ಮೋನಿಂದ ಅಂಡೋತ್ಪತ್ತಿಯಾಗುತ್ತದೆ.

[P.T.O.

9. What is Gestation?
ಗರ್ಭಾವಸ್ಥೆ ಎಂದರೇನು ?
10. What is Corpus Luteum? What is its function?
ಕಾರ್ಪಸ್ ಲೋಟಿಯಮ್ ಎಂದರೇನು ? ಅದರ ಕಾರ್ಯವನ್ನು ತಿಳಿಸಿರಿ.
11. Mention any two functions of Sertoli cells.
ಸಿರೆಟಲಿ ಸೆಲ್ಲಿನ ಎರಡು ಕಾರ್ಯಗಳನ್ನು ತಿಳಿಸಿರಿ.
12. What is invitro fertilization?
ಪ್ರನಾಳೀಯ ಫಲೀಕರಣ ಎಂದರೇನು ?

II. Answer any Three of the following. **(3×5=15)**

13. Explain Mechanism of Hormone action.
ಹಾರ್ಮೋನಿನ ಯಾಂತ್ರಿಕ ವ್ಯವಸ್ಥೆ ಬಗ್ಗೆ ಬರೆಯಿರಿ.
14. Write a note on Steroidal Hormones.
ಸ್ಟೀರಿಯಾಡಲ್ ಹಾರ್ಮೋನ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
15. Explain Hypothalmo-hypophyseal gonadal axis.
ಹೈಪೋಥಾಲೊಮ ಹೈಪೊಪಾಸಿಮಲ್ ಗೊನೆಡಲ ಎಕ್ಸಸ ಬಗ್ಗೆ ಬರೆಯಿರಿ.
16. Explain Regulation of Gonadotropins in Male.
ಗಡುವಿನ ರೆಗ್ಯೂಲೇಶನ್ ಆಫ್ ಗೋನೆಡ ಟ್ರೂಪಿನ ಬಗ್ಗೆ ಬರೆಯಿರಿ.

III. Answer any Three of the following. **(3×5=15)**

17. Explain the structure of female reproductive system of rat.
ಹೆಣ್ಣು ಇಲಿಯ ಸಂತಾನೋತ್ಪತ್ತಿ ರಚನೆ ಬಗ್ಗೆ ಬರೆಯಿರಿ.
18. List the functions of Epididymis.
ಎಪಿಡಿಡಿಮಿಸ್‌ನ ಕಾರ್ಯವನ್ನು ಬರೆಯಿರಿ.
19. Sketch & label Male reproductive system of Rat.
ಗಂಡು ಇಲಿಯ ಸಂತಾನೋತ್ಪತ್ತಿಯ ಅಂದವಾದ ಚಿತ್ರವನ್ನು ಬಿಡಿಸಿರಿ.
20. Write a note on system cell renewal.
ಸೀಸ್ಟಮ್ ಸೆಲ್‌ನ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

IV. Answer any Three of the following. **(3×5=15)**

21. Explain Estrous cycle in Rat.
ಇಲಿಯ ಇಸ್ಟರಿಸ್ ಸೈಕಲ್ ಬಗ್ಗೆ ಬರೆಯಿರಿ.

22. Describe the structure of Male reproductive system of Human.
ಪುರುಷನ ಸಂತಾನೋತ್ಪತ್ತಿ ಬಗ್ಗೆ ಬರೆಯಿರಿ.
23. Write a note on sperm transportation in female tract
ಸ್ತ್ರೀ ಪ್ರದೇಶದಲ್ಲಿ ವೀರ್ಯ ಸಾಗಣೆ ಬಗ್ಗೆ ಬರೆಯಿರಿ.
24. Write a note on Androgen synthesis.
ಅಂಡ್ರೂಜನ್ ಉತ್ಪತ್ತಿ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

V. Answer any Three of the following. **(3×5=15)**

25. Write a note on causes & diagnosis of Male infertility.
ಪುರುಷ ಬಂಜೆತನದ ಕಾರಣ ಮತ್ತು ರೋಗನಿರ್ಣಯ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
26. Explain modern contraceptive method.
ಆಧುನಿಕ ಗರ್ಭನಿರೋಧಕ ವಿಧಾನಗಳ ಬಗ್ಗೆ ಬರೆಯಿರಿ.
27. Write a note on Hormonal control of Implantation.
ಅಳವಡಿಕೆಯಲ್ಲಿ ಆಗುವ ಹಾರ್ಮೋನ ನಿಯಂತ್ರಣ ಬಗ್ಗೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
28. Explain Zygote intrafallopian transfer.
ಜೈಗೋಟ್ ಇಂಟ್ರಾಫಾಲೋಪಿಯನ್ ವರ್ಗಾವಣೆ ಬಗ್ಗೆ ಬರೆಯಿರಿ.

42646/F460

Reg. No. | | | | | | | | | |

VI Semester B.Sc. Degree Examination, October - 2023

ZOOLOGY

Applied Zoology

Sericulture, Apiculture, Insect Pest, Management Vermiculture, Aquaculture, Poultry, Animal Husbandry

Paper - I (Non-CBCS)

(Repeater)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates:

1) Answer all questions.
ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ.
2) Draw diagram wherever necessary.
ಅವಶ್ಯಕತೆವಿದ್ದಲ್ಲಿ ಅಂದವಾದ ಚಿತ್ರಗಳನ್ನು ಬಿಡಿಸಿರಿ.

SECTION - I

ವಿಭಾಗ – I

Answer any Ten of the following. **(10×2=20)**

1. What is Vermiwash?
ವರ್ಮಿವಾಶ್ ಎಂದರೇನು ?
2. What is Royal Jelly?
ರಾಯಲ್ ಜೆಲಿ ಎಂದರೇನು ?
3. Name any two indigenous buffalo breeds.
ದೇಶಿ ತಳಿ ಎಮ್ಮೆಗಳ ಎರಡು ಪ್ರಕಾರಗಳನ್ನು ಹೆಸರಿಸಿ.
4. What is Voltinism?
ವೋಲ್ಟಿನಿಸಮ್ ಎಂದರೇನು ?
5. Define Deflossing.
ಡಿಫ್ಲೊಸಿಂಗ್ ಎಂದರೇನು ?
6. Name any two Indian major carps.
ಭಾರತೀಯ ಮೇಜರ ಕಾರ್ಪ್‌ಸ್‌ನ ಎರಡು ಮೀನುಗಳನ್ನು ಹೆಸರಿಸಿ.
7. What is Chawki rearing?
ಚಾಕಿ ಪಾಲನೆ ಎಂದರೇನು ?

[P.T.O.

8. Name any two by products of milk.
ಹಾಲಿನ ಎರಡು ಉಪ ಉತ್ಪನ್ನಗಳನ್ನು ಹೆಸರಿಸಿ.

9. Name any two species of Marine Prawns.
ಎರಡು ವಿಧದ ಸಾಗರ ಸೀಗಡಿ ಮೀನುಗಳನ್ನು ಹೆಸರಿಸಿ.

10. Define Broilers and Layers.
ಮಾಂಸದ ಕೋಳಿಗಳು ಮತ್ತು ಪದರ ಕೋಳಿ ಎಂದರೇನು ?

11. Give any two examples of Mediterranean breeds used in Poultry.
ಕೋಳಿ ಸಾಕಾಣಿಕೆಯಲ್ಲಿ ಬಳಸುವ ಯಾವುದಾದರೂ ಎರಡು ಮೆಡಿಟಿರಿನಿಯನ ತಳಿಗಳ ಉದಾಹರಣೆ ಕೊಡಿ.

12. Name any two sites in India known for Pearl production.
ಭಾರತದಲ್ಲಿ ಮುತ್ತುಗಳ ಉತ್ಪಾದನೆಗೆ ಹೆಸರುವಾಸಿಯಾದ ಎರಡು ಸ್ಥಳಗಳನ್ನು ಹೆಸರಿಸಿರಿ.

SECTION - II
ವಿಭಾಗ - II

Answer any Four questions of the following. **(4×5=20)**

13. Explain Pokkali culture of Prawn.
ಪೊಕ್ಕಾಲಿ ವಿಧಾನದಿಂದ ಸೀಗಡಿ ಮೀನು ಸಾಕಾಣಿಕಾ ವಿಧಾನವನ್ನು ವಿವರಿಸಿ.

14. Give an account of the chemical control of pests.
ಕೀಟ ಪೀಡೆ ನಿಯಂತ್ರಿಸುವ ರಾಸಾಯನಿಕ ವಿಧಾನಗಳನ್ನು ಬರೆಯಿರಿ.

15. Write a note on Nutritive value of egg in poultry.
ಕೋಳಿ ಸಾಕಾಣಿಕೆಯಲ್ಲಿ ತತ್ತಿಯ ಪೌಷ್ಟಿಕಾಂಶಗಳ ಮೌಲ್ಯವನ್ನು ವಿವರಿಸಿ.

16. Write a note on fish preservation methods.
ಮೀನು ಜೋಪಾಸನ ವಿಧಾನವನ್ನು ಬರೆಯಿರಿ.

17. Describe the role of Earthworm in soil fertility.
ಮಣ್ಣಿನ ಫಲವತ್ತತೆಯಲ್ಲಿ ಎರೆಹುಳುವಿನ ಪಾತ್ರವನ್ನು ಬರೆಯಿರಿ.

18. Explain in detail any two diseases of cattle.
ಜಾನುವಾರುಗಳ ಯಾವುದಾದರೂ ಎರಡು ರೋಗಗಳ ಬಗ್ಗೆ ಸವಿಸ್ತಾರವಾಗಿ ವಿವರಿಸಿರಿ.

SECTION - III

ವಿಭಾಗ - III

Answer any Four of the following. **(4×10=40)**

19. Write a detailed note on rearing of silkworms.
ರೇಷ್ಮೆಹುಳು ಸಾಕಾಣಿಕೆಯ ಬಗ್ಗೆ ವಿವರವಾದ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
20. How do you culture Marine Water Prawns?
ಸಮುದ್ರ ಸಿಗಡಿಯ ಸಾಕಾಣಿಕೆಯನ್ನು ವಿವರಿಸಿರಿ.
21. Write a note on fish by products.
ಮೀನಿನ ಉಪ ಉತ್ಪನ್ನಗಳ ಕುರಿತು ಬರೆಯಿರಿ.
22. Describe the life history of mulberry silk worm.
ಹಿಪ್ಪುನೇರಳೆ ರೇಷ್ಮೆಹುಳುವಿನ ಜೀವನ ಚರಿತ್ರೆ ಕುರಿತು ಬರೆಯಿರಿ.
23. Explain the process of Pearl formation.
ಮುತ್ತು ಹವಳದ ಉತ್ಪಾದನೆ ಕುರಿತು ಬರೆಯಿರಿ.

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VI Semester B.Sc. Degree (CBCS) Examination, October - 2023

ZOOLOGY

Ecology, Zoogeography & Wild Life Conservation

Paper - II (A)

(Regular)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates:

1. Answer all questions.
2. Draw diagrams wherever necessary.

I. Answer any Ten of the following questions. **(10×2=20)**

ಕೆಳಗಿನ ಯಾವುದಾದರು ಹತ್ತು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿರಿ.

1. Define Autecology.
   ಸ್ವಯಂ ಪರಿಸರ ವಿಜ್ಞಾನ ಎಂದರೇನು ?
2. Define Mutualism.
   ಪರಸ್ಪರವಾದ ಎಂದರೇನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
3. What is lotic water system?
   ವೇಗವಾಗಿ ಚಲಿಸುವ ನೀರಿನ ವ್ಯವಸ್ಥೆ ಎಂದರೇನು ?
4. Define Edge effect.
   ಅಂಚಿನ ಪರಿಣಾಮ ಎಂದರೇನು ವ್ಯಾಖ್ಯಾನಿಸಿ.
5. What are Biomes?
   ಆವಾಸಸ್ಥಾನಗಳು ಎಂದರೇನು ?
6. What is Aestivation?
   ಬೇಸಿಗೆಯ ಸುದೀರ್ಘ ಸುಪ್ತತೆ ಎಂದರೇನು ?
7. India belongs to which geographic realm.
   ಭಾರತವು ಯಾವ ಭೌಗೋಳಿಕ ಕ್ಷೇತ್ರಕ್ಕೆ ಸೇರುತ್ತದೆ.
8. What is Pangea?
   ಪಾಂಗೀಯಾ ಎಂದರೇನು ?
9. Which geographical realm is called Marvel of Geography?
   ಯಾವ ಭೌಗೋಳಿಕ ಕ್ಷೇತ್ರವನ್ನು ಭೌಗೋಳಿಕತೆಯ ಅದ್ಭುತ ಎಂದು ಕರೆಯುತ್ತಾರೆ ?
10. Expand BNHS and WWF.
    BNHS ಹಾಗೂ WWF ಅನ್ನು ವಿಸ್ತರಿಸಿ ಬರೆಯಿರಿ.

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11. What are Biosphere reserves.
ಮೀಸಲು ಜೀವಗೋಳಗಳು ಎಂದರೇನು ?

12. Define sanctuary and National Park.
ಅಭಯಾರಣ್ಯ ಹಾಗೂ ರಾಷ್ಟ್ರೀಯ ಉದ್ಯಾನವನ ಎಂದರೇನು.

II. Answer any Three of the following. (3×5=15)
ಈ ಕೆಳಗಿನ ಯಾವುದಾದರು ಮೂರಕ್ಕೆ ಉತ್ತರಿಸಿ.

13. Write a note on effect of temperature on animals.
ಪ್ರಾಣಿಗಳ ಮೇಲೆ ಉಷ್ಣಾಂಶದ ಪರಿಣಾಮಗಳ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

14. What is commensalism? Explain with an example.
ಸಹಜೀವತ್ವ ಎಂದರೇನು ? ಉದಾಹರಣೆಯೊಂದಿಗೆ ವಿವರಿಸಿ.

15. Describe oxygen cycle.
ಆಮ್ಲಜನಕ ಚಕ್ರ ಕುರಿತು ವಿವರಿಸಿ.

16. Write a note on ecotone.
ಜೈವಿಕ ಸಮುದಾಯಗಳ ನಡುವಿನ ಪರಿವರ್ತನೆ ಪ್ರದೇಶ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

III. Answer any Three of the following. (3×5=15)
ಈ ಕೆಳಗಿನ ಯಾವುದಾದರು ಮೂರಕ್ಕೆ ಉತ್ತರಿಸಿ.

17. Explain Zonation of sea.
ಸಾಗರದ ವಲಯೀಕರಣ ಕುರಿತು ವಿವರಿಸಿ.

18. Describe ecological adaptation of fresh water animals.
ಸಿಹಿನೀರಿನಲ್ಲಿ ಪ್ರಾಣಿಗಳ ಪರಿಸರ ಹೊಂದಾಣಿಕೆ ಕುರಿತು ವಿವರಿಸಿ.

19. Write a note on lentic water system.
ನಿಂತ ನೀರಿನ ವ್ಯವಸ್ಥೆ ಕುರಿತು ಬರೆಯಿರಿ.

20. Write a note on population density.
ಜನಸಂಖ್ಯಾ ಸಾಂದ್ರತೆ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.

IV. Answer any Three of the following. (3×5=15)
ಈ ಕೆಳಗಿನ ಯಾವುದಾದರು ಮೂರಕ್ಕೆ ಉತ್ತರಿಸಿ.

21. Write a note on Wallace Line.
ವ್ಯಾಲೇಸ್ ಲೈನ್ ಕುರಿತು ಬರೆಯಿರಿ.

22. Explain factor affecting dispersal of animals.
ಪ್ರಾಣಿಗಳ ಪ್ರಸರಣದಲ್ಲಿ ಪರಿಣಾಮ ಬೀರುವ ಅಂಶಗಳ ಕುರಿತು ಬರೆಯಿರಿ.
23. Write note on continental drift.
ಖಂಡಗಳ ಅಲೆತ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
24. Describe Australian region.
ಆಸ್ಟ್ರೇಲಿಯ ಪ್ರದೇಶ ಕುರಿತು ವಿವರಿಸಿ.

V. Answer any Three of the following. **(3×5=15)**
ಈ ಕೆಳಗಿನ ಯಾವುದಾದರು ಮೂರಕ್ಕೆ ಉತ್ತರಿಸಿ.

25. Write note on causes for the depletion of wild life.
ವನ್ಯಜೀವಿಗಳ ಸವಕಳಿಗೆ ಕಾರಣಗಳು ಕುರಿತು ಬರೆಯಿರಿ.
26. Explain in brief wild life conservation techniques.
ವನ್ಯಜೀವಿಗಳ ಸಂರಕ್ಷಣಾ ತಂತ್ರಗಳ ಕುರಿತು ಸಂಕ್ಷಿಪ್ತವಾಗಿ ವಿವರಿಸಿ.
27. Describe Project Tiger.
ಹುಲಿಯೋಜನೆ ಕುರಿತು ವಿವರಿಸಿ.
28. Explain Wild Life Ecotourism.
ವನ್ಯಜೀವಿ ಪರಿಸರ ಪ್ರವಾಸೋದ್ಯಮ ಕುರಿತು ವಿವರಿಸಿ.

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VI Semester B.Sc. (Non-CBCS) Degree Examination, October - 2023

ZOOLOGY

Microbiology, Nanotechnology, Bioinformatics methods in Biology and Research Methodology

Paper - II

(Repeater)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates:

1) Attempt all questions.
ಎಲ್ಲ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.
2) Draw diagrams wherever necessary.
ಅವಶ್ಯವಿದ್ದಲ್ಲಿ ಚಿತ್ರ ಬಿಡಿಸಿರಿ.

I. Answer any Ten of the following. **(10×2=20)**
ಬೇಕಾದ 10 ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

1. Name the fluorescent used in fluorescent microscope.
ಪ್ರತಿದೀಪಕ ಸೂಕ್ಷ್ಮದರ್ಶಕದಲ್ಲಿ ಉಪಯೋಗಿಸುವ ಪ್ರತಿದೀಪಕಗಳನ್ನು ಹೆಸರಿಸಿ.
2. Define Proteomics.
ಪ್ರೋಟಿಯೋಮಿಕ್ಸ್ ವ್ಯಾಖ್ಯಾನಿಸಿ.
3. What is Lotus effect?
ಕಮಲ ಪರಿಣಾಮ ಎಂದರೇನು ?
4. What are DNA and RNA virus?
ಡಿ.ಎನ್.ಎ. ಮತ್ತು ಆರ್.ಎನ್.ಎ. ವೈರಸ್ ಎಂದರೇನು ?
5. Expand BLAST.
BLAST ದ ವಿಸ್ತೃತ ರೂಪ ಬರೆಯಿರಿ.
6. Mention two applications of Bioinformatics.
ಜೈವಿಕ ಮಾಹಿತಿಯ ಎರಡು ಉಪಯೋಗ ತಿಳಿಸಿ.
7. Mention types of fermenters.
ಫರ್ಮೆಂಟರಗಳ ವಿಧಗಳನ್ನು ತಿಳಿಸಿರಿ.
8. What are Radioisotopes?
ವಿಕಿರಣ ಸಮಸ್ಥಾನಿಗಳೆಂದರೇನು ?
9. Mention the role of computers in research.
ಸಂಶೋಧನೆಯಲ್ಲಿ ಗಣಕಯಂತ್ರಗಳ ಪಾತ್ರ ತಿಳಿಸಿ.

10. What are genetically altered fish?
ತಳೀಯವಾಗಿ ಬದಲಾಯಿಸಿದ ಮೀನು ಎಂದರೇನು ?
11. What is Gene prediction?
ಜೀನ್ ಭವಿಷ್ಯ ಎಂದರೇನು ?
12. Mention two applications of Nanotechnology.
ನ್ಯಾನೋ ತಂತ್ರಜ್ಞಾನದ ಎರಡು ಅನ್ವಯಗಳನ್ನು ತಿಳಿಸಿರಿ.

II. Answer any Four of the following. **(4×5=20)**
ಬೇಕಾದ ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.
13. Explain the structure of Yeast cell.
ಯೀಸ್ಟ ಕೋಶದ ರಚನೆ ವಿವರಿಸಿ.
14. Describe reproduction in bacteria.
ಬ್ಯಾಕ್ಟೀರಿಯಾದಲ್ಲಿ ಸಂತಾನೋತ್ಪತ್ತಿ ವಿವರಿಸಿ.
15. Write note on Northern blotting technique.
ನಾರ್ದರ್ನ್ ಬ್ಲಾಟಿಂಗ್ ತಂತ್ರ ವಿವರಿಸಿ.
16. Write note on Insitu hybridization.
ಇನ್‌ಸಿಟು ಹೈಬ್ರಿಡೈಜೇಶನ್ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.
17. Write about different methods of data collection.
ಮಾಹಿತಿ ಸಂಗ್ರಹದ ವಿವಿಧ ವಿಧಾನಗಳ ಕುರಿತು ಬರೆಯಿರಿ.
18. Explain the production of Streptomycin.
ಸ್ಟೆಪ್ಟೋಮೈಸಿನ್ ಉತ್ಪಾದನೆಯನ್ನು ವಿವರಿಸಿ.

III. Answer any Four of the following. **(4×10=40)**
ಬೇಕಾದ ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.
19. Describe Mass Spectrometry in detail.
ಮಾಸ್ ಸ್ಪೆಕ್ಟ್ರೋಮೆಟ್ರಿಯ ಪರಿಪೂರ್ಣ ವಿವರಣೆ ನೀಡಿ.
20. Explain the role of microbes in environment.
ಪರಿಸರದಲ್ಲಿ ಸೂಕ್ಷ್ಮಾಣು ಜೀವಿಗಳ ಪಾತ್ರ ವಿವರಿಸಿ.
21. Explain steps involved in sample survey.
ಮಾದರಿ ಸಮೀಕ್ಷೆ ಒಳಗೊಂಡ ಮಜಲುಗಳನ್ನು ವಿವರಿಸಿ.
22. Describe method and applications of ELISA.
ELISA ವಿಧಾನ ಮತ್ತು ಅನ್ವಯಗಳನ್ನು ವಿವರಿಸಿ.
23. Explain Interpretation and report writing in research.
ಸಂಶೋಧನೆಯಲ್ಲಿ ವಾಖ್ಯಾನ ಮತ್ತು ವರದಿ ಬರೆಯುವಿಕೆಯನ್ನು ವಿವರಿಸಿ.
