CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME
B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025

PHYSICS

Mechanics and Thermal Physics

Duration:3 Hours   **Max Marks:80**

Part A

Answer any seven questions: **(7×10= 70)**

1. a) Define radius of gyration. Find the relation between M.I and radius of gyration of a rotating body.
   b) Deduce an expression for the MI of a thin rod about an axis passing through its end and perpendicular to the rod and hence derive the expressions for the MI of the rod about an axis passing through its centre and perpendicular to the rod.(3+7)

2. a) Give the expression for the time period of a compound pendulum. What is the condition for minimum period for a compound pendulum?
   b) Describe the method for determining acceleration due to gravity and radius of gyration using a compound pendulum.   (3+7)

3. a) Define uniform circular motion, simple harmonic motion and centre of mass.
   b) Derive an expression for the areal velocity in terms of angular momentum and show that when angular momentum is conserved, the motion of a particle is planar and transverse acceleration is zero.   (3+7)

4. a) Write a note on gravitational potential energy.
   b) Show that in a conservative field, work done is independent of the path and define potential energy of a particle.   (3+7)

5. a) Show that when angular momentum is conserved, the motion is planar.
   b) Derive expressions for orbital velocity,time period and altitude of a satellite.(3+7)

6. a) Deduce the relation between slope of adiabatic and isothermal curves.
   b) Derive an expression for the work done by a gas during an isothermal and adiabatic expansion.   (3+7)

7. a) Show that for any reversible cyclic change of a system the total change of entropy is zero.
   b) What is temperature – entropy diagram? Derive an expression for the efficiency of a Carnot's engine using ST diagram.   (3+7)

8. a) What is a refrigerator? Define the coefficient of performance of a refrigerator.

   b) Describe the process for production of low temperature by regenerative cooling.

   (3+7)

9. a) Explain why efficiency of Carnot's engine cannot be 100%.

   b) Describe a Carnot cycle with the help of an indicator diagram and obtain an expression for its efficiency in terms of temperatures.   (3+7)

Part B (Numerical)

Answer any two questions: **(2×5= 10)**

10. A circular disc of mass 0.5 kg of radius 10 cm is making 70 revolutions/minute about an axis passing through its centre perpendicular to its plane. Calculate its kinetic energy.

11. An empty rocket weighs 6000 kg containing 35000 kg fuel. If the exhaust velocity of escaping gas is 2 km/s. Calculate maximum velocity attained.

12. Find the increase in the boiling point of water at 100°C when the pressure is increased by 2 atmosphere. Latent heat of vaporization is 2.268 x 10^6 J/kg and 1 gm of steam occupies 1677 cm^3 of volume.

....

CHOICE BASED CREDIT SYSTEM

B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025

BOTANY

Fungi and Cryptogams

Duration:3 Hours   Max Marks:60

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

1. Mention any two medicinal uses of Lichen .

2. What is sterigmata? Where do you find it?

3. What is bifid appendage ? In which plant it is found?

4. What are pegged rhizoids? Where it is found?

5. Mention any four ornamental Ferns.

6. What is Patrifaction ? Give an example.

II. Answer any FIVE of the following :   (5×6= 30 Marks)

7. Explain in detail about the bud rot disease of coconut with control measures.

8. What are Lichens ? Explain their nature of association.

9. Explain the structure of Sporophyte of Anthoceros.

10. Explain the internal structure of stem and leaf of Funaria.

11. Selaginella is heterosporpus. Justify and add a note on its seed habit

12. Describe the sporophyte of Ophiopglossum.

III. Answer any FOUR of the following :   (4×10= 40 Marks)

13. Describe the asexual reproduction in Phytophthora

14. Describe the structure of sporophyte of Pteris and explain its fertile pinna

15. Explain the stelar types in Pteridophytes.

16. Explain the life cycle of Riccia.

17. Explain the anatomy of Equistewm aerial shoot.

****

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME

B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025

MICROBIOLOGY

Microbial Diversity

Duration:3 Hours   **Max Marks:80**

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

1. Archaebacteria

2. Glycocalyx

3. TMV

4. Discoverer of Actinomycetes

5. Two antibiotics produced by Aspergillus

6. Sporozoites

II. Answer any FIVE of the following :   **(5×6= 30 Marks)**

7. Write a short note on Gram negative bacterial cell wall.

8. Write a short note on plasma membrane.

9. Write a short note on Rabies virus infection.

10. Write a short note on general characteristics of viruses.

11. List the distinguishing characteristeristics of fungi.

12. Write a short note on cyst of Entamoeba histolytica.

III. Answer any FOUR of the following :   **(4×10= 40 Marks)**

13. Explain in detail general features of bacterial endospore.

14. Explain in detail intracytoplasmic inclusions.

15. Write in detail about the growth cycle,lab diagnosis and clinical importance of Chlamydia.

16. Explain in detail about Mycoplasma with diagram.

17. Write in detail about the role of algae in industries and agriculture.

****

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME
B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025
MICROBIOLOGY
Microbial Biochemistry and Physiology

Duration:2 Hours   **Max Marks:60**

SECTION - A

Answer the following strictly observing the internal choice provided: **4×5=20**

UNIT 1

1) Comment on the hydrophilic interactions of water.

OR

2) Write short notes on electrolytes.

UNIT 2

3) Write a brief note on oligosaccharides.

OR

4) Explain the functions of proteins.

UNIT 3

5) Write short notes on $Na^+ K^+$ ATPase.

OR

6) Explain tonicity.

UNIT 4

7) Define photophosphorylation. Add a note on cyclic photophosphorylation.

OR

8) Explain briefly anoxygenic photosynthesis.

SECTION - B

Answer the following strictly observing the internal choice provided: **4×10=40**

UNIT 1

9) Describe water as a universal solvent.

OR

10) Give a comparative account of covalent and non-covalent bond.

UNIT 2

11) Give a detailed account on lipids.

OR

12) Give a detailed account of water soluble vitamins.

UNIT 3

13) Classify bacteria on the basis of its nutritional requirements and ability to synthesize essential metabolites.

OR

14) Write short notes on MPN and electronic coulter counting method.

UNIT 4

15) Explain the different types of high energy compounds.

OR

16) Explain glycolysis.

****

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME

B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025

MATHEMATICS

Number Theory and Calculus

Duration:3 Hours   **Max Marks:80**

I. Answer any EIGHT of the following :   (8×3= 24 Marks)

a. Show that the expression $\frac{a(a^2+2)}{3}$ is an integer $\forall a \geq 1$.

b. If $a|bc$ with $gcd(a,b) = 1$ then prove that $a|c$.

c. Find the value of $\phi(44,000)$.

d. Find ∇f of the function $f(x,y) = y\log x + xy^2$.

e. Find the equation of the tangent line to the ellipse $\frac{x^2}{4} + y^2 = 2$ at the point $(-2,1)$.

f. For the function $f(x,y) = 4x^2 + 9y^2$, find:
     a) Domain
     b) Range
     c) Functions level curves
     d) Boundary points of functions domain
     e) Is the domain open or closed region or neither
     f) Is the domain bounded or unbounded.

g. If $f(x,y) = \sin^2(x - 3y)$, find $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$.

h. Find the polar equation for the following equations:
     a) $(x-2)^2 + y^2 = 4$
     b) $x = 7$

i. Find the length of the polar curve $r = 6\sin(\theta)$ where $0 \leq \theta \leq \frac{\pi}{2}$.

j. State the test for determining whether a polar curve is symmetric with respect to the origin.

II. Answer any EIGHT of the following :   (8×7= 56 Marks)

a. Solve the following system of congruences using chinese remainder theorem.

$$x \equiv 2 \ (mod \ 3)$$
$$x \equiv 3 \ (mod \ 5)$$
$$x \equiv 2 \ (mod \ 7)$$

b. State and prove Wilsons Theorem.

c. Determine whether 11 is a prime by deciding whether $10! \equiv -1 \ mod(11)$.

d. Apply the two-path test, to show that the function $f(x,y) = \frac{-x}{\sqrt{x^2 + y^2}}$ has no limit as $(x,y) \rightarrow (0,0)$.

e. Define directional derivative. Find the derivative of $f(x,y) = x^2 \sin 2y$ at the point $\left(1, \frac{\pi}{2}\right)$ in the direction of $v = 3i - 4j$.

f. Find the tangent plane and normal line to the surface $f(x,y,z) = x^2 + y^2 + z - 9$ at the point $P_0(1,2,4)$.

g. Show that $f(x,y,z) = (x^2 + y^2 + z^2)^{\frac{-1}{2}}$ satisfies the Laplace equation.

h. Check the Symmetry of the polar curve $r = 1 - cos(\theta)$ and then plot the curve.

i. Determine the area that lies inside $r = 3 + 2\sin(\theta)$ and outside $r = 2$.

j. Evaluate $\int_0^1 \int_x^{\sqrt{x}} xy(x+y) \, dy \, dx$.

****

116

CHOICE BASED CREDIT SYSTEM

B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025

MATHEMATICS

Mathematics Theory II

Duration:3 Hours   **Max Marks:120**

I. Answer any TEN of the following :   **(10×3= 30 Marks)**

a. Show that the expression $\frac{a(a^2+2)}{3}$ is an integer for all $a \geq 1$

b. If p is a prime and p|ab, then prove that p|a or p|b.

c. Find whether N=1,571,724 is divisible by 11.

d. If p is a prime, then prove that $a^p \equiv a \pmod{p}$ for any integer a.

e. Find $\phi(360)$.

f. Find the gradient of $g(x,y) = y - x^2$ at (-1,0).

g. Evaluate $\lim\limits_{x \to 0}\left(\frac{1}{sinx} - \frac{1}{x}\right)$

h. Evaluate the integral $\int\limits_{0}^{1} \int\limits_{0}^{y^2} (3y^3 e^{xy})dxdy$

i. Find the area of the region in the plane enclosed by the cardioid $r = 2(1 - cos\theta)$

j. Plot the point $(-1, \pi/6)$ (in polar coordinate). Find all of its other polar coordinates

k. Find the Polar equation of $x^2 + y^2 - 4x = 0$.

l. Find Taylor series for xe^x.

II. Answer any TEN of the following :   **(10×9= 90 Marks)**

a. Determine all solutions in the integers of the Diophantine equation
$24x + 138y = 18$.

b. State and prove Fermat's Little theorem

c. For arbitrary integers a and b, prove that $a \equiv b \pmod{n}$ if and only if a and b leave the same non-negative remainder when divided by n.

d. If p and q are distinct primes with $a^p \equiv a \pmod{q}$ and $a^q \equiv q \pmod{p}$ then prove that $a^{pq} \equiv a \pmod{pq}$

e. Solve the linear congruence $5x \equiv 2 \pmod{26}$.

f. Given integers a,b,c. Prove that gcd(a,bc)=1 if and only if gcd(a,b)=1 and gcd(a,c)=1.

g. Find the equation for the plane tangent to the surface $z = \ln(x^2 + y^2)$ at (1,0,0).

h. Find the directional derivative of $h(x, y, z) = xy + yz + zx$ at $P_0(1, -1, 2)$ in the direction of the vector $a = 3i + 6j - 2k$.

i. Find Taylor series for tanx at a=$\frac{\pi}{4}$

j. Find parametric equations for the line tangent to the curve of intersection of the two surfaces $f(x, y, z) = x^2 + y^2 - 2 = 0$ and $g(x, y, z) = x + z - 4 = 0$ at (1,-1,3)

k. State Fubini's theorem(first form). Evaluate $\iint_R f(x, y)dA$ for $f(x, y) = 1 - 6x^2 y$ and $R : 0 \leq x \leq 2, -1 \leq y \leq 1$

l. Find the volume of the region bounded by the paraboloid $z = x^2 + y^2$ and below by the triangle enclosed by the lines y=x,x=0 and x+y=2 in the xy-plane.

****

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME
B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025
MATHEMATICS
Number Theory, Algebra, Calculus II

Duration:2 Hours   **Max Marks:60**

PART - A

I. Answer any 6 questions. Each question carries 2 marks: **(2×6= 12 Marks)**

     a. Find the value of $\phi(5400)$.

     b. Find the sum of positive integers less than 480 and relatively prime to 480.

     c. Define commutative binary operation.
        On the set G of all nonsingular matrices of order 2×2 is multiplication of
        matrices a commutative binary operation? Justify your answer.

     d. Prove that the set of all cube roots of unity is an abelian group with respect to
        multiplication.

     e. Find the domain of definition of the function :
        (i) $z = f(x,y) = \frac{1}{\sqrt{1-x^2-y^2}}$ (ii)$z = f(x,y) = x^2 + xy + y^2$

     f. Verify Euler's theorem for $z = \sin^{-1}\frac{x}{y} + \tan^{-1}\frac{y}{x}$.

     g. Evaluate $\int_1^2 \int_0^{2x} xy^3 \, dy \, dx$.

     h.
        Evaluate $\int_0^1 \int_0^1 \int_0^1 dx \, dy \, dz$

PART - B

2. Answer any 2 questions. Each question carries 6 marks: **(6×2= 12 Marks)**

     a. State and prove Fermat's Little theorem

     b. Determine whether 13 is a prime by deciding whether $12! \equiv -1 (mod\ 13)$.

     c. For $n > 2$, prove that $\phi(n)$ is an even interger.

     d. Represent $\frac{-19}{51}$ as a simple continued fraction.

PART - C

3. Answer any 2 questions. Each question carries 6 marks: **(6×2= 12 Marks)**

     a. Prove that for any subset A of G, the normalizer N(A) of A is a subgroup of G.

     b. Let G be a group and $a, b \in G$. Show the following.
$$(i)(a^{-1})^{-1} = a$$
$$(ii)(a \cdot b)^{-1} = b^{-1} \cdot a^{-1}$$

     c. Prove that a non-empty subset H of a group G is a subgroup of G
if and only if whenever $a, b \in H \implies a \cdot b^{-1} \in H$.

     d. Let G be a cyclic group and H be a subgroup of G. Prove that H is cyclic.

PART - D

4. Answer any 2 questions. Each question carries 6 marks: **(6×2= 12 Marks)**

     a. If $u = \frac{1}{\sqrt{x^2+y^2+z^2}}$; $x^2 + y^2 + z^2 \neq 0$, then prove that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = 0$.

     b. If $u = \tan^{-1}\left(\frac{x+y}{\sqrt{x}+\sqrt{y}}\right)$, show by Euler's theorem that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = \frac{1}{4}\sin 2u$.

     c. Find $\frac{dw}{dt}$ as a function of t, both by using the chain rule and by expressing w in terms of t and differentiating directly
with respect to t. Also find $\frac{dw}{dt}$ at the given point
$w = x^2 + y^2, x = at^2, y = 2at, t = 1$

     d. Determine the relative extrema of $f(x,y) = 2x^4 + y^2 - x^2 - 2y$ if there are any.

PART - E

5. Answer any 2 questions. Each question carries 6 marks: **(6×2= 12 Marks)**

     a. Find by double integration, the area of the region in the xy plane bounded by the curves $y = x^2$ and $y = 4x - x^2$.

     b. Find the surface area of the paraboloid $z = x^2 + y^2$ below the plane $z = 4$.

     c. Evaluate $\int\limits_{0}^{\frac{\pi}{2}} \int\limits_{0}^{\frac{\pi}{2}} \int\limits_{0}^{xz} \cos\left(\frac{y}{z}\right) dy dx dz$.

     d. Evaluate $\int\limits_{C} 4xy dx + (2x^2 - 3xy)dy$. if the curve C is the line segment from
$(-3, -2)$ to $(1, 0)$

****

118

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME
B.Sc SECOND SEMESTER DEGREE EXAMINATION MAY 2025
STATISTICS
Probability and Distributions - I

Duration: 2 Hours   **Max Marks: 60**

Answer any THREE of the following :   (3×2= 06)

1. Obtain the MGF of Poisson distribution.

2. Deduce the C.G.F of Gamma distribution using single parameter.

3. What is the difference between positive and contrary frequencies?

4. Define class frequencies.

5. Write the commad for obtaining the Boxplot using R.

Answer any FOUR of the following in not more than a page each :   (4×6= 24)

6. Deduce the mean and variance of Hypergeometric distribution.

7. Obtain the recurrence relation for the central moments of Binomial distribution.

8. Derive the mean and variance of Exponential distribution with parameter θ.

9. State and prove memory less property of Exponential distribution.

10. Obtain the expression for $R_{1.23}$.

11. Write a programme to obtain the quartile deviation and its coefficient from the following data:

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
f	3	8	15	20	25	10	9	6	4

Answer any THREE of the following in not more than two page each :   (3×10= 30)

12. Define a Geometric variate. State and prove its lack of memory property.

13. Define Beta variate of second kind. Derive its mean and variance.

14. Derive the expressions of even and odd order central moments of Normal distribution.

15. Define partial correlation between X_1 and X_2 and derive its formula.

16. If $X_1=Y_1+Y_2$, $X_2=Y_2+Y_3$ and $X_3=Y_1+Y_3$ where Y_1, Y_2 and Y_3 have zero mean, having variance=1 and they are uncorrelated variables, then find $R_{2.31}$.

****

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME

B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025

STATISTICS

Probability Distributions

Duration:3 Hours   **Max Marks:60**

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

1. If X follows B(4,0.5) and Y follows B(5,0.5), then what is the mean and variance of X+Y?

2. If X has Uniform distribution over the range (0,1), find the mean and the variance.

3. State Chebyshev's inequality and its significance.

4. Show that a sum of n independent Gamma variates is also a Gamma variate.

5. Define Order Statistics.

6. What is the relationship between Negative Binomial and Geometric distributions?

II. Answer any FIVE of the following :   **(5×6= 30 Marks)**

7. Derive an expression for Median of a Normal Distribution.

8. Obtain the mean and variance of Hypergeometric distribution.

9. For a Poisson variate with parameter λ prove that $k_{r+1} = \lambda \frac{d}{d\lambda} k_r$.

10. Obtain the mean and variance of Exponential distribution with parameter θ..

11. Deduce the p.d.f of $Y = X_{(n)} = \text{Max}(x_1, x_2, \ldots, x_n)$ when $X \sim U(0,\theta)$.

12. If X has the p.d.f f(x)=2x , $0 \leq X \leq 1$. Find the distribution function. Also find the mean and Variance.

III. Answer any FOUR of the following :   **(4×10= 40 Marks)**

13. Define a Geometric variate. State and prove its lack of memory property

14. Define Negative Binomial distribution. Derive its probability mass function and justify why this distribution is called Negative Binomial distribution?

15. Derive the moments and characteristic function of the Cauchy Distribution

16. Derive an expression for odd and even order moments of Normal distribution.

17. Establish the relationship between t, F and Chi Square distribution.

****

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME
B.Sc. SECOND SEMESTER DEGREE EXAMINATION APRIL 2025
CHEMISTRY
Inorganic and Physical Chemistry - I

Duration: 2 Hours   **Max Marks:60**

PART - A

I. Answer any Six from the following :   (2×6= 12 Marks)

1. Draw the shapes of p orbitals.

2. Write Schrodinger's wave equation and explain the terms.

3. Define electron affinity.

4. Give reason: Nitrogen is an inert gas.

5. Write Van der Waal's equation of state for 1 mole of a gas. Explain the terms.

6. Define most probable velocity and average velocity.

7. What are smectic liquid crystals?

8. Give two applications of liquid crystals.

PART - B

II.Answer any SIX of the following choosing at least one question from each unit:(6×8= 48 Marks)

UNIT I

9. a) Explain the order of filling up of various orbitals. What are its limitations?
   b) State and explain Hund's rule of maximum multiplicity?(4+4)

10. a) Explain Bohr theory for hydrogen atom. What are its limitations?
    b) Discuss important applications of Slater's rules. (4+4)

UNIT II

11. a) How do alkali and alkaline earth metals react with (i) hydrogen (ii) halogen
    b) LiCl is covalent while NaCl is ionic. Explain. (4+4)

12. a) How are ionic carbides classified? Explain with examples.
    b) What are the factors affecting ionisation energy? (4+4)

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME
B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025
CHEMISTRY
General Chemistry-II

Duration:3 Hours   **Max Marks:80**

PART - A

1. Answer any **Five** of the following: (2×5= 10 Marks)

1   What are the colours imparted to the flame by Barium and Strontium?

2   What are the raw materials used in the Dutch process?

3   The equilibrium constant for a reaction is found to be 5.63 at 298K. Calculate standard free energy change for the reaction. (R=8.314 J/K/mol)

4   What is atom economy?

5   What is Lucas reagent?

6   What is Gattermann reaction?

PART - B

II. Answer any seven of the following choosing at least TWO from each Unit:(10×7= 70 Marks)

UNIT I

7   a. Explain the manufacture of paper?
    b. What is diagonal relationship? Give three similarities and three differences between lithium and magnesium. (5+5)

8   a. How is Portland cement manufactured?
    b. Write a note on the role of sodium and magnesium in biosystems. (6+4)

9   a. How is sodium carbonate manufactured by Solvay's process?
    b. Explain the variation of ionisation energy in the s block elements.
    c. Write three applications of soda ash. (4+3+3)

UNIT II

10 a. Derive the integrated form of Vant Hoff equation.
    b.The equilibrium constant Kp for the reaction is 21.2 atm at 950° C and 8.21 atm at 1000° C. Calculate the heat of reaction.
    c. State and explain any three principles of green chemistry. (4+3+3)

21CSCC201   Reg No   :   ....

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME
B.Sc. SECOND SEMESTER DEGREE EXAMINATION   MAY 2025
COMPUTER SCIENCE
Data Structures using C

Duration:2 Hours   Max Marks:60

PART A

Answer any FIVE questions: (5×2= 10)

1) What is a Data Structure?

2) What is a memory efficient Doubly Linked List?

3) Define PUSH operation of a stack.

4) What is an input restricted queue with respect to a deque?

5) Define tree. Give an example.

6) State the two traversal strategies used in traversing a graph.

PART B

Answer any FIVE questions :   (5×6= 30)

7) With syntax and example, explain one-dimensional array declaration and initialization.

8) How can you alter the size of a block in memory? Explain with an example.

9) Write the algorithm for insertion sort .

10) What is a queue? What are the drawbacks of writing a queue using linear representation? Explain.

11) List and explain the different operations that can be performed on binary trees.

12) Write a program to compute the value of ncr using a recursive function to find the factorial of a number.

PART C

Answer any TWO questions :   (2×10= 20)

13) Explain in detail the working of a stack as a linked list with diagram and algorithm.

14) (a) Write an algorithm for solving matching of nested parenthesis.
    (b) Convert the infix expression: A*(B*C+D*E)+F to postfix.

15) With suitable examples explain: (a) Preorder (b) Postorder c) Inorder traversal.

****

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME
B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025
ZOOLOGY
Biochemistry and Physiology

Duration:2 Hours   Max Marks:60

SECTION - A

Answer the following strictly observing the internal choice provided: 4×5=20

UNIT 1

1) List the functions of Glycolipids.

    OR

2) Explain the characteristics of Isozymes.

UNIT 2

3) Write the reactions of Gluconeogenesis.

    OR

4) Write short notes on Beta-oxidation of fatty acids.

UNIT 3

5) Explain protein digestion in small intestine.

    OR

6) The heart acts as a double pump. Substantiate.

UNIT 4

7) List any five functions of ACTH.

    OR

8) Explain briefly tubular secretion.

SECTION - B

Answer the following strictly observing the internal choice provided: 4×10=40

UNIT 1

9) Give a detailed account of amino acids.

    OR

10) Explain the concept of Km and Vmax.

11) Explain the steps of formation of urea.

OR

12) Explain EMP Pathway.

13) Give an account on accessory organs of digestion.

OR

14) Define Rh factor. Explain the significance of Rh factor.

15) Define synapse, explain the different types of synaptic junctions.

OR

16) Explain the mechanism of muscle contraction.

****

CHOICE BASED CREDIT SYSTEM SEMESTER SCHEME

B.Sc. SECOND SEMESTER DEGREE EXAMINATION MAY 2025

ZOOLOGY

Zoomorphology II

Duration:3 Hours   **Max Marks:80**

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

1. Name the coelomic cavities in Balanoglossus.

2. Mention any two classes of super class Pisces.

3. What is parapsida skull?

4. Write any two important differences between poisonous and nonpoisonous snakes.

5. What are ampullary glands? Where is it found?

6. What is keel? Mention its function.

II. Answer any FIVE of the following :   **(5×6= 30 Marks)**

7. Write any five general characters of vertebrata with any two examples.

8. Describe the external features of *Labeo rohita*.

9. Write any five distinctive characters of order Chelonia with two examples.

10. With a neat labeled diagram explain pectoral girdle of frog.

11. Write a note on anatomical flight adaptations in birds.

12. Write five general characters of super order Palaeognathae with two examples.

III. Answer any FOUR of the following :   **(4×10= 40 Marks)**

13. Explain the Classification of Chordata upto Classes with examples for each.

14. With a neat labeled diagram explain the external features of *Herdmania*.

15. Give an account of First aid for snake bite and chemical nature of snake venom.

16. With a neat labeled diagram explain the digestive system of *Hoplobatrachus tigrinus*.

17. Give an account of the general characters of Class Mammalia with example.

****