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B.Sc. V Semester Degree Examination, March/April - 2023

PHYSICS

Paper No. 5.1 : Atomic and Molecular Physics

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *(i) Answers to* ***Section-A*** *in first two pages only.*

(ii) Non-programmed scientific calculators are allowed.

SECTION - A

Answer the following. 15x1=15

1. Mention any two properties of an atom.
2. Define atomic mass unit.
3. What is the energy of an atom in 3^{rd} orbit of H-atom.
4. Give the relation between radius and principal quantum no. in Bohr's orbit.
5. What is a wave no ?
6. Write any two applications of mass spectrograph.
7. Why does sky appears blue ?
8. What is a Zeeman effect ?
9. State pauli's exclusion principle.
10. Define Fluorescence.
11. Mention any one application of Raman effect.
12. Which type of molecular spectra is observed in the far infrared region ?
13. What is a magnetic dipole ?

P.T.O.

14. What is recorded on the hologram ?

15. Mention any one characteristic of laser.

SECTION - B

Answer **any five** of the following. **5x5=25**

16. Describe Dempster's method of determining atomic mass.

17. Explain quantum theory of Raman effect.

18. Write a note on Sommerfetd's model of an atom.

19. Describe Frank-Hertz experiment to determine the critical potentials.

20. Discuss the salient features of vector atom model.

21. Derive an expression for eigen values of vibrational spectra.

22. Write a note on phosphorescence.

SECTION - C

Answer **any three** of the following. **3x10=30**

23. (a) Describe Millikan's oildrop method of determining the charge of an election. **7+3**
    (b) Find the number of electrons on a waterdrop of mass. 9.8×10^{-12} gm when it remains suspended in an electric field of 2950 V/em. [Given charge of an election is 1.6×10^{-19} C and $g = 9.8$ m/s^2.]

24. Describe alpha scattering experiment. **10**

25. (a) Describe stern-Geslach experiment. **5+5**
    (b) Discuss the classical theory of Zeeman effect ?

26. (a) Derive an expression for pure rotational energy of a diatomic molecule. **5+5**
    (b) Distinguish between rotational and vibrational spectra of a diatomic molecule.

27. (a) Explain the construction and working of He-ne laser. **7+3**
    (b) Write any three applications of laser ?

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B.Sc. V Semester Degree Examination, March/April - 2023

PHYSICS

Paper No. 5.2 : Statistical Physics, Quantum Mechanics and Electronics

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : Write answers to **Section 'A'** questions in the first two Pages only.

SECTION - A

I. Answer **all** the following questions. **15x1=15**

1. Define ensemble.
2. What is Fermion ?
3. Which Particle obeys Pauli's exclusion Principle ?
4. Is compton scattering coherent scattering ?
5. Write the expression for de-Broglie's Wavelength.
6. Define wave function.
7. Write the expression for zero point energy of a quantum mechanical oscillation.
8. Define conduction band.
9. Define Intrinsic Semiconductor.
10. Give an example for acceptor impurities.
11. What is avalanche breakdown ?
12. Write the relation between α and β.
13. Define Current gain.
14. Expand LCD.
15. What is 7-Segment display ?

P.T.O.

SECTION - B

II. Answer **any five** of the following. **5x5=25**

16. Write a note on Gibb's Paradox.

17. Derive an expression for de-Broglie's Wavelength.

18. Derive time independent Schrodinger wave equation.

19. Describe Davissiond and Germer experiment.

20. Derive an expression for electrical conductivity of a Semiconductor.

21. Explain the working of a npn-transistor as an amplifier in CE-configuration.

22. Write a note on photo diode.

SECTION - C

III. Answer **any three** of the following. **3x10=30**

23. (a) Compare Maxwell-Boltzmann and Bose-Einstein distribution functions. **5+5**

(b) Illustrate the Heisenberg's uncertainty Principle by Gamma ray microscope.

24. (a) Obtain an expression for energy of a linear harmonic oscillator using Schrodinger wave equation. **7+3**

(b) Calculate the wavelength associated with an electron of energy 200 eV [Given $h = 6.625 \times 10^{34}$ Js and charge of electron $= 1.6 \times 10^{-19}$ C].

25. (a) What is electrical conductivity of a conductor ? Mention the factors on which it depends. **2+8**

(b) What is Hall effect ? Derive an expression for Hall co-efficient and mention the importance of Hall effect.

26. (a) Explain with neat circuit diagram the construction and working of Half wave rectifier. **5+5**

(b) Explain L and Pi section filters with neat diagrams.

27. (a) Explain working Principle of solar cell. **5+5**

(b) Write the applications of LED.

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B.Sc. V Semester Degree Examination, March/April - 2023

CHEMISTRY - V

Paper No. 5.1 : Chemistry

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : (i) ***Section-A :*** *Contains questions from Inorganic, Organic and Physical Chemistry.*

(ii) ***Section-B :*** *Contains questions from Inorganic Chemistry.*

Section-C : *Contains questions from Organic Chemistry.*

Section-D : *Contains questions from Physical Chemistry.*

(iii) *Answer* ***all*** *sections.*

SECTION-A

Answer **any ten** of the following. **10x1=10**

1. Define paramagnetism.
2. What is spectroscopic ground state term for d^2 configuration ?
3. What are intercalation compounds ?
4. What are electrochemical series ?
5. What are thiols ?
6. Mention the compound which is used as reference in NMR spectra.
7. What is chemical shift ?
8. What is isoelectric point ?
9. State Grothus - Draper's law.
10. Define dipole moment.
11. What is Chemiluminiscence ?
12. Give two examples of molecules with permanent dipole moment.

P.T.O.

SECTION-B

Answer **any two** of the following. **2x10=20**

13. (a) Explain Guoy's method for the determination of magnetic moment and magnetic susceptibility. **6**

(b) Discuss the magnetic properties of Octahedral Complexes on the basis of Crystal field theory. **4**

14. (a) Discuss the elecronic spectra of $[Ti\ (H_2O)_6]^{3+}$ ion. **6**

(b) Write a note on charge transfer spectra. **4**

15. (a) Give the classification and structure of Silicates. **6**

(b) Give the preparation and properties of S_4N_4. **4**

SECTION-C

Answer **any two** of the following. **2x10=20**

16. (a) Explain principle, instrumentation and applications of NMR. **6**

(b) Discuss sailent features and applications of IR Spectroscopy. **4**

17. (a) Give the methods of preparation and reactions of thioethers. **6**

(b) Write a note on : **4**

(i) (n+l) rule.

(ii) Spin-Spin Coupling

18. (a) Discuss the classification and structure of amino acids. **6**

(b) Write any two methods of preparation of Ethane thiol. **4**

SECTION-D

Answer **any two** of the following. **2x10=20**

19. (a) What is quantum yield ? Give reasons for high quantum yield. **6**

(b) State and expalin Beer's law. **4**

20. (a) Discuss mechanism of photochemical combination of H_2 and Cl_2. **6**

(b) Calculate the Einsteins energy for the radiation of wavelength 4500 Å. **4**

21. (a) Write a note on : **6**

(i) Orientation polarisation

(ii) Phosphorescence

(b) Discuss applications of dipole moment is elucidating the structure of CCl_4 and H_2O. **4**

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11671

B.Sc. V Semester Degree Examination, March/April - 2023

5.2 : Chemistry - VI

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *(i)* ***Section - A*** *contains Questions from Inorganic, Organic and Physical chemistry.*

(ii) ***Section - B*** *contains Questions from Inorganic chemistry.*

Section - C *contains Questions from Organic chemistry.*

Section - D *contains Questions from Physical chemistry.*

(iii) Answer ***all*** *the* ***four*** *sections* ***A, B, C*** *and* ***D.***

SECTION - A

Answer **any ten** of the following : **10x1=10**

1. Define Precision.
2. Define absolute error.
3. Write Radioactive displacement law.
4. What is artificial radioactivity ?
5. Write the composition of oil.
6. What is Iodine number ?
7. Give any two uses of Terylene.
8. Define chromophore.
9. State Kohlrausch's law.
10. What is ionic conductance ?
11. Define mass average molecular weight.
12. Define degree of polymerisation.

P.T.O.

SECTION - B

Answer **any two** of the following : **2x10=20**

13. (a) Describe the types of determinate errors. **6**

(b) Write a note on significant figures and computations. **4**

14. (a) Write chemical reactions of liquid ammonia as a solvent. **6**

(b) Write any two chemical reactions in liquid SO_2. **4**

15. (a) Describe nuclear shell model. **6**

(b) Write the differences between Nuclear fission and Nuclear fusion. **4**

SECTION - C

Answer **any two** of the following : **2x10=20**

16. (a) Describe the mechanism of claisen condensation of synthesis of ethyl aceto acetate. **6**

(b) Describe the Killiani-Fischer synthesis of aldoses. **4**

17. (a) Explain the manufacture of soap by Hydrolyzer process. **6**

(b) Write the synthesis and uses of Teflon. **4**

18. (a) Elucidate the open chain structure of D-glucose. **6**

(b) Give the classification of dyes based on structure. **4**

SECTION - D

Answer **any two** of the following : **2x10=20**

19. (a) Describe the conductometric titration of - **6**

(i) Strong acid and strong base

(ii) Weak acid and strong base

(b) Define cell constant. Explain conductance in metal and electrolytic solution. **4**

20. (a) Explain the method of determination of molecular weight of polymer by viscosity method. **6**

(b) The resistance of $\frac{N}{10}$ solution of an electrolyte was found to be 210 ohms at 25°C. **4**

Calculate equivalent conductance of the solution at 25°C. (cell const. = 0.88)

21. (a) Describe the experimental method of determination of transport number by Hittorf's method for non-attackable electrodes. **6**

(b) Explain equivalent conductance and molar conductance with their units. **4**

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B.Sc. V Semester Degree Examination, March/April - 2023

MATHEMATICS

Paper No. 5.1-(IX) : Integral Transforms

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *Answer* ***all*** *the Sections.*

SECTION - A

Answer **any five** of the following. **5x2=10**

1. Find $L[e^{at}]$.

2. Find $L[\cos hmt]$.

3. Evaluate $L[4t^2-5t+7]$.

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

5. Evaluate $L\left[\frac{\sin t}{t}\right]$.

6. If F(s) is the Fourier Transform of F(*x*) then P.T $\frac{1}{a}F\left(\frac{s}{a}\right)$ is the Fourier Transform of F(*ax*).

7. Find the *Z*-transform of $(\cos\theta+i\sin\theta)^n$.

SECTION-B

Answer **any five** questions. **5x6=30**

8. Verify convolution theorem for $f(t)=1$, $g(t)=\sin t$.

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

10. Solve the Differential Equation $\frac{d^2y}{dx^2}-5\frac{dy}{dx}+6y=0$. Given that $y(0)=1$, and $y'(0)=0$.

P.T.O.

11. Solve $\frac{dx}{dt} = 2x - 3y$, $\frac{dy}{dt} = y - 2x$ given $x(0) = 8$, $y(0) = 3$.

12. Obtain the Fourier Series for the function $f(x) = x^2$ in $-\pi \leq x \leq \pi$ and hence deduce that $\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \ldots = \frac{\pi^2}{12}$.

13. Expand the function $f(x) = x.\sin x$ as a Fourier series in the interval $-\pi \leq x \leq \pi$.

14. Obtain the Half-Range sine series of the function $f(x) = x^2$ in $0 < x < \pi$.

SECTION - C

Answer **any five** of the following. **5x6=30**

15. Find the Fourier transform of $f(x) = \begin{cases} x & |x| \leq a \\ 0 & |x| > a \end{cases}$.

16. Find the Sine and Cosine Fourier transform of $2e^{-5x} + 5e^{-2x}$.

17. Use parseval's identity to prove that $\int_0^\infty \frac{dt}{(a^2 + t^2)(b^2 + t^2)} = \frac{\pi}{2ab(a + b)}$.

18. If $Z_T(U_n) = \bar{U}(Z)$ then prove that $Z_T(U_n - k) = Z^{-k}\ \bar{U}(Z)$ when $k > 0$.

19. Find the Z-transform of $\sin(3n + 5)$.

20. Find Inverse Z-transform of $\left[\frac{5z}{(2 - z)(3z - 1)}\right]$.

21. Solve by using z-transform $y_{n+2} - 4y_n = 0$
Given that $y_0 = 0$, $y_1 = 2$.

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11242 **36532**

B.Sc. V Semester Degree Examination, March/April - 2023

MATHEMATICS - X

Paper No. 5.2 : Applied Mathematics

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *Answer* ***all*** *the Sections.*

SECTION - A

Answer **any five** of the following questions. **5x2=10**

1. Define Gradient of a scalar point function.

2. Find the maximal directional derivative of x^3y^2z at the point $(1, -2, 3)$.

3. If f and g are irrotational, show that $f \times g$ is solenoidal.

4. State Stoke's theorem.

5. Define Stationary function and write the solution of Euler's equation when 'f' is independent of y.

6. Write one dimensional wave equation and write its appropriate solution.

7. Find the C.F. of $[2D^2 - DD^1 - 3D^{1^2}]z = 0$.

SECTION - B

Answer **any five** of the following questions. **5x6=30**

8. Prove that Curl (Curl $\vec{f}$) = grad (div $\vec{f}$) $- \nabla^2 \vec{f}$.

9. Find the angle between the surfaces $x^2 + y^2 + z^2 = 9$ and $z = x^2 + y^2 - 3$ at the point $(2, -1, 2)$.

10. If $u = x + y + z$, $v = x^2 + y^2 + z^2$ and $w = xy + yz + zx$ show that $[\nabla u \ \nabla v \ \nabla w] = 0$.

P.T.O.

11. Verify Green's theorem for $\oint_C [(3x^2 - 8y^2)dx + 2y(2 - 3x)dy]$, where C is the boundary of the rectangular area enclosed by the lines $x=0$, $x=1$, $y=0$ and $y=2$.

12. Evaluate $\iint_S F \cdot n ds$, where $F = 4xzi + y^2j + yzk$ and S is the surface of the cube bounded by the planes $x=0$, $x=1$, $y=0$, $y=1$, $z=0$, $z=1$, by using Gauss divergence theorem.

13. Find the curve through (0, 1) and (1, 2) along which $I = \int_0^1 [y^2 - yy^1 + (y^1)^2]dx$ is minimum.

SECTION - C

Answer **any five** of the following questions. **5x6=30**

14. Solve $(D^2 - 5DD^1 + 4D^{1^2})z = \sin(4x + y)$.

15. Solve $(D^2 - DD^1 - 2D^{1^2})z = (y - 1)e^x$.

16. Solve $(2DD^1 + D^{1^2} - 3D^1)z = 5\cos(3x - 2y)$.

17. Solve $(D^2 - (D^1)^2 - 3D + 3D^1)z = xy$.

18. Reduce $\frac{\partial^2 z}{\partial x^2} = x^2\left(\frac{\partial^2 z}{\partial y^2}\right)$ to canonical form.

19. Obtain the solution for one dimensional heat equation $\frac{\partial u}{\partial t} = C^2 \frac{\partial^2 u}{\partial x^2}$ by using the method of separation of variables.

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B.Sc. V Semester Degree Examination, March/April - 2023

MATHEMATICS - XI

Paper No. 5.3 : Graph Theory - I

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *Answer* ***all*** *the sections.*

SECTION - A

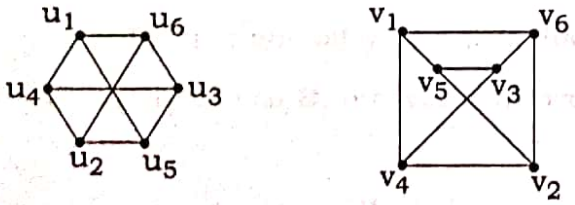
Answer **any five** of the following. **5x2=10**

1. Define multiple graph and pseudo graph.
2. Define complete bipartite graph with an example.
3. Define spanning sub graph with an example.
4. Give an example of a 3-regular graph on 10 vertices which contains a cut-vertex.
5. Define binary tree with an example.
6. Find point connectivity of $K_{m,n}$, where $(1 \leq m \leq n)$.
7. State Menger's Theorem.

SECTION - B

Answer **any five** of the following. **5x6=30**

8. Show that the graphs G & H are isomorphic



9. Prove that a non-trivial graph is bipartite if and only if all of its cycles are even.
10. Show that every u-v walk contains a u-v path.

P.T.O.

11. Prove that every self complementary graph has 4n or 4n + 1 vertices.

12. If G is a (p, q) graph whose vertices have degree d_i then show that L(G) has q vertices and q_L edges where $q_L = \sum_{i=1}^{p} d_i^2 - q$

13. Prove that for any graph G with six vertices G or $\overline{G}$ contains a triangle.

14. Suppose a tree T has N_1 vertices of degree 1, N_2 vertices of degree 2, N_3 vertices of degree 3, . . . N_k vertices of degree k, prove that :
$N_1 = 2 + N_3 + 2N_4 + 3N_5 + \ldots + (k-2)\, N_k$.

SECTION - C

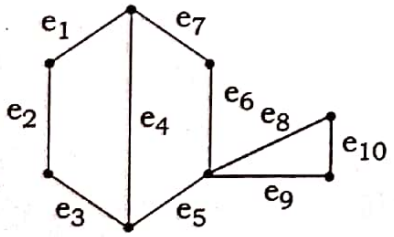
Answer **any five** of the following. **5x6=30**

15. Define Incidence matrix. Find the graph G which has adjacency matrix.

$$\begin{bmatrix} 0 & 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \end{bmatrix}$$

16. Define cycle matrix and find cycle matrix of the graph G.

G :



17. State and prove Whitney's theorem.

18. Explain Konigberg's Seven bridge problem.

19. Prove that a (p, q) graph G is a tree if and only if G is acyclic and p = q + 1.

20. If a connected graph G is Eulerian then prove that edges of G can be partioned into cycles.

21. If G is a graph with P ≥ 3 vertices such that $\delta(G) > \frac{P}{2}$ then prove that G is Hamiltonian.

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10572

B.Sc. V Semester Degree Examination, March/April - 2023

BOTANY

5.1 : Morphology, Taxonomy and Economic Botany

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *(i) Answer* ***all*** *the questions.*

(ii) Draw diagram wherever necessary.

I. Answer **all** the questions. **15x1=15**

1. What is Runner ? Give an example.

2. What is Aestivation ?

3. What is systematic Botany ?

4. What is Pome ?

5. What is Fusiform root ? Give an example.

6. What is natural system of classification ?

7. Define a Staminode of Pistilode.

8. What is Phyllotaxy ?

9. What is Stylopodium ?

10. What is Spadix ?

11. What are Stipules ?

12. Write botanical name of Cotton.

13. What is Gynobasic style ?

14. What is Rhizome ? Give an example.

15. What are Tendrils ?

P.T.O.

II. Answer **any five** of the following. **5x5=25**

16. Describe the structure of Hypanthodium Infloresense with a neat labelled diagram.

17. Match the following :

	Family		**Distinguish Character**
(a)	Apocyanaceae.	(i)	Oblique ovary and Persistent calyx.
(b)	Cucurbitaceae.	(ii)	Dumble shaped stigma and sagitate anther.
(c)	Solonaceae.	(iii)	Synandrous stamen and unisexual flower.
(d)	Euphorbiaceae.	(iv)	Gland dotted leaves and Hesperidium fruit.
(e)	Rutaceae.	(v)	Papilionaceoes Corolla.
(f)	Papilionaceae.		

18. Write a salient feature of family Apocyanaceae.

19. Define stem. Explain subaerial modification of stem.

20. What is Placentation ? Explain any two types of placentation with labelled diagram.

21. Write a short note on :

(a) Nepenthes (b) Corm

22. Write the salient feature of the family Brassicaceae.

III. Answer **any three** of the following. **3x10=30**

23. Assign the following plants to their respective families and write the botanical name and Economic importance.

(a) Mustard (b) Sugarcane (c) Clove (d) Red gram

24. What is Herbarium ? Explain the process of Herbarium technique.

25. What is fruit ? Explain different types of fleshy fruits.

26. What is Corolla ? Explain the different forms of Corolla with diagram.

27. Write a salient feature of family Poaceae give the Economic Importance of any four plants with their botanical names.

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10644

B.Sc. V Semester Degree Examination, March/April - 2023

BOTANY

Paper No. 5.2 : Cell Biology and Cytogenetics

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *Answer* ***all*** *the questions.*

SECTION - A

I. Answer the following questions. **1x15=15**

1. Who proposed Fluid Mosaic Model of Plasma Membrane ?
2. What is Tonoplast ?
3. Define Euploidy.
4. What is a Telomere ?
5. What is Nucleoid ?
6. Who proposed Semi-Conservative method of DNA ?
7. What are Point Mutation ?
8. Who proposed Lac-Operon Concept ?
9. What is the Genotypic Ratio of Dihybrid Cross ?
10. Define Phenotype ?
11. What is Nucleolus ?
12. What is Epistasis ?
13. What is Genetic Code ?
14. What is Chromatid ?
15. Which sub-unit type of Ribosomes are found in Prokaryotes ?

P.T.O.

SECTION - B

II. Answer **any five** of the following questions. **5x5=25**

16. Explain Double Helix Model of DNA.

17. Draw and explain the Chloroplast Cell Organelle.

18. Explain the difference between Plant and Animal Cell.

19. Describe the Clover Leaf model of t-RNA.

20. Explain Law of Seggregation with an example.

21. What are the Properties of Genetic Code ?

22. Briefly explain the Sex-linked inheritance with reference to plants ZZ-ZW.

SECTION - C

III. Answer **any three** of the following questions. **3x10=30**

23. Explain the Fluid Mosaic Model of Plasma Membrane.

24. Describe the Semi-Conservative method of DNA Replication.

25. Write in detail of Lac-Operon concept in E-Coli.

26. Explain Polygenic Inheritance in Maize.

27. In tomatoes red fruit colour (R) is dominant over yellow(r). A pure red fruit plant is crossed to a yellow fruited one. What will be appearence of R_1 ? The F_1 are interbreed and produce 320 offsprings in the F_2. How many of them will be red and how many yellow ? What will be genotype of F_2 and in what number.

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10643

B.Sc. V Semester Degree Examination, March/April- 2023

ZOOLOGY

Paper No. Z-5.1 : Cell Biology & Developmental Biology

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *(i) Answer **all** the questions.*

(ii) Draw labelled diagrams wherever necessary.

SECTION - A

Answer **any five** of the following : **5x2=10**

1. What is Karyokinesis and Cytokinesis ?
2. Define Benign and Malignant tumour.
3. What is Oncogenesis ? Mention any two Biological Carcinogens.
4. What is Placenta ? Mention any two of them.
5. What are Fate maps ?
6. Define Graffian Follicle and Antrum.

SECTION - B

A. Answer **any three** of the following : **3x5=15**

7. Sketch and label Hen's egg.
8. What are Marphogenetic Movements ? Mention Germ layers and their derivatives.
9. Explain the process of Oogenesis with schematic representation.
10. Describe V.S. of Blastula of Frog.
11. Mention the functions of Placenta.
12. What is Organiser Phenomenon ? Write a brief note on it.

P.T.O.

B. Answer **any three** of the following : **3x5=15**

13. Describe the Ultrastructure of Mitochondria with labelled diagram.

14. Explain Metaphase of Mitosis with neat labelled sketch.

15. Describe Fluid Mosaic model of Plasma membrane with diagram.

16. Enumerate the functions of Nucleus.

17. Distinguish between Mitosis and Meiosis.

SECTION - C

A. Answer **any two** of the following : **2x10=20**

18. Describe the structure of 18 hrs. chick embryo with neat labelled diagram.

19. Describe the mechanism of Fertilization and its significance.

20. Mention the differences between Sperm and Ovum.

B. Answer **any one** of the following : **1x10=10**

21. Explain in detail about the Occurrence, Types and Functions of Lysosomes.

22. Explain the Ultrastructure of Endoplasmic reticulum and add a note on its functions.

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10641

B.Sc. V Semester Degree Examination, March/April - 2023

ZOOLOGY

Paper No. Z-5.2 : Environmental Biology and Wildlife Zoology

(CBCS)

Time : 3 Hours | Maximum Marks : 70

Note : *(i) Answer **all** the questions.*

(ii) Draw neat labelled diagrams wherever necessary.

SECTION - A

Answer **any five** of the following in a sentence or two each. **5x2=10**

1. Define ammensalism. Give an example.

2. What are neustons ? Give an example.

3. Define Sublimation.

4. Define Threatened species. Give an example.

5. What is meant by Primary Consumers ? Give an example.

6. What is acid rain ? List any two effects of it.

SECTION - B

Answer **any six** of the following in a paragraph each. **6x5=30**

7. Explain CO_2 cycle in detail with the help of Schematic Representation.

8. Write a note on food chain.

9. List the functions of ecosystem.

10. Explain briefly about the renewable sources of environment.

11. Describe the process of solid waste management.

12. Write a note on fauna of Nearctic realm.

13. Write a note on the importance of Red data Book and IUCN.

P.T.O.

SECTION - C

Answer **any three** of the following in detail. 3x10=30

14. Describe the various measures of wildlife management in India.

15. Explain in detail about air pollution.

16. Write a detail note on fauna of any five National Parks of Karnataka.

17. Describe the adaptation mechanisms in aerial animals.

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