



101607

B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022
PHYSICS - V

Paper No. 5.1 - Atomic and Molecular Physics

Time : 3 Hours

Maximum Marks : 70

Instruction : Write answers to **Section A** questions in first two pages only.

SECTION - A

I. Answer the following :

15x1=15

1. Define atomic mass unit.
2. Define impact parameter.
3. What will be the energy of emitted photon when electron jumps from third orbit to ground state ?
4. Define ionization potential.
5. Mention any one failure of Rutherford model of atom.
6. State Pauli's exclusion principle.
7. What is Stark effect ?
8. What is anomalous Zeeman effect ?
9. Name the molecular spectra observed in IR region.
10. What are eigen values ?
11. What is fluorescence ?



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12. What is Rayleigh scattering of light ?

13. What are Stoke's lines ?

14. What is population inversion ?

15. What is optical pumping ?

SECTION - B

II. Answer **any five** of the following :

5x5=25

16. Describe the principle and working of Dempster's mass spectrograph.

17. Write a note on sommer feld's atom model.

18. Describe Stern-Gerlach experiment.

19. Write a note on space quantization.

20. Describe experimental set-up used to study Raman Effect.

21. Write a note on Phosphorescence.

22. Explain in brief spontaneous and stimulated emission with Einstein's coefficient equations.

SECTION - C

III. Answer **any three** of the following :

3x10=30

23. (a) With necessary theory, explain JJ Thomson's method to determine the specific charge of an electron.

6+4

(b) A drop of oil of radius 10^{-6} m carries a charge equal to that of an electron. If the density of the oil is $2 \times 10^3 \text{ kgm}^{-3}$, find the electric field required to keep it stationary.

($e = 1.6 \times 10^{-19} \text{ c}$, $g = 9.8 \text{ ms}^{-2}$)



24. (a) State the Postulates of Bohr's theory of hydrogen atom. 5+5
(b) Describe Frank-Hertz experiment.
25. (a) Explain quantum theory related to normal Zeeman effect. 5+5
(b) Discuss L-S coupling scheme.
26. (a) Discuss the quantum theory to explain Raman Effect. 5+5
(b) Obtain an expression for rotational energy of a rigid diatomic molecule.
27. (a) Explain the construction and working of Ruby Laser. 5+5
(b) Write a note on Holography.

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

PHYSICS VI

Paper No. 5.2 - Statistical Physics, Quantum Mechanics & Electronics

Time : 3 Hours

Maximum Marks : 70

Instruction : Write answers to **Section-A** questions in the first **two** pages only.

SECTION - A

Answer the following each of 1 mark.

15x1=15

1. Write an expression for Fermi-Dirac distribution function.
2. What are de-Broglie matter waves ?
3. State Heisenberg's uncertainty principle.
4. What is a wave function ?
5. What is zero point energy ?
6. What are Eigen values ?
7. What are Intrinsic Semiconductors ?
8. Name two particles involved in the Compton scattering.
9. What is Zener diode ?
10. What are filter circuits ?
11. What is meant by dark current of photo diode ?
12. Name the material used for manufacturing of LED.
13. What is Phase Space ?
14. What is Stirling's approximation ?
15. What is Seven Segment display ?



P.T.O.

Answer **any five** of the following.

5x5=25

16. Illustrate the Heigen's berg's uncertainty principle by Gamma ray microscope.
17. Obtain the time independent Schrodinger's wave equation.
18. Derive an expression for electrical conductivity of semiconductor.
19. Explain the construction and working of solar cell with a neat diagram.
20. State and prove Boltzmann's equipartition theorem.
21. Obtain an expression for energy gap of a Semiconductor.
22. Explain the working of a transistor as an amplifier in CE mode with a neat circuit diagram.

Answer **any three** of the following.

3x10=30

23. (a) Distinguish between Maxwell's Boltzmann and Bose Einstein's distribution function. **5+5=10**
(b) Give comparison between LED and LCD.
24. (a) What is Compton effect ? And hence obtain an expression for compton shift.
(b) Find the change in wavelength of an X-ray photon when it is scattered through an angle of 90° by a free electron. **7+3=10**
25. (a) Obtain an expression for energy of a linear harmonic oscillator using Schrodinger wave equation. **7+3=10**
(b) Find the lowest energy of a neutron confined to a nucleus of size 10^{-14} m.
Given mass of neutron = 1.67×10^{-27} kg $\hbar = 1.054 \times 10^{-34}$ J second.
26. (a) With a neat circuit diagram, Explain the construction and working of Bridge Rectifier and hence derive an expression for efficiency of a Full Wave Rectifier.
(b) Obtain the relation between α and β . **7+3=10**
27. (a) What is Holl effect ? And obtain the expression for Holl coefficient. **7+3=10**
(b) A Germanium plate of thickness 2 mm, breadth 10 mm and length 200 mm is placed in a magnetic field of 0.6 web/m² acting perpendicular to its thickness. If 0.02 A current flows along its length. Calculate the Holl voltage if the Holl coefficient is 3.76×10^{-4} m³/coulomb.

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

CHEMISTRY - V

Paper No. V (5.1) - Chemistry - V

Time : 3 Hours

Maximum Marks : 70

Instructions :

- (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 questions :

10x1=10

1. Define Magnetic susceptibility.
2. Cu^{+2} ions are coloured while Zn^{+2} ions are colourless. Give reason.
3. What is meant by spectro-chemical series ?
4. What are Carboranes ?
5. What is down field shift ?
6. Arrange the increasing order of stretching frequencies of $\text{C} \equiv \text{C}$, $\text{C}=\text{C}$ and $\text{C}-\text{C}$.
7. Write the IUPAC name of $\text{C}_2\text{H}_5\text{SH}$.
8. What are Thioethers ?
9. State Einsteins Law of Photochemical equivalence.
10. Define Quantum yield.
11. Give two examples of molecules with permanent dipole moment.
12. Define Molar Polarisation.



P.T.O.

SECTION - BAnswer **any two** of the following :**2x10=20**

13. (a) How do you determine the magnetic susceptibility and magnetic moment by Gouy's method. 6
(b) Explain the types of electronic transitions of complexes. 4
14. (a) Give the preparation, properties of $[\text{NPCl}_2]_3$. 6
(b) Write a note on temperature independent paramagnetism. 4
15. (a) Determine the term symbols for an electronic configuration of P^2 . 6
(b) Write the preparation, properties and structure of S_4N_4 . 4

SECTION - CAnswer **any two** of the following :**2x10=20**

16. (a) Describe the principle and applications of NMR spectra. 6
(b) Write a note on iso-electric point of an amino acids. 4
17. (a) Give the methods of preparation and chemical properties of ethane thiol. 6
(b) Write a note on classification of amino acids. 4
18. (a) Explain the principle and applications of IR spectra. 6
(b) Write a note on spin-spin coupling. 4

SECTION - DAnswer **any two** of the following :**2x10=20**

19. (a) Give the differences between photochemical reactions and thermochemical reactions. 6
(b) Find the value of an Einstein of energy for the radiation of wavelength 4240\AA . 4
20. (a) Give the Clausius - Mossotti equation. Explain the terms and discuss its importance. 6
(b) Discuss the application of dipole moment in elucidating the structure of : 4
(i) Carbon dioxide (ii) Water
21. (a) State and explain phosphorescence and fluorescence with a diagram. 6
(b) Explain photochemical mechanism for the combination of H_2 and Br_2 . 4

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

CHEMISTRY

Paper No. 5.2 - Chemistry - VI

Time : 3 Hours

Maximum Marks : 70

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- Instructions :** (i) **Section - A** contains questions from Inorganic, Organic and Physical Chemistry.
(ii) **Section - B** contains questions from Inorganic. **Section - C** contains questions from Organic and **Section - D** contains questions from Physical Chemistry.
(iii) Answer **all** the four **Sections A, B, C and D**.
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SECTION - A

Answer **any ten** of the following.

10x1=10

1. Define random error.
2. Write any two general properties of solvents.
3. Define protic and aprotic solvents.
4. What is artificial radioactivity ?
5. Define thermosetting polymers.
6. What is epimerization ?
7. Write difference between hard and soft soap.
8. Write any one use of Nylon-6,6.
9. Define transport number.
10. State Kohlrausch's law.
11. Define degree of polymerization.
12. Define equivalent conductance.



P.T.O.

SECTION - BAnswer **any two** of the following questions.**2x10=20**

13. (a) What are the types of error ? Explain with suitable example. 6
(b) Explain the sampling of solids, liquids and gases with suitable examples. 4
14. (a) Write chemical reactions of liquid ammonia as a solvent. 6
(b) Discuss the chemical reaction in liquid SO_2 . 4
15. (a) Discuss the nuclear shell model. 6
(b) Write the difference between Nuclear fission and Nuclear fusion. 4

SECTION - CAnswer **any two** of the following questions.**2x10=20**

16. (a) Write any three synthetic application of ethyl acetoacetate. 6
(b) Explain the saponification and iodine number of oils and fats. 4
17. (a) Discuss the elucidation of open chain structure of D-Glucose. 6
(b) What are syndets ? Explain the cleaning action of soap. 4
18. (a) Explain with suitable example of Theory of colour and constitution. 6
(b) Write the synthesis of teflon. 4

SECTION - DAnswer **any two** of the following questions.**2x10=20**

19. (a) Explain the Debye-Huckel-Onsagar equation for the strong electrolyte. 6
(b) Define cell constant. Explain conductance in metal and electrolytic solution. 4
20. (a) Describe the conductometric acid-base titration with respect to. 6
(i) Strong acid v/s strong base
(ii) Weak acid v/s weak base
(b) Explain the variation of equivalent conductance with dilution. 4
21. (a) Determine the molecular weight of polymers by viscosity methods. 6
(b) Write Hittorf's law and experimental determination of transport number for non-attackable electrodes. 4

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

MATHEMATICS - IX

Paper No. 5.1 - Integral Transforms

Time : 3 Hours

Maximum Marks : 70

Instruction : Answer **all** the Sections.**SECTION - A**Answer **any five** of the following :**5x2=10**

1. Find $L[\sinh mt]$
2. Find $L[\cos^2 t]$
3. Find $L[e^{-2t} \cosh 4t]$
4. Using Convolution theorem find $L^{-1}\left[\frac{1}{(S+1)(S+2)}\right]$
5. If $f(x) = \begin{cases} -x & ; -\pi < x < 0 \\ x & ; 0 < x < \pi \end{cases}$ find Fourier coefficient of b_n .
6. If $f(s)$ is Fourier transform of $F(x)$, then prove that $\frac{1}{a} f\left(\frac{s}{a}\right)$ is the Fourier transform of $F(ax)$ i.e. $F(ax) = \frac{1}{a} f\left(\frac{s}{a}\right)$
7. Find Z-transform of $a^n \cdot n$ i.e. $Z[a^n \cdot n]$.

P.T.O.

SECTION - B

5x6=30

Answer **any five** questions :

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

9. Find the Laplace transform of $\frac{e^{-mt} - e^{-nt}}{t}$

10. Find the Inverse Laplace transform of $\frac{3s^2 + 16s + 26}{s(s^2 + 4s + 13)}$

11. Solve the simultaneous differential equation $\frac{dx}{dt} + y = \sin t$; $\frac{dy}{dt} + x = \cos t$ with $x(0) = 2$, $y(0) = 0$.

12. Obtain the Fourier series of $f(x) = \begin{cases} -k & ; (-\pi, 0) \\ k & ; (0, \pi) \end{cases}$ and

hence deduce that $\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots$

13. Find the half range sine series of function $f(x) = x(\pi - x)$ in interval $0 < x < \pi$.

14. Find the complex form of Fourier series for the function $f(x) = x$ in $(-\pi, \pi)$.

SECTION - C

Answer **any five** of the following :

5x6=30

15. Find the Fourier transform of $f(x) = \begin{cases} 1 & ; |x| \leq 1 \\ 0 & ; |x| > 1 \end{cases}$ and hence evaluate $\int_0^{\infty} \frac{\sin x}{x} dx$.

16. Find the Fourier sine and cosine transform of $7e^{-6x} + 8e^{-9x}$



17. Using Parseval's identity for Fourier cosine transform show that

$$\int_0^{\infty} \frac{\sin ax}{x(a^2 + x^2)} dx = \frac{\pi(1 - e^{-a^2})}{2a^2} \text{ where } a > 0$$

18. Find the Fourier Integral of function $f(x) = \begin{cases} 0 & ; x < 0 \\ \frac{1}{2} & ; x = 0 \\ e^{-x} & ; x > 0 \end{cases}$ and hence

show that $f(0) = \frac{1}{2}$.

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

20. Compute the inverse-Z-transform of $\frac{3z^2}{(5z-1)} + \frac{2z}{(5z+2)}$.

21. Solve differential $y_{n+2} + 6y_{n+1} + 9y_n = 2^n$ with $y_0 = y_1 = 0$ using Z-transform.

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

MATHEMATICS

Paper No. 5.2 : APPLIED MATHEMATICS - X

Time : 3 Hours

Maximum Marks : 70

Instruction : Answer **all** Sections.

SECTION - A

Answer **any five** questions. :

5x2=10

1. Define scalar point function. Give an example.
2. If $\phi(x, y, z) = x^2 + \sin y + z$ find $\text{grad}\phi$ at $(0, \pi/2, 1)$.
3. State Green's theorem in the plane.
4. Prove that $\text{curl}(\text{grad}\phi) = 0$.
5. Define functional and Geodesic.
6. Find the C.F. of $(D^2 - 5DD^1 + 4D^{12})z = \sin(4x + y)$.
7. Write one-dimensional wave equation with its suitable solution.

SECTION - B

Answer **any five** of the following :

5x6=30

8. Show that $\nabla r^n = nr^{n-1} \hat{r}$ where $\vec{r} = xi + yj + zk$.
9. Find the directional derivative of the function $\phi(x, y, z) = xy^2 + yz^3$ at $(2, -1, 1)$ in the direction of $2i + j + 2k$.
10. Find the curves on which the functional $\int_0^1 \left[(y')^2 + 12xy \right] dx$ with $y(0) = 0$ and $y(1) = 1$ can be extremised.



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11. Evaluate by using the Green's theorem.

$$\int_C [e^{-x} \sin y \, dx + e^{-x} \cos y \, dy] \text{ where } C \text{ is the rectangle with vertices } (0, 0), (\pi, 0),$$

$$\left(\pi, \frac{\pi}{2}\right), \left(0, \frac{\pi}{2}\right)$$

12. Verify Stokes' theorem for $\vec{F} = (2x - y)\mathbf{i} - yz^2\mathbf{j} - y^2z\mathbf{k}$ where 'S' is the upper half of the surface of the sphere $x^2 + y^2 + z^2 = 1$ and 'C' is its boundary.

13. If $\vec{r} = x\mathbf{i} + y\mathbf{j} + z\mathbf{k}$, then show that

$\vec{r}^n \cdot \vec{r}$ is an irrotational vector for any value of n. But is solenoidal only when $n = -3$.

SECTION - C

Answer **any five** of the following :

5x6=30

14. Solve $(D^2 + 2DD^1 + D^{12})z = 2\cos y - x\sin y$.

15. Solve $(D^2 - 2DD^1 + D^{12})z = 12xy$.

16. Solve $(D^2 - DD^1 - 2D)z = \sin(3x + 4y) - e^{2x+y}$.

17. Solve $(D^2 - 6DD^1 + 5(D^1)^2)z = 6x + 2y$.

18. Reduce the equation. $\frac{\partial^2 z}{\partial x^2} + 2\frac{\partial^2 z}{\partial x \partial y} + \frac{\partial^2 z}{\partial y^2} = 0$ to canonical form.

19. A tightly stretched string of length 'l' with fixed end points $x=0$ and $x=l$ is set into vibration by velocity $v(x)$ given by.

$$v(x) = \begin{cases} x & \text{for } 0 \leq x \leq l/4 \\ l/4 & \text{for } l/4 \leq x \leq 3l/4 \\ l-x & \text{for } 3l/4 \leq x \leq l \end{cases}$$

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**B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022****MATHEMATICS - XI****Paper No. 5.3 - Graph Theory - I (Optional)**

Time : 3 Hours

Maximum Marks : 70

Instruction : Answer **all** Sections.**SECTION - A**Answer **any five** of the following :**5x2=10**

1. Prove that the sum of the degree of all vertices of a graph is twice the number of edges.
2. Draw two different cubic graphs with 6 vertices and 9 edges.
3. Draw the graph K_4 and its line graph $L(K_4)$.
4. Find all connected graph with 4 vertices.
5. Give an example of a 3-regular graph on 10 vertices which contains a cut vertex.
6. Define Binary Tree with an example.
7. State Menger's Theorem.

SECTION - BAnswer **any five** of the following.**5x6=30**

8. Prove that every u-v walk contains a u-v path.
9. Prove that a non-trivial graph is bipartite if and only if all of its cycles are even.
10. Find the adjacency matrix of the graph G shown below and find the incidence matrix of G.

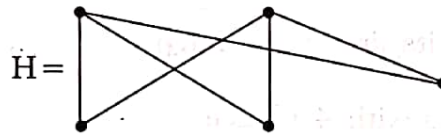
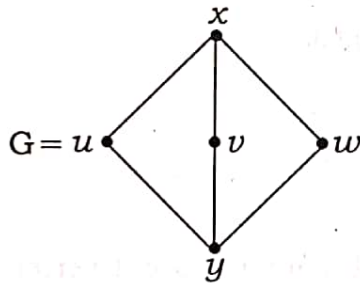
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11. Prove that for any graph G with six vertices G (or) \bar{G} contains a triangle.

12. Find the graph G which has adjacency matrix.

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

13. Prove that the graphs $G \times H$ are isomorphic.



14. Let G be a graph with "P" vertices and "q" edges. If G is bipartite then show that

$$q \leq \frac{p^2}{4}.$$

SECTION - C

Answer any five of the following.

5x6=30

15. Let G be a connected graph with atleast 3 vertices prove that G is a block if and only if any two vertices of G lie on a common cycle.

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

17. Draw all binary trees with five end vertices. Find the path length of each.



18. State and prove Whitney's inequality.
19. State and explain Königsberg bridge problem.
20. Give an example of a graph :
- (i) Which is Eulerian but not Hamiltonian
 - (ii) Which is Hamiltonian but not Eulerian
 - (iii) Which is both Eulerian and Hamiltonian
21. Construct a graph G satisfying.
 $k(G) = 1$ $\lambda(G) = 3$ and $f(G) = 4$

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

BOTANY - V

Paper No. 5.1 - Morphology, Taxonomy and Economic Botany

Time : 3 Hours

Maximum Marks : 70

- Instructions :** (i) Answer **all** the questions.
(ii) Draw the diagrams wherever necessary.

I. Answer the following.

15x1=15

1. What is staminode ?
2. Expand ICBN.
3. What is Gynobasic style ?
4. What are pnematophores ?
5. What is systematic Botany ?
6. Define the term phyllode.
7. What are Carpophore ?
8. What are Botanical Gardens ?
9. What is Venation ?
10. What is Androphore and Gynophore ?
11. Write the Botanical name of cotton.
12. Define Seed.
13. What is perianth ?



P.T.O.

14. What is Legume or Pod ?

15. What is tendril ?

II. Answer **any five** of the following.

5x5=25

16. What is stipule ? Explain the kinds of stipule.

17. What is aestivation ? Explain the different kinds of aestivation.

18. Write the salient features of the family Malvaceae.

19. Describe the underground modification of stem with suitable diagram.

20. Write the floral formula and floral diagram of the family papilionaceae.

21. Write the Botanical name, family and economic importance of the following :
(a) Ground nut (b) Clove (c) Mustard

22. Explain the structure of seed.

III. Answer **any three** of the following.

3x10=30

23. Describe the salient features of family Liliaceae, giving any four economic importance of plants.

24. Briefly outline the Bentham and Hooker system of classification add a note on their merits and demerits.

25. What is fruit ? Explain the different types of fleshy fruits with suitable diagram.

26. Assign the following plants to their respective families giving their Botanical name add a note on their economic importance.

(a) Coffee (b) Ragi (c) Tulsi (d) Castor

27. What is cohesion of stamens ? Explain the different types of cohesion with suitable diagram and example.

28. What is placentation ? Explain the different kinds of placentation with suitable diagram and example.

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

BOTANY - VI

Paper No. 5.2 - Cell Biology and Cytogenetics

Time : 3 Hours

Maximum Marks : 70

Instruction : (i) Answer **all** the questions.
(ii) Draw diagrams wherever necessary.

I. Answer all the questions.

15x1=15

1. What are Peroxisomes ?
2. Who introduced the term endoplasmic reticulum ?
3. What is Aneuploidy ?
4. What is Transcription ?
5. What are Pyrimidines ?
6. What is Replication ?
7. What is Codominance ?
8. What is Epistasis ?
9. Define Colinearity.
10. What are exons and introns ?
11. What is Test Cross ?
12. Who rediscovered the principles of genetics in 1900 ?
13. What is Atavism ?
14. Who coined the term gene ?
15. What is Linkage ?



P.T.O.

II. Answer **any five** of the following.

5×5=25

16. What are plastids ? Describe different types of plastids.
17. What is the variation in chromosome number and write down the significance of polyploidy ?
18. Describe the semiconservative method of DNA replication.
19. Explain the inducible gene with reference to Lac Operon.
20. Describe two laws of Mendel.
21. Explain different types of Gene mutations.
22. Briefly explain the sex determination in Melandrium.

III. Answer **any three** of the followings.

3×10=30

23. What is dominant epistasis ? Explain with an examples.
24. Explain different steps of translation in the process of protein synthesis.
25. Describe the structure and functions of Golgi bodies.
26. What is chromosomal aberration ? Explain deletion and duplication.
27. The white fruit colour in summer squash is controlled by a dominant gene (W) and coloured controlled by its recessive allele (w). Yellow fruit is governed by an independently assorting hypostatic gene (G) and green by its recessive allele (g). When dihybrid plants are crossed, the offsprings appear in the ratio of 12 white : 3 yellow : 1 green. What fruit colour ratios are expressed from the crosses given below ?
 - (a) $WWgg \times WwGG$
 - (b) $WwGg \times wwgg$

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

ZOOLOGY - V

Paper No. Z.5.1 - Cell Biology and Developmental Biology

Time : 3 Hours

Maximum Marks : 70

- Instructions :** (i) Answer **all** the questions.
(ii) Draw the Diagrams wherever necessary.

SECTION - A

Answer **any five** of the following.

5x2=10

1. Distinguish between Prokaryotes and Eukaryotes.
2. Write any four functions of Centrioles.
3. What is Oncology ? Name any two chemical carcinogens.
4. Define Epiboly and Emboly.
5. What is Fertilizin and Antifertilizin ?
6. Define Graffian follicle and corpus luteum.

SECTION - B

A. Answer **any three** of the following.

3x5=15

7. Explain the process of spermatogenesis with schematic representation.
8. With a neat labelled diagram explain 18. hrs Chick Embryo.
9. Describe V.S. of Blastula of Frog.
10. Write short notes on Germ layers and their derivatives.
11. Describe the Mechanism of Fertilization.



P.T.O.

B. Answer **any three** of the following.

3x5=15

12. With a neat labelled diagram explain the structure and functions of Golgi bodies.
13. What are Carcinogens ? Add a note on Physical Carcinogens.
14. Distinguish between Mitosis and Meiosis.
15. What are Lysosomes ? Mention its forms and a note on its Functions.
16. Enumerate the Fluid mosaic model of Plasma membrane.

SECTION - C

A. Answer **any two** of the following in detail.

2x10=20

17. Define cleavage. Explain types of cleavage on the basis of plane of cleavage, add a note on effect of yolk on cleavage.
18. With a neat labelled diagram explain whole mount of 48 hrs. Chick Embryo.
19. Write short notes on the following :
 - (a) IVF
 - (b) MOET
 - (c) Sperm bank
 - (d) Surrogate mother

B. Answer **any one** of the following in detail.

1x10=10

20. Describe the phases of Prophase-I of Meiosis-I with neat labelled diagrams.
21. Explain the Occurrence, types, structure and functions of Endoplasmic reticulum.

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B.Sc. V Semester (CBCS) Degree Examination, March/April - 2022

ZOOLOGY - VI

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

Time : 3 Hours

Maximum Marks : 70

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

(ii) Draw neat labelled diagrams wherever necessary.

SECTION - A

Answer **any five** of the following in **one** or **two** sentences each.

5x2=10

1. Define biome. Give an example.
2. What do you mean by synecology and autecology ?
3. Define ecotype.
4. Write a major difference between climate and weather.
5. Name endangered species found in Khaziranga National Park and Ranthambore National Park.
6. Expand COD and BOD.

SECTION - B

Answer **any six** of the following in **one** or **two** paragraphs each.

6x5=30

7. Explain briefly about commensalism with suitable examples.
8. Write a short note on noise pollution.
9. Explain about pond water ecosystem.
10. Write a short note on Wildlife Protection Act.



P.T.O.

11. Write a note on Hotspots of biodiversity in India.
12. Explain about food web.
13. Discuss briefly about wildlife sanctuaries.

SECTION - C

Answer the following in detail (Any three).

3x10=30

14. Discuss in detail about soil erosion and forest conservation.
15. Describe ecological adaptations of terrestrial animals.
16. Define water pollution. Explain in detail about sources, effects, control and preventive measures of water pollution.
17. Discuss in detail about in-situ and ex-situ conservation.

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