PGS-251005
Autonomous Examination DEC-2025
SEMESTER-I
M.Sc. (Chemistry)
Paper – I (Inorganic Chemistry-I)

Time : 3 Hours M.M. : 70

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

Section-A

01. Objective type questions Attempt any 10 questions out of 12 given below.
(1 x 10 = 10)

(i) The Number of geometrical isomers given by the octahedral complex $[Ma_4bc]$ is:

(a) 0 (b) 2

(c) 3 (d) 4

(ii) In the complex ion, $[PtCl_4]^{2-}$ The no. of Cl^- ions that can be precipitated with $AgN0_3$ is:

(a) 4 (b) 2

(b) 0 (d) 1

(iii) For a high spin octahedral complex having d^4 configuration The CFSE is :

(a) $-1.6\ \Delta_0$ (b) $-1.8\ \Delta_0$

(c) $-0.6\ \Delta_0$ (d) $-1.2\ \Delta_0$

(iv) Which Will be more stable?

(a) $[Be^{II}(0H)]^+$ (b) $[Mg^{II}(0H)]^+$

(c) $[Ca^{II}(0H)]^+$ (d) $[Ba^{II}(0H)]^+$

(v) Tetra chloro complex of Ni (II) and Pd (II) will be:

(a) Diamagnetic and Diamagnetic
(b) Diamagnetic and Paramagnetic
(c) Paramagnetic and Diamagnetic
(d) Paramagnetic and Paramagnetic

(vi) The total number of microstates for a d^3 ion is ……

(vii) Maximum Trans effect is shown by ……...

(viii) The purple color of permanganate ion is due to……..

(ix) The number of unpaired electron in the complex $[Fe(CN)6]^{3-}$ is ……....

(x) In $[Fe(N0)(CN)_5]^{2-}$ complex ion, oxidation state of Fe is ……..

(xi) As the Value of principal Quantum Number increases, The CFSE is decreases. (True/False)

(xii) The secondary valency of a central metal ion is equal to its oxidation number. (True/False)

Section-B

02. Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below.
(03 x 03= 09)

(i) Give the IUPAC name of following:
(a) Li $[AlH_4]$
(b) K_2 $[Zn(0H)_4]$
(c) $[Cr(en)_3]Cl_3$

(ii) Give spin selection rule and Laporte selection rule.

(iii) What is $\log \beta$? How is it related with stability of Complexes?

(iv) Calculate the spin only magnetic moment for Fe^{2+} and Ni^{2+}.

(v) What is Jahn Teller distortion?

Section-C

03. Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below.
(06 x 03= 18)

(i) Determine ground state term symbol for d^2 configuration.

(ii) How will you prepare Cis and Trans $[Pt(NH_3)_2Cl_2]$ starting from $[Ptcl_4]2-$ and $[Pt(NH_3)_4]^{2+}$

(iii) Explain orbital Contribution to the magnetic moment.

(iv) Why magnetic moment of $[Fe(F_6)]^{3-}$ is higher than that of $[Fe(CN)_6]^{3-}$?

(v) How the nature of ligand and Ionic Potential of metal ion affects the stability of metal complexes?

Section-D

04. Long answer type questions (word limit – 500.600 words) Attempt any three questions out of five given below.
(11 x 03 = 33)

(i) Discuss the outer sphere and Inner sphere mechanism of electron transfer reactions. Why is the electron transfer in the system

$[Co(NH_3)_6]^{2+}$ $[Co(NH_3)_6]^{3+}$ slower than that of $[Fe(CN)_6]^{4-}$ $[Fe(CN)_6]^{3-}$?

(ii) (a) Describe the applications of CFT in crystal structure of spinels.
(b) Explain orgel energy diagrams for d^1 and d^9 ions.

(iii) Discuss the formation of σ and π MO's Octahedral complexes. Draw MO diagram for $[C0F_6]^{3-}$ and $[C0(NH_3)_6]^{3-}$.

(iv) Discuss the mechanism in the acid hydrolysis of octahedral complexes. Describe the factor which affects it.

(v) Discuss geometrical isomerism of coordination compounds in square planer and octahedral complexes.

....00....

PGS-251006
Autonomous Examination DEC-2025
SEMESTER-I
M.Sc. – (Chemistry)
Paper – II (Organic Chemistry -I)

Time : 3 Hours M.M. : 70

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

Section-A

01. Objective type questions Attempt any 12 questions out of 10 given below.

(1 x 10 = 10)

(i) The electrophile which is considered to the active agent in the nitration of benzene is -
(a) NO_2^- (b) NO+
(c) NO_2+ (d) HNO_2+

(ii) Optical isomerisation is shown by
(a) n Butyl chloride (b) sec-Butyl chloride
(c) ter-Butyl Chloride (d) Isobutyl chloride

(iii) The shape of carbocation is -
(a) Pyramidal (b) Bent
(c) Linear (d) Trigonal planar

(iv) In which medium Favorskii rearrangement occurs-
(a) Acidic (b) Basic
(c) Neutral (d)Alkaline

(v) The Benzylic acid rearrangement reaction ofa cyclic diketone leads to -
(a) Ring expansion (b) Ring Contraction
(c) Ring Fusion (d) Isomers

(vi) Azulene is another example of a bicycle molecule like **…...….**and **……...**

(vii) Pyridine undergoes nucleophilic substitution with $NaNH_2$ at 100C to give …….

(viii) Carboanions behave as strong ….....…. and ….....….

(ix) The pinacol rearrangement is the acid catalyzed rearrangement of a…….....into a……..... .

(x) The reagents for Friedel Crafts acylation are an ------- and a lewis acid cataly.....

(xi) Nitrene is the nitrogen analogue of carbene. (True/False)

(xii) Racemisation of an enatiomer can only occur by breaking of at least one bond to the chiral centre. (True/False)

Section-B

02. Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below.

(03 x 03= 09)

(i) What do you meant by Homo- aromatic Compound?

(ii) What is Carbene ? Give example.

(iii) write a short note on-walden inversion.

(iv) Explain Chirality.

(v) Give the mechanism of Stork Enamine reaction? Give example.

Section-C

03. Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below.

(06 x 03= 18)

(i) Give Preparation , structure and stability of carbocation.

(ii) What is Benzyne ? Explain Preparation, structure and reaction of benzyne.

(iii) Discuss the mechanism of pinacol –pinacolone rearrangement.

(iv) Explain the Von Richter rearrangement and its application.

(v) Write the short notes on conformation analysis of Cyclohexane

Section-D

04. Long answer type questions (word limit – 500–600 words) Attempt any three questions out of five given below.

(11 x 03 = 33)

(i) Describe ArSN1 and ArSNi mechanism, Leaving group and attacking nucleophile.

(ii) Explain Wagner-Meerwin rearrangement and Sommelete-Hauser reaarangment.

(iii) Write the short note on-
(a) Mechanism of Nitration
(b) Aromatic and Anti-aromatic compound
(c) Curtius reaction

(iv) (a) Explain the Allene, Spiro, and Biphenyl System .Give example
(b) Discuss the Mechanism of Simon –Smith reaction.

(v) Discuss the Aldol condensation and Chichibabin reaction .

———000———

PGSKT-251002
Autonomous Examination DEC-2025
SEMESTER-I
M.Sc.- Chemistry
Paper – II (Organic Chemistry)

Time : 3 Hours M.M. : 70

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

Section-A

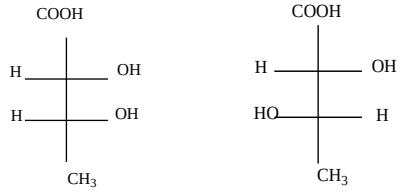
01.Objective type questions Attempt any 10 questions out of 12 given below. (1 x 10 = 10)

(i) Recemic mixture is optically active due to -
(a) Internal compensation (b) External compensation
(c) Molecular symmetry (d) none of these

(ii) The preferred confirmation of trams 1,2- dibromo cyclohexane is:
(a) Diaxial (b) Diequatirial
(c) Axial, eqatirial (d) Neitter a, b ncr c

(iii) Phenol can be converteel into salicylic acid using -
(a) CO_2 and alkali under pressure. (b) CCl_4 in alkali
(c) $CHCl_3$ in alkali followed bty oxidation (d)) none of these

(iv) Compound I & II are respectively



I II

(a) Erythro erythro (b) Threo, erythro
(c) Erythro threo (d)Threo threo

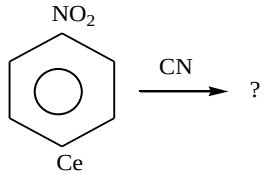
(v) The following is the rate law of an SN_2reaction-
Rate = [MeI] [OH^-]
What will be the effect on the rate of reaction if the concentration of MeI is doubled and that of OH^- is halved-
(a) the rate becomes 2 times faster
(b) The rate become 4 times faster
(c) The rate becomes half.
(d) No change in the rate of reaction

(vi) S_N2 reaction always involves ……

(vii) A pair of stereoisomers which has no mirror image relationship is known as pair of ----------

(viii) The intermediate formed in aromatic electrophilic substitution is known as----------

(ix)



(x) In nucleophilic substitution the leavin gp is known as ----------

(xi) Intramolecular condensation reaction of diester to give B-ketu enter is known as claisen condematicy. (True/False)

(xii) Conformation are different arrangements of alms that can be converted into one another by rotation about single bond. (True/False)

Section-B

02.Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below.

(3 x 3 = 09)

(i) What is Chirality?
(ii) Explain H V Z reaction.
(iii) Explain Newmann formula with suitable example.
(iv) Discuss E/Z nomenclature.
(v) What is Galtermann- Koch reaction?

Section-C

03.Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below. Question for annotation is compulsory.

(6 x 3 = 18)

(i) Describe conformations of disubstituted ethane derivative by tacking example of n-butane.
(ii) Write Arenium ion mechanism of aromatic electrophilic substitution.
(iii) Write short notes on –
(a) Diazonium coupling (b) Vilsmeir Haack reaction.
(iv) Discuss absolute configuration of biphenyl and allenes.
(v) Describe E_1 and E_2 mechanism in aliphatic electrophilic substitution.

Section-D

04.Long answer type questions (word limit – 500.600 words) Attempt any three questions out of five given below.

(11 x 3 = 33)

(i) Explain activation and deactivation of benzene ring be taking example of $^{-}$OH and-NO_2 group. Write explanation for to luene is more easily nitrated than benzene.

(ii) What do you understand by aliphatic nucleophilic substitution? Discuss the mechanism of SN1 and SN2 reactions.

(iii) Writes note on any two of the following –
- (a) Chichibabin reaction
- (b) Reimer- Tiemann reaction
- (c) Chasen condensation

(iv) Discuss Friedal – Craft reaction in detail.

(v) Explain the following (any three)
- (a) Cram's rule
- (b) Stark Enamine reaction
- (c) SNi mechamism
- (d) Von-Richter rearrangement .

———000———

PGS-251007
Autonomous Examination DEC-2025
SEMESTER- I
M.Sc. - Chemistry
Paper – III (Group Theory and Solid State Chemistry)

Time : 3 Hours **M.M. : 70**

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

Section-A

Objective type questions Attempt any 10 questions out of 12 given below.
(10 x 01 = 10)

(i) Point group symmetry of allene (C_3H_4) is -
(a) D_2d (b) D_2h
(c) C_2v (d) D_3d

(ii) Order of C_4v point group is -
(a) 4 (b) 8
(c) 12 (d) 16

(iii) The coordination number of atoms in a body centred cubic (BCC) lattice is -
(a) 6 (b) 12
(c) 8 (d) 4

(iv) In FCC lattice, which of the following planes has the highest atomic packing density ?
(a) (100) (b) (110)
(c) (111) (d) (210)

(v) For C_{2v} point group, the product . $C_{2(Z)}.\sigma_{yz}$ is equal to -
(a) E (b) $C_{2(x)}$
(c) σ_{xz} (d) i

(vi) The number of Bravis lattices possible in three dimensional crystal is.....

(vii) Character of S_4 symmetry element is .....

(viii) Packing efficiency of FCC lattice is .....

(ix) .....type of semiconductor is formed when arsenic (As) is dropped with silicon (si).

(x) In zinc Blende structure Zn^{2+} ions are present at .....

(xi) As per GOT, sum of squares of characters of any irreducible representation is equal to order of the group. (True/False)

(xii) All IR active vibrational modes are necessarily Raman active. (True/False)

Section-B

Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below.
(3 x 3 = 09)

(i) Explain improper axis of symmetry with suitable example.

(ii) Discuss rules for assigning Mulliken symbol.

(iii) What do you mean by voids ? Explain tetrahedral and octahedral voids in cubic closed packing (CCP).

(iv) Differentiate Schoottky and Frenkel defects.

(v) Write unit cell parameters of seven crystal system.

Section-C

Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below. Question for annotation is compulsory.
(3 x 6 = 18)

(i) Discuss how group theory is helpful to predict electronic transition probabilities (Selection rule).

(ii) Write matrix representation for E, C_2 and σ .

(iii) Determine relationship between radius of atom and edge length of unit cell for BCC and FCC.

(iv) Discuss non stoichiometric defects in detail.

(v) Derive Bragg's Law equation and discuss its limitations.

Section-D

Long answer type questions (word limit – 500-600 words) Attempt any three questions out of five given below.

(3 x 11 = 33)

(i) Discuss diffraction methods for prediction of structure of solids.

(ii) Discuss the crystal structure of following ionic solids -

(a) NaCl (b) CsCl (c) ZnS (Pervoskite)

(iii) Derive the character table of C_2v point group using postulates of GOT.

(iv) Explain the following in detail -

(a) Band theory of semiconductor.

(b) Lattice type prediction from $Sin^2\theta$ values.

(v) What do you mean by reducible and reducible representation ? find out the total number of IR and Raman active vibrational modes of Lis-buta diene.

Character table of C_2v point group is given below -

	E	$C_2(z)$	$\sigma_v(xz)$	$\sigma_v(yz)$	Linear, rotations	Quadratic
A_1	1	1	1	1	z	x^2, y^2, z^2
A_2	1	1	-1	-1	Rz	*xy*
B_1	1	-1	-1	-1	*x*, Ry	*xz*
B_2	1	-1	1	1	*y*, *Rx*	*yz*

———000———

PGS-251072
Autonomous Examination DEC-2025
SEMESTER-I
M.A./M.Sc./M.Com./LLM
Paper – IV - (Research Methodology & Computer Application:Basics)

Time : 3 Hours M.M. : 70

नोट : सभी प्रश्न हल करना अनिवार्य है। प्रश्न के समक्ष अंक एवं शब्द सीमा निर्दिष्ट है।
Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

'खण्ड–अ'
Section-A

1.वस्तुनिष्ठ प्रश्न–दिये गये 12 प्रश्नों में से किन्हीं 10 प्रश्नों के उत्तर दीजिए।
Objective type questions Attempt any 10 questions out of 12 given below.
(01 x 10 = 10)

(i) निम्न में से कौन सा शोध का अंग नहीं है-
(अ) परिकल्पना निर्माण (ब) तथ्यों का संकलन
(स) परिकल्पना का परीक्षण (द) साहित्यिक चोरी

Which of the following is not a part of research?
(a) Hypothesis generation (b) Data collection
(c) Hypothesis testing (d) Plagiarism

(ii) शोध-नैतिकता में शामिल है-
(अ) ईमानदारी और सत्यनिष्ठा (ब) पारदर्शिता
(स) निष्पक्षता (द) उपरोक्त सभी

Research ethics includes -
(a) Honesty and Integrity (b) Transparency
(c) Impartiality (d) All of the above

(iii) किसी विशिष्ट उद्देश्य के लिए शोधकर्ता द्वारा एकत्र की गई मूल जानकारी कहलाती है-
(अ) प्राथमिक स्रोत (ब) द्वितीयक स्रोत
(स) दोनो अ और ब (द) इनमें से कोई नहीं

Original information collected directly by the researcher for a unique purpose-
(a) Primary data (b) Secondary data
(c) Both 'a' & 'b' (d) None of these

(iv) कंप्यूटर का बाहरी ढांचा कहलाता है-
(अ) सॉफ्टवेयर (ब) हार्डवेयर
(स) प्रिंटर (द) इनमें से कोई नहीं

The outer structure of a computer is called-
(a) Software (b) Hardware
(c) Printer (d) None of these

(v) प्रतिचयन का प्रकार है-
(अ) संभाव्यता प्रतिचयन (ब) गैर-संभाव्यता प्रतिचयन
(स) दोनों (द) इनमें से कोई नहीं

The type of sampling is-
(a) Probability sampling (b) Non-probability sampling
(c) Both (d) None of these

(vi) निम्न में से कौन सा इनपुट उपकरण नहीं है-
(a) माउस (b) प्रिंटर
(c) कीबोर्ड (d) स्कैनर

Which of the following is not an input device
(a) Mouse (b) Printer
(c) Keyboard (d) Scanner

(vii) एम. एस.पॉवर प्वाइंट एक .....सॉफ्टवेयर है|
M.S. Power point is a ……..software

(viii) शोध प्रश्न को हल करने के लिए डेटा इकट्ठा करने और उसका विश्लेषण करने के तरीके को .....कहते हैं |
The method of collecting and analyzing data to answer a research question is called .....

(ix) किसी बड़े समूह से शोध हेतु चुने गये प्रतिनिधि .....कहलाते हैं |
Representatives selected from a large group for research are called.....

(x) शोध उद्देश्य की पूर्ति हेतु शोध में नैतिकता अत्यंत आवश्यक है| (सत्य/असत्य)
Research Ethics is essential to achieve the research objective. (True/False)

(xi) साहित्य-समीक्षा शोध का अंग नहीं है | (सत्य/असत्य)
Literature review is not a part of research. (True/False)

(xii) गूगल,बिंग,याहू आदि प्रमुख सर्च इंजन हैं| (सत्य/असत्य)
Google, Bing, Yahoo etc. are the major search engines. (True/False)

'खण्ड–ब'
Section-B

2.अति लघुत्तरीय प्रश्न (शब्द सीमा 70–100 शब्द) दिये गये पॉच प्रश्नों में से किन्हीं तीन प्रश्नों के उत्तर दीजिए।

Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below. **(3 x 3 = 09)**

(i) शोध के उद्देश्य को स्पष्ट कीजिये |
Explain the purpose of the research.

(ii) साहित्यिक चोरी से क्या अभिप्राय है?
What is meant by plagiarism?

(iii) सैम्पल साइज किसे कहते हैं ?
What is sample size?

(iv) ऑपरेटिंग सिस्टम क्या है ?
What is an operating system?

(v) शोध-अन्तराल क्या है?
What is Research-Gap?

'खण्ड–स'
Section-C

3.लघु उत्तरीय प्रश्न (शब्द सीमा 200–250 शब्द) दिये गये पॉच प्रश्नों में से किन्हीं तीन प्रश्नों के उत्तर दीजिए।

Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below. **(6 x 3 = 18)**

(i) शोध की परिभाषा लिखिए एवं शोध के विभिन्न चरणों पर प्रकाश डालिए |
Write the definition of research and highlight the various stages of research..

(ii) साहित्य-समीक्षा से क्या अभिप्राय है? शोध हेतु साहित्य-समीक्षा के महत्व पर प्रकाश डालिए |
What is meant by a literature review? Explain the importance of a literature review for research

(iii) कंप्यूटर की संरचना का परिचय प्रस्तुत कीजिये|
Give an introduction to the structure of a computer.

(iv) मात्रात्मक एवं गुणात्मक शोध को उदाहरण सहित पारिभाषित कीजिये|
Define quantitative and qualitative research with examples..

(v) शोध-पत्र प्रकाशन हेतु किन बातों का ध्यान रखा जाना आवश्यक है|
What are the things that need to be kept in mind for publishing a research paper?

'खण्ड–द'
Section-D

4.दीर्घोत्तरीय प्रश्न (शब्द सीमा 500–600 शब्द) दिये गये पाँच प्रश्नों में से किन्हीं तीन प्रश्नों के उत्तर दीजिए।

Long answer type questions (word limit – 500-600 words) Attempt any three questions out of five given below. **(11 x03 = 33)**

(i) शोध की विभिन्न पद्धतियों पर प्रकाश डालिए|
Highlight various methods of research.

(ii) शोध-नैतिकता क्या है? शोध-नैतिकता के वैशिष्ट्य पर प्रकाश डालिए|
What is research ethics? Highlight the salient features of research ethics.

(iii) शोध-प्रारूप किसे कहते हैं? शोध प्रारूप के विभिन्न अंगों पर प्रकाश डालिए|
What is a research design? Explain the various components of a research design.

(iv) 'शोध कार्य में कंप्यूटर की भूमिका' विषय पर निबंध लिखिए |
Write an essay on the topic 'Role of computer in research work'.

(v) शोध के विभिन्न उपकरणों और उनके महत्व पर विस्तृत टिप्पणी कीजिये|
Comment in detail on various tools of research and their importance.

---000---

PGS-251008
Autonomous Examination DEC-2025
SEMESTER-I
M.Sc. Chemistry
Paper – V (Quantum Chemistry)

Time : 3 Hours M.M. : 70

Note: Attempt all questions. Scheme of questions and marks are indicated against the questions.

Section-A

01.Objective type questions Attempt any 10 questions out of 12 given below. **(01 x 10 = 10)**

(i) Two function are orthogonal. If the integral of their product is -
(a) 1 (b) 0
(c) Infinity (d) 2

(ii) Which of the following conditions a wave function must not satisfy for it to be acceptable ?
(a) It must be single valued
(b) It cannot become infinite over a finite region of space.
(c) It is continuous every where
(d) It is infinite over a finite range.

(iii) The commutator (x^2, px) is -
(a) 0 (b) $i\hbar x^2$
(c) $2i\hbar x$ (d) $i\hbar$

(iv) A normalized wave function ensures -
(a) Conservation of momentum (b) Definite energy
(c) Total probability = 1 (d) Orthogonality of state

(v) According to the time dependent Schrodinger equation how does a systems wave function evolve with time ?
(a) Linearly with time
(b) With a constant rate determine by the Hamilton.
(c) According to the equation $H\psi = i\hbar\frac{\partial\psi}{\partial\psi}$
(d) By a probabilitistic process related to the wave functions amplitude.

(vi) If ψ is the wave function, the probability density function is given by.....

(vii) In 1-D problem the energy level of bound system is.....
(viii) By space inversion change of $+x$ into $-x$ potential energy will be. .....
(ix) The degeneracy of a quantum partical in a 3D cubic box having energy $27h^2/8ml^2$ is .....
(x) Energy difference between 1st excited state and ground state for 2-D box is .....
(xi) Particle in a box of finite potential can never be at rest. (True/False)
(xii) The values of energy for which Schrodinger steady state equation can be solved is called a Eigen vectors. (True/False)

Section-B

02.Very Short answer type questions (word limit – 70-100 words) Attempt any Three questions out of Five given below. **(03 x 03 = 09)**

(i) What do you understand by operators.
(ii) What is expectation value.
(iii) What is Degeneracy.
(iv) Find he value of $\left[x^n, {}^{d}\!/\!_{dx}\right]$.
(v) Write significance of quantum number.

Section-C

03.Short answer type questions (word limit – 200-250 words) Attempt any Three questions out of Five given below. **(06 x 03 = 18)**

(i) Write concept of zero point energy.
(ii) Write Radial and angular parts of wave function.
(iii) Explain postulates of quantum mechanics.
(iv) What is commutators ? Write properties of commutators.
(v) Explain De-Broglie hypothesis ?

Section-D

04.Long answer type questions (word limit – 500–600 words) Attempt any three questions out of five given below. **(11 x 03 = 33)**

(i) Derive equation for vibrational energy of a diatomic molecule assuming it to be simple harmonic oscillator. Explain zero point energy.
(ii) Explain particle in 1D-Box, boundary condition, energy wave function plots probability plots.

(iii) (a) Calculate value of Normalisation constant for 1D box, $\psi = \sin\left(\frac{n\pi x}{l}\right)$ in between 0 to *l*.

(b) Explain the wave function $\sqrt{\frac{2}{a}} \sin \frac{n\pi x}{a} (0 < x < a)$

n = 1, 2, 3 is orthogonal or not.

(iv) Derive the time independent Schrodinger wave equation.

(v) Write note on -

(a) Schrodinger wave equation for H-atom.

(b) Energy calculation for hydrogen and hydrogen like atom.

———000———