

Exam Code: 508602

Paper Code: 2213

Master of Science (Physics) (FYIP) Semester-II

Course Title: Inorganic Chemistry –I: Atomic Structure and
Periodic Table

Course Code: FPHL-2086

Time: 3 Hours

Max. Marks: 70

NOTE: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 14 marks.

SECTION-A

1. a) Describe Werner's coordination theory and its significance in the development of coordination chemistry. Discuss how his theory explains the structures and properties of coordination compounds.

b) What is coordination number? What are the factors affecting coordination number.

c) Write the IUPAC name of the following:

i) $K_2[PtF_6]$ ii) $[Rh(PPH_3)]Cl$ iii) $[Ni(dmg)_2]$ (7, 4, 3)

2. Write postulates of molecular orbital theory. Compare the molecular orbital diagram of O_2 , N_2 . Also discuss its bond order and magnetism. (14)

SECTION-B

3. Discuss the splitting of d orbitals of metal ion in octahedral and tetrahedral complex. (14)

4. What is CFSE? Calculate CFSE for following:

i) d^3 for octahedral.

ii) d^8 for tetrahedral.

iii) d^6 for tetrahedral.

iv) d^4 for octahedral.

v) d^7 for octahedral. (14)

SECTION-C

5. (a) What are term symbols? Derive the term symbols for d^2 configuration (excited state).

(b) Define microstates. Calculate the number of microstates for d^4 , d^6 , p^3 systems. (7, 7)

6. (a) What is Orgel Diagram? Draw combined Orgel energy level diagram for d^1 , d^9 octahedral and tetrahedral complexes.

(b) What are selection rules for d-d transitions and Hund's rules for determining ground state term symbol? Under what conditions these are relaxed? (7, 7)

SECTION-D

7. Define π -acid ligands. Discuss the electronic structure and bonding of carbon monoxide as a π -acid ligand in metal carbonyl complexes. (14)

8. Explain the use of vibrational spectroscopy in the study of metal carbonyl complexes. How can IR spectroscopy differentiate between terminal and bridging CO groups? (14)

Exam Code: 508602

Paper Code: 2212

Programme: Master of Science (Physics) (FYIP)

Semester-II

Course Title: Mathematics-II

Course Code: FPHL-2335

Time Allowed: - 3 Hours

Max. Marks: - 70

Note: Attempt five questions in all selecting at least one question from each section. The fifth question may be attempted from any section. All questions carry equal marks.

Section-A

- 1(a) Transform the equation $12x^2 + 7xy - 12y^2 - 17x - 31y - 7 = 0$ first to parallel axis through $(1, -1)$ and then to axes inclined at an angle $\tan^{-1} \frac{4}{3}$ to the original axis. (7)
- (b) Prove that the subnormal at any point of a parabola is constant and equal to half of its latus rectum. (7)
- 2(a) Tangents are drawn from a point $(-2, -1)$ to the hyperbola $2x^2 - 3y^2 = 6$. Find their equations and angle between them. (7)
- (b) State and prove Focal Property for ellipse. (7)

Section-B

- 3(a) Find the center and radius of a circle given by $x^2 + y^2 + z^2 = 49, 2x + 3y + 6z = 14$. (7)
- (b) Show that the planes $x - 2y + z = 0; x + y - 2z - 3 = 0; 3x - 2y + z - 2 = 0$ meet in a point. Find the co-ordinate of the point. (7)
- 4(a) Find the equation of the tangent plane of the cone $4x^2 - y^2 + 2z^2 + 2xy - 3yz + 12x - 11y + 6z + 4 = 0$ at the point $(-3, 0, -1)$ (7)
- (b) Show that the equation $4x^2 - 24xy + 11y^2 = 0$ represents two straight lines passing through origin. Find their separate equations, and also find the angle between them. (7)

Section-C

- 5(a) Solve the equation $x^4 - 8x^3 + 14x^2 + 8x - 15 = 0$ given that two of its roots are equal in magnitude but opposite in sign. (7)
- (b) If α, β, γ are roots of $x^3 - x - 1 = 0$, then prove that $\frac{1+\alpha}{1-\alpha} + \frac{1+\beta}{1-\beta} + \frac{1+\gamma}{1-\gamma} = -7$ (7)
- 6(a) Solve the biquadratic equation $3x^4 + 8x^3 + 2x^2 - 1 = 0$ by Descarte's method. (7)
- (b) Solve the equation $x^4 - 5x^3 + 3x^2 + 2x + 8 = 0$ by Ferrari method (7)

Section-D

- 7(a) Prove that the set $\{a + b\sqrt{2} : a, b \in \mathbb{Q}\}$ forms a commutative group of a infinite order w.r.t addition. (7)
- (b) Let H and K be subgroups of a group G. Show that HK is a subgroup of G if and only if $HK = KH$. (7)
- 8(a) Find the center of symmetric group S_3 of degree 3. (7)
- (b) Show that a group G is abelian iff $f: G \rightarrow G$ is given by $f(x) = x^2$ is a homomorphism. (7)

Exam Code: 508602

Paper Code: 2210

Master of Science (Physics) (FYIP) Semester-II

Electricity and Magnetism

Course code: FPHL -2393

Time: 3 Hours

Marks: 70

Note: Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 14 marks. Students can use Non-Scientific calculators or logarithmic tables.

Section A

1. (a) A charge q is distributed uniformly over a thin ring of radius a . Find the electric field $\vec{E}$ due to this ring at the point on the axis of a ring at a distance z from the centre. Show that the maximum of $\vec{E}$ occurs at $z = a/\sqrt{2}$.

(10)

(b) Calculate $\nabla\left(\frac{1}{r}\right)$ where $\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$

(4)

2. (a) Show that potential due to arbitrary charge distribution at far off points from the charge distribution can be written as the sum of potentials due to monopole, dipole, quadruple etc.

(10)

(b) Determine the constant 'a' so that $(x+2y)\hat{i} + (2y-z)\hat{j} + (2x+az)\hat{k}$ is solenoidal.

(4)

Section B

3. (a) Show that the total electric flux over a closed surface in a dielectric having permittivity ϵ is $1/\epsilon$ times the free charge enclosed within the surface.

(5)

(b) Explain the terms electric displacement vector $\vec{D}$ and polarization vector $\vec{P}$ and arrive at the relation $\vec{D} = \epsilon_0 \vec{E} + \vec{P}$ and hence derive $k = 1 + \chi_e$.

(5)

(c) The electric field in a sample of polystyrene at 25°C is uniform with a magnitude of 5000 V/m . Find (a) polarization in polystyrene. (b) Electric

displacement. Given that dielectric constant of polystyrene at 25°C is 2.56 and $\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 \text{N}^{-1} \text{m}^{-2}$. (4)

4. A charge is situated at a distance d from an infinite conducting sheet maintained at zero potential in the x - y plane. The source charge lies in the region $z > 0$. Using method of images, find electric field at any point in the region $z > 0$. Also find the induced surface charge density on the sheet. (14)

Section C

5. (a) Using Biot Savart's law, Show that the vector potential due to an arbitrary current distribution is given by

$$\vec{A} = \frac{\mu_0}{4\pi} \iiint \frac{\vec{j} dv'}{|\vec{r} - \vec{r}'|} \quad (10)$$

(b) Derive Ampere's circuital law in the form

$$\oint \vec{B} \cdot d\vec{r} = \mu_0 I_{\text{enc}} \quad (4)$$

6. (a) Define the term (i) Retentively (ii) Coercively (iii) Hysteresis and prove that hysteresis loss per cycle of magnetization is equal to area of B-H Loop. (7)

(b) Prove that magnetic moment due to orbital motion of an electron is an integral multiple of $\frac{eh}{4\pi m}$ and define Bohr magneton. (7)

Section D

7. Discuss by deriving necessary mathematical relations the interaction of a moving charge on the other moving charge and obtain the expression for the force as measured in the laboratory frame. Hence define the magnetic field. (14)

8. Explain the concepts of complex reactance, impedance, resonance, power dissipation, quality factor, and bandwidth in the context of a series LCR circuit. How are these parameters interrelated, and what is their significance in determining the behaviour of the circuit at resonance? (14)

Exam Code: 508602

Paper Code: 2211

Programme: Master of Science (Physics) (FYIP) Semester-II

Course Title: Waves and Oscillations

Course Code: FPHL-2394 ✓

Time Allowed: 3 hrs

Max. Marks: 70

Note: Attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section. Each question carries 14 marks. Students can use non-programmable scientific calculators.

Section A

1. Define a damped harmonic oscillator. Derive the differential equation governing its motion, clearly explaining the physical significance of each term involved. Obtain the general solution of the equation for the following three cases:

- (a) Light damping
- (b) Critical damping
- (c) Heavy damping

Also, discuss the qualitative behavior of the oscillator in each case. (14)

2. (a) Define and derive expressions for the following terms in the context of a damped harmonic oscillator:

- (i) Logarithmic decrement,
- (ii) Relaxation time, and
- (iii) Quality Factor.

Explain how these parameters are related to the damping coefficient. (8)

(b) A mass of 1 kg is attached to a spring of stiffness constant 16 N/m. It oscillates in a viscous medium offering resistance proportional to velocity. If the energy of the system decays to $1/e$ of its initial value in 5 seconds, calculate the damping constant and Q-factor. (6)

Section B

3. (a) Derive the differential equation for a forced damped harmonic oscillator and explain the physical significance of each term. Discuss in detail the transient and steady-state solutions of the equation. (8)

(b) How does the amplitude and phase of the steady-state oscillation depend on the frequency of the driving force and the damping constant? Illustrate using appropriate mathematical expressions and plots. (6)

4. (a) Derive an expression for the average power supplied to a damped harmonic oscillator by a sinusoidal driving force. Show that the power absorbed by the oscillator is maximum at resonance and explain how it varies with driving frequency. (8)

(b) Define the Q-value (quality factor) of an oscillator and derive its relation with the power absorption bandwidth. (6)

Section C

5. Derive the equations of motion for two identical coupled oscillators connected by a spring. Solve the equations using the method of normal coordinates and obtain the expressions for the normal modes and their corresponding frequencies. Illustrate how the energy is exchanged between the oscillators and explain the physical significance of in-phase and out-of-phase modes. (14)

6. Derive the equations of motion for a system of N coupled longitudinal oscillators connected by springs. Using the method of normal modes, find the normal frequencies of the system and describe the corresponding normal modes of vibration. (14)

Section D

7. Derive the wave equation for a string of fixed length and obtain the solution that satisfies the boundary conditions at both ends. Explain how standing waves are formed due to the superposition of incident and reflected waves. Derive expressions for the allowed frequencies of vibration and describe the pattern of the first three normal modes with the help of diagrams. (14)

8. Derive the general formula for the apparent frequency when there is relative motion between the source and the observer in a medium (like air). Discuss the different cases:

(i) Source moving towards/away from stationary observer

(ii) Observer moving towards/away from stationary source

(iii) Both source and observer in motion (14)

Paper Code: 2115

Programme	Exam Code	Course Code
Master of Commerce (FYIP)	508302	FCOL-2102 ✓
Master of Science (Mathematics) (FYIP)	508402	FMAL-2102 ✓
Master of Science (Physics) (FYIP)	508602	FPHL-2102 ✓

Semester-II
Course Title: Communicative English-II
(100)

Time Allowed: 3 Hours

Max Marks: 35

Attempt five question in all, selecting at least one from each section. Fifth question may be attempted from any section. Each question carries 7 marks.

SECTION-A

1. What are the steps you need to take while making notes on reading? 7
2. How can you make notes while listening to a radio talk? 7

SECTION-B

3. Write any paragraph and analyse it for its unity, coherence and structure? 7
4. Write a paragraph on Electioneering? 7

SECTION-C

5. Define the ABC of Good Notes on the basis of your reading of "The written word ". 7
6. Find words that are similar in meaning to the following:-
 - a) A person whose position or status is lower
 - b) An idea in the mind by some experience
 - c) A type of some spoken communication
 - d) Widely accepted and used
 - e) To appear
 - f) Correctly
 - g) To explain why7x1=7

SECTION-D

7. Write an essay on 'Myself' and analyse for it's effectivity. 7
8. Highlight the main verb and underline the entire nominalized subject:
 - a) The researcher's claim that he had discovered a cure for the common cold was received with disbelief by the scientific community.
 - b) The government's decision to raise income taxes has angered a lot of people.
 - c) The student's slow and painful adjustment to life overseas was to expected.
 - d) The allegation by some people that immigrants take more out of the U.S economy that they contribute to it is rejected by most economist.7

Lib-24/5/20 (EUG) R.M.V.L

Paper Code: 2104

Programme	Exam Code	Couse Code
Master of Commerce(FYIP)	508302	FCOL-2421 ✓
Master of Arts (English) (FYIP)	508502	FENL-2421
Master of Science (Mathematics) (FYIP)	508402	FMAL-2421
Master of Science (Physics) (FYIP)	508602	FPHL-2421

Semester-II**Course Title: Punjabi (Compulsory)****(100)****Time Allowed: 3 Hours****Max Marks: 35**

ਨੋਟ:- ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਸੱਤ ਅੰਕ ਹਨ।

ਸੈਕਸ਼ਨ- I

1. ਸੁਹਾਗ ਇਕਾਂਗੀ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਆਪਣੇ ਸ਼ਬਦਾਂ ਵਿੱਚ ਲਿਖੋ।
2. ਇੱਕ ਐਤਵਾਰ ਇਕਾਂਗੀ ਦਾ ਸਾਰ ਲਿਖੋ।

ਸੈਕਸ਼ਨ -II

3. ਜੁੱਤੀਆਂ ਦਾ ਜੋੜਾ ਇਕਾਂਗੀ ਦੇ ਸਾਰ ਤੇ ਚਾਨਣਾ ਪਾਓ।

4. ਕੱਚ ਦਾ ਗਜਰਾ ਇਕਾਂਗੀ ਦੇ ਵਿਸ਼ਾ ਵਸਤੂ ਸਬੰਧੀ ਆਪਣੇ ਵਿਚਾਰ ਪ੍ਰਗਟ ਕਰੋ।

ਸੈਕਸ਼ਨ -III

5. ਹੇਠ ਲਿਖੇ ਮੁਹਾਵਰਿਆਂ ਤੇ ਅਖਾਣਾ ਵਿੱਚੋਂ ਕਿਸੇ ਸੱਤ ਨੂੰ ਵਾਕਾਂ ਵਿੱਚ ਵਰਤੋ।

ਉਂਗਲ ਕਰਨੀ, ਉੱਲੂ ਬਣਾਉਣਾ, ਉੜਾ ਐੜਾ ਨਾ ਆਉਣਾ, ਅੱਖਾਂ ਵਿੱਚ ਲਾਲੀ ਉਤਰਨੀ, ਆਪਣੇ ਅੱਗੇ ਕੰਢੇ ਬੀਜਣਾ, ਈਨ ਮੰਨਣਾ, ਇੱਟ ਕੁੱਤੇ ਦਾ ਵੈਰ ਹੋਣਾ, ਉੱਚੀ ਦੁਕਾਨ ਫਿੱਕਾ ਪਕਵਾਨ , ਆਪ ਕੁਚੱਲੀ ਵਿਹੜੇ ਨੂੰ ਦੋਸ਼, ਉਲਟਾ ਚੋਰ ਕੋਤਵਾਲ ਨੂੰ ਡਾਂਟੇ।

6. ਛੋਟੇ ਭਰਾ ਨੂੰ ਪੱਤਰ ਲਿਖੋ ਕਿ ਉਹ ਪੜ੍ਹਾਈ ਦੇ ਨਾਲ ਨਾਲ ਖੇਡਾਂ ਵਿੱਚ ਵੀ ਹਿੱਸਾ ਲਵੇ।

ਸੈਕਸ਼ਨ-IV

7. ਪੜਨਾਂਵ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦੇ ਹੋਏ ਇਸ ਦੀਆਂ ਕਿਸਮਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦਿਓ।
8. ਕਿਰਿਆ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦੇ ਹੋਏ ਇਸ ਦੀਆਂ ਕਿਸਮਾਂ ਦੀ ਉਦਾਹਰਨ ਸਹਿਤ ਜਾਣਕਾਰੀ ਦਿਓ।

Paper Code: 2107

Programme	Exam Code	Course Code
Master of Commerce(FYIP)	508302	FCOL-2031 ✓
Master of Arts (English) (FYIP)	508502	FENL-2031 ✓
Master of Science (Mathematics) (FYIP)	508402	FMAL-2031 ✓
Master of Science (Physics) (FYIP)	508602	FPHL-2031 ✓

Semester-II
Course Title: Basic Punjabi
(20)

Time Allowed: 3 Hours

Max Marks: 35

ਨੋਟ:- ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹਨ । ਹਰ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਸੱਤ ਅੰਕ ਹਨ।

ਸੈਕਸ਼ਨ-1

1. ਨਾਂਵ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦਿਆਂ ਇਸਦੀਆਂ ਕਿਸਮਾਂ ਬਾਰੇ ਦੱਸੋ।
2. ਕਿਰਿਆ ਦੀ ਪਰਿਭਾਸ਼ਾ ਦਿੰਦਿਆਂ ਇਸ ਦੀਆਂ ਕਿਸਮਾਂ ਬਾਰੇ ਦੱਸੋ।

ਸੈਕਸ਼ਨ-II

3. ਸਾਧਾਰਨ ਵਾਕ ਬਾਰੇ ਦੱਸੋ ।
4. ਬਿਆਨੀਆਂ ਵਾਕ ਤੇ ਚਰਚਾ ਕਰੋ।

ਸੈਕਸ਼ਨ-III

5. ਹੇਠਾਂ ਲਿਖੇ ਕਿਸੇ ਇੱਕ ਵਿਸ਼ੇ ਤੇ ਪੈਰਾ ਰਚਨਾ ਲਿਖੋ।
 ਓ. ਰੁੱਖ ਲਗਾਓ
 ਅ. ਸਵੇਰ ਦੀ ਸੈਰ
 ਏ. ਸੁੰਦਰਤਾ
6. ਹੇਠ ਲਿਖੇ ਪੈਰੂ ਦਾ ਸਿਰਲੇਖ ਦਿੰਦਿਆਂ ਸੰਖੇਪ ਰਚਨਾ ਕਰੋ।
 ਤੁੱਛ ਬੁੱਧੀ ਵਾਲੇ ਲੋਕਾਂ ਦੇ ਸੁਝਾਵ ਵਿੱਚ ਆਮ ਕਰਕੇ ਉਪਭਾਵਕਤਾ ਬਹੁਤ ਹੁੰਦੀ ਹੈ। ਨਿੱਜੀ ਘਰੇਲੀ ਮਾਮਲਿਆਂ ਤੋਂ ਲੈ ਕੇ ਕੌਮੀ ਤੇ ਕੌਮਾਂਤਰੀ ਮਾਮਲਿਆਂ ਤੱਕ ਉਹਨਾਂ ਦੇ ਮਨ ਤੇ ਵਿਚਾਰ ਘਟੀਆ ਤੇ ਅਸੁੱਧ ਭਾਵਾਂ ਨਾਲ ਭਰੇ ਹੁੰਦੇ ਹਨ। ਉਹਨਾਂ ਦੇ ਨਿੱਜੀ ਦੁਸ਼ਮਣਾਂ, ਉਹਨਾਂ ਦੇ ਸੰਪਰਦਾਇਕ ਤੇ ਸ਼੍ਰੇਣੀ, ਕੌਮੀ ਹਿੱਤਾਂ ਦੇ, ਜਿਸ ਤਰ੍ਹਾਂ ਉਹ ਇਹਨਾਂ ਨੂੰ ਸਮਝਦੇ ਹੋਣ, ਵਿਰੋਧੀਆਂ ਵਿਰੁੱਧ ਕੋਈ ਗੱਲ ਹੋਵੇ, ਉਹਨਾਂ ਨੂੰ ਚੰਗੀ ਲੱਗੇਗੀ, ਭਾ ਜਾਏਗੀ।

ਸੈਕਸ਼ਨ-IV

7. ਆਪਣੀ ਮਿੱਤਰ/ਸਹੇਲੀ ਨੂੰ ਆਪਣੀ ਭੈਣ ਦੇ ਵਿਆਹ ਵਿੱਚ ਸ਼ਾਮਿਲ ਹੋਣ ਲਈ ਪੱਤਰ ਲਿਖੋ।
8. ਹੇਠ ਲਿਖੇ ਮੁਹਾਵਰਿਆਂ ਅਤੇ ਅਖਾਣਾਂ ਵਿੱਚੋਂ ਕੋਈ ਸੱਤ ਨੂੰ ਵਾਕਾਂ ਵਿੱਚ ਵਰਤੋ।
 ਉਗਲ ਕਰਨੀ, ਅੱਗ ਲਾਉਣਾ, ਇੱਟ ਨਾਲ ਇੱਟ ਖੜਕਾਉਣਾ, ਸਬਰ ਦਾ ਘੁੱਟ ਭਰਨਾ, ਹੱਥ ਤੰਗ ਹੋਣਾ, ਉਹ ਦਿਨ ਡੁੱਬਾ ਜਦੋਂ ਘੋੜੀ ਚੜਿਆ ਕੁੱਬਾ, ਇੱਕ ਅਨਾਰ ਸੌ ਬਿਮਾਰ, ਇੱਕ ਚੁੱਪ ਸੌ ਸੁੱਖ, ਸੱਦੀ ਨਾ ਬੁਲਾਈ ਮੈਂ ਲਾੜੇ ਦੀ ਤਾਈ, ਖਰਬੂਜ਼ੇ ਨੂੰ ਦੇਖ ਕੇ ਖਰਬੂਜਾ ਰੰਗ ਬਦਲਦਾ ਹੈ।

Paper Code: 2110

Programme	Course Code	Exam Code
Master of Arts (English) (FYIP)	FENL-2431 ✓	508502
Master of Science (Mathematics) (FYIP)	FMAL-2431 ✓	508402
Master of Science (Physics) (FYIP)	FPHL-2431 ✓	508602

Semester: II**Course Title: Punjab History and Culture****Time Allowed: 3 Hours****Max Marks: 35**

Note: Attempt five questions in 500 words, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 7 marks.

Section - A

1. Explain the struggle of Chandra Gupt Maurya with Alaxander. What was its impact on political history of Punjab?
2. Discuss the chief features of Mauryan polity and administration with special reference to the reforms brought out by Ashoka.

Section - B

3. Discuss the achievements of Kanishka with special reference to his services to Buddhism.
4. What were the major achievements in the field of literature and architecture under the Guptas?

Section - C

5. Describe the conquests, administration and literary activities of Harsha Vardhana.
6. What was the political and cultural pattern of Punjab from 7th to 1000 A.D.?

Section - D

7. Explain the growth of languages in Ancient Punjab with special reference to Taxila from 7th to 1000 A.D.
8. Write down the development of Art and Architecture in Ancient Punjab.