

Paper Code: 4182

Programme	Exam Code	Course Code
Bachelor of Science (Non-Medical)	121304	BSNM-4395 (I) ✓
Bachelor of Science (Computer Science)	121304	BCSM-4395 (I) ✓

Semester-IV

Course Title: Physics (Quantum Mechanics)

(40)

Time Allowed: 3 Hours

Max Marks: 60

Note: - Candidates are required to attempt five questions from Section A to D, selecting at least one question from each section. The fifth question may be attempted from any Section. Each complete question carries 12 marks.

Section A

- (a) Why could not classical theory explain various features of photo-electric effect?

(b) Give Einstein's theory of photoelectric emission. Discuss how it explains the observed facts about photo electric effect?
- (a) What are the limitations of the old quantum theory? Explain clearly.

(b) What led de-Broglie to suggest wave character of matter? Derive expression for the wavelength of electron.

(c) Define group velocity and Wave velocity of a Wave group associated with a particle.

Section B

3. (a) What is Gaussian Wave-packet? Give its characteristics.

(b) Explain the terms 'Observable', expectation value and eigen value. Show that a Hermitian operator leads to a real eigen value.

4. (a) What do you mean by probability current density. Show that the probability is conserved.

(b) State and explain Ehrenfest's theorem on the motion of wave packets.

Section C

5. A particle of mass m and total energy E moves from a region of zero potential to a region of constant potential V_0 . Deduce an expression for the penetration distance of the particle through step potential.

6. Differentiate between classical and quantum mechanical explanation for reflection and transmission through a potential barrier. Hence explain what tunnelling barrier for an energy is less than the barrier height.

Section D

7. Obtain the expressions for energy levels and normalized wave functions for the ground state of Harmonic oscillation.
8. State Schrodinger equation in spherical coordinates for hydrogen atom. Bring about the separation of variables.

(For Reappear Candidates Old Syllabus (2021-22))

Paper Code: 9406

Exam Code: 121304

Programme: Bachelor of Science (Semester: IV)

Course Title: Physics (Quantum Mechanics)

Course Code: BSNM/ BCSM-4395 (I)

Time Allowed: 3 Hours

Max Marks: 30

Note: Attempt five questions, selecting at least one question from each section. Fifth question can be attempted from any Section. Each question carries 6 marks. Students can use Non-Scientific calculators or logarithmic tables.

Section-A

1. What do you mean by phase velocity and group velocity? Prove that phase velocity is half of the particle velocity whereas group velocity is equal to velocity of moving particles.
2. What is the Compton effect? Describe the Compton effect using the quantum theory of light, and derive an expression for the Compton wavelength shift.

Section-B

3. What is the Gaussian wave packet? Prove that the wave packet for which the uncertainty product has minimum value has the Gaussian curve. State the properties of Gaussian wave packet.
4. What is the Hermitian operator? Is the momentum operator Hermitian? Prove that the operator $\frac{d}{dx}$ is non Hermitian.

Section-C

5. Consider a particle incident on a potential step of height V_0 with energy $E > V_0$. Calculate the coefficient of reflection and transmission.
6. Express Schrodinger equation for spherically symmetric potential into three ordinary differential equations.

Section-D

7. Describe the method to produce X-Rays. What are characteristic and continuous X-rays. Discuss differences between characteristic and continuous X-rays. State and explain Mosley's law.
8. What is Raman effect? Elaborate. Show that $\Delta J = \pm 2$ leads to raman scattering.

Paper Code: 4183

Programme	Exam Code	Course Code
Bachelor of Science (Non-Medical)	121304	BSNM-4395 (II)
Bachelor of Science (Computer Science)	121304	BCSM-4395 (II)

Semester-IV**Course Title: Physics (Atomic and Molecular Spectra)****(40)****Time Allowed: 3 Hours****Max Marks: 40**

Attempts five Questions in all. Selecting at least one question from each section-A,B, C, D. The fifth questions may be attempted from any section. Each question carries 8 marks.

Note: Student can use non-scientific calculator.

Section A

- State and prove Bohr's correspondence principle.
 - What is change in energy in eV corresponding to wave number of 2000 cm^{-1} for a spectral line?
- State the Bohr's postulates, derive an expression for the frequencies of radiation emitted in hydrogen atom. Hence explain the various spectral series of this atom.
 - Can Stern-Gerlach experiment be performed with ions rather than neutral atoms?

Section B

3. a. What is Zeemann effect? Explain it with necessary theory and derive expression for Zeeman shift.
b. Find Spectroscopic terms for two electron for which $L_1 = 0$ and $L_2 = 1$
4. a. How does spin orbit interaction help in understanding fine structure of hydrogen spectrum?
b. Calculate the frequency at which an electron's orbital magnetic moment μ precesses in a magnetic field.

Section C

5. a. Consider a p-electron in one electron atom. Calculate the value of L, S & J.
b. Distinguish between LS & JJ Coupling schemes. Which scheme holds for lighter atoms?
6. a. Draw the energy levels of electrons in the helium atom.
b. Explain the spectra of alkali and alkali and alkaline earth atoms. What is difference between energy level diagram of hydrogen and helium?

Section D

7. a. What is Auger effect? Can Auger effect take place with visible light?
b. Distinguish between Continuous and Characteristics X-rays. How is the production of characteristics X-rays accounted for?
8. Calculate the wavelength of X-rays.
What is Raman Effect? Explain Stokes and Anti-stokes lines. Discuss the selection rule for Raman transition.

Examination Code: 121304

Paper Code: 9407

Bachelor of Science (Semester-IV)**Course Title : Physics (Atomic Spectra and Lasers)****Course Code: BSNM-4395(II)/ BCSM-4395(II)****Time: 3 Hours****Max Marks: 30**

NOTE: Attempt five questions in all, Selecting at least one question from each section. Fifth Question can be attempted from any section. each question carries equal (6) marks. Students can use Non-Scientific calculators or logarithmic tables.

Section-A

1. A) Give brief description of Stern- Gerlach experiment. Is Spin of a particle an inherent property associated with the particle? (4.5)
B) What magnetic flux density B is required to observe the normal effect if a spectrometer can resolve spectral lines separated by $0.5 \text{ \AA}$ at $5000 \text{ \AA}$? (1.5)
2. What is Zeeman effect ? Under what conditions one obtains the anomalous Zeeman effect? Describe and explain it by taking the case of sodium lines (6)

Section-B

3. What is the difference between the energy level diagrams of hydrogen and helium atoms. Explain its fine structure by drawing energy level diagram. (6)
4. How do non-equivalent electrons differ from equivalent electrons? Explain it by considering p-p and s-s configuration. (6)

Section-C

5. Explain the concept of population inversion and Derive Schawlow- Townes condition for laser oscillations. (6)
6. A) Explain the concept of Coherence. Discuss how the spatial coherence is related to the size of the source. (4)
B) In what ways does the laser light differ from the light from a filament lamp? (2)

Section-D

7. A) Explain Construction and working of Rubylaser. (4)
B) Compare the efficiency of Three level and four level lasers (2)
8. A) What is holography and explain recording as well as reconstruction processes (4)
B) How holography is different from photography. (2)

Paper Code: 4108

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARM-4134 ✓
Bachelor of Science (Computer Science)	121304	BCSM-4134 ✓
Bachelor of Science (Economics)		BECM-4134 ✓

Semester-IV

Course Title: Computer Science (Data Structures)

(40)

Time Allowed: 3 Hours

Max Marks: 50

Note: There are eight questions of equal marks (10 marks each). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. The students can use Non—programmable/ scientific & Non—storage type calculator.

Section A

1. What do you mean by Data Structures? How can you measure complexity of an algorithm? (10)
2. a) What is array? How it is represented in memory? (6)
- b) What do you understand by multi dimensional array? (4)

Section B

3. a) Explain types of Linked list. (6)
b) Write advantages of linked list over array. (4)
4. Write Quicksort algorithm and apply it on the following set of numbers to arrange them in the ascending order: (10)
99,88,77,66,55,44,33,22,11

Section C

5. a) How will you represent queues in memory? (6)
b) What do you mean by priority queue? (4)
6. Using Binary search, find the locations of the elements 44 and 101. (10)
99, 11, 33, 88, 22, 44, 77

Section D

7. Explain DFS and BFS graph traversals algorithms with examples. (10)
8. Write a note on the following (4*2.5 = 10)
 - a) Binary Search tree L
 - b) Complete binary tree
 - c) Heap
 - d) Adjacency matrix

Paper Code: 4106

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARM-4333 (I) ✓✓
Bachelor of Science (Non-Medical)	121304	BSNM-4333 (I) ✓✓
Bachelor of Science (Economics)		BECM-4333 (I) ✓✓
Bachelor of Science (Computer Science)		BCSM-4333 (I) ✓✓

Semester-IV

Course Title: Mathematics (Statics and Vector Calculus)
(40)

Time Allowed: 3 Hours

Max Marks: 80

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries equal marks (16 marks for each question).

Section -A

- Q 1.(a) State and prove Lami's Theorem.
- Q 1.(b) The greatest and least resultants that two forces can have are of magnitude P and Q respectively. Show that when they act at an angle θ , their resultant is of magnitude $\sqrt{P^2 \cos^2 \frac{\theta}{2} + Q^2 \sin^2 \frac{\theta}{2}}$.
- Q 2.(a) State Varignon's Theorem and using this theorem calculate the moment of F about the origin when a force acts at a point (3,4) of the XY plane, The force is directed away from the origin and inclined at 60° to the X-axis. The horizontal component of F is 5 kg wt. Also find force F.

- Q 2.(b) Forces of magnitude 5 kg, 10 kg, Q kg and R kg act along the sides AB, BC, DC and DA of a square ABCD and forces each of magnitude $5\sqrt{2}$ kg act along the sides BD, CA. If these forces are equivalent to a couple, find Q and R.

Section -B

- Q 3.(a) Two equal weights rest on the faces of a double inclined plane whose inclinations to the horizon are α and β and are connected by a string passing over a smooth pulley on the vertex. If the weights be in limiting equilibrium show that the coefficient of friction is equal to $\frac{\sin \alpha - \sin \beta}{\cos \alpha + \cos \beta}$

- Q 3.(b) How high can a particle rest inside a rough hollow sphere of radius r if the coefficient of friction is μ .

- Q 4.(a) ABC is an equilateral triangle of side 40 cms. Weights 5, 1, 3 kgs are placed at points A, B, C respectively and Weights 2, 4, 6 kgs are placed at mid points of BC, CA and AB respectively. Find the distance of their C.G. from B.

- Q 4.(b) A uniform solid consists of a cone of semi- vertical angle 45° cemented on a hemisphere on the same base. Show that the C.G. of the body divides its central axis in the ratio 7 : 5.

Section -C

- Q 5.(a) Find the directional derivative of $f(x, y, z) = x^2 y^2 z^2$ at the point (1, 1, -1) in the direction of the tangent to the curve $x = e^t$, $y = 2 \sin t + 1$, $z = t - \cos t$ at $t = 0$.

Q 5.(b) If $\vec{r} = t^3 \hat{i} + \left(2t^3 - \frac{1}{5t^2} \right) \hat{j},$

show that $\vec{r} \times \frac{d\vec{r}}{dt} = \hat{k}$

Q 6.(a) Find the constants a, b, c so that the vector

$\vec{r} = (x + 2y + az)\hat{i} + (bx - 3y - z)\hat{j} + (4x + cy + 2z)\hat{k}$ is irrotational.

Evaluate

Q 6.(b) $\int_0^1 \left[t\hat{i} + (t^2 - 2t)\hat{j} + (3t^2 + 3t^3)\hat{k} \right] dt$

Section -D

State Stoke's Theorem and verify it for

$\vec{F} = y\hat{i} + z\hat{j} + x\hat{k}$

Q 7.(a) where S is the upper half surface of the sphere $x^2 + y^2 + z^2 = 1$ and C is boundary.

Verify Green's theorem in a plane for

$\oint_C \left((x^2 - xy^3)dx + (y^2 - 2xy)dy \right)$

Q 7.(b) where C is the square with vertices (0,0), (2,0), (2,2), (0,2),

Q8.

State Gauss's Divergence Theorem and

use it to evaluate $\iiint_S \vec{f} \cdot \hat{n} dS$ where $\vec{f} = 4xy\hat{i} + yz\hat{j} - xz\hat{k}$

and S is the surface of the cube

bounded by the planes $x = 0, x = 2,$ $y = 0, y = 2, z = 0, z = 2.$

Paper Code: 9412.

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARM-4333 (I) ✓✓
Bachelor of Science (Non-Medical)	121304	BSNM-4333 (I) ✓✓
Bachelor of Science (Economics)		BECM-4333 (I) ✓✓
Bachelor of Science (Computer Science)		BCSM-4333 (I) ✓✓

Semester-IV.

Course Title: Mathematics (Statics and Vector Calculus)
(40)

Time Allowed: 3 Hours**Max Marks: 40**

Note: Attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries equal marks (8) marks for each question).

Section -A

Q 1.(a) State and prove Lami's Theorem.

Q 1.(b) The greatest and least resultants that two forces can have are of magnitude P and Q respectively. Show that when they act at an angle θ , their resultant is of magnitude $\sqrt{P^2 \cos^2 \frac{\theta}{2} + Q^2 \sin^2 \frac{\theta}{2}}$.

Q 2.(a) State Varignon's Theorem and using this theorem calculate the moment of F about the origin when a force acts at a point (3,4) of the XY plane, The force is directed away from the origin and inclined at 60° to the X-axis. The horizontal component of F is 5 kg wt. Also find force F.

- Q 2.(b) Forces of magnitude 5 kg, 10 kg, Q kg and R kg act along the sides AB, BC, DC and DA of a square ABCD and forces each of magnitude $5\sqrt{2}$ kg act along the sides BD, CA. If these forces are equivalent to a couple, find Q and R.

Section -B

- Q 3.(a) Two equal weights rest on the faces of a double inclined plane whose inclinations to the horizon are α and β and are connected by a string passing over a smooth pulley on the vertex. If the weights be in limiting equilibrium show that the coefficient of friction is equal to $\frac{\sin \alpha - \sin \beta}{\cos \alpha + \cos \beta}$

- Q 3.(b) How high can a particle rest inside a rough hollow sphere of radius r if the coefficient of friction is μ .

- Q 4.(a) ABC is an equilateral triangle of side 40 cms. Weights 5, 1, 3 kgs are placed at points A, B, C respectively and Weights 2, 4, 6 kgs are placed at mid points of BC, CA and AB respectively. Find the distance of their C.G. from B.

- Q 4.(b) A uniform solid consists of a cone of semi- vertical angle 45° cemented on a hemisphere on the same base. Show that the C.G. of the body divides its central axis in the ratio 7 : 5.

Section -C

- Q 5.(a) Find the directional derivative of $f(x, y, z) = x^2 y^2 z^2$ at the point $(1, 1, -1)$ in the direction of the tangent to the curve $x = e^t$, $y = 2 \sin t + 1$, $z = t - \cos t$ at $t = 0$.

Q5.(b) If $\vec{r} = t^3 \hat{i} + \left(2t^3 - \frac{1}{5t^2} \right) \hat{j}$,

show that $\vec{r} \times \frac{d\vec{r}}{dt} = \hat{k}$

Q6.(a) Find the constants a, b, c so that the vector
 $\vec{r} = (x + 2y + az)\hat{i} + (bx - 3y - z)\hat{j} + (4x + cy + 2z)\hat{k}$ is irrotational.

Evaluate

Q6.(b) $\int_0^1 [t\hat{i} + (t^2 - 2t)\hat{j} + (3t^2 + 3t^3)\hat{k}] dt$

Section -D

State Stoke's Theorem and verify it for

$$\vec{F} = y\hat{i} + z\hat{j} + x\hat{k}$$

Q7.(a) where S is the upper half surface of the sphere $x^2 + y^2 + z^2 = 1$ and C is boundary.

Verify Green's theorem in a plane for

$$\oint_C ((x^2 - xy^3)dx + (y^2 - 2xy)dy)$$

Q7.(b) where C is the square with vertices (0,0), (2,0), (2,2), (0,2),

Q8.

State Gauss's Divergence Theorem and use it to evaluate

$$\iint_S \vec{f} \cdot \hat{n} dS$$

where $\vec{f} = 4xy\hat{i} + yz\hat{j} - xz\hat{k}$
and S is the surface of the cube
bounded by the planes $x = 0, x = 2,$
 $y = 0, y = 2, z = 0, z = 2.$

Paper Code: 4107

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARM-4333(II) ✓
Bachelor of Science (Non-Medical)	121304	BSNM-4333(II) ✓
Bachelor of Science (Economics)		BECM-4333 (II) ✓
Bachelor of Science (Computer Science)		BCSM-4333 (II) ✓

Semester-IV**Course Title: Mathematics (Solid Geometry)****(40)****Time Allowed: 3 Hours****Max Marks: 60**

Note: Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. All question carry equal 12 marks.

Section-A

1(a). Find the equation of the cylinder whose generators are parallel to the line $\frac{x}{1} = \frac{y}{-2} = \frac{z}{3}$ and whose guiding curve is the ellipse $x^2 + 2y^2 = 1, z = 0$.

(b). Find the equation of the right circular cylinder whose generating circle is $x^2 + y^2 + z^2 = 4, x + y + z = 3$.

2(a). Find the equation of the enveloping cylinder of the conicoid $ax^2 + by^2 + cz^2 = 1$ whose generators are parallel to the line $\frac{x}{l} = \frac{y}{m} = \frac{z}{n}$.

(b). Obtain the equation of the right circular cylinder described on the circle through the points (1, 0, 0), (0, 1, 0), (0, 0, 1) as the guiding circle.

Section-B

3(a). Find the equation of the cone, whose vertex is the point (2, 3, -5) and the guiding curve is $y^2 = 8x, z = 0$.

(b). Find the equation of the right circular cone whose vertex is P (2, 3, 1), axis makes equal angles with coordinate axes and semi vertical angle is 60° .

4(a). Find the value of λ if the plane $\lambda x + y + z = 0$ cuts the cone $xy + yz + zx = 0$ in perpendicular lines.

(b). Check whether $2x^2 + 2y^2 + 7z^2 - 10yz - 10zx + 2x + 2y + 26z - 17 = 0$ represents a cone. If yes, find the coordinates of vertex of this cone.

Section-C

5(a). Check whether the feet of the six normals from (α, β, γ) to the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ lies on the cone $\frac{a^2(b^2-c^2)}{x}\alpha + \frac{b^2(c^2-a^2)}{y}\beta + \frac{c^2(a^2-b^2)}{z}\gamma = 0$ or not.

(b). Trace the locus of the equation $\frac{x^2}{a^2} + \frac{y^2}{b^2} = \frac{2z}{c}$ where a, b, c are positive.

6(a). Find the condition that the plane $lx + my + nz = p$ may touch the conicoid $ax^2 + by^2 + cz^2 = 1$.

(b). Reduce the following equation to the standard form and identify the curve

$$x^2 - 4xy + 4y^2 - 32x + 4y + 16 = 0.$$

Section-D

7. Check whether the $5x^2 - 16y^2 + 5z^2 + 8yz - 14zx + 8xy + 4x + 20y + 4z - 24 = 0$ represents hyperbolic paraboloid. If yes, find the coordinates of its vertex and the equation of its axes.

8(a). Check whether the surface represented by

$$x^2 + 6y^2 - z^2 - yz + 5xy + 2x + 5y = 0$$
 is hyperbolic cylinder. Justify your answer.

(b). Reduce the equation into standard conic

$$9x^2 + 4y^2 + 4z^2 + 8yz + 12zx + 12xy + 4x + y + 10z + 1 = 0.$$

Paper Code: 9413.

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARM-4333(II)
Bachelor of Science (Non-Medical)	121304	BSNM-4333(II)
Bachelor of Science (Economics)		BECM-4333 (II) ✓
Bachelor of Science (Computer Science)		BCSM-4333 (II)

Semester-IV
Course Title: Mathematics (Solid Geometry)
(40)

Time Allowed: 3 Hours

Max Marks: 40

Note: Attempt five questions in all, selecting at least one question from each section. The fifth question may be attempted from any Section. All question carry equal 8 marks.

Section-A

1(a). Find the equation of the cylinder whose generators are parallel to the line $\frac{x}{1} = \frac{y}{-2} = \frac{z}{3}$ and whose guiding curve is the ellipse $x^2 + 2y^2 = 1, z = 0$.

(b). Find the equation of the right circular cylinder whose generating circle is $x^2 + y^2 + z^2 = 4, x + y + z = 3$.

2(a). Find the equation of the enveloping cylinder of the conicoid $ax^2 + by^2 + cz^2 = 1$ whose generators are parallel to the line $\frac{x}{l} = \frac{y}{m} = \frac{z}{n}$.

(b). Obtain the equation of the right circular cylinder described on the circle through the points (1, 0, 0), (0, 1, 0), (0, 0, 1) as the guiding circle.

Section-B

3(a). Find the equation of the cone, whose vertex is the point (2, 3, -5) and the guiding curve is $y^2 = 8x, z = 0$.

(b). Find the equation of the right circular cone whose vertex is P (2, 3, 1), axis makes equal angles with coordinate axes and semi vertical angle is 60° .

4(a). Find the value of λ if the plane $\lambda x + y + z = 0$ cuts the cone $xy + yz + zx = 0$ in perpendicular lines.

(b). Check whether $2x^2 + 2y^2 + 7z^2 - 10yz - 10zx + 2x + 2y + 26z - 17 = 0$ represents a cone. If yes, find the coordinates of vertex of this cone.

Section-C

5(a). Check whether the feet of the six normals from (α, β, γ) to the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ lies on the cone $\frac{a^2(b^2-c^2)}{x}\alpha + \frac{b^2(c^2-a^2)}{y}\beta + \frac{c^2(a^2-b^2)}{z}\gamma = 0$ or not.

(b). Trace the locus of the equation $\frac{x^2}{a^2} + \frac{y^2}{b^2} = \frac{2z}{c}$ where a, b, c are positive.

6(a). Find the condition that the plane $lx + my + nz = p$ may touch the conicoid $ax^2 + by^2 + cz^2 = 1$.

(b). Reduce the following equation to the standard form and identify the curve

$$x^2 - 4xy + 4y^2 - 32x + 4y + 16 = 0.$$

Section-D

7. Check whether the $5x^2 - 16y^2 + 5z^2 + 8yz - 14zx + 8xy + 4x + 20y + 4z - 24 = 0$ represents hyperbolic paraboloid. If yes, find the coordinates of its vertex and the equation of its axes.

8(a). Check whether the surface represented by

$$x^2 + 6y^2 - z^2 - yz + 5xy + 2x + 5y = 0 \text{ is hyperbolic cylinder. Justify your answer.}$$

(b). Reduce the equation into standard conic

$$9x^2 + 4y^2 + 4z^2 + 8yz + 12zx + 12xy + 4x + y + 10z + 1 = 0.$$

Paper Code: 4102

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARL-4031 ✓
Bachelor of Science (Non-Medical)	121304	BSNL-4031 ✓
Bachelor of Science (Medical)		BSML-4031 ✓
Bachelor of Science (Economics)		BECL-4031
Bachelor of Science (Computer Science)		BCSL-4031 ✓
Bachelor of Commerce	121104	BCRL-4031
Bachelor of Business Administration	121704	BBRL-4031

Semester- IV**Course Title: Basic Punjabi****(40)****Time Allowed: 3 Hours****Max Marks: 80**

ਨੋਟ: ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹਨ। ਵਿਦਿਆਰਥੀ ਨੇ ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ, ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ (16) ਅੰਕ ਹਨ।

ਭਾਗ-ਪਹਿਲਾ

- ਹੇਠ ਲਿਖੀਆਂ ਕਾਵਿ-ਸਤਰਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ ਕਰੋ।
ਕਮਦਿਲਾਂ ਨੂੰ ਦਿਲ, ਨਪਰਿਆਂ ਪਰ ਦਈਂ।

ਯਾ ਖੁਦਾ ਸਭ ਬੇ-ਘਰਾਂ ਨੂੰ ਘਰ ਦਈਂ।
 ਹਰ ਸੁਹਾਗਣ ਦਾ ਰਹੇ ਜਿੰਦਾ ਸੁਹਾਗ
 ਉਮਰ ਲੰਘਦੀ ਜਾ ਰਹੀ ਨੂੰ ਵਰ ਦਈਂ
 ਤੋਤਲੇ ਬੋਲਾਂ ਦਾ ਰਾਖਾ ਖੁਦ ਬਣੀ,
 ਖੋਫ ਹਰ ਕਾਤਿਲ ਤੇ ਸੀਨੇ ਭਰ ਦਈਂ।

2. ਹੇਠ ਲਿਖੀਆਂ ਕਾਵਿ-ਸਤਰਾਂ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ ਕਰੋ।
 ਹੁਣ ਘਰਾਂ ਨੂੰ ਪਰਤਣਾ ਮੁਸ਼ਕਿਲ ਬੜਾ ਹੈ
 ਕੌਣ ਪਹਿਚਾਣੇਗਾ ਸਾਨੂੰ
 ਮੱਥੇ ਉੱਤੇ ਮੌਤ ਦਸਖਤ ਕਰ ਗਈ ਹੈ
 ਚਿਹਰੇ ਉੱਤੇ ਯਾਰ ਪੈੜਾਂ ਛੱਡ ਗਏ ਨੇ
 ਸ਼ੀਸ਼ੇ ਵਿਚੋਂ ਹੋਰ ਕੋਈ ਝਕਦਾ ਹੈ
 ਅੱਖਾਂ ਵਿਚ ਕੋਰੀ ਲਿਸ਼ਕ ਹੈ।

ਭਾਗ-ਦੂਸਰਾ

3. ਡਾ. ਜਗਤਰ ਦੀ ਕਵਿਤਾ 'ਰੋਸ਼ਨੀ ਦਾ ਦੌਰ' ਦਾ ਸਾਰ ਆਪਣੇ ਸ਼ਬਦਾਂ ਵਿਚ ਲਿਖੋ।
4. ਮੋਹਨ ਸਿੰਘ ਦੀ ਕਵਿਤਾ 'ਸੈਦਾ ਤੇ ਸਬਜ਼ਾਂ' ਦਾ ਸਾਰ ਆਪਣੇ ਸ਼ਬਦਾਂ ਵਿਚ ਲਿਖੋ।

ਭਾਗ-ਤੀਜਾ

5. ਕਵੀ ਪਾਸ਼ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾਵਾਂ ਬਾਰੇ ਵਿਸਤ੍ਰਿਤ ਨੋਟ ਲਿਖੋ।
6. ਕਵੀ ਮੋਹਨ ਸਿੰਘ ਦੇ ਜੀਵਨ ਰਚਨਾਵਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦਿਓ।

ਭਾਗ-ਚੌਥਾ

7. ਹੇਠ ਲਿਖੇ ਅਸ਼ੁੱਧ ਸ਼ਬਦਾਂ ਨੂੰ ਸੁੱਧ ਕਰਕੇ ਲਿਖੋ।
ਸਬਦ, ਨੌਕਰੀ, ਔਖੀ, ਨਿਪੁਨਸਕ ਬੰਦਾ, ਕਿੱਕਰਾ ਦੇ ਫੁੱਲ,
ਸੈਕਰੇਟਰੀ, ਗੁਰੂ ਆਮਰਦਾਸ ਜੀ, ਆਮਾਨਤ, ਗੋਰਵ।
8. ਹੇਠ ਲਿਖੇ ਅਸ਼ੁੱਧ ਸ਼ਬਦਾਂ ਨੂੰ ਸੁੱਧ ਕਰਕੇ ਲਿਖੋ।
ਅਸਕੇ, ਪੋੜੀ ਚੜ, ਕੋਲੀ ਫੜ, ਚੋਲ ਖਾ, ਗੋਲੀ, ਚਮਣ ਕੱਦੂ,
ਕਾਲਿਜ, ਬੱਸਾ ਚੱਲੀਆਂ, ਹਰਮੰਦਰ ਸਾਹਿਬ, ਸੀਸਾ।

Paper Code: 4101

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARL-4421
Bachelor of Science (Non-Medical)	121304	BSNL-4421
Bachelor of Science (Medical)		BSML-4421
Bachelor of Science (Economics)		BECL-4421 ✓
Bachelor of Science (Computer Science)		BCSL-4421
Bachelor of Commerce	121104	BCRL-4421 ✓
Bachelor of Business Administration	121704	BBRL-4421 ✓

Semester- IV**Course Title: Punjabi (Compulsory)**

(160)

Time Allowed: 3 Hours**Max Marks: 80**

ਨੋਟ: ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਜ਼ਰੂਰੀ ਹਨ। ਹਰੇਕ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ (16) ਅੰਕ ਹਨ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

ਭਾਗ-ੳ

- 1) “ਪਗਡੰਡੀਆਂ” ਸਵੈਜੀਵਨੀ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਲਿਖੋ।

- 2) “ਪਗਡੰਡੀਆਂ” ਸਵੈਜੀਵਨੀ ਦਾ ਸਾਰ ਸੰਖੇਪ ਵਿੱਚ ਆਪਣੇ ਸ਼ਬਦਾਂ ਵਿੱਚ ਲਿਖੋ। (16 ਅੰਕ)

ਭਾਗ-ਅ

- 3) “ਫ਼ਾਸਲੇ” ਨਾਟਕ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਕੀ ਹੈ? ਸਪੱਸ਼ਟ ਕਰੋ।
4) “ਫ਼ਾਸਲੇ” ਨਾਟਕ ਦੀਆਂ ਨਾਟਕੀ ਜੁਗਤਾਂ ਬਾਰੇ ਚਰਚਾ ਕਰੋ। (16 ਅੰਕ)

ਭਾਗ-ਬ

- 5) ਪੰਜਾਬ ਸਰਕਾਰ ਦੇ ਮੁੱਖ ਚੋਣ ਅਫ਼ਸਰ ਨੂੰ ਇੱਕ ਚਿੱਠੀ ਰਾਹੀਂ ਆਪਣੇ ਪਿੰਡ ਵਿੱਚ ਚੋਣਾਂ ਦਰਾਨ ਹੋਈਆਂ ਬੇਨਿਯਮੀਆਂ ਤੋਂ ਜਾਣੂ ਕਰਵਾਓ।
6) “ਗੁਆਚੇ ਦੀ ਭਾਲ” ਸੰਬੰਧੀ ਇਸ਼ਤਿਹਾਰ ਲਿਖੋ। (16 ਅੰਕ)

ਭਾਗ-ਸ

- 7) ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮਾਂ ਦਾ ਉਲੇਖ ਕਰੋ।
8) ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਸਪੱਸ਼ਟ ਕਰੋ। (16 ਅੰਕ)

FOR GAP YEAR STUDENTS (2023-24).

Paper Code: 9426.

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARL-4421
Bachelor of Science (Non-Medical)	121304	BSNL-4421
Bachelor of Science (Medical)		BSML-4421
Bachelor of Science (Economics)		BECL-4421
Bachelor of Science (Computer Science)		BCSL-4421
Bachelor of Commerce	121104	BCRL-4421
Bachelor of Business Administration	121704	BBRL-4421

Semester- IV

Course Title: Punjabi (Compulsory)
(160)

Time Allowed: 3 Hours

Max Marks: 40

ਨੋਟ: ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਜ਼ਰੂਰੀ ਹਨ। ਹਰੇਕ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ (8) ਅੰਕ ਹਨ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

ਭਾਗ-ੳ

- 1) “ਪਗਡੰਡੀਆਂ” ਸਵੈਜੀਵਨੀ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਲਿਖੋ।

- 2) “ਪਗਡੰਡੀਆਂ” ਸਵੈਜੀਵਨੀ ਦਾ ਸਾਰ ਸੰਖੇਪ ਵਿੱਚ ਆਪਣੇ ਸ਼ਬਦਾਂ ਵਿੱਚ ਲਿਖੋ।

ਭਾਗ-ਅ

- 3) “ਫਾਸਲੇ” ਨਾਟਕ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ ਕੀ ਹੈ? ਸਪੱਸ਼ਟ ਕਰੋ।
4) “ਫਾਸਲੇ” ਨਾਟਕ ਦੀਆਂ ਨਾਟਕੀ ਜੁਗਤਾਂ ਬਾਰੇ ਚਰਚਾ ਕਰੋ।

ਭਾਗ-ੲ

- 5) ਪੰਜਾਬ ਸਰਕਾਰ ਦੇ ਮੁੱਖ ਚੋਣ ਅਫ਼ਸਰ ਨੂੰ ਇੱਕ ਚਿੱਠੀ ਰਾਹੀਂ ਆਪਣੇ ਪਿੰਡ ਵਿੱਚ ਚੋਣਾਂ ਦਰਾਨ ਹੋਈਆਂ ਬੇਨਿਯਮੀਆਂ ਤੋਂ ਜਾਣੂ ਕਰਵਾਓ।
6) “ਗੁਆਚੇ ਦੀ ਭਾਲ” ਸੰਬੰਧੀ ਇਸ਼ਤਿਹਾਰ ਲਿਖੋ।

ਭਾਗ-ਸ

- 7) ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮਾਂ ਦਾ ਉਲੇਖ ਕਰੋ।
8) ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਸਪੱਸ਼ਟ ਕਰੋ।

Paper Code: 4103

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARL-4431 ✓
Bachelor of Science (Non-Medical)	121304	BSNL-4431 ✓
Bachelor of Science (Medical)		BSML-4431 ✓
Bachelor of Science (Economics)		BECL-4431
Bachelor of Science (Computer Science)		BCSL-4431 ✓
Bachelor of Commerce	121104	BCPL-4431
Bachelor of Business Administration	121704	BBRL-4431

Semester- IV**Course Title: Punjab History and Culture****(30)****Time Allowed: 3 Hours****Max Marks: 80**

Note: Attempt five question, selecting at least one question from each section in 1000 words and the fifth question may be selected from any of the four section. Each question carries 16 marks.

Section-I

1. What contribution was made by Guru Har Gobind ji in the transformation of Sikhism?

2. What were the causes of martyrdom of Guru Teg Bahadur Ji?

Section-II

3. Discuss the main principles and significance of Khalsa Panth.
4. Discuss the circumstances which led to the creation of Khalsa in 1699.

Section-III

5. Explain the achievements of Banda Singh Bahadur.
6. Write a detailed note on Ahluwalia Misl and Ramgarhia Misl.

Section-IV

7. Write a note on Baisakhi and Diwali.
8. Discuss the military administration under Maharaja Ranjit Singh.

Hindi Version

सैक्शन-1

1. सिख धर्म के परिवर्तन में गुरु हर गोबिंद जी का क्या योगदान था?
2. गुरु तेग बहादुर जी की शहादत के क्या कारण थे?

सैक्शन-2

3. खालसा पंथ के प्रमुख सिद्धांतों और महत्व की चर्चा कीजिए।
4. उन परिस्थितियों की चर्चा कीजिए जिनके कारण 1699 में खालसा का निर्माण हुआ।

सैक्शन-3

5. बंदा सिंह बहादुर की उपलब्धियों का वर्णन कीजिए।
6. अहलूवालिया मिसल और रामगढ़िया मिसल पर एक विस्तृत टिप्पणी लिखिए।

सैक्शन-4

7. बैसाखी और दीवाली पर एक नोट लिखिए।
8. महाराजा रणजीत सिंह के अधीन सैन्य प्रशासन की चर्चा कीजिए।

Paper Code: 4104

Programme	Exam Code	Course Code
Bachelor of Arts	121204	BARL -4212
Bachelor of Science (Medical)	121304	BSML -4212
Bachelor of Science (Non-Medical)		BSNL -4212
Bachelor of Science (Computer Science)		BCSL -4212
Bachelor of Science (Economics)		BECL -4212
Bachelor of Commerce	121104	BCRL -4212
Bachelor of Business Administration	121704	BBRL -4212

Semester - IV**Course Title: English (Compulsory)****Time Allowed: 3 Hours****Max Marks: 80****SECTION-A**

Q1) Attempt any TEN questions. Each question carries 2 marks
(10X2= 20)

a) Put in *at, on or in*.

I've been invited to a wedding _____ 14 February.

b) Read the situation and make sentence using just *in time*.

A child ran into the road in front of your car. You saw the child at the last moment. (manage / stop)

c) Use *in, at or on*.

Where's the label? _____

d) Complete the sentences. Use *in, at or on + the following*:

The Plane	Prison
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Some people are _____ for crimes that they did not commit.

e) Put in *to/at/in/into* where necessary. If no preposition is necessary, leave the space empty.

I'm tired. Let's go _____ home now.

f) Write sentences about places you have been to. Use *I've been to* / *I've never been to* + the words in bracket.

(never) _____

g) Write sentences using *got + into / out of / on / off*.

You were walking home. A friend passed you in her car. She saw you, stopped and offered you a lift. She opened the door.

What did you do? _____

h) Complete the sentences using *by*.

Carl won the race. He was five metres in front of the other runners.

Carl _____

i) Complete the sentences with the correct *preposition*.

There are some differences _____ British and American English.

j) Complete the sentences using an *adjective + preposition*. Choose from:

Excited	Nervous
---------	---------

Are you _____ the exam?

k) Complete the second sentence so that it means the same as the first.

There were lots of tourists in the streets. The streets were crowded _____

l) Which is correct?

i. Can you explain this word to me?

ii. Can you explain me this word?

m) Put in the correct preposition after *care*. If no preposition is necessary, leave the space empty.

Who's going to take care _____ you when you are old?

n) Complete the sentence with *look for* or *look after*. Use the correct form of look (*looks/ looked/looking*).

I _____ for my keys, but I couldn't find them anywhere.

o) Complete the sentences using *hear or heard + a preposition* (*about/of/from*).

I'm surprised you haven't _____ her. She's quite famous.

SECTION – B

Q2) Attempt any one essay in about 400 words.

(1x10=10)

a) Does fashion industry needs to change?

OR

b) Is hunting an immoral act?

Q3) Give a single word for the phrases given below (any 5) (5x2=10)

- a) Government of the people, for the people, and by the people
- b) The right of self-government
- c) A man whose wife is dead
- d) To run away with lover in order to get married secretly
- e) Able to read
- f) Fit for food
- g) That which cannot be conquered
- h) Unable to die

SECTION – C

Q4) Give words that are similar in meaning:

(5x2=10)

- a) To become smaller
- b) The process of bringing water to agricultural land
- c) Regions or areas
- d) To use up something completely
- e) Needing many years to develop

Q5) Fill in the blanks by choosing the appropriate word: (5x2=10)

Fertile	Collapsed	Disrupt	Roots	Deteriorated	Arid
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- a) Irrigation can change _____ land into protective farmland.
- b) Mayan history shows how the pressure of human populations can _____ the natural ecology of a region and make it unlivable.
- c) Even though the earthquake was not very strong, some older buildings _____ and many others were badly damaged.
- d) The _____ of this plant do not reach deep into the soil. That's why it will not grow in regions with little rainfall.
- e) Weather forecasters are advising motorists not to drive today because conditions on the roads have _____ rapidly in the last two hours.

SECTION – D

Q6) Attempt any three questions in about 200 words each. (3x5=15)

- a) Explore the theme of control and power. Who seems to have control at different points in the poem *Porphyria's Lover*.
- b) Explore the symbolism of the "School," "Grain," and "Setting Sun." What might each represent in the poem *Because I Could Not Stop For Death*.
- c) Why does Frost repeat the line "And miles to go before I sleep"? What effect does this repetition have on the poem's ending and its meaning in the poem *Stopping by Woods on A Snowy Evening*?
- d) What does the poem reveal about human expectations after death in the poem *Ah! Are You Digging on my Grave*?
- e) Analyse the meaning of the final line: "The only emperor is the emperor of ice-cream." in the poem *Emperor of Ice-Cream*.

Q7) Explain any one the following with reference to the context in about 250 words. (1x5=5)

"Because I could not stop for Death –
 He kindly stopped for me –
 The Carriage held but just Ourselves –
 And Immortality"

OR

"Mistress, I dug upon your grave
 To bury a bone, in case
 I should be hungry near this spot
 When passing on my daily trot.
 I am sorry, but i quite forgot
 It was your resting-place."