CLASS: XI

SUBJECT: ENGLISH CORE

ART INTEGRATED LEARNING PROJECT

PREPARE PROJECT ON A4 SIZE PAPER

USE DECORATIVE CARD BOARD COVER

TRY TO MAKE IT VISUALLY APPEALING BY INTEGRATING ART, PICTURES, ETC.

PROJECT TOPICS ARE FOR ROLL NO 1 TO 11 AFTER THAT ROLL NO 12 WILL DO 1 ST PROJECT, ROLL NO 13 WILL DO 2 ND PROJECT AND SO ON.

1. The Portrait of a Lady (Prose)

Project Topic: Memory Box or Collage

● Theme: "Memories of Grandmother."

● Description: Create a memory box or collage that represents key moments from the story or the bond between the narrator and his grandmother. The box can include symbolic items such as a miniature portrait of the grandmother, a religious symbol, or natural elements (flowers, seeds, or leaves) that she cherished. The collage can feature pictures of the grandmother, the house, the narrator's school, or scenes that evoke memories.

● Materials: Cardboard box, photographs, fabric, small objects, paint, and glue.

2. "We're Not Afraid to Die... if We Can Be Together (Prose)

Project Topic: Comic Strip or Graphic Novel:

● Theme: "The Battle with the Sea."

● Description: Create a comic strip or a short graphic novel illustrating key moments of the story, especially the storm and the family's fight for survival. Highlight the key emotions—fear, hope, and survival—and the resilience of the characters.

● Materials: Paper, ink pens, markers, or digital tools for comic creation.

OR

Model of the Boat or Sea Voyage:

● Theme: "Survival at Sea."

● Description: Build a 3D model of the boat or the scene of the storm. You could make a small model of the boat battling against waves, with figures representing the family

members. Use materials like clay, cardboard, or wood for the boat, and create dynamic waves using plastic, paper, or fabric.

● Artistic Element: Add a background scene with a sky and sea to represent the storm, showing the turbulent nature of the ocean.

3. Discovering Tut: The Saga Continues (Prose)

Project Topic: Mysteries of Ancient Egypt Civilization

https://www.slideshare.net/slideshow/english-art-integrated-project-class-11-cbse/269898447

4. The Adventure (Prose)

Project Topic: Interactive Timeline or Map of the Adventure

● Theme: "Mapping the Adventure."

● Description: Create an interactive timeline or map that charts the narrator's journey. Include both the physical journey (locations and landmarks) and emotional experiences (inner changes, realizations, and mysteries encountered). The timeline or map could have both real and imagined elements, symbolizing the blurring of lines between the two worlds in the story.

● Materials: Paper, colored markers, fabric, or digital tools for creating interactive maps or digital timelines.

5. A Photograph (Poem)

Prepare a project on the poem "A Photograph" including following points

● Theme

● Background

● Explanation

● Literary Devices

● Difficult Words Meaning

● Draw or paste picture to make it visually appealing.

6. The Laburnum Top (Poem)

Prepare a project on the poem "A Photograph" including following points

● Theme

● Background

● Explanation

● Literary Devices

● Difficult Words Meaning

● Draw or paste picture to make it visually appealing.

7. The Voice of the Rain (Poem)

Prepare a project on the poem "A Photograph" including following points

● Theme

● Background

● Explanation

● Literary Devices

● Difficult Words Meaning

● Draw or paste picture to make it visually appealing.

8. The Summer of the Beautiful White Horse (Prose)

Prepare a project as shown in the video

https://youtu.be/swlPKAKHARc

9. The Address (Prose)

Project Topic: How Does War Damage Us?

https://www.scribd.com/document/603225698/Engliash-Project-by-Kartik-Gulati

10. Mother's Day (Play)

Mother's Day Poem or Letter (Literary Art)

● Theme: "A Tribute to My Mother"

● Description: Write a heartfelt poem or letter to your mother, expressing gratitude for her sacrifices, love, and care. The poem or letter can reflect on specific memories that are meaningful to you, such as moments when your mother supported or taught you valuable lessons.

● Artistic Element: You can decorate the letter or poem with small drawings or borders that enhance the sentiment. Consider using calligraphy or a creative font to make it visually appealing.

AND

Handmade Mother's Day Card (Craft + Visual Art)

● Theme: "A Personalized Gift for Mom"

● Description: Create a handmade card that reflects your personal relationship with your mother. Use creative materials like colored paper, buttons, ribbons, and fabric to make the card unique. You can write a personal message on the inside, thanking her for the love and guidance she has given you.

● Materials: Construction paper, fabric, colored markers, ribbons, beads, and glitter.

11. Birth (Prose)

Prepare a project as shown in the given link

https://www.scribd.com/document/619438725/11th-english-project

Class XI   Subject: Chemistry

METHOD OF PURIFICATION ORGANIC SOLVENTS

Q.1 Write the principle and example of the following.

    a) Sublimation.

    b) Crystallization.

    c) Distillation.

    d) Fractional distillation with application

    e) Distillation under reduced pressure

    f) Steam distillation.

Q.2) What is the principle of chromatography. What are the type.

    Explain in brief each type.

Q.3) Explain why alkyl is a electron donor when attached to $\prod$ system.

Q.4) What are electrophile and nucleophile give an example of each.

Q.5) Why organic liquid vaporizes at a temperature below its boiling points?

  Exercise question No. 11. 12. 15. 17, 36 and 38.

CONIC SECTION :-

Q 1.   Find the equation of the circle whose centre is $(2, -3)$ and radius is 8.

Q 2.   Find the centre and radius of each of the following circles:

(i) $x^2 + (y + 2)^2 = 9$ (ii) $x^2 + y^2 - 4x + 6y = 12$

(iii) $(x + 1)^2 + (y - 1)^2 = 4$ (iv) $x^2 + y^2 + 6x - 4y + 4 = 0$.

Q 3.   Find the equation of the circle with passes through the origin and cuts off intercepts 3 and 4 from the positive parts of the axes respectively.

Q 4.   Find the equation of a circle

(i) which touches both the axes at a distance of 6 units from the origin.

(ii) which touches x-axis at a distance 5 from the origin and radius 6 units

(iii) which touches both the axes and passes through the point (2,1).

(iv) passing through the origin, radius 17 and ordinate of the centre is -15.

Q 5.   Find the equation of the circle which passes through the points $(1, –2)$ and $(4, -3)$ and has its centre on the line $3x + 4y = 7$.

Q 6.   For the following parabolas find the coordinates of the foci, the equations of the directrices and the length of the latus–rectum.

(i) $y^2 = 8x$ (ii) $x^2 = 6y$ (iii) $y^2 = -12x$ (iv) $x^2 = 16y$

Q 7.   Find the equation of the parabola whose focus is $(1, –1)$ and whose vertex is $(2, 1)$. Also, find its axis and latus–rectum.

Q 8.   An arc is in the form of a parabola with its axis vertical. The arc is 10 m high and 5 m wide at the base. How wide is it 2m from the vertex of the parabola

Q 9.   Find the area of the triangle formed by the lines joining the vertex of the parabola $x^2 = 12y$ to the ends of its latus-rectum.

Q 10.   The cable of a uniformly loaded suspension bridge hangs in the form of a parabola.
The roadway which is horizontal and 100 m long is supported by vertical wires attached to the cable, the longest wire being 30 m and the shortest wire being 6 m. Find the length of a supporting wire attached to the roadway 18 m from the middle.

Q 11.   For the following ellipses find the length of major and minor axes, coordinates of foci and vertices, and the eccentricity:

(i) $16x^2 + 25y^2 = 400$ (ii) $3x^2 + 2y^2 = 6$

Q 12.   Find the equation of the ellipse whose axes are along the coordinate axes, vertices are $(\pm 5, 0)$ and foci at $(\pm 4, 0)$

Q 13.   A rod AB of length 15 cm rests in between two coordinate axes in such a way that the end point A lies on x–axis and end point B lies on y–axis. A point is taken on the rod in such a way that AP = 6 cm. Show that the locus of P is an ellipse. Also, find its eccentricity.

Q 14.   Find the equation of an ellipse, the distance between the foci is 8 units and the distance between the directrices is 18 units.

Q 15. Find the equation of an ellipse with its foci on y-axis, eccentricity $3/4$, centre at the origin and passing through (6, 4).

Q16. Find the equation of the hyperbola, referred to its principal axes as axes of coordinates, in the following cases:

(i) Vertices at $(\pm 5, 0)$, Foci at $(\pm 7, 0)$ (ii) Vertices at $(0, \pm 7)$, $e = \dfrac{4}{3}$

Q 17. The equation of the directrix of a hyperbola is $x - y + 3 = 0$. Its focus is (-1,1) and eccentricity 3. Find the equation of the hyperbola.

Q 18. Find the equation of the hyperbola whose

(i) focus is (0,3), directrix is $x + y - 1 = 0$ and eccentricity $= 2$

(ii) focus is (1,1), directrix is $3x + 4y + 8 = 0$ and eccentricity $= 2$

(iii) focus is (1,1) directrix is $2x + y = 1$ and eccentricity $= \sqrt{3}$

(iv) focus is (2,- 1), directrix is $2x + 3y = 1$ and eccentricity $= 2$

(v) focus is (a, 0), directrix is $2x - y + a = 0$ and eccentricity $= \dfrac{4}{3}$

Q 19. Find the equation of the hyperbola, referred to its principal axes as axes of coordinates, in the following cases:

(i) the distance between the foci $= 16$ and eccentricity $= \sqrt{2}$

(ii) conjugate axis is 5 and the distance between foci $=13$

(iii) conjugate axis is 7 and passes through the point (3, - 2).

Q 20. Find the equation of the hyperbola whose

(i) foci are (6,4) and (- 4,4) and eccentricity is 2.

(ii) vertices are (- 8, -1) and (16, -1) and focus is (17, -1)

(iii) foci are (4,2) and (8,2) and eccentricity is 2.

(iv) vertices are at (0 ± 7) and foci at $\left(0, \pm \dfrac{28}{3}\right)$

3-D :-

Q 1. Name the octants in which the following points lie:
(i) (5,2,3)   (ii) (-5,4.3)   (iii) (4,-3,5)
(iv) (7,4,-3)   (v) (-5,-4,7)   (vi) (-5,-3,-2)
(vii) (2,-5,-7)   (viii) (-7,2-5).

Q 2. Find the image of:
(i) (- 2,3,4) in the yz - plane.   (ii) (- 5 ,4, -3) in the xz - plane.
(iii) (5 ,2-7) in the xy - plane.   (iv) (- 5,0,3) in the xz-plane.
(v) (- 4,0,0) in the xy - plane.

Q 3. A cube of side 5 has one vertex at the point (1,0,-1), and the three edges from this vertex are, respectively, parallel to the negative x and y axes and positive z-axis. Find the coordinates of the other vertices of the cube.

Q 4. Planes are drawn parallel to the coordinate planes through the points (3, 0,-1) and (- 2, 5,4). Find the lengths of the edges of the parallelepiped so formed.

Q 5. Planes are drawn through the points (5,0,2) and (3,- 2 ,5) parallel to the coordinate planes. Find the lengths of the edges of the rectangular parallel opiped so formed.

Q 6. Find the distances of the point P (- 4,3,5) from the coordinate axes.

Q 7. The coordinates of a point are (3, - 2, 5). Write down the coordinates of seven points such that the absolute values of their coordinates are the same as those of the coordinates of the given point.

Q 8. Find the distance between the points P (–2, 4, 1) and Q (1, 2, – 5).

Q 9. Prove by using distance that the points P (1, 2, 3), Q (–1, –1, –1) and R (3, 5, 7) are collinear.

Q 10. Determine the point in XY–plane which is equidistant from three points A (2, 0, 3), B (0, 3, 2) and C (0, 0, 1).

Q 11. Find the coordinates of a point on Y–axis which is at a distance of $5\sqrt{2}$, from the point P (3, –2, 5)

Q 12. Show that the points A (0, 1, 2), B (2, –1, 3) and C(1, –3, 1) are vertices of an isosceles right–angled triangle

Q 13. Find the locus of the point which is equidistant from the points A (0, 2, 3) and (2, – 2, 1).

Q 14. Find the coordinates of a point equidistant from the four points O (0, 0, 0), A (a, 0, 0), B (0, b, 0) and C (0, 0, c).

Q 15. Prove that the point A (1, 3, 0), B (- 5, 5, 2), C (-9,-1, 2) and D (- 3, - 3,0) taken in order are the vertices of a parallelogram. Also, show that ABCD is not a rectangle.

LIMITS & DERIVATIVE:-

Evaluate the following limits:

Q 1. $\lim\limits_{x \to 1} \dfrac{x^2 +1}{x +1}$

Q 2. $\lim\limits_{x \to 0} \dfrac{2x^2 +3x +4}{x^2 +3x +2}$

Q 3. $\lim\limits_{x \to 3} \dfrac{\sqrt{2x +3}}{x +3}$

Q 4. $\lim\limits_{x \to 1} \dfrac{\sqrt{x +8}}{\sqrt{3}}$

Q 5. $\lim\limits_{x \to a} \dfrac{\sqrt{x} +\sqrt{a}}{x +a}$

Q 6. $\lim\limits_{x \to 1} \dfrac{1+(x -1)^2}{1+x^2}$

Q 7. $\lim\limits_{x \to 0} \dfrac{x^{2/3} -9}{x -27}$

Q 8. $\lim\limits_{x \to 0} 9$

Q 9. $\lim\limits_{x \to 2}(3-x)$

Q 10. $\lim\limits_{x \to -1}(4x^2 +2)$

Q 11. $\lim\limits_{x \to -1} \dfrac{x^3 -3x +1}{x -1}$

Q 12. $\lim\limits_{x \to 0} \dfrac{3x +1}{x +3}$

Q 13. $\lim\limits_{x \to 3} \dfrac{x^2 -9}{x +2}$

Q 14. $\lim\limits_{x \to 0} \dfrac{ax +b}{cx +d}, d \neq 0$

Q 15. $\lim\limits_{x \to 1} 3x^2 + 4x + 5.$

Q16. If $\lim\limits_{x \to a} \dfrac{x^9 -a^9}{x -a} = 9,$ find all possible value of a.

Q 17. Evaluate the following limits

(i) $\lim\limits_{x \to 0} \dfrac{\sin 3x}{x}$

(ii) $\lim\limits_{x \to 0} \dfrac{\sin 5x}{2x}$

(iii) $\lim\limits_{x \to 0} \dfrac{\sin ax}{\sin bx}$

(iv) $\lim\limits_{x \to 0} \dfrac{\sin^2 ax}{\sin^2 bx}$

(v) $\lim\limits_{x \to 0} \dfrac{\sin^2 3x}{x^2}$

Q 18. Evaluate the following limits:

(i) $\lim\limits_{x \to 0} \dfrac{1-\cos 2x}{x^2}$

(ii) $\lim\limits_{x \to 0} \dfrac{1-\cos 2x}{x}$

(iii) $\lim\limits_{x \to 0} \dfrac{1-\cos x}{x^2}$

(iv) $\lim\limits_{x \to 0} \dfrac{1-\cos 2mx}{1-\cos 2nx}$

(iv) $\lim\limits_{x \to 0} \dfrac{1-\cos mx}{1-\cos nx}$

Q19. If $\lim\limits_{x \to a} \dfrac{x^3 -a^3}{x -a} = \lim\limits_{x \to 1} \dfrac{x^4 -1}{x -1},$ find all possible value of a.

Q 20. Evaluate: $\lim\limits_{x \to \infty} \dfrac{\sqrt{3x^2 -1}+\sqrt{2x^2 -1}}{4x +3}.$

MULTIPLE CHOICE QUESTIONS (MCQs)

Mark the correct alternatives in each of the following:

Q 1. Equation of the hyperbola whose vertices are ($\pm$ 3,0) and foci at ($\pm$ 5,0), is

(a) $16x^2 -9y^2 =144$ (b) $9x^2 -16y^2 =144$ (c) $25x^2 -9y^2 = 225$ (d) $9x^2 -25y^2 =81$

Q 2. If e_1 and e_2 are respectively the eccentricities of the ellipse $\dfrac{x^2}{18} + \dfrac{y^2}{4} = 1$ and the hyperbola

$\dfrac{x^2}{9} - \dfrac{y^2}{4} = 1$, then the relation between e_1 and e_2 is

(a) $3e_1^2 + e_2^2 = 2$ (b) $e_1^2 + 2e_2^2 = 3$ (c) $2e_1^2 + e_2^2 = 3$ (d) $e_1^2 + 3e_2^2 = 2$

Q 3. The distance between the directrices of the hyperbola x = 8 sec θ, y = 8 tan θ, is

(a) $8\sqrt{2}$ (b) $16\sqrt{2}$ (c) $4\sqrt{2}$ (d) $6\sqrt{2}$

Q 4. The equation of the conic with focus at (1,- 1) directrix along x - y + 1 = 0 and eccentricity $\sqrt{2}$ is

(a) xy = 1   (b) 2xy + 4x - 4y - 1 = 0   (c) x² - y² = 1   (d) 2xy - 4x + 4y + 1 = 0

Q 5. The eccentricity of the conic $9x^2 - 16y^2 = 144$ is

(a) $\dfrac{5}{4}$ (b) $\dfrac{4}{3}$ (c) $\dfrac{4}{5}$ (d) $\sqrt{7}$

Q 6. The number of integral values of λ for which the equation $x^2 + y^2 + \lambda x (1 - \lambda) y + 5 = 0$
is the equation of a circle whose radius cannot exceed 5, is

(a) 14   (b) 18   (c) 16   (d) none of these

Q 7. The equation of the circle passing through the point (1, 1) and having two diameters along the
pair of lines x² - y² - 2.t + 4y - 3 = 0, is

(a) x² + y² - 2x - 4y + 4 = 0   (b) x² + y² + 2x + 4y - 4 = 0
(c) x² + y² - 2x + 4y + 4 = 0   (d) none of these

Q 8. If the centroid of an equilateral triangle is (1, 1) and its one vertex is (- 1, 2), then the equation of
its circumcircle is

(a) x² + y² - 2x - 2y - 3 = 0   (b) x² + y² + 2x - 2y - 3 = 0
(c) x² + y² + 2x + 2y -3 = 0   (d) none of these

Q 9. If the point (2, k) lies outside the circles x² + y² + x - 2y - 14 = 0 and x² + y² = 13 then k lies in
the interval

(a) $(-3, -2) \cup (3, 4)$ (b) $-3, 4$ (c) $(-\infty, -3) \cup (4, \infty$ (d) $(-\infty, -2) \cup (3, \infty)$

Q 10. If the point $(\lambda, \lambda + 1)$ lies inside the region bounded by the curve $x = \sqrt{25 - y^2}$ and y-axis, then λ
belongs to the interval

(a) $(-1, 3)$ (b) $(-4, 3)$ (c) $(-\infty, -4) \cup (3, \infty)$ (d) none of these

Q 11. The equation of the parabola with focus (0, 0) and directrix x + y = 4 is

(a) x² + y²-2xy + 8x + 8y-16 = 0   (b) x² + y²-2xy + 8x + 8y = 0
(c) x² + y² + 8x + 8y - 16 = 0   (d) x² - y² + 8x + 8y - 16 = 0

Q 12. The line 2x - y + 4 = 0 cuts the parabola y² = 8x in P and Q. The mid-point of PQ is

(a) (1, 2)   (b) (1,-2)   (c) (- 1, 2)   (d) (- 1, - 2)

Q 13. In the parabola y² = 4 ax, the length of the chord passing through the vertex and inclined to the
axis at $\pi/4$ is

(a) $4\sqrt{2}a$ (b) $2\sqrt{2}a$ (c) $\sqrt{2}a$ (d) none of these

Q 14. The equation $16x^2 + y^2 + 8xy - 74 x - 78y + 212 = 0$ represents

(a) a circle   (b) a parabola   (c) an ellipse   (d) a hyperbola

Q 15. The length of the latus -rectum of the parabola y² + 8x - 2y + 17 = 0 is

(a) 2   (b) 4   (c) 8   (d) 16

Q 16. An ellipse has its centre at (1,-1) and semi-major axis = 8 and it passes through the point (1, 3).
The equation of the ellipse is

(a) $\dfrac{(x+1)^2}{64}+\dfrac{(y+1)^2}{16}=1$

(b) $\dfrac{(x-1)^2}{64}+\dfrac{(y+1)^2}{16}=1$

(c) $\dfrac{(x-1)^2}{64}+\dfrac{(y+1)^2}{16}=1$

(d) $\dfrac{(x+1)^2}{64}+\dfrac{(y-1)^2}{16}=1$

Q 17. The sum of the focal distances of any point on the ellipse $9x^2 + 16y^2 = 144$ is

(a) 32   (b) 18   (c) 16   (d) 8

Q 18. If (2, 4) and (10, 10) are the ends of a latus-rectum of an ellipse with eccentricity 1/2, then the length of semi - major axis is

(a) 20 / 3   (b) 15 / 3   (c) 40 / 3   (d) none of these

Q 19. The equation $\dfrac{x^2}{2-\lambda}+\dfrac{y^2}{\lambda-5}+1=0$ represents an ellipse, if

(a) $\lambda<5$ (b) $\lambda<2$ (c) $2<\lambda<5$ (d) $\lambda<2$ or $\lambda>5$

Q 20. The eccentricity of the ellipse $9x^2 + 25y^2 - 18x - 100y -116 = 0$, is

(a) 25/16   (b) 4/5   (c) 16/25   (d) 5/4

Q 21. The ratio in which the line joining (2, 4, 5) and (3, 5, -9) is divided by the yz-plane is

(a) 2 : 3   (b) 3 : 2   (c) -2 : 3   (d) 4 : -3

Q 22. The ratio in which the line joining the points (a, b, c) and (-a, - c, - b) is divided by the xy - plane is

(a) a : b   (b) b : c   (c) c : a   (d) c : b

Q 23. If P (0, 1, 2), Q (4, - 2, 1) and O (0, 0, 0) are three points, then $\angle POQ =$

(a) $\dfrac{\pi}{6}$ (b) $\dfrac{\pi}{4}$ (c) $\dfrac{\pi}{3}$ (d) $\dfrac{\pi}{2}$

Q 24. If the extremities of the diagonal of a square are (1, - 2, 3) and (2, - 3, 5), then the length of the side is

(a) $\sqrt{6}$ (b) $\sqrt{3}$ (c) $\sqrt{5}$ (d) $\sqrt{7}$

Q 25. The points (5, - 4, 2), (4, - 3,1), (7, 6, 4) and (8,- 7, 5) are the vertices of

(a) a rectangle   (b) a square   (c) a parallelogram   (d) none of these

Q 26. $\displaystyle\lim_{x\to1}\dfrac{\sin \pi x}{x-1}$ is equal to

(a) $-\pi$ (b) π (c) $-\dfrac{1}{\pi}$ (d) $\dfrac{1}{\pi}$

Q 27. If $\displaystyle\lim_{x\to1}\dfrac{x+x^2+x^3+...+x^n-n}{x-1}=5050$ then n equal

(a) 10   (b) 100   (c) 150   (d) none of these

Q 28. The value of $\displaystyle\lim_{x\to\infty}\dfrac{\sqrt{1+x^4}+(1+x^2)}{x^2}$ is

(a) -1 (b) 1   (c) 2   (d) none of these

Q 29. $\displaystyle\lim_{x\to0}\dfrac{\sqrt{1+x}-1}{x}$ is equal to

(a) $\dfrac{1}{2}$ (b) 2   (c) 0   (d) 1

Q 30. $\displaystyle\lim_{x\to3}\dfrac{\sum_{r=1}^{n}x^r-\sum_{r=1}^{n}3^r}{x-3}$ is equal to

(a) $\dfrac{2(n-1)\times3^n}{4}$ (b) $\dfrac{(2n-1)\times3^n+1}{4}$ (c) $(2n-1)3^n+1$ (d) $\dfrac{(2n-1)\times3^n-1}{4}$

CASE STUDY BASED QUESTIONS-XI

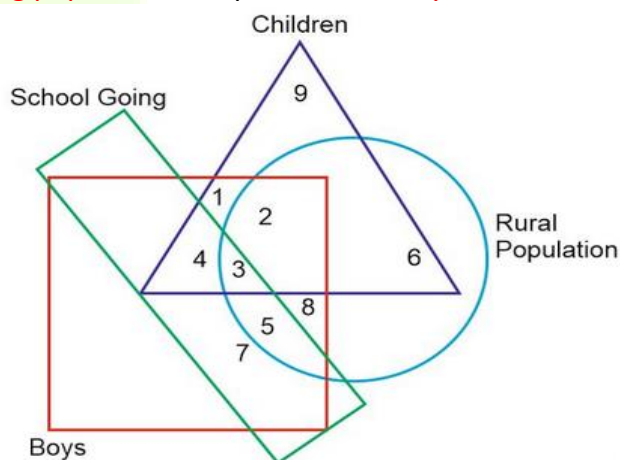# MATHEMATICS

1	**SET THEORY**	
	Venn Diagrams Venn diagrams were invented by a logician John Venn as a way of picturing relationships between different groups of things. These diagrams, also called Set diagrams or Logic diagrams, are widely used in mathematics, statistics, logic, teaching, linguistics, computer science and business In the following diagram, triangle shows children, circle shows rural population, rectangle shows school going population & square shows boys. Based on the information stated above answer the below given questions-:	
i	The village boys not going to school are denoted by which number? a)1 b) 2 c)1,2 d)2,8	
ii	The village children not going to school are denoted by which number? a)1 b) 2 c)6 d)2,6	
iii	What is represented by number 4? a) School going boys b) Children who are boys c) Children who are not from village. d) School going boys who are not from village.	
iv	School going boys from village are denoted by which number? a) 3 b) 3,5 c) 3,4 d) 3, 4, 5,7	
2	In the following figure small square represents the persons who know English, triangle to those who know Marathi, big square to those who know Telugu and circle to those who know Hindi. In the different regions of the figures from 1 to 12 are given.	
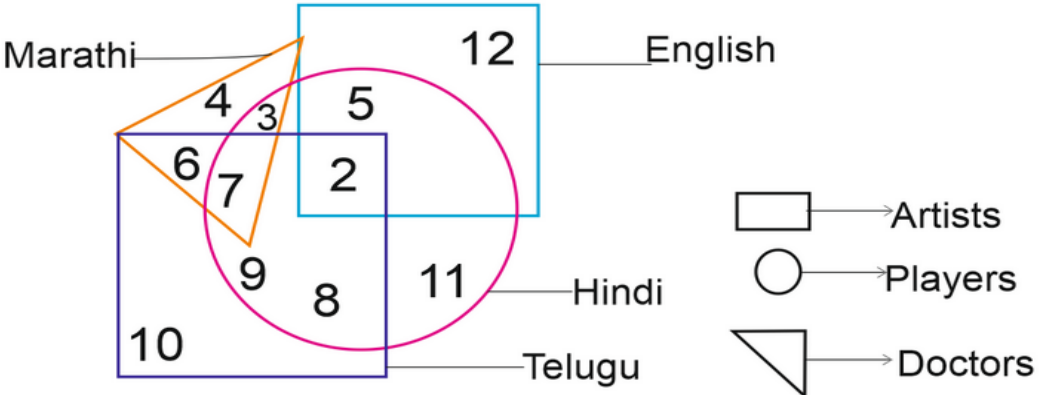
i	How many persons can speak English and Hindi both the languages only ? a) 5 b) 8 c) 7 d) 18
ii	How many persons can speak all the languages? a) 1 b) 8 c) 2 d) None
iii	How many persons can speak Marathi and Telugu both ? a) 10 b) 11 c) 3 d) None of these
iv	How many persons can speak English, Hindi and Telugu ? a) 8 b) 2 c) 7 d) None of these
3	## RELATION AND FUNCTIONS A Relation R from A to B can be depicted pictorially using arrow diagram . In arrow diagram, we write down the elements of two set A and B in two disjoint circle, Then we draw arrow from set A to set B whenever (a,b)∈R. Below shown is an example of information depicted through an arrow diagram.For example A company has four categories of employees given by Assistants (A), Clerks (C), Managers (M) and an Executive Officer €. The company provide ₹10,000, ₹25,000, ₹50,000 and ₹1,00,000 as salaries to the people who work in the categories A, C, M and E respectively. Here A_1, A_2, A_3, A_4 and A_5 are Assistants; C_1, C_2, C_3, C_4 are Clerks; M_1, M_2, M_3 re managers and E_1, E_2 are Executive officers then the relation R is defined by xRy, where x is the salary given to person y.
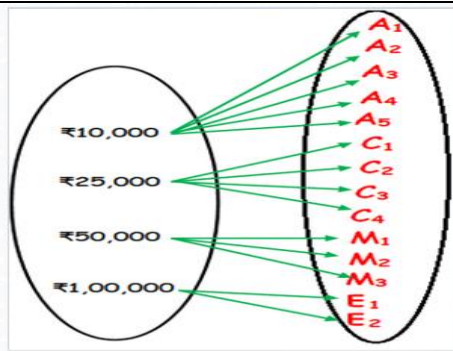
Answer the questions given below

i
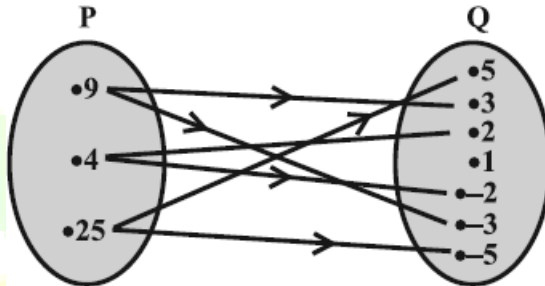
The relation defined in the above arrow diagram from set P to Q is

a) **"x is a square of y"**   b) **" x is a square root of y "**   c)**"x is a cube root of y"**   d)**None**

ii
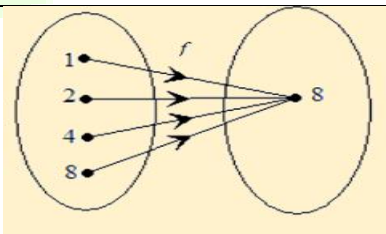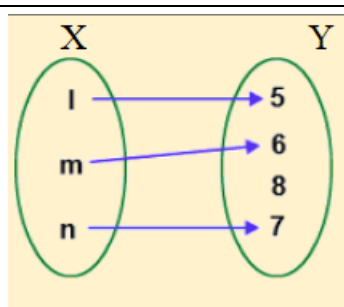

The relation defined in the above arrow diagram from set A to B is

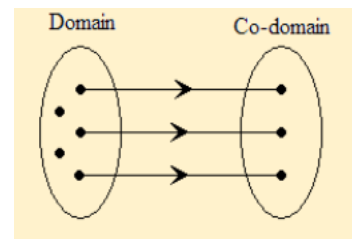a)   "x = 2y"   b) " x is a square of y"   c) "x is a factor of y "   d) None
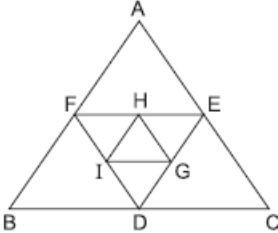
iii
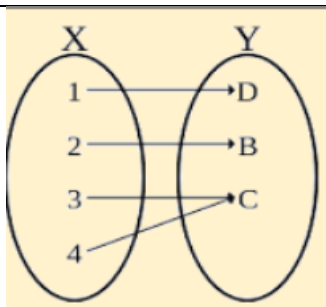
    FIGURE A   FIGURE B   FIGURE C

I) Which Aamong the above figures shows a Relation between the two non-empty sets

	a)A,C b) B,C c) A,B d)A,B,C II) Which among the above figures shows a Function between the two non-empty sets a)A ,C b)B,C c)A.B d) A,B,C	
iv	If the number of elements in set A and B are p and q then he number of relations from A to B are a) 2^{pq-1} b) 2^{pq+1} c) 2^{p^2} d) 2^{pq}	
v	If the number of elements in set A and B are p and q then the number of non-empty relations from A to B are a) 2^{pq-1} b) 2^{pq+1} c) 2^{pq} d) 2^{p^2}	
4	TRIGONOMETRY **Trigonometry** (from Greek trigon, "triangle" and metron, "measure") is a branch of mathematics that studies relationships between side lengths and angles of triangles. Measurement of angles can be done in DEGREES(English System),GRADES(French System) AND RADIANS(Circular System). Throughout history, trigonometry has been applied in areas such as geodesy, surveying, celestial mechanics, navigation and many other fields. Based on the concept of trigonometry answer the below given questions-:	
i	 The minute hand of a clock is 2 cm long. How far does its tip moves in 20 minutes(Take $\pi = \dfrac{22}{7}$) a)5.14cm b) 4 cm c)4.19cm d)6.1 cm	

ii	 The angles subtended at the centre by the equal arcs of two wipers of the car as shown above are 65^0 and 110^0, the ratio of their radii will be ? a) $13:22$ b) $22:13$ c)20:13 d)13:20	
5	SEQUENCES AND SERIES A polygon is **regular** when all angles are equal and all sides are equal (otherwise it is "irregular"). Below given figure is an equilateral triangle with sides 18cm.The midpoints of its sides are joined to form another triangle whose midpoints ,in turn ,are joined to form another triangle .The process is continued indefinitely. Answer the questions given below: 	
i	The sum of perimeters of all the triangles will be: a)100 cm b) 110cm c) 118cm d)108cm	
ii	The sum of areas of all the triangles is a) $105\sqrt{3}cm^2$ b) $108\sqrt{3}cm^2$ c) $108cm^2$ d) $100cm^2$	
iii	The sequence of lengths of sides of a triangle form a/an a)Arithmetic Progression b)Geometric progression c) Harmonic progression d) None of these	
iv	The sum to infinity of a geometric series is given by a) $S_\infty = \dfrac{a}{1-r}$ b) $S_n = \dfrac{a\left(1-r^n\right)}{1-r} : r<1$ c) $S_n = \dfrac{n}{2}\left[2a+(n-1)d\right]$ d) $S_\infty = \dfrac{1-r}{a}$	
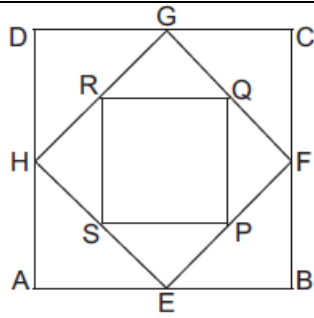
6	
	The side of a given square is 10 cm.The midpoints of its sides are joined to form a new square.Again,the midpoints of the sides of the new square are joined to form another square.The process is continued indefinetly.based on the above information answer the questions below:
i	The sum of areas of all the squares so formed will be a)300 sqcm b) 350 sqcm c) 200 sqcm d) 400 sqcm
ii	The sum of Perimeters of the squares so formed will be a) $40+80\sqrt{2}$ cm b) $80+40\sqrt{2}$ cm c) $80\sqrt{2}$ cm d) $40\sqrt{2}$ cm
7	
	Chessboard is the type of *game board* used for the game of <u>chess</u>, on which the chess <u>pawns</u> and *pieces* are placed. A chessboard is usually square in shape, with an alternating pattern of squares in two colours, with its side being divided into eight parts, resulting in a total of 64 squares. The inventor of the chess board suggested a reward of one gram of wheat for the first square,2 grams for the second,4 grams for the third and so on .doubling the number of grains for for subsequent squares .Based on the above information answer the questions given below:
i	How many grains would have to be given to the inventor ? a)1024 b) $2^{64}-1$ c) $2^{63}-1$ d) 2^{64}
ii	The number of grains in each square forms a /an a)Arithmetic sequence b)Harmonic sequence c)Geometric sequence d)None
iii	The sum to n terms of Arithmetic series is given by a) $S_{\infty}=\dfrac{a}{1-r}$ b) $S_n=\dfrac{a(1-r^n)}{1-r}:r<1$ c) $S_n=\dfrac{n}{2}\left[2a+(n-1)d\right]$ d) $S_{\infty}=\dfrac{1-r}{a}$

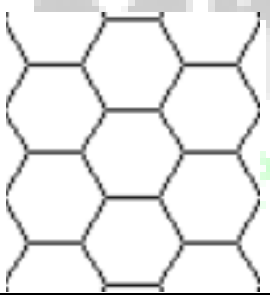|		
iv	The sum to n terms of Geometric series is given by a) $S_\infty = \dfrac{a}{1-r}$ b) $S_n = \dfrac{a(1-r^n)}{1-r} : r < 1$ c) $S_n = \dfrac{n}{2}\left[2a+(n-1)d\right]$ d) $S_\infty = \dfrac{1-r}{a}$	
8	 We need to grow more trees to make our surroundings better and to compensate for the deforestation and reducing effects of air pollution. To better our individual and social health let us grow more trees. In a village there are 30 trees at equal distances of 5 meters in a line around a well. The distance of the well from the nearest tree being 10 meters. A Gardner waters all the trees Separately starting from the well and returns to the well after watering each tree to get water for the next. Now answer the questions :	
i	The total distance covered (in meters) by the gardner is: a)4975m b)4795m c)4955m d)4275m	
ii	The terms having constant difference is called as: a)Difference b)common ratio c)Common difference d)none	
iii	The number of A.P's containing 10 terms in which the first term is in the set { 1,2,3} and the common difference is in the set {2,3,4} will be : a)10 b)9 c)6 d)8	
9	**FIBONACCI SEQUENCE** A Fibonacci number is a series of numbers in which each Fibonacci number is obtained by adding the two preceding numbers. It means that the next number in the series is the addition of two previous numbers. Let the first two numbers in the series is taken as 0 and 1. By adding 0 and 1, we get the third number as 1. Then by adding the second and the third number (i.e) 1 and 1, we get the fourth number as 2, and similarly, the process goes on. Thus, we get the Fibonacci series as 0, 1, 1, 2, 3, 5, 8, ……. Hence, the obtained series is called the **Fibonacci number series.** The sequence of Fibonacci numbers can be defined as: : $a_n = a_{n-1} + a_{n-2}; n > 2$	
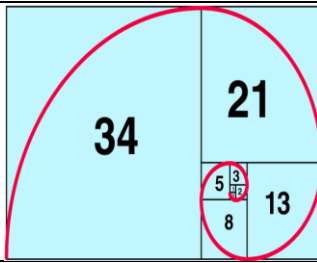
i	The first five terms of the sequence given by $a_n = 2n + 1$ forms a series given by a) $3, 5, 7, 9, 11, \ldots\ldots$ b) $3 + 5 + 7 + 9 + 11 + \ldots\ldots$ c) $5, 7, 9, 11, 13\ldots\ldots$ d) $5 + 7 + 9 + 11 + 13 + \ldots\ldots$
ii	The Fibonacci sequence is defined by $a_n = a_{n-1} + a_{n-2}; n > 2$ where $a_1 = a_2 = 1$, then the sequence formed by $\dfrac{a_{n+1}}{a_n}$ for $n = 1, 2, 3, 4, 5$ is a) $1, 2, \dfrac{3}{2}, \dfrac{5}{3}, \dfrac{8}{5}$ b) $1, 2, \dfrac{5}{3}, \dfrac{3}{5}, \dfrac{8}{5}$ c) $1, 2, 3, 5, 8$ d) $1, \dfrac{1}{2}, \dfrac{2}{3}, \dfrac{3}{5}, \dfrac{5}{8}$

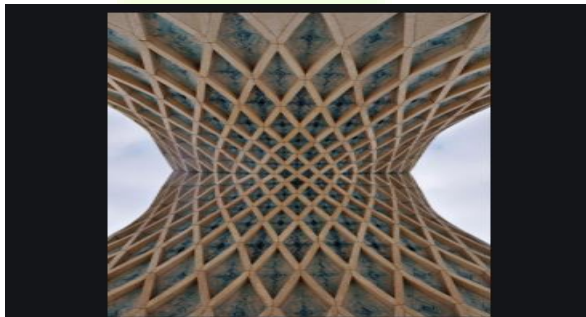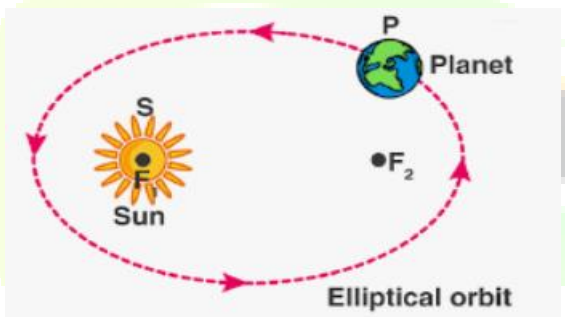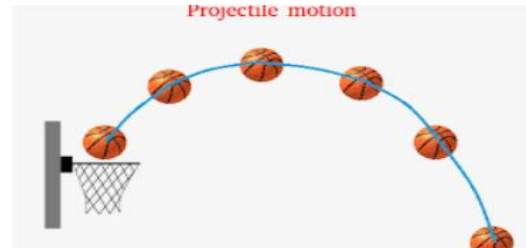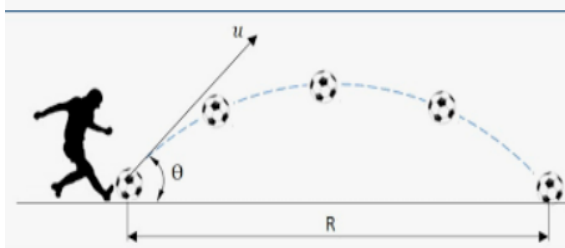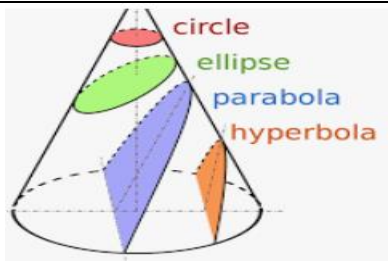| **10**	**PERMUTATION AND COMBINATION** **TESELLATIONS** A **Tessellation** (or **Tiling**) is when we cover a surface with a pattern of flat shapes so that there are no overlaps or gaps. **Tessellations** can be found in many areas of life. Art, architecture, hobbies, and many other areas hold examples of **tessellations** found in our everyday surroundings. Specific examples include oriental carpets, quilts, origami etc. Seven regular hexagonal plates of same size are given in the figure below.
i	The number of ways in which six corners of regular hexagon can be painted with six different colours will be ? a) $6!$ b) $5!$ c) $7!$ d) $8!$
ii	"If an event can occur in 'm' different ways followed by another event which occurs in 'n' different ways, then the total number of ways of occurrence of event will be $m \times n$ .The statement refers to which Principle ? a)Fundamental principle of addition b)Permutation c)Combination d)Fundamental Principle of Multiplication

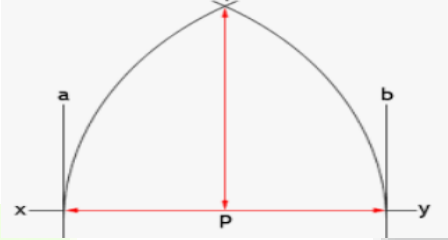|		
iii	The number of ways in which the word HEXAGON be permuted is a)5000 b)5020 c)5040 d)5010	
iv	The number of diagonals in a hexagon are a)9 b)18 c)10 d)18	
11	 The number lock has three/four wheels each labelled with 10 digits 0 to 9.The lock can be opened with the digits are set in a particular specific order.In mathematics, a permutation of a set is an arrangement of its members into a sequence or linear order, or if the set is already ordered, a rearrangement of its elements. The word "Permutation" also refers to the act or process of changing the linear order of an ordered set. Now answer the questions given below:	
i	A number lock in a suitcase has three wheels each labelled with ten digits 0 to 9,the number of possible attempts if repeatition of numbers is not alowed is a)719 b)720 c)730 d)740	
ii	The number of unsuccessful attempts will be a)719 b)720 c)730 d)740	
iii	If an event can occur in 'm' different ways foolowing which another event can occur in 'n' different ways,followed by another event in 'p' different ways and so on,then the total number of ways in which the event occurs will be a) $m+n+p+.....ways$ b) $m \times n \times p \times .....ways$ c) $m \times n \times p$ d) $m+n+p$	
iv	The arrangements (with or without meaning) of letters or alphabets is called a)Combination b)Permutation c)Probability d)Sequence	
v	A group photograph is to be taken in a school.All the 7 teachers should be in the first row and all the 20 students are asked to stand in the second row.The two corners of the second row is reserved for the two tallest students interchangeable only between them and the middle seat of the first row is reserved for the Principal.The number of possible arrangements wil be a) $20! \times 7!$ b) $20! \times 7! \times 2$ c) $18! \times 7! \times 2$ d) $18! \times 6! \times 2$	
12	**CONIC SECTIONS**	

Conic sections have applications in various fields. When an object is thrown in space, then the path traced by the object is (called a projectile) a PARABOLA. Another example can be a parabolic reflectors which are used in Cars, Automobiles , Solar cookers, Telescopes and Cables shape like Parabolic arcsused in suspension bridge

The Planets in a solar system moves in an ELLIPTICAl path with the Sun at one of the foci, also Artificial stellites are made to move in an ELLIPTICAL path around Earth.

HYPERBOLA have their applications in the field of Ballistics, the shape of EIFFEL Tower is also Hyperbolic .Few examples are shown in the figure above:

Based on the above information answer the questions:

i	The focus of a parabolic reflector 5 cm deep and diameter 20 cm is :	
	a)6 cm b)20 cm c)15 cm d)5cm	
ii	The area of triangle formed by the lines joining the vertex of the parabola $x^2 = 12y$ to the ends of its latus rectum is a) 8 sq.units b) 18 sq units c)20 sq units d) 12 sq units	
iii	 The arch shown above is in the form of semi-ellipse.It is 8 m wide and 2m high at the centre.The height of the arch at 1.5 m from one end is a)1.56 m b) 2.56m c) 2 m d)3m	
13	**PROBABILITY** Ravi visited a dentist for his tooth problem. The probability that he will have his tooth extracted is 0.06,the probability that he will have a cavity filled is 0.2 and the probability that he will have a tooth extracted or a cavity filled is 0.23. Answer the below given questions:	
i	The probability that he will have his tooth extracted as well as cavity filled is a)0.23 b)0.43 c).08 d)0.03	
ii	If E_1 and E_2 be two events such that $E_1 \subseteq E_2$ then which among the following statement is true? a) $P(E)_1 \le P(E_2)$ b) $P(E)_1 < P(E_2)$ c) $P(E)_1 = P(E_2)$ d) $P(E_1) \ge P(E_2)$	
iii	For any event E ? a) $0 < P(E) < 1$ b) $0 \le P(E) \le 1$ c) $0 \ge P(E) \ge 1$ d) $0 > P(E) > 1$	
14	**THREE DIMENSIONAL GEOMETRY** A three dimensional cartsian Coordinate System is formed by a point called the Origin(denoted by O)and a basis consisting of three mutually perpendicular vectors.These vectors define the three coordinate axes: X,Y and Z axes.They are also known as abscissa,ordinate and applicate	

axis,respectively.The coordinates of any point in the space is determined by three real numbers x,y,and z.The Planes known as coordinate plsnes divides the space into OCTANTS.
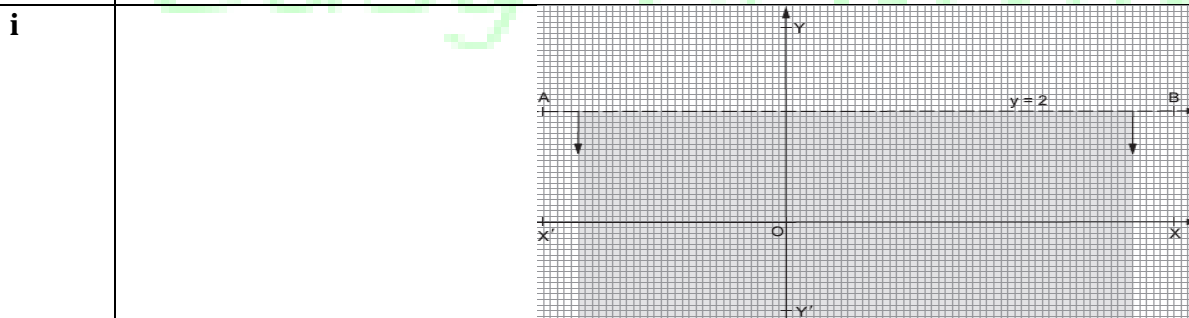Below shown figure depicts a rectangular paralleopiped.Based on the above information answer the questions below:
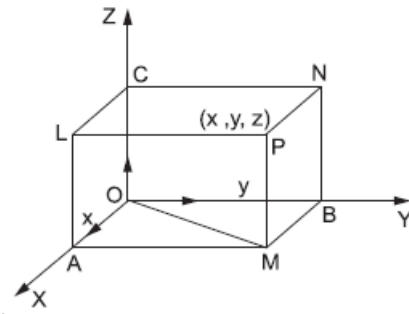
i	If point P represents the coordinate (3,6,5) ,the coordinates of point N will be ? a)(3,0,5) b)(0,6,5) c)(3,6,0) d)(0,0,0)
ii	In which octanat does the point (3,-2,-5) lies? a)II b)VI c)VIII d)IV
iii	From the figure above ,the coordinates of point B will be : a)(0,6,0) b)(0,0,5) c)(0,6,5) d)(3,6,0)
iv	If a point lies on Z-axis then the coordinates of the points are: a)(x,y,z) b) (x,y,0) c) (0,y,0) d)(0,0,z)
15	**LINEAR INEQUALITIES** Linear inequality is an inequality which involves a linear function.Two dimensional linear inequalities are statements of the form - $ax+by<c, ax+by>c, ax+by\le c$ and $ax+by\ge c$ The set of all ordered pair (x, y) which satisfies the given inequation is called as the solution set of the given inequation. Now answer the questions based on linear inequalities:
i	 The inequality represented in the graph is given by a) $y\le 2$ b) $y>2$ c) $y=2$ d) $y<2$
ii	If $-x-8\le 3$ then the value of x is a) $x\le 11$ b) $x\le -11$ c) $x\ge -11$ d) $x\ge 11$

| iv | A furniture dealer deals in two items ,tables and chairs.He has ₹ 30,000 to invest and a space to store atmost 60 pieces.A table cost him ₹ 1500 and a chair ₹ 300.The data Formulated in the form of an inequation will be
a) $1500x + 300y > 30000; x + y < 60, x \geq 0, y \geq 0$
b) $1500x + 300y \geq 30000; x + y \geq 60, x \geq 0, y \geq 0$
c) $1500x + 300y \leq 30000; x + y \geq 60, x \geq 0, y \geq 0$
d) $1500x + 300y \leq 30000; x + y \leq 60, x \geq 0, y \geq 0$ | |

GOOD WISHES!!!!!!!

By SHIVANI KOTWAL

ANSWERS

1	i)d	ii)d	iii)d	iv)b	
2	i)a	ii)d	iii)c	iv)b	
3	i)a	ii)c	iii)a,c	iv)d	v)a
4	i)c	ii)b			
5	i)d	ii)b	iii)b	iv)a	
6	i)c	ii)b			
7	i)b	ii)c	iii)c	iv)b	
8	i)b	ii)c	iii)b		
9	i)b	ii)a			
10	i)b	ii)d	iii)c	iv)a	
11	i)b	ii)a	iii)b	iv)b	v)d
12	i)d	ii)b	iii)a		
13	i)d	ii)a	iii)b		

14   i)b   ii)c   iii)a   iv)d

15   i)b   ii)c   iii)d

By SHIVANI KOTWAL

VISIT AT :BE MATHAHOLIC (YOUTUBE CHANNEL)

Q 1: Suppose

>>> d1 = { 1 : 'one' , 2: 'two' , 3: 'three' , 4: 'four'}

>>> d2 = { 5 :'five', 6:'six' }

Write the output of the following code:

>>> d1.items()

>>> d1.keys()

>>> d1.values()

>>> d1.update(d2)

>>> len(d1)

Q 2:- Consider the following dictionary Prod_Price.

Prod_Price = {'LCD' : 25000,

'Laptop' : 35000,

'Home Theatre' : 80000,

'Microwave Oven' : 18000,

'Electric Iron' : 2800,

'Speaker' : 55000}

Find the output of the following statements:

(a) print(Prod_Price.get('Laptop'))

(b) print(Prod_Price.keys())

(c) print(Prod_Price.values())

(d) print(Prod_Price.items())

(e) print(len(Prod_Price))

(f) print('Speaker' in Prod_Price)

(g) print(Prod_Price.get('LCD'))

(h) del Prod_Price['Home Theatre']

   print (Prod_Price)

Q3:- Write a Python program to input names of 'n' customers and

their details like items bought, cost and phone number, store it in a

dictionary and display all the details in a tabular form.

Q 4:-Write a program to store students' names and their percentage

in a dictionary, and delete a particular student name from the

dictionary. Also display dictionary after deletion.

---------------------------------XI-CS--

Winter Break Homework

Sub-Biology

CLASS-XI

Q1. Explain the process of glycolysis, including all the steps and Enzymes involved.

Q 2.Explain Plant Growth Regulators (PGRs) in Detail?

Q 3. Discuss the differences between aerobic respiration and Fermentation.

Q4. Describe the process of differentiation, dedifferentiation, and redifferentiation in plants.

Q5.List of investigatory projects, Select Any One from below

1) Study locally available common flowering plants of the family-Solanaceae and identify type of stem (Herbaceous or woody), type of leaves (Compound or simple).

2) Study the following parts of human skeleton(Model): Ball and socket joints of thigh and shoulder.

3) Differentiate between monocot and dicot plants on the basis of venation patterns.

4) DNA Fingerprinting

5) Plasticity

PM SHRI KENDRIYA VIDYALAYA AJNI

XI PHYSICS
Winter Break Homework

Try to solve exercise questions of chapter mechanical properties of solids and fluids.

Make a model based on Pascal's law.