

FINAL EXAM (TERM-II)

CLASS: XI-C,D

MATEMATICS

MAXIMUM TIME: 2hrs.

MAXIMUM MARKS: 40

1. This question paper contains three sections – A, B and C. Each part is compulsory.
2. Section - A has 6 short answer type (SA1) questions of 2 marks each.
3. Section – B has 4 short answer type (SA2) questions of 3 marks each.
4. Section - C has 4 long answer type questions (LA) of 4 marks each.
5. There is an internal choice in some of the questions.
6. Q-14 is a case-based problem having 4 sub parts of 1 mark each.

SECTION - A		
Q-1.	Convert $15^{\circ}34'3''$ in decimal degree measure. Or Find the value of $\tan \frac{19\pi}{3}$	2
Q-2.	Solve for real value of x if $ 3 - 4x  \geq 9$	
Q-3.	Find the equation of a parabola having vertex at (0,0) and focus at (0, -6) Or Find the centre and radius of the circle whose equation is: $x^2+y^2-8x+10y-12=0$	2
Q-4.	How many words (with or without meaning) can be made from the word PETROL such that all letters are used and first letter is a vowel	2
Q-5.	Find the derivative of $f(x) = \frac{3x+4}{9-7x+5x^2}$ w.r. to x	2
Q-6.	A box contains 1red and 3 identical white balls. Two balls are drawn at random in succession. Write the sample space of the experiment when: (i) Ball is replaced (ii) Ball not replaced	2
SECTION-B		
Q-7.	Find the values (i) If $\cos(x) = -3/5$ where x lies in III quadrant, find value of $\sin(x)$ (ii) If $\tan(x) = -5/12$ where x lies in II quadrant, find value of $\operatorname{cosec}(x)$ (iii) If $\sec(x) = 13/5$ where x lies in IV quadrant, find value of $\cot(x)$	3
Q-8.	Solve the following system of linear equations graphically: $3x + 2y \leq 150,$ $x + 4y \leq 80,$ $x \leq 15 \text{ and } y \geq 0$	3

Q-9.	<p>Find the equation of the ellipse whose eccentricity is <math>\frac{2}{3}</math>, latus rectum is 5 and centre is (0,0).</p> <p style="text-align: center;">Or</p> <p>Find the eccentricity of the hyperbola:</p> $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ <p>which passes through (3,0) and <math>(3\sqrt{2}, 2)</math>.</p>	3
Q-10.	<p>Given that P(3,2,-4), Q(5,4,-6) and R(9,8,-10) are collinear. Find the ratio in which Q divides PR.</p> <p style="text-align: center;">Or</p> <p>Find the equation of the set of points P, the sum of whose distance from A(4,0,0) and B(-4,0,0) is equal to 10.</p>	3
SECTION-C		
Q-11.	Draw the graph of $\sin(x)$ and $\cos(x)$ on the same axis where $x \in [-\pi, \pi]$	4
Q-12.	<p>Using first principle find the derivative of <math>\sin^2(x)</math>.</p> <p style="text-align: center;">Or</p> <p>Find, using first principle, the derivative of <math>f(x) = 2x^2 + 3x - 5</math> at <math>x = -1</math>. Also prove <math>f'(x) - 3f'(-1) = 0</math></p>	4
Q-13.	It is required to seat 7 men and 4 women in a row so that women occupy the even places. How many such arrangements are possible? Also find in how many ways, out of these men and women, 3 men and 2 women can be seated in 5 VIP chairs.	
Q-14.	<p>Kapila and Sadia want to setup a game stall in their school Fair on Children's Day. They choose a simple game of rolling a die twice. They decide that on the basis of number shown on die after each roll of the die, the winning of the game is decided.</p> <p>Find the chance of winning the game by a player if winning is:</p> <ul style="list-style-type: none"> <li>(i) A total of at least 11</li> <li>(ii) A total of at the most 4</li> <li>(iii) An odd number on the first die and a multiple of 3 on the second die.</li> <li>(iv) A doublet of prime number.</li> </ul>	1x4