Plus One Mathematics

Answer any 6 questions from 1 to 8. Each Carries 3 Score.

1(a) If a set ~~has~~ A has 2 elements ; then the number of subsets of A _____ (1)

1) 4, 2) 8, 3) 6, 4) 2. (1)

(b) write all subsets of $\{a, b\}$. (1)

(c) Let $A = \{x / x \text{ is a prime no. } < 10\}$. Write A in roster form. (1)

2 a) Find the value of x and y, If $(x+3, y-1) = (5, 8)$ (1)

b) IF three elements of $A \times B$ are $(1, a), (2, b), (3, a)$ Such that $n(A) = 3$ and $n(B) = 2$. find A and B (1)

c) Find the number of relations from A to B in which A has 4 elements and B has 3 elements (1)

3. Solve $\frac{3x-4}{2} \geq \frac{x+1}{4}$. Show ~~that~~ the graph of the Solution on a number line. (3)

~~4. a) Find the slope of the line joining (1,2) and (3,5).~~

~~b) Find the equation of the a straight line passing through (3,4) having slope $\frac{1}{2}$~~ (2)

~~(4,7) and perpendicular to the above line~~

~~5) a) Find the equation of a straight line passing through (3,4) and having slope $\frac{1}{2}$.~~ (2)

~~b) Find the distance of the point (0,0) from the above line~~ (1)

4) Find the equation of the circle with centre (1,2) and passing through the point (3,4) (3)

5) a) Find the octant in which ~~the point (3,4)~~ (-3,4,7) lie (1)

(b) Show that the points A(0,7,10), B(-1,6,6) and C(-4,9,6) are the vertices of right angled triangle (2)

6) If $P(A) = \frac{1}{2}$, $P(B) = \frac{1}{3}$ and $P(A \cup B) = \frac{2}{3}$. Find $P(A \cap B)$ and $P(A \cap B')$. (3)

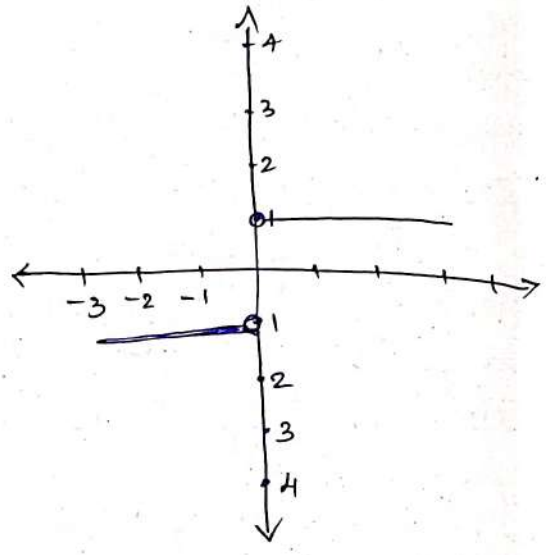
7. Find the equation of the circle (3)

If $f(x) = 1 + x + x^2 + x^3 + \dots + x^{20}$, find $f'(1)$.

8 Find number of arrangements of letters of the word "INDEPENDENCE" in which all the vowels occur together (3)

Answer any 6 questions from 9 to 16. Each Carries 4 Scores

9.



a) Identify the function and defeni it (2)

b) Write the domain and range of the function (2)

10 a) Write number of terms in the expansion of $(x+y)^{10}$. (1)

b) Expand $(x-2y)^5$ (3)

11) a) Insert four geometric means between 1 and 243 (2)

b) Find the Sum of n terms. (2)

$7 + 77 + 777 + \dots$

12 Consider the equation of the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$ (4)

Find the centre, foci, eccentricity and latus rectum.

13 Two cards are drawn from a well Shuffled deck of 52 cards. Find the ~~proble~~ probability that

i) both are spade ii) One is a king other is a diamond. (4)

14) (a) $5! - 3! =$ ____ (1)

b) Find x, if $\frac{1}{6!} + \frac{1}{7!} = \frac{x}{8!}$ (2)

c) If $nC_5 = nC_7$. find nC_{12} (1)

15 a) If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

$A = \{2, 4, 6, 8\}$, $B = \{2, 3, 5, 7\}$ Find

i) A' and B' ii) $A \cup B$ iii) $A - B$ (4)

iv) Verify $(A \cup B)' = A' \cap B'$

16 a) The Conjugate of a complex number $Z = 4 + 5i$ is ____ (1)

b) Write the multiplicative inverse of Z (2)

c) The value of i^{-19} (1)

Any 3 Questions from 17 to 20. Each Carries 6 Scores

17. a) $\sin 15 = \cos$ ____ (1)

b) If $\sin x = \frac{12}{13}$, x lies in the second quadrant (2)

find $\cos x$ and $\tan x$

c) prove that $\frac{\cos 7x + \cos 5x}{\sin 7x - \sin 5x} = \cot x$. (3)

18 a) Find the slope of the line joining (1,2) and (3,5). (1)

b) Find the equation of a straight line passing through (2)

(4,7) and perpendicular to above line

c) Find the equation of a straight line passing through (3,4) having slope $\frac{1}{2}$. (2)

d) Find the distance of the point (0,0) from the (1)

above line.

19) a) We know that $\frac{d(\tan x)}{dx} = \sec^2 x$. Verify this by quotient Rule. (2)

b) Find the derivative of $\sin x$ using first principle. (4)

20. Find the mean, variance and standard deviation of the following data. (6)

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
frequency	2	8	10	17	9	2	2

1. Shaji Kumar P G
2. Reji Joseph
3. Shobhana K P
4. Priyanka. K I
5. Jibi Bose
6. Ashly Jose
7. Remya. R
8. Sr. Mimi Thomas
9. Shafeekh T. P