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MODEL PAPER (MATH) INTER (PART – I) (BISE BWP)
YEAR 2024 AND ONWARD (SUBJECTIVE)

Note: It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2 and Q.No.3 while attempt any (9) Parts from Q.No.4. Attempt any (3) Questions from Part – II .Write same Question No. and its Part No. as given in the Question Paper.

Part - I 25 x 2 = 50

Q.No.2	(i)	State symmetric property of Inequality .		
	(ii)	Find Condition that one root of $x^2 + px + q = 0$ is double the other.		
	(iii)	From suitable Properties of union and intersection deduce the result $A\cap(A\cup B) = A\cup(A\cap B)$.		
	(iv)	Show that a statement $(p \wedge q) \rightarrow P$ is a tautology .		
	(v)	Differentiate between Inductive and Deductive Logics .		
	(vi)	Define Quantifiers.		
	(vii)	Evaluate : $(-1+\sqrt{-3})^5 + (-1-\sqrt{3})^5$	(viii)	If the matrices A and B are symmetric and AB = BA , show that AB is Symmetric .
	(ix)	Solve the equation $\frac{x}{x+1} + \frac{x+1}{x} = \frac{5}{2}$ $x \neq -1, 0$	(x)	Find the three cube roots of 8
	(xi)	Divide 40 into two parts such that the sum of their square is greater.	(xii)	Show that the roots of equation $(P+q)X^2 - PX - q = 0$ are rational.
Q.No.3	(i)	What is Identity ? Give an example .		
	(ii)	How many terms are there in the A.P. is which $a_1 = 11$, $a_n = 68$, $d = 3$?		
	(iii)	If a , b , c , d are in G.P , Prove that a – b , b – c , c – d are in G.P		
	(iv)	Sum the series : $-3 + (-1) + 1 + 3 + 5 + \dots + a_{16}$		
	(v)	Find the 5^{th} term of G.P. 3,6,12, ...		
	(vi)	Sum the series $2 + (1 - i) + (\frac{1}{i}) + \dots$ to 8 terms.		
	(vii)	The Governor of the Punjab calls a meeting of 12 officers . In how many ways can they be seated at a round table?	(viii)	Find the number of the diagonals of a 6 – sided figure
	(ix)	Define Equally Likely Events .	(x)	Using Binomial theorem expand $(a + 2b)^5$
	(xi)	Evaluate $\sqrt[3]{30}$ correct to three decimal places.	(xii)	Give the statement for binomial Theorem only.
Q.No.4	(i)	Find the Circular measure of the angle between the hands of a watch at 4 O' clock		
	(ii)	Show that $2 \sin 45^\circ + \frac{1}{2} \operatorname{Cosec} 45^\circ = 3/\sqrt{2}$		
	(iii)	Express $\cos 6\theta + \cos 3\theta$ as products of trignometric functions.		
	(iv)	If $\alpha + \beta + \gamma = 180^\circ$ then Prove that $\cos(\alpha + \beta) = -\cos\gamma$		
	(v)	Without using calculator , find the values of all trignometric functions of 75°		
	(vi)	Define Period function and period of trignometric functions .		
	(vii)	Find the Period of Sin 2x		

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	(viii)	In ΔABC ; if a= 3 ; C= 6 ; $\beta = 36^0\ 20'$, then find b
	(ix)	State the Law of tangents of triangle.
	(x)	State Heroes Formula
	(xi)	State the Law of tangents of triangle.
	(xii)	Show that $\text{Cos}^{-1}(-x) = \pi - \text{Cos}^{-1} x$
	(xiii)	Show the equation Cosec $\theta = 2$

Part - II **3 x 10 = 30**

Q.No.5	(a)	Solve the System ; $X_1 + 3X_2 + 2X_3 = 3$ $4X_1 + 5X_2 - 3X_3 = -3$ $3X_1 - 2X_2 + 17X_3 = -4$	(5)
	(b)	Use Synthetic Division to find the values of p and q if x+1 and x – 2 are the factors of polynomial $x^3 + px^2 + qx + 6 \neq 6$	(5)
Q.No.6	(a)	Resolve into Partial Fractions $\frac{x^2+2x+2}{(x^2+3)(x+1)(x-1)}$	(5)
	(b)	If $y = 1 + 2x + 4x^2 + 8x^3 + ...$ (i) Show that $x = \frac{y-1}{2y}$ (ii) Find the interval in which the series is Convergent .	(5)
Q.No.7	(a)	Two cards from a deck of 52 playing cards are drawn in such a way that the card is replaced after the first draw. Find the probability that the first card is king and the second is queen.	(5)
	(b)	Show that $\binom{n}{1} + \binom{n}{3} + \binom{n}{5} + \cdots + \binom{n}{n-1} = 2^{n-1}$	(5)
Q.No.8	(a)	Prove that $\text{Sin}\frac{\pi}{9}\ \text{Sin}\frac{2\pi}{9}\ \text{Sin}\frac{\pi}{3}\ \text{Sin}\frac{4\pi}{9} = \frac{3}{16}$	(5)
	(b)	Prove that $(r_3 - r)\ \text{Cot}\frac{r}{2} = C$	(5)
Q.No.9	(a)	Prove the following identity. State the domain of θ in this case . $\sqrt{\frac{1-\sin\theta}{1+\sin\theta}} = \text{Sec}\theta - \tan\theta$	(5)
	(b)	Prove that : $\text{Tan}^{-1}\frac{120}{119} = 2\ \text{Cos}^{-1}\frac{12}{13}$	(5)

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Paper Code : 6191

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Note : Four choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. on the Objective Bubble Sheet. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	The set { 0 , 1 } possesses the Closure property with respect to : (A) Addition (B) Multiplication (C) Subtraction (D) Division
(2)	The Set { 0 } is a : (A) Empty Set (B) Null Set (C) Singleton Set (D) Solution Set
(3)	The number of elements in power set of { 0 , 1 } are : (A) 4 (B) 3 (C) 2 (D) 1
(4)	$\{1, w, w^2\}$ is group under : (A) Addition (B) Subtraction (C) Multiplication (D) Division
(5)	If A and B are disjoint sets then : (A) $A\cap B = A$ (B) $A\cap B = B$ (C) $A\cap B = \emptyset$ (D) $A\cap B = \{0\}$
(6)	If A and B are the roots of $5X^2 - X - 2 = 0$ then α and β is : (A) $-\frac{1}{5}$ (B) $\frac{1}{5}$ (C) $\frac{2}{5}$ (D) $\frac{5}{2}$
(7)	$\frac{x^2+1}{q(x)}$ will be Proper fraction if degree of q(x) equals : (A) 1 (B) 2 (C) 3 (D) 0
(8)	The discriminant of Quadratic Equation is : (A) $4ac - b^2$ (B) $b^2 + 4ac$ (C) $a^2 - 4ac$ (D) $b^2 - 4ac$
(9)	No term in G.P is : (A) 3 (B) 2 (C) 1 (D) 0
(10)	The fraction $\frac{x+1}{x^2+2}$ is : (A) Proper Fraction (B) Improper fraction (C) Mixed (D) Identity
(11)	The Harmonic Mean between a and b is : (A) $\frac{a+b}{2ab}$ (B) $\frac{a-b}{2ab}$ (C) $\frac{2ab}{a-b}$ (D) $\frac{2ab}{a+b}$
(12)	The 2nd term in the expansion of $(1+2x)^{1/2}$ is : (A) x (B) $2x$ (C) $3x$ (D) $4x$
(13)	The statement $4^n > 3^n + 4$ is true if : (A) $n < 2$ (B) $n \neq 2$ (C) $n \geq 2$ (D) $n \leq 2$
(14)	If n is a positive integer then $n^2 + n$ is divisible by : (A) 2 (B) 3 (C) 4 (D) 5
(15)	Co – ratio of Cosine is : (A) Sec (B) Sin (C) Cot (D) Cosec
(16)	If $\sin\theta < 0$ and $\cot\theta > 0$, then in which quadrant θ lies : (A) Ist (B) 2nd (C) 3rd (D) 4th
(17)	Domain of Cos x is : (A) Z (B) Q (C) R (D) N
(18)	$\frac{abc}{4\Delta} =$ (A) r_1 (B) r_2 (C) r_3 (D) R
(19)	The value of $\cos(\tan^{-1}\sqrt{3})$ is : (A) $\frac{1}{2}$ (B) $-\frac{1}{2}$ (C) $\frac{\sqrt{3}}{2}$ (D) $-\frac{\sqrt{3}}{2}$
(20)	A solution of $1 + \cos x = 0$ is : (A) $\frac{\pi}{2}$ (B) π (C) 2π (D) 3π