2017 (S) Roll No: _____

INTERMEDIATE PART-I (11th CLASS)

MATHEMATICS PAPER-I

TIME ALLOWED: 2.30 Hours

SUBJECTIVE MAXIMUM MARKS: 80

NOTE: - Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. $8 \times 2 = 16$

(i) Prove that $\dfrac{\frac{a}{b}}{\frac{c}{d}} = \dfrac{ad}{bc}$; justify each step.

(ii) Simplify $(5, -4) \div (-3, -8)$

(iii) Show that $\forall z \in C$, $z^2 + z^{-2}$ is a real number.

(iv) Write $\{x \mid x \in N \wedge x \leq 10\}$ in descriptive and tabular form.

(v) Show that $(p \wedge q) \rightarrow p$ is a tautology.

(vi) Define a Function.

(vii) If $A = \begin{bmatrix} 1 & 2 \\ a & b \end{bmatrix}$ and $A^2 = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$, then find the values of a and b.

(viii) Find inverse of $\begin{bmatrix} 2i & i \\ i & -i \end{bmatrix}$

(ix) Find the value of x if $\begin{vmatrix} 1 & 2 & 1 \\ 2 & x & 2 \\ 3 & 6 & x \end{vmatrix} = 0$

(x) Solve $x^2 - x = 2$ by factorization.

(xi) Show that $x^3 - y^3 = (x - y)(x - wy)(x - w^2 y)$

(xii) If α, β are roots of $3x^2 - 2x + 4 = 0$ then find the value of $\dfrac{1}{\alpha^2} + \dfrac{1}{\beta^2}$

3. Attempt any eight parts. $8 \times 2 = 16$

(i) Resolve into Partial Fractions $\dfrac{x^2 + 1}{(x+1)(x-1)}$

(ii) If $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in A.P show that $b = \dfrac{2ac}{a+c}$

(iii) Sum the series $2 + (1 - i) + \frac{1}{i} + ----$ to 8 terms.

(iv) If 5 is harmonic mean between 2 and b. Find b.

(v) Sum the series $2 \times 1^2 + 4 \times 2^2 + 6 \times 3^2 + ------$ up to n – terms.

(vi) How many 6 – digits numbers can be formed from digits 2, 2, 3, 3, 4, 4?

(vii) Evaluate ${}^{n}C_{0}$.

(viii) Define Probability and Sample Space.

(ix) Determine the probability of getting two heads in two successive tosses of a balanced coin.

(x) Use Mathematical induction to show that $1 + 2 + 2^2 + ----- + 2^n = 2^{n+1} - 1$ for non-negative integers $n = 0, 1$

(xi) Find the term involving x^{-2} in the expansion of $\left(x - \dfrac{2}{x^2}\right)^{13}$

(xii) Expand $(.8)^{\frac{1}{3}}$ up to two decimal places.

P.T.O.

4. Attempt any nine parts. **$9 \times 2 = 18$**

(i) Convert $35°20'$ into radians.

(ii) If $\theta = \frac{-9}{2}\pi$, find the value of $\sin\theta$ and $\cos\theta$ without using calculator.

(iii) Prove that $\frac{2\tan\theta}{1+\tan^2\theta} = 2\sin\theta Cos\theta$

(iv) Express $\sin(-625°)$ as a trigonometric function of an angle of positive degree measure of less than $45°$.

(v) Show that $Cos(\alpha+\beta).Cos(\alpha-\beta) = Cos^2\alpha - Sin^2\beta$

(vi) Express $\sin 12° \sin 46°$ as difference.

(vii) Find the period of the function $Cot\frac{x}{2}$.

(viii) Solve the triangle ABC, in which $\gamma = 90°$, $\beta = 50°\ 10'$, $C = 0.832$.

(ix) Solve the triangle in which $a = 7,\ b = 7,\ c = 9$

(x) A ladder leaning against a vertical wall makes an angle of $24°$ with the wall. Its foot is 5m from the wall. Find its length.

(xi) Without using table/calculator, show that $\tan^{-1}\frac{5}{12} = \sin^{-1}\frac{5}{13}$

(xii) Solve $\sin x = -\frac{\sqrt{3}}{2}$ in which lie in $[0, 2\pi]$

(xiii) Find the solution of the equation $\cot\theta = -\frac{1}{\sqrt{3}}$ which lie in $[0, 2\pi]$

SECTION-II

NOTE: - Attempt any three questions. **$3 \times 10 = 30$**

5.(a) Show that the set $\{1, w, w^2\}$ when $w^3 = 1$ is an Abelian Group w.r.t ordinary multiplication. 5

(b) Solve the following system of linear equations by Cramer's Rule. 5

$2x + 2y + z = 3,\ \ 3x - 2y - 2z = 1,\ \ 5x + y - 3z = 2$

6.(a) If the roots of $px^2 + qx + q = 0$ are α and β. Then Prove that $\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}} + \sqrt{\frac{q}{p}} = 0$ 5

(b) Resolve into Partial Fractions. $\frac{x^2+1}{x^3+1}$ 5

7.(a) The sum of 9 terms of an A.P is 171 and its eighth term is 31. Find the series. 5

(b) If x is so small that its square and higher powers can be neglected, then show that 5

$$\frac{\sqrt{1+2x}}{\sqrt{1-x}} \approx 1 + \frac{3}{2}x$$

8.(a) Show that the area of a sector of a circular region of radius r is $\frac{1}{2}r^2\theta$, where θ is the circular measure of the central angle of the sector. 5

(b) Prove that $1 + \tan\alpha \tan 2\alpha = \sec 2\alpha$ 5

9.(a) The area of the triangle is 2437. If $a = 79$ and $c = 97$ then find the angle β. 5

(b) Prove that $\sin^{-1}\frac{3}{5} + \sin^{-1}\frac{8}{17} = \sin^{-1}\frac{77}{85}$ 5

Paper Code Number: 2191

2017 (S) Roll No: _____

INTERMEDIATE PART-I (11th CLASS)

MATHEMATICS PAPER-I

TIME ALLOWED: 30 Minutes

MAXIMUM MARKS: 20

OBJECTIVE

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) If n is a prime number then $\sqrt{n}$ equals:-

(A) Rational number (B) Whole number (C) Natural number (D) Irrational number

(2) A semi group is always a/an:-

(A) Group (B) Abelian group (C) Groupoid (D) Non abelian group

(3) For a non-trival solution $|A|$ equals:- (A) $|A| > 0$ (B) $|A| < 0$ (C) $|A| = 0$ (D) $|A| \neq 0$

(4) If $|A| = \begin{vmatrix} x & 1 \\ 1 & 1 \end{vmatrix}$ and $\frac{1}{|A|} = 7$ then x equals:- (A) $\frac{7}{8}$ (B) $\frac{8}{7}$ (C) $\frac{9}{7}$ (D) $\frac{-7}{8}$

(5) The product of four fourth routs of unity is equal to:- (A) 0 (B) 1 (C) i (D) -1

(6) If w is the complex cube root of unity then $(3 + w)(3 + w^2)$ is equal to:- (A) 9 (B) 7 (C) 13 (D) 6

(7) If $(x-4)^2 = x^2 - 8x + 16$ then it is:-

(A) Exponential equation (B) An equation (C) Cubic equation (D) An identity

(8) The Harmonic Mean between x and y is equal to:-

(A) $\frac{2xy}{x+y}$ (B) $\frac{2(x+y)}{xy}$ (C) $\frac{x+y}{2xy}$ (D) $\frac{x+y}{2}$

(9) $\sum_{k=1}^{n} k^1$ is equal to:- (A) $\frac{n(n+1)(2n+1)}{6}$ (B) $\frac{n(n+1)}{4}$ (C) $\frac{n(n+1)}{2}$ (D) $n(n+1)$

(10) For an event E:- (A) $0 \leq P(E) < 1$ (B) $0 \leq P(E) \leq 1$ (C) $0 < P(E) \leq 1$ (D) $-1 \leq P(E) \leq 1$

(11) ${}^nP_n$ equals:- (A) 1 (B) $(n+1)$ (C) $n!$ (D) n

(12) The sum of odd coefficients in the expansion $(1+x)^n$ equals:- (A) n^2 (B) 2^{n-2} (C) 2^{n-1} (D) 2^n

(13) If n is any positive integer, then $1^2 + 2^2 + 2^3 + ---- + 2^n$ equals:-

(A) $2(2^n - 1)$ (B) $2(2^{n-1} - 1)$ (C) $2(2^{n+1} - 1)$ (D) $2(3^n - 1)$

(14) 1^0 equals:- (A) $\frac{\pi}{180}$ radians (B) $\frac{180}{\pi}$ radians (C) $\frac{1}{180}$ radians (D) π radians

(15) If $\alpha + \beta = 45°$ then $\tan(\alpha + \beta + \gamma)$ equals:-

(A) $\frac{1 - \tan\gamma}{1 + \tan\gamma}$ (B) $\frac{1 + \tan\gamma}{1 - \tan\gamma}$ (C) $\frac{\tan\gamma + 1}{\tan\gamma - 1}$ (D) $\frac{\tan\gamma - 1}{\tan\gamma + 1}$

(16) The range of $\tan x$ is equal to:-

(A) $[-1, 1]$ (B) R (C) $R - \left\{ x \mid x = (2n+1)\frac{\pi}{2},\ n \in z \right\}$ (D) $R - \{ x \mid x = n\pi, n \in z \}$

(17) For an equilateral triangle having each side of measure a, the value of s equals:-

(A) $\frac{\sqrt{3}a}{2}$ (B) $\frac{3a}{2}$ (C) $\frac{3a^2}{4}$ (D) $\frac{a}{\sqrt{2}}$

(18) The Pythagoras theorem can be derived from:- (A) Law of Sines
(B) Law of Tangents (C) Law of Cosines (D) Fundamental law of Trigonometry

(19) $\tan^{-1}\left(\frac{2A}{1-A^2}\right)$ equals:- (A) $\tan^{-1} A/2$ (B) $\tan^{-1}\left(2/A\right)$ (C) $\tan^{-1}(2A)$ (D) $2\tan^{-1} A$

(20) Solution of $1 + \cos x = 0$ is:- (A) $\pi/2$ (B) π (C) 2π (D) $\pi/4$

Paper Code Number: 2193

2017 (S) Roll No: _____

INTERMEDIATE PART-I (11th CLASS)

MATHEMATICS PAPER-I

TIME ALLOWED: 30 Minutes

MAXIMUM MARKS: 20

OBJECTIVE

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) The range of $\tan x$ is equal to:-

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(2) For an equilateral triangle having each side of measure a, the value of s equals:-

(A) $\frac{\sqrt{3}a}{2}$ (B) $\frac{3a}{2}$ (C) $\frac{3a^2}{4}$ (D) $\frac{a}{\sqrt{2}}$

(3) The Pythagoras theorem can be derived from:- (A) Law of Sines (B) Law of Tangents (C) Law of Cosines (D) Fundamental law of Trigonometry

(4) $\tan^{-1}\left(\frac{2A}{1-A^2}\right)$ equals:- (A) $\tan^{-1} A/2$ (B) $\tan^{-1}\left(2/A\right)$ (C) $\tan^{-1}(2A)$ (D) $2\tan^{-1} A$

(5) Solution of $1 - \cos x = 0$ is:- (A) $\pi/2$ (B) π (C) 2π (D) $\pi/4$

(6) If n is a prime number then $\sqrt{n}$ equals:-

(A) Rational number (B) Whole number (C) Natural number (D) Irrational number

(7) A semi group is always a/an:-

(A) Group (B) Abelian group (C) Groupoid (D) Non abelian group

(8) For a non-trival solution $|A|$ equals:- (A) $|A| > 0$ (B) $|A| < 0$ (C) $|A| = 0$ (D) $|A| \neq 0$

(9) If $|A| = \begin{vmatrix} x & 1 \\ 1 & 1 \end{vmatrix}$ and $\frac{1}{|A|} = 7$ then x equals:- (A) $\frac{7}{8}$ (B) $\frac{8}{7}$ (C) $\frac{9}{7}$ (D) $\frac{-7}{8}$

(10) The product of four fourth routs of unity is equal to:- (A) 0 (B) 1 (C) i (D) -1

(11) If w is the complex cube root of unity then $(3+w)(3+w^2)$ is equal to:- (A) 9 (B) 7 (C) 13 (D) 6

(12) If $(x-4)^2 = x^2 - 8x + 16$ then it is:-

(A) Exponential equation (B) An equation (C) Cubic equation (D) An identity

(13) The Harmonic Mean between x and y is equal to:-

(A) $\frac{2xy}{x+y}$ (B) $\frac{2(x+y)}{xy}$ (C) $\frac{x+y}{2xy}$ (D) $\frac{x+y}{2}$

(14) $\sum_{k=1}^{n} k^2$ is equal to:- (A) $\frac{n(n+1)(2n+1)}{6}$ (B) $\frac{n(n+1)}{4}$ (C) $\frac{n(n+1)}{2}$ (D) $n(n+1)$

(15) For an event E:- (A) $0 \leq P(E) < 1$ (B) $0 \leq P(E) \leq 1$ (C) $0 < P(E) \leq 1$ (D) $-1 \leq P(E) \leq 1$

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(17) The sum of odd coefficients in the expansion $(1+x)^n$ equals:- (A) n^2 (B) 2^{n-2} (C) 2^{n-1} (D) 2^n

(18) If n is any positive integer, then $1^2 + 2^2 + 2^3 + \cdots\cdots + 2^n$ equals:-

(A) $2(2^n - 1)$ (B) $2(2^{n-1} - 1)$ (C) $2(2^{n+1} - 1)$ (D) $2(3^n - 1)$

(19) 1^c equals:- (A) $\frac{\pi}{180}$ radians (B) $\frac{180}{\pi}$ radians (C) $\frac{1}{180}$ radians (D) π radians

(20) If $\alpha + \beta = 45^\circ$ then $\tan(\alpha + \beta + \gamma)$ equals:-

(A) $\frac{1 - \tan\gamma}{1 - \tan\gamma}$ (B) $\frac{1 + \tan\gamma}{1 - \tan\gamma}$ (C) $\frac{\tan\gamma + 1}{\tan\gamma - 1}$ (D) $\frac{\tan\gamma - 1}{\tan\gamma + 1}$

Paper Code Number: 2195	2017 (S) INTERMEDIATE PART-I (11th CLASS)	Roll No: _____

MATHEMATICS PAPER-I

TIME ALLOWED: 30 Minutes
MAXIMUM MARKS: 20

OBJECTIVE

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Q.No.1

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(2) The sum of odd coefficients in the expansion $(1+x)^n$ equals:- (A) n^2 (B) 2^{n-2} (C) 2^{n-1} (D) 2^n

(3) If n is any positive integer, then $1^2 + 2^2 + 2^3 + ---- + 2^n$ equals:-

(A) $2(2^n - 1)$ (B) $2(2^{n-1} - 1)$ (C) $2(2^{n+1} - 1)$ (D) $2(3^n - 1)$

(4) 1° equals:- (A) $\frac{\pi}{180}$ radians (B) $\frac{180}{\pi}$ radians (C) $\frac{1}{180}$ radians (D) π radians

(5) If $\alpha + \beta = 45^\circ$ then $\tan(\alpha + \beta + \gamma)$ equals:-

(A) $\frac{1 - \tan\gamma}{1 + \tan\gamma}$ (B) $\frac{1 + \tan\gamma}{1 - \tan\gamma}$ (C) $\frac{\tan\gamma + 1}{\tan\gamma - 1}$ (D) $\frac{\tan\gamma - 1}{\tan\gamma + 1}$

(6) The range of $\tan x$ is equal to:-

(A) $[-1, 1]$ (B) R (C) $R - \left\{ x \mid x = (2n+1)\frac{\pi}{2},\ n \in z \right\}$ (D) $R - \{ x \mid x = n\pi, n \in z \}$

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Paper Code Number: 2197	2017 (S) INTERMEDIATE PART-I (11th CLASS)	Roll No: _____

MATHEMATICS PAPER-I

TIME ALLOWED: 30 Minutes
MAXIMUM MARKS: 20

OBJECTIVE

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(A) $\frac{1-\tan\gamma}{1+\tan\gamma}$ (B) $\frac{1+\tan\gamma}{1-\tan\gamma}$ (C) $\frac{\tan\gamma+1}{\tan\gamma-1}$ (D) $\frac{\tan\gamma-1}{\tan\gamma+1}$

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(19) If $|A| = \begin{vmatrix} x & 1 \\ 1 & 1 \end{vmatrix}$ and $\frac{1}{|A|} = 7$ then x equals:- (A) $\frac{7}{8}$ (B) $\frac{8}{7}$ (C) $\frac{9}{7}$ (D) $\frac{-7}{8}$

(20) The product of four fourth routs of unity is equal to:- (A) 0 (B) 1 (C) i (D) -1

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN

OBJECTIVE KEY FOR INTER (PART-I (II)) Examination, 2017.

Name of Subject Maths **Session** ______

Q. Nos.	Paper Code 2191	Paper Code 2193	Paper Code 2195	Paper Code 2197
1.	D	B	C	B
2.	C	B	C	D
3.	C	C	F.C	A
4.	B	D	A	A
5.	D	B	B	B
6.	B	D	B	C
7.	D	C	B	C
8.	A	C	C	F.C
9.	A	B	D	A
10.	B	D	B	B
11.	C	B	D	B
12.	C	D	C	B
13.	F.C	A	C	C
14.	A	A	B	D
15.	B	B	D	B
16.	B	C	B	D
17.	B	C	D	C
18.	C	F.C	A	C
19.	D	A	A	B
20.	B	B	B	D

F.C means Full credit
All options are correct

ہم نے مضمون ریاضی پرچہ I گروپ ____ سیشن ____ انٹر سالانہ/ضمنی امتحان 2017 کا سوالیہ پرچہ/چانٹا پیپر معروضی (Subjective & Objevtive) کو بنظر تحقیق چیک کر لیا ہے یہ پرچہ سلیبس کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ پرچہ میں کسی قسم کی کوئی غلطی نہ ہے۔ ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کر لیا ہے یہ Version آپس میں مطابقت رکھتے ہیں اور سلیبس (Syllabus) کے مطابق بھی ہیں۔ نیز اس پرچہ کی Key کی بابت بھی تصدیق کی جاتی ہے کہ یہ بھی درست بنائی گئی ہے۔ اس میں بھی کسی قسم کی کوئی غلطی نہ ہے۔
مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات وصول کر کے ان کا بغور مطالعہ کر لیا ہے اور ان کی روشنی میں Key بنائی ہے۔

PREPARED & CHECKED BY

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