

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN
OBJECTIVE KEY FOR INTERMEDIATE ANNUAL EXAMINATION, 2022

15⁰¹/₂₂

Name of Subject: Mathematics

Session: A-22 P-I

Group: 1st

Group: 2nd

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

Q. Nos	Paper Code 2192	Paper Code 2194	Paper Code 2196	Paper Code 2198
1	A	A	D	C
2	B	B	D	C
3	D	C	B	C
4	C	D	D	D
5	C	B	A	D
6	C	A	C	B
7	D	C	A	D
8	D	D	B	A
9	B	A	C	C
10	D	B	D	A
11	A	D	B	B
12	C	C	A	C
13	A	C	C	D
14	B	C	D	B
15	C	D	A	A
16	D	D	B	C
17	B	B	D	D
18	A	D	C	A
19	C	A	C	B
20	D	C	C	D

سرٹیفکیٹ بابت صحیح سوالیہ پرچہ مارکنگ Key

ہم نے مضمون Mathematics پرچہ I گروپ 2nd سیکم انٹرمیڈیٹ سالانہ امتحان 2022 کا سوالیہ پرچہ انشائیہ و معروضی (Subjective & Objective) کو بنظر عمیق چیک کر لیا ہے یہ پرچہ Syllabus 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۔ نیز اس پرچہ کی معروضی (MCQs) Key کی بابت تصدیق کی جاتی ہے کہ 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۔ نیز سب ایگزامینرز کیلئے تفصیلی مارکنگ ہدایات / مارکنگ سیکم / Rubrics بھی تیار کر دی گئی ہیں۔

Prepared & Checked By:

Dated: 18/07/2022

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Re-Checked By: ہم نے درج بالا سوالیہ پرچہ (انشائیہ و معروضی) معروضی "Key" اور ہدایات کے حوالہ سے مکمل طور پر تلی کر لی ہے۔ کسی قسم کی کوئی غلطی نہ ہے۔

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تاریخ

INTERMEDIATE PART-I (11th CLASS)

MATHEMATICS PAPER-I

TIME ALLOWED: 2.30 Hours

GROUP-I

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 × 2 = 16

(i) Separate into real and imaginary parts the complex number $\frac{i}{1+i}$ (ii) Find the multiplicative inverse of $a + bi$ (iii) Show that $\forall z \in \mathbb{C}; (z - \bar{z})^2$ is a real number.(iv) Write two proper subsets of set $\{a, b, c\}$ (v) Construct truth table for $p \wedge \sim q$

(vi) Define Tautology.

(vii) Find x and y if $\begin{bmatrix} x+3 & 1 \\ -3 & 3y-4 \end{bmatrix} = \begin{bmatrix} -1 & 1 \\ -3 & 2 \end{bmatrix}$ (viii) Prove that $\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix} = 0$ (ix) If ' A ' is a non-singular matrix, then show that $(A^{-1})^{-1} = A$

(x) Show that sum of cube roots of unity is zero.

(xi) Evaluate $\omega^{28} + \omega^{29} + 1$ when $\omega^3 = 1$ (xii) Prove that roots of equation $x^2 - 2\left(m + \frac{1}{m}\right)x + 3 = 0$; $m \neq 0$ are real.

3. Attempt any eight parts.

8 × 2 = 16

(i) Define proper fraction and give one example.

(ii) For the identity $\frac{1}{(x-1)(2x-1)(3x-1)} = \frac{A}{x-1} + \frac{B}{2x-1} + \frac{C}{3x-1}$ Calculate the value of A .(iii) Determine whether -19 is the term of A.P. 17, 13, 9, ----- or not.

(iv) Find the next two terms of 1, 3, 4, 15, 31, -----

(v) Find the number of terms in A.P. in which $a_1 = 11$, $a_n = 68$, $d = 3$ (vi) Find the 12th term of G.P. $1 + i$, $2i$, $-2 + 2i$, -----(vii) Find three A.Ms between $\sqrt{2}$ and $3\sqrt{2}$ (viii) Show that ${}^{16}C_{11} + {}^{16}C_{10} = {}^{17}C_{11}$

(ix) What is sample space and event?

(x) State the principle of mathematical induction.

(xi) Calculate $(9.98)^4$ by means of binomial theorem.(xii) Prove that $n! > 2^n - 1$ for $n = 4, 5$

(104)

(2)

4. Attempt any nine parts.

 $9 \times 2 = 18$

- (i) Find 'r' when $\ell = 5\text{cm}$, $\theta = \frac{1}{2}$ radian.
- (ii) Verify that $\sin^2 \frac{\pi}{6} + \sin^2 \frac{\pi}{3} + \tan^2 \frac{\pi}{4} = 2$
- (iii) Prove that $(\tan \theta + \cot \theta)^2 = \sec^2 \theta \operatorname{cosec}^2 \theta$
- (iv) Find the value of $\cos 15^\circ$. (without using calculator)
- (v) Prove that $\frac{\sin 2\alpha}{1 + \cos 2\alpha} = \tan \alpha$
- (vi) If $\sin \alpha = \frac{12}{13}$ where $0 < \alpha < \frac{\pi}{2}$. Find the value of $\cos 2\alpha$
- (vii) Find the period of $\tan \frac{x}{7}$
- (viii) Find the area of triangle ABC , when three sides are $a = 18$, $b = 24$, $c = 30$
- (ix) Prove that $r_1 r_2 r_3 = rs^2$ (with usual notations)
- (x) Show that $r = (s - a) \tan \frac{\alpha}{2}$ (with usual notations)
- (xi) Find the value of $\sec \left(\sin \left(-\frac{1}{2} \right) \right)$
- (xii) Find the solutions of $\sec x = -2$ which lies in $[0, 2\pi]$
- (xiii) Solve the equation $\sin x = \frac{1}{2}$

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

5.(a) Show that $\begin{vmatrix} a + \ell & a & a \\ a & a + \ell & a \\ a & a & a + \ell \end{vmatrix} = \ell^2 (3a + \ell)$

(b) Show that the roots of $x^2 + (mx + c)^2 = a^2$ will be equal, if $c^2 = a^2 (1 + m^2)$

6.(a) Resolve rational fraction $\frac{x^2 + 1}{x^3 + 1}$ into partial fractions.

(b) Insert four H.Ms between $\frac{7}{3}$ and $\frac{7}{11}$

7.(a) Prove that ${}^nC_r + {}^nC_{r-1} = {}^{n+1}C_r$

(b) Prove by Mathematical induction

$$a + (a + d) + (a + 2d) + \dots + [a + (n - 1)d] = \frac{n}{2} [2a + (n - 1)d]$$

8.(a) Prove that $\sin^6 \theta + \cos^6 \theta = 1 - 3 \sin^2 \theta \cdot \cos^2 \theta$

(b) Prove that $\frac{\sin \theta + \sin 3\theta + \sin 5\theta + \sin 7\theta}{\cos \theta + \cos 3\theta + \cos 5\theta + \cos 7\theta} = \tan 4\theta$

9.(a) In any triangle ABC , with usual notation, prove that $\sin \frac{\alpha}{2} = \sqrt{\frac{(s - b)(s - c)}{bc}}$

(b) Prove that $\sin^{-1} \frac{4}{5} + \sin^{-1} \frac{5}{13} + \sin^{-1} \frac{16}{65} = \frac{\pi}{2}$

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. 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 $z_1 = 1 + i$, $z_2 = 1 - i$
 (A) $z_1 < z_2$ (B) $z_1 > z_2$ (C) $\bar{z}_1 = \bar{z}_2$ (D) $|z_1| = |z_2|$
- (2) In $\{P(X), \cap\}$ the identity element is:
 (A) ϕ (B) 0 (C) X (D) 1
- (3) For a skew symmetric matrix the diagonal elements must be:
 (A) 0 (B) 1 (C) -1 (D) 2
- (4) If the matrix A is real then $\bar{A}$ equals to:
 (A) $-A$ (B) A (C) A^t (D) A^{-1}
- (5) Factor of $f(x) = x^n - a^n$, where n is positive integer is:
 (A) $x + a$ (B) $x - a$ (C) $x + \frac{1}{a}$ (D) $x - \frac{1}{a}$
- (6) Sum of the roots of the quadratic equation $ax^2 - bx + c = 0$ is:
 (A) $\frac{-b}{a}$ (B) $\frac{c}{a}$ (C) $\frac{-a}{b}$ (D) $\frac{b}{a}$
- (7) $\sin^2 \theta + \cos^2 \theta = 1$, $\theta \in R$ is:
 (A) Algebraic Equation (B) Conditional Equation (C) Identity Equation (D) Radical Equation
- (8) If a and b are distinct positive real numbers then:
 (A) $A > G$ (B) $A < G$ (C) $A < H$ (D) $G < H$
- (9) $\sum_{k=1}^{2n} 1$ equals to:
 (A) n (B) $2n$ (C) $3n$ (D) $4n$
- (10) Number of ways in which a necklace of 6 beads of different colours be made are:
 (A) $5!$ (B) $\frac{5!}{2}$ (C) $6!$ (D) $\frac{6!}{2}$
- (11) If A and B are mutually exclusive events such that $P(A) = .15$, $P(B) = .35$ then $P(A \cup B)$ equals to:
 (A) 0.2 (B) 0.05 (C) 0.005 (D) 0.5
- (12) $\forall n \in N$, $1 + 2 + 4 + \dots + 2^{n-1}$ equals to:
 (A) $3^n - 2$ (B) $4^n - 3$ (C) $2^n - 1$ (D) $5^n - 4$
- (13) The exponent of x in 10th term of expansion of $(a + x)^n$ is:
 (A) 9 (B) 10 (C) 11 (D) 12
- (14) If $\cot \theta > 0$ and $\sin \theta < 0$ then terminal arm of angle lies in:
 (A) 1st Quadrant (B) 2nd Quadrant (C) 3rd Quadrant (D) 4th Quadrant
- (15) $\cos\left(\frac{3\pi}{2} - \theta\right)$ equals to:
 (A) $\sin \theta$ (B) $-\sin \theta$ (C) $\cos \theta$ (D) $-\cos \theta$
- (16) Domain of $\sin x$ is:
 (A) N (B) W (C) C (D) R
- (17) The circle passing through the vertices of a triangle is called:
 (A) In-circle (B) Circum-circle (C) Ex-circle (D) Unit circle
- (18) With usual notations r equals to:
 (A) $\frac{s}{A}$ (B) $\frac{s}{2A}$ (C) $\frac{A}{s}$ (D) $\frac{A}{s - a}$
- (19) Range of principal tangent function is:
 (A) R (B) N (C) $[-1, 1]$ (D) $[0, +\infty]$
- (20) If $\tan x = -1$ then reference angle is:
 (A) $\frac{\pi}{4}$ (B) $\frac{-\pi}{4}$ (C) $\frac{\pi}{3}$ (D) $\frac{3\pi}{4}$

INTERMEDIATE PART-I (11th CLASS)**MATHEMATICS PAPER-I**

TIME ALLOWED: 2.30 Hours

GROUP-II**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 × 2 = 16

- (i) Simplify $(2, 6) \div (3, 7)$
- (ii) Find real and imaginary parts of complex number; $(\sqrt{3} + i)^3$
- (iii) Prove that $\bar{z} = z$ iff z is real.
- (iv) Write the set $\{x \mid x \in P \wedge x < 12\}$ in the descriptive and tabular form.
- (v) Show $B - A$ by venn diagram, when $B \subseteq A$
- (vi) Convert the theorem $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ to logical form.
- (vii) Find the matrix X if: $X \begin{bmatrix} 5 & 2 \\ -2 & 1 \end{bmatrix} = \begin{bmatrix} -1 & 5 \\ 12 & 3 \end{bmatrix}$
- (viii) Find the value of x if: $\begin{vmatrix} 1 & 2 & 1 \\ 2 & x & 2 \\ 3 & 6 & x \end{vmatrix} = 0$
- (ix) Define skew symmetric matrix.
- (x) Solve the equation by factorization $x(x + 7) = (2x - 1)(x + 4)$
- (xi) Show that $x^3 - y^3 = (x - y)(x - \omega y)(x - \omega^2 y)$
- (xii) If α, β are roots of equation $3x^2 - 2x + 4 = 0$ find the value of $\alpha^2 - \beta^2$

3. Attempt any eight parts.

8 × 2 = 16

- (i) Define proper rational fraction. Give one example.
- (ii) Write only into partial fractions form the expression $\frac{4x^3}{(x^2 - 1)(x + 1)^2}$
- (iii) Find the nth term of sequence $\left(\frac{4}{3}\right)^2, \left(\frac{7}{3}\right)^2, \left(\frac{10}{3}\right)^2, \dots$
- (iv) Calculate the sum of series $\frac{3}{\sqrt{2}} + 2\sqrt{2} + \frac{5}{\sqrt{2}} + \dots + a_{13}$
- (v) How many terms of series $-7 + (-5) + (-3) + \dots$ amount to 65?
- (vi) Find the sum of infinite geometric series $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$
- (vii) Calculate A and G for $a = 9, b = 4$
- (viii) Write $n(n - 1)(n - 2)$ into factorial form.
- (ix) How many words can be formed from PLANE using all letters and no letter is repeated?
- (x) Using mathematical induction, prove that $2 + 4 + 6 + \dots + 2n = n(n + 1)$ is true for $n = 1$ and $n = 2$
- (xi) Find 'r' for finding term independent of x in $\left(\frac{x}{2} + \frac{2}{x^2}\right)^{12}$
- (xii) Evaluate $\sqrt[4]{17}$ correct to three places of decimal.

4. Attempt any nine parts.

(2)

9 × 2 = 18

- (i) Find 'r' when $\ell = 56\text{cm}$, $\theta = 45^\circ$
- (ii) If $\cot \theta = \frac{5}{2}$ and terminal arm of angle is in I quadrant, find value of $\frac{3\sin \theta + 4\cos \theta}{\cos \theta - \sin \theta}$
- (iii) Show that $\cot^4 \theta + \cot^2 \theta = \operatorname{cosec}^4 \theta - \sec^2 \theta$ where θ is not an integral Multiple of $\frac{\pi}{2}$.
- (iv) Prove that $\sin 780^\circ \sin 480^\circ + \cos 120^\circ \sin 30^\circ = \frac{1}{2}$
- (v) Prove the identity $\cos \frac{\alpha}{2} = \pm \sqrt{\frac{1 + \cos \alpha}{2}}$
- (vi) Express the given product as sum or difference: $\cos(2x + 30^\circ) \cos(2x - 30^\circ)$
- (vii) Define period of trigonometric function.
- (viii) Solve triangle ABC by half angle formula when $a = 283$, $b = 317$, $c = 428$
- (ix) Find R, r, r_1, r_2, r_3 if measure of sides of triangle are $a = 13$, $b = 14$, $c = 15$
- (x) Area of triangle is 2437. If $a = 79$, and $c = 97$. Find angle β .
- (xi) Show that $\tan(\sin^{-1} x) = \frac{x}{\sqrt{1-x^2}}$
- (xii) Find value of θ satisfying the equation $\tan^2 \theta - \sec \theta - 1 = 0$
- (xiii) Solve $\sin x = \frac{1}{2}$

SECTION-II

NOTE: Attempt any three questions.

3 × 10 = 30

- 5.(a) Find A^{-1} if $A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 1 & -1 & 1 \end{bmatrix}$
- (b) Find the values of a and b if -2 and 2 are the roots of the polynomial $x^3 - 4x^2 + ax + b$
- 6.(a) Resolve $\frac{6x^3 + 5x^2 - 7}{2x^2 - x - 1}$ into partial fractions.
- (b) Find five numbers in A.P whose sum is 25 and the sum of whose squares is 135.
- 7.(a) Prove that ${}^nC_r + {}^nC_{r-1} = {}^{n+1}C_r$
- (b) Use mathematical induction to prove the formula for every +ve integer n

$$1^2 + 3^2 + 5^2 + \dots + (2n-1)^2 = \frac{n(4n^2 - 1)}{3}$$
- 8.(a) Find the values of the remaining trigonometric function, if $\sin \theta = \frac{-1}{\sqrt{2}}$ and the terminal arm of the angle is not in quad III.
- (b) Prove that $\frac{2\sin \theta \sin 2\theta}{\cos \theta + \cos 3\theta} = \tan 2\theta \tan \theta$
- 9.(a) Prove that in an equilateral triangle $r : R : r_1 = 1 : 2 : 3$
- (b) Prove that $\sin^{-1} \frac{1}{\sqrt{5}} + \cot^{-1} 3 = \frac{\pi}{4}$

MATHEMATICS PAPER-I

GROUP-I

OBJECTIVE

TIME ALLOWED: 30 Minutes

MAXIMUM MARKS: 20

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. 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) Domain of $\sin x$ is:
 (A) N (B) W (C) C (D) R
- (2) The circle passing through the vertices of a triangle is called:
 (A) In-circle (B) Circum-circle (C) Ex-circle (D) Unit circle
- (3) With usual notations r equals to:
 (A) $\frac{s}{\Delta}$ (B) $\frac{s}{2\Delta}$ (C) $\frac{\Delta}{s}$ (D) $\frac{\Delta}{s-a}$
- (4) Range of principal tangent function is:
 (A) R (B) N (C) $[-1, 1]$ (D) $[0, +\infty]$
- (5) If $\tan x = -1$ then reference angle is:
 (A) $\frac{\pi}{4}$ (B) $\frac{-\pi}{4}$ (C) $\frac{\pi}{3}$ (D) $\frac{3\pi}{4}$
- (6) If $z_1 = 1 + i$, $z_2 = 1 - i$
 (A) $z_1 < z_2$ (B) $z_1 > z_2$ (C) $\bar{z}_1 = \bar{z}_2$ (D) $|z_1| = |z_2|$
- (7) In $\{P(X), \cap\}$ the identity element is:
 (A) ϕ (B) 0 (C) X (D) 1
- (8) For a skew symmetric matrix the diagonal elements must be:
 (A) 0 (B) 1 (C) -1 (D) 2
- (9) If the matrix A is real then $\bar{A}$ equals to:
 (A) $-A$ (B) A (C) A' (D) A^{-1}
- (10) Factor of $f(x) = x^n - a^n$, where n is positive integer is:
 (A) $x + a$ (B) $x - a$ (C) $x + \frac{1}{a}$ (D) $x - \frac{1}{a}$
- (11) Sum of the roots of the quadratic equation $ax^2 - bx + c = 0$ is:
 (A) $\frac{-b}{a}$ (B) $\frac{c}{a}$ (C) $\frac{-a}{b}$ (D) $\frac{b}{a}$
- (12) $\sin^2 \theta + \cos^2 \theta = 1$, $\theta \in R$ is:
 (A) Algebraic Equation (B) Conditional Equation (C) Identity Equation (D) Radical Equation
- (13) If a and b are distinct positive real numbers then:
 (A) $A > G$ (B) $A < G$ (C) $A < H$ (D) $G < H$
- (14) $\sum_{k=1}^{2n} 1$ equals to:
 (A) n (B) $2n$ (C) $3n$ (D) $4n$
- (15) Number of ways in which a necklace of 6 beads of different colours be made are:
 (A) $5!$ (B) $\frac{5!}{2}$ (C) $6!$ (D) $\frac{6!}{2}$
- (16) If A and B are mutually exclusive events such that $P(A) = .15$, $P(B) = .35$ then $P(A \cup B)$ equals to:
 (A) 0.2 (B) 0.05 (C) 0.005 (D) 0.5
- (17) $\forall n \in N$, $1 + 2 + 4 + \dots + 2^{n-1}$ equals to:
 (A) $3^n - 2$ (B) $4^n - 3$ (C) $2^n - 1$ (D) $5^n - 4$
- (18) The exponent of x in 10th term of expansion of $(a+x)^n$ is:
 (A) 9 (B) 10 (C) 11 (D) 12
- (19) If $\cot \theta > 0$ and $\sin \theta < 0$ then terminal arm of angle lies in:
 (A) 1st Quadrant (B) 2nd Quadrant (C) 3rd Quadrant (D) 4th Quadrant
- (20) $\cos\left(\frac{3\pi}{2} - \theta\right)$ equals to:
 (A) $\sin \theta$ (B) $-\sin \theta$ (C) $\cos \theta$ (D) $-\cos \theta$

MATHEMATICS PAPER-I

TIME ALLOWED: 30 Minutes

MAXIMUM MARKS: 20

GROUP-I

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. 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 A and B are mutually exclusive events such that $P(A) = .15$, $P(B) = .35$ then $P(A \cup B)$ equals to:
 (A) 0.2 (B) 0.05 (C) 0.005 (D) 0.5
- (2) $\forall n \in N$, $1 + 2 + 4 + \dots + 2^{n-1}$ equals to:
 (A) $3^n - 2$ (B) $4^n - 3$ (C) $2^n - 1$ (D) $5^n - 4$
- (3) The exponent of x in 10th term of expansion of $(a + x)^n$ is:
 (A) 9 (B) 10 (C) 11 (D) 12
- (4) If $\cot \theta > 0$ and $\sin \theta < 0$ then terminal arm of angle lies in:
 (A) 1st Quadrant (B) 2nd Quadrant (C) 3rd Quadrant (D) 4th Quadrant
- (5) $\cos\left(\frac{3\pi}{2} - \theta\right)$ equals to:
 (A) $\sin \theta$ (B) $-\sin \theta$ (C) $\cos \theta$ (D) $-\cos \theta$
- (6) Domain of $\sin x$ is:
 (A) N (B) W (C) C (D) R
- (7) The circle passing through the vertices of a triangle is called:
 (A) In-circle (B) Circum-circle (C) Ex-circle (D) Unit circle
- (8) With usual notations r equals to:
 (A) $\frac{s}{\Delta}$ (B) $\frac{s}{2\Delta}$ (C) $\frac{\Delta}{s}$ (D) $\frac{\Delta}{s-a}$
- (9) Range of principal tangent function is:
 (A) R (B) N (C) $[-1, 1]$ (D) $[0, +\infty]$
- (10) If $\tan x = -1$ then reference angle is:
 (A) $\frac{\pi}{4}$ (B) $\frac{-\pi}{4}$ (C) $\frac{\pi}{3}$ (D) $\frac{3\pi}{4}$
- (11) If $z_1 = 1 + i$, $z_2 = 1 - i$
 (A) $z_1 < z_2$ (B) $z_1 > z_2$ (C) $\bar{z}_1 = \bar{z}_2$ (D) $|z_1| = |z_2|$
- (12) In $\{P(X), \cap\}$ the identity element is:
 (A) ϕ (B) 0 (C) X (D) 1
- (13) For a skew symmetric matrix the diagonal elements must be:
 (A) 0 (B) 1 (C) -1 (D) 2
- (14) If the matrix A is real then $\bar{A}$ equals to:
 (A) $-A$ (B) A (C) A' (D) A^{-1}
- (15) Factor of $f(x) = x^n - a^n$, where n is positive integer is:
 (A) $x + a$ (B) $x - a$ (C) $x + \frac{1}{a}$ (D) $x - \frac{1}{a}$
- (16) Sum of the roots of the quadratic equation $ax^2 - bx + c = 0$ is:
 (A) $\frac{-b}{a}$ (B) $\frac{c}{a}$ (C) $\frac{-a}{b}$ (D) $\frac{b}{a}$
- (17) $\sin^2 \theta + \cos^2 \theta = 1$, $\theta \in R$ is:
 (A) Algebraic Equation (B) Conditional Equation (C) Identity Equation (D) Radical Equation
- (18) If a and b are distinct positive real numbers then:
 (A) $A > G$ (B) $A < G$ (C) $A < H$ (D) $G < H$
- (19) $\sum_{k=1}^{2n} 1$ equals to:
 (A) n (B) $2n$ (C) $3n$ (D) $4n$
- (20) Number of ways in which a necklace of 6 beads of different colours be made are:
 (A) $5!$ (B) $\frac{5!}{2}$ (C) $6!$ (D) $\frac{6!}{2}$

MATHEMATICS PAPER-I

TIME ALLOWED: 30 Minutes

GROUP-I

OBJECTIVE

MAXIMUM MARKS: 20

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. 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) Sum of the roots of the quadratic equation $ax^2 - bx + c = 0$ is:
 (A) $\frac{-b}{a}$ (B) $\frac{c}{a}$ (C) $\frac{-a}{b}$ (D) $\frac{b}{a}$
- (2) $\sin^2 \theta + \cos^2 \theta = 1$, $\theta \in R$ is:
 (A) Algebraic Equation (B) Conditional Equation (C) Identity Equation (D) Radical Equation
- (3) If a and b are distinct positive real numbers then:
 (A) $A > G$ (B) $A < G$ (C) $A < H$ (D) $G < H$
- (4) $\sum_{k=1}^{2n} 1$ equals to:
 (A) n (B) $2n$ (C) $3n$ (D) $4n$
- (5) Number of ways in which a necklace of 6 beads of different colours be made are:
 (A) $5!$ (B) $\frac{5!}{2}$ (C) $6!$ (D) $\frac{6!}{2}$
- (6) If A and B are mutually exclusive events such that $P(A) = .15$, $P(B) = .35$ then $P(A \cup B)$ equals to:
 (A) 0.2 (B) 0.05 (C) 0.005 (D) 0.5
- (7) $\forall n \in N$, $1 + 2 + 4 + \dots + 2^{n-1}$ equals to:
 (A) $3^n - 2$ (B) $4^n - 3$ (C) $2^n - 1$ (D) $5^n - 4$
- (8) The exponent of x in 10th term of expansion of $(a + x)^n$ is:
 (A) 9 (B) 10 (C) 11 (D) 12
- (9) If $\cot \theta > 0$ and $\sin \theta < 0$ then terminal arm of angle lies in:
 (A) 1st Quadrant (B) 2nd Quadrant (C) 3rd Quadrant (D) 4th Quadrant
- (10) $\cos\left(\frac{3\pi}{2} - \theta\right)$ equals to:
 (A) $\sin \theta$ (B) $-\sin \theta$ (C) $\cos \theta$ (D) $-\cos \theta$
- (11) Domain of $\sin x$ is:
 (A) N (B) W (C) C (D) R
- (12) The circle passing through the vertices of a triangle is called:
 (A) In-circle (B) Circum-circle (C) Ex-circle (D) Unit circle
- (13) With usual notations r equals to:
 (A) $\frac{s}{\Delta}$ (B) $\frac{s}{2\Delta}$ (C) $\frac{\Delta}{s}$ (D) $\frac{\Delta}{s-a}$
- (14) Range of principal tangent function is:
 (A) R (B) N (C) $[-1, 1]$ (D) $[0, +\infty]$
- (15) If $\tan x = -1$ then reference angle is:
 (A) $\frac{\pi}{4}$ (B) $\frac{-\pi}{4}$ (C) $\frac{\pi}{3}$ (D) $\frac{3\pi}{4}$
- (16) If $z_1 = 1 + i$, $z_2 = 1 - i$
 (A) $z_1 < z_2$ (B) $z_1 > z_2$ (C) $\bar{z}_1 = \bar{z}_2$ (D) $|z_1| = |z_2|$
- (17) In $\{P(X), \cap\}$ the identity element is:
 (A) ϕ (B) 0 (C) X (D) 1
- (18) For a skew symmetric matrix the diagonal elements must be:
 (A) 0 (B) 1 (C) -1 (D) 2
- (19) If the matrix A is real then $\bar{A}$ equals to:
 (A) $-A$ (B) A (C) A' (D) A^{-1}
- (20) Factor of $f(x) = x^n - a^n$, where n is positive integer is:
 (A) $x + a$ (B) $x - a$ (C) $x + \frac{1}{a}$ (D) $x - \frac{1}{a}$

MATHEMATICS PAPER-I

GROUP-II

OBJECTIVE

TIME ALLOWED: 30 Minutes

MAXIMUM MARKS: 20

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. 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) $i^2 \cdot i^4 \cdot i^6 \cdot i^8$ equals to:
 (A) 1 (B) 0 (C) -1 (D) i
- (2) Set of real numbers between "0" and "1" is:
 (A) Finite set (B) Infinite set (C) Empty set (D) Singleton set
- (3) If order of matrix A is 7×7 and order of matrix B is 3×7 then:
 (A) $B + A$ is possible (B) AB is possible (C) $B - A$ is possible (D) BA is possible
- (4) Determinant of a triangular matrix is equal to the product of entries on its:
 (A) Secondary diagonal (B) First column (C) Main diagonal (D) First row
- (5) The degree of the polynomial $0x^{15} + 3x^{14} + 7x^9 + 8$ is:
 (A) 15 (B) 9 (C) 14 (D) 8
- (6) Condition that the roots of the equation $x^2 + px + q = 0$ are multiplicative inverse of each other is:
 (A) $p = 0$ (B) $q = 0$ (C) $q = 1$ (D) $q = -1$
- (7) An equation $\sin \theta = 1$ is:
 (A) Identity (B) Algebraic (C) Reciprocal (D) Conditional
- (8) Fifth term of H.P $\frac{1}{2}, \frac{1}{5}, \frac{1}{8}, \dots$ is:
 (A) $\frac{1}{4}$ (B) 11 (C) 14 (D) $\frac{1}{14}$
- (9) $\sum_{k=1}^n 4$ equals to:
 (A) n (B) $4n$ (C) $8n$ (D) $2n$
- (10) Possible ways to write the name of a triangle with vertices A, B, C are:
 (A) 3 (B) 2 (C) 1 (D) 6
- (11) ${}^nC_r \times r!$ equals to:
 (A) nP_r (B) nP_n (C) ${}^nC_{n-r}$ (D) ${}^nP_{n-r}$
- (12) There is no natural no. for which 3^n is:
 (A) Odd (B) An integer (C) Even (D) Prime
- (13) 6th term from the end in expansion of $(a+x)^{11}$ is:
 (A) 6th term from beginning (B) 5th term from beginning (C) 7th term from beginning (D) 8th term from beginning
- (14) If $\sec \theta < 0$ and $\sin \theta < 0$, then terminal arm of angle lies in:
 (A) 4th Quadrant (B) 3rd Quadrant (C) 2nd Quadrant (D) 1st Quadrant
- (15) If α, β, γ are the angles of a triangle then $\sin(\alpha + \beta)$ equals to:
 (A) $\sin \beta$ (B) $-\sin \beta$ (C) $\sin \gamma$ (D) $-\sin \gamma$
- (16) The minimum value of $\cos \theta$ is:
 (A) 0 (B) 1 (C) $-\infty$ (D) -1
- (17) If the sides of a triangle are a, b, c then semi perimeter of the triangle is equal to:
 (A) $a + b + c$ (B) $\frac{a + b + c}{2}$ (C) $\frac{2}{a + b + c}$ (D) $a + b - c$
- (18) In any triangle ABC with usual notations, $\frac{a^2 + c^2 - b^2}{2ac}$ equals to:
 (A) $\cos \beta$ (B) $\cos \alpha$ (C) $\cos \gamma$ (D) $\sin \beta$
- (19) Inverse of a function exists only if the function is:
 (A) One to one (B) Onto (C) Bijective (D) Into
- (20) If $\sin \theta = 0$ then θ equals to:
 (A) $\left\{2n\pi + \frac{\pi}{2}\right\}, n \in \mathbb{Z}$ (B) $\left\{n\pi + \frac{\pi}{2}\right\}, n \in \mathbb{Z}$ (C) $\left\{\frac{n\pi}{2} + n\pi\right\}, n \in \mathbb{Z}$ (D) $\{n\pi\}, n \in \mathbb{Z}$

MATHEMATICS PAPER-I

GROUP-II

OBJECTIVE

TIME ALLOWED: 30 Minutes

MAXIMUM MARKS: 20

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. 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) 6th term from the end in expansion of $(a+x)^{11}$ is: (A) 7th term from beginning
(B) 6th term from beginning (C) 5th term from beginning (D) 8th term from beginning
- (2) If $\sec \theta < 0$ and $\sin \theta < 0$, then terminal arm of angle lies in:
(A) 4th Quadrant (B) 3rd Quadrant (C) 2nd Quadrant (D) 1st Quadrant
- (3) If α, β, γ are the angles of a triangle then $\sin(\alpha + \beta)$ equals to:
(A) $\sin \beta$ (B) $-\sin \beta$ (C) $\sin \gamma$ (D) $-\sin \gamma$
- (4) The minimum value of $\cos \theta$ is:
(A) 0 (B) 1 (C) $-\infty$ (D) -1
- (5) If the sides of a triangle are a, b, c then semi perimeter of the triangle is equal to:
(A) $a + b + c$ (B) $\frac{a + b + c}{2}$ (C) $\frac{2}{a + b + c}$ (D) $a + b - c$
- (6) In any triangle ABC with usual notations, $\frac{a^2 + c^2 - b^2}{2ac}$ equals to:
(A) $\cos \beta$ (B) $\cos \alpha$ (C) $\cos \gamma$ (D) $\sin \beta$
- (7) Inverse of a function exists only if the function is:
(A) One to one (B) Onto (C) Bijective (D) Into
- (8) If $\sin \theta = 0$ then θ equals to:
(A) $\left\{ 2n\pi + \frac{\pi}{2} \right\}, n \in \mathbb{Z}$ (B) $\left\{ n\pi + \frac{\pi}{2} \right\}, n \in \mathbb{Z}$ (C) $\left\{ \frac{n\pi}{2} + n\pi \right\}, n \in \mathbb{Z}$ (D) $\{n\pi\}, n \in \mathbb{Z}$
- (9) $i^2 \cdot i^4 \cdot i^6 \cdot i^8$ equals to:
(A) 1 (B) 0 (C) -1 (D) i
- (10) Set of real numbers between "0" and "1" is:
(A) Finite set (B) Infinite set (C) Empty set (D) Singleton set
- (11) If order of matrix A is 7×7 and order of matrix B is 3×7 then:
(A) $B + A$ is possible (B) AB is possible (C) $B - A$ is possible (D) BA is possible
- (12) Determinant of a triangular matrix is equal to the product of entries on its:
(A) Secondary diagonal (B) First column (C) Main diagonal (D) First row
- (13) The degree of the polynomial $0x^{15} + 3x^{14} + 7x^9 + 8$ is:
(A) 15 (B) 9 (C) 4 (D) 8
- (14) Condition that the roots of the equation $x^2 + px + q = 0$ are multiplicative inverse of each other is:
(A) $p = 0$ (B) $q = 0$ (C) $q = 1$ (D) $q = -1$
- (15) An equation $\sin \theta = 1$ is:
(A) Identity (B) Algebraic (C) Reciprocal (D) Conditional
- (16) Fifth term of H.P $\frac{1}{2}, \frac{1}{5}, \frac{1}{8}, \dots$ is:
(A) $\frac{1}{4}$ (B) 11 (C) 14 (D) $\frac{1}{14}$
- (17) $\sum_{k=1}^n 4$ equals to:
(A) n (B) $4n$ (C) $8n$ (D) $2n$
- (18) Possible ways to write the name of a triangle with vertices A, B, C are:
(A) 3 (B) 2 (C) 1 (D) 6
- (19) ${}^nC_r \times r!$ equals to:
(A) nP_r (B) nP_n (C) ${}^nC_{n-r}$ (D) ${}^nP_{n-r}$
- (20) There is no natural no. for which 3^n is:
(A) Odd (B) An integer (C) Even (D) Prime

Code

2022 (A)

Roll No:

1/3

Number: 2196

INTERMEDIATE PART-I (11th CLASS)
MATHEMATICS PAPER-I
GROUP-II

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. 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) An equation $\sin \theta = 1$ is:
 (A) Identity (B) Algebraic (C) Reciprocal (D) Conditional
- (2) Fifth term of H.P $\frac{1}{2}, \frac{1}{5}, \frac{1}{8}, \dots$ is:
 (A) $\frac{1}{4}$ (B) 11 (C) 14 (D) $\frac{1}{14}$
- (3) $\sum_{k=1}^n 4$ equals to:
 (A) n (B) $4n$ (C) $8n$ (D) $2n$
- (4) Possible ways to write the name of a triangle with vertices A, B, C are:
 (A) 3 (B) 2 (C) 1 (D) 6
- (5) ${}^nC_r \times r!$ equals to:
 (A) nP_r (B) nP_n (C) ${}^nC_{n-r}$ (D) ${}^nP_{n-r}$
- (6) There is no natural no. for which 3^n is:
 (A) Odd (B) An integer (C) Even (D) Prime
- (7) 6th term from the end in expansion of $(a+x)^{11}$ is:
 (A) 7th term from beginning (B) 6th term from beginning (C) 5th term from beginning (D) 8th term from beginning
- (8) If $\sec \theta < 0$ and $\sin \theta < 0$, then terminal arm of angle lies in:
 (A) 4th Quadrant (B) 3rd Quadrant (C) 2nd Quadrant (D) 1st Quadrant
- (9) If α, β, γ are the angles of a triangle then $\sin(\alpha + \beta)$ equals to:
 (A) $\sin \beta$ (B) $-\sin \beta$ (C) $\sin \gamma$ (D) $-\sin \gamma$
- (10) The minimum value of $\cos \theta$ is:
 (A) 0 (B) 1 (C) $-\infty$ (D) -1
- (11) If the sides of a triangle are a, b, c then semi perimeter of the triangle is equal to:
 (A) $a + b + c$ (B) $\frac{a + b + c}{2}$ (C) $\frac{2}{a + b + c}$ (D) $a + b - c$
- (12) In any triangle ABC with usual notations, $\frac{a^2 + c^2 - b^2}{2ac}$ equals to:
 (A) $\cos \beta$ (B) $\cos \alpha$ (C) $\cos \gamma$ (D) $\sin \beta$
- (13) Inverse of a function exists only if the function is:
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- (14) If $\sin \theta = 0$ then θ equals to:
 (A) $\left\{ 2n\pi + \frac{\pi}{2} \right\}, n \in \mathbb{Z}$ (B) $\left\{ n\pi + \frac{\pi}{2} \right\}, n \in \mathbb{Z}$ (C) $\left\{ \frac{n\pi}{2} + n\pi \right\}, n \in \mathbb{Z}$ (D) $\{n\pi\}, n \in \mathbb{Z}$
- (15) $i^2 \cdot i^4 \cdot i^6 \cdot i^8$ equals to:
 (A) 1 (B) 0 (C) -1 (D) i
- (16) Set of real numbers between "0" and "1" is:
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- (17) If order of matrix A is 7×7 and order of matrix B is 3×7 then:
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- (18) Determinant of a triangular matrix is equal to the product of entries on its:
 (A) Secondary diagonal (B) First column (C) Main diagonal (D) First row
- (19) The degree of the polynomial $0x^{15} + 3x^{14} + 7x^9 + 8$ is:
 (A) 15 (B) 9 (C) 14 (D) 8
- (20) Condition that the roots of the equation $x^2 + px + q = 0$ are multiplicative inverse of each other is:
 (A) $p = 0$ (B) $q = 0$ (C) $q = 1$ (D) $q = -1$

MATHEMATICS PAPER-I
GROUP-II
OBJECTIVE

TIME ALLOWED: 30 Minutes

MAXIMUM MARKS: 20

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. 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) Determinant of a triangular matrix is equal to the product of entries on its:
 (A) Secondary diagonal (B) First column (C) Main diagonal (D) First row
- (2) The degree of the polynomial $0x^{15} + 3x^{14} + 7x^9 + 8$ is:
 (A) 15 (B) 9 (C) 14 (D) 8
- (3) Condition that the roots of the equation $x^2 + px + q = 0$ are multiplicative inverse of each other is:
 (A) $p = 0$ (B) $q = 0$ (C) $q = 1$ (D) $q = -1$
- (4) An equation $\sin \theta = 1$ is:
 (A) Identity (B) Algebraic (C) Reciprocal (D) Conditional
- (5) Fifth term of H.P $\frac{1}{2}, \frac{1}{5}, \frac{1}{8}, \dots$ is:
 (A) $\frac{1}{4}$ (B) 11 (C) 14 (D) $\frac{1}{14}$
- (6) $\sum_{k=1}^n 4$ equals to:
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 (A) 3 (B) 2 (C) 1 (D) 6
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 (A) 7th term from beginning (B) 6th term from beginning (C) 5th term from beginning (D) 8th term from beginning
- (11) If $\sec \theta < 0$ and $\sin \theta < 0$, then terminal arm of angle lies in:
 (A) 4th Quadrant (B) 3rd Quadrant (C) 2nd Quadrant (D) 1st Quadrant
- (12) If α, β, γ are the angles of a triangle then $\sin(\alpha + \beta)$ equals to:
 (A) $\sin \beta$ (B) $-\sin \beta$ (C) $\sin \gamma$ (D) $-\sin \gamma$
- (13) The minimum value of $\cos \theta$ is:
 (A) 0 (B) 1 (C) $-\infty$ (D) -1
- (14) If the sides of a triangle are a, b, c then semi perimeter of the triangle is equal to:
 (A) $a + b + c$ (B) $\frac{a + b + c}{2}$ (C) $\frac{2}{a + b + c}$ (D) $a + b - c$
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- (18) $i^2 \cdot i^4 \cdot i^6 \cdot i^8$ equals to:
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