

نوٹ: حصہ دوم میں سے کوئی سے تین (3) سوالات حل کیجئے۔ تاہم سوال نمبر نو (9) لازمی ہے۔

حصہ اول Section I

- 2- Write short answers to any SIX questions: (2 x 6 = 12)
- Define quadratic equation.
 - Solve: $x^2 + 2x - 2 = 0$
 - Write the quadratic equation in the standard form: $(x + 7)(x - 3) = -7$
 - Discuss the nature of roots of equation: $x^2 + 3x + 5 = 0$
 - Evaluate: $(1 - 3\omega - 3\omega^2)^5$
 - Without solving the quadratic equation $x^2 - 5x + 3 = 0$ find sum and product of its roots.
 - Express the ratio as a fraction in its simplest form: 1 hour : 27 min 30 sec
 - If y varies directly as x , and $y = 8$ when $x = 2$, find x when $y = 28$
 - Find third proportional to 6, 12
- 3 Write short answers to any SIX questions: (2 x 6 = 12)
- Resolve into partial fraction $\frac{x-11}{(x-4)(x+3)}$
 - What is an improper fraction?
 - If $A = N$, $B = W$, then find $A - B$
 - If $Y = Z^+$, $T = O^+$, then find $Y \cup T$
 - Define one-one function.
 - If $(3 - 2a, b - 1) = (a - 7, 2b + 5)$, then find a and b
 - Define class limits.
 - Define a frequency distribution.
 - Write two properties of arithmetic mean.
- 4- Write short answers to any SIX questions: (2 x 6 = 12)
- Define ratio and give one example.
 - If x and y^2 varies directly and $x = 27$ when $y = 4$. Find the value of y when $x = 3$
 - Locate the angle $22\frac{1}{2}^\circ$ in xy -plane
 - Express $(60)^\circ$ angle into radian.
 - Define an angle.
 - What is the radian measure of the central angle of an arc 50 m long on the circle of radius 25 m?
 - Find r when $l = 56$ cm and $\theta = 45^\circ$
 - In a ΔABC , calculate $m\overline{BC}$ when $m\overline{AB} = 5$ cm, $m\overline{AC} = 4$ cm, $m\angle A = 60^\circ$
 - Divide an arc of any length into two equal parts.

نوٹ: حصہ دوم میں سے کوئی سے تین (3) سوالات حل کیجئے۔ تاہم سوال نمبر نو (9) لازمی ہے۔

حصہ دوم Section II (ہر سوال کے 8 نمبر اور ہر جزو کے 4 نمبر)

- 5- (الف) $7x^2 + 2x - 1 = 0$ کو جذریہ تکمیل طریق حل کیجئے۔
 (ب) اگر مساوات $7x^2 + 2x - 1 = 0$ کے جذریں $x = 2k + 3$ اور $x = k + 1$ ہوں تو k کی قیمت معلوم کیجئے۔
- 6- (الف) $m \propto \frac{1}{n^3}$ اور $n = 2$ جبکہ $n = 4$ ہو تو m معلوم کیجئے۔
 جب $n = 6$ اور $n = 6$ جبکہ $m = 432$ ہو۔
 (ب) Resolve $\frac{3x-11}{(x+3)(x^2+1)}$ into partial fraction.
- 7- (الف) اگر $U = \{1, 2, 3, \dots, 20\}$
 $X = \{1, 3, 7, 9, 15, 18, 20\}$
 $Y = \{1, 3, 5, \dots, 17\}$
 then show that $Y - X = Y \cap X'$
 (ب) Find the standard deviation of 11500, 12400, 15000, 14500, 14800
- 8- (الف) ثابت کیجئے کہ $\frac{\sec \theta + 1}{\sec \theta - 1} = \frac{\sec \theta + 1}{\tan \theta}$
 (ب) Circumscribe a circle about an equilateral triangle ABC with each side of length 4 cm.
- 9- ثابت کیجئے کہ کسی دائرے میں قوس منفر دے بننے والا مرکزی زاویہ مقدار میں اپنی قوس کی دھڑ کے محصور زاویے سے دوگنا ہوتا ہے۔

OR

Prove that two tangents drawn to a circle from a point outside it, are equal in length.

110-221-100,000

Roll No. _____

Mathematics (Science Group) Paper: II

(III)-221 (سیکنڈری سکول پارٹ II، کلاس دہم)

پرچہ II

ریاضی (سائنس گروپ)

Time: 20 Minutes

Group: II

Objective معروضی

دوسرا گروپ

وقت: 20 منٹ

Marks: 15

Code: 7196

مارکس: 15

نوٹ: ہر سوال کے چار ممکنہ جوابات A، B، C اور D دیئے گئے ہیں۔ جوابی کاپی پر ہر سوال کے سامنے دیئے گئے دائروں میں سے درست جواب کے مطابق متعلقہ دائرہ کو مارکر یا پین سے بھر دیجئے۔ ایک سے زیادہ دائروں کو پُر کرنے یا کاٹ کر پُر کرنے کی صورت میں مذکورہ جواب غلط تصور ہوگا۔

- 1- 1- The length of a chord and radial segment of a circle are congruent, the central angle made by the chord will be
 75° (D) 60° (C) 45° (B) 30° (A)
- 2- In a ratio $x : y$, y is called
 proportion تناسب (D) consequent دوسری رقم (C) antecedent پہلی رقم (B) relation تعلق (A)
- 3- A line intersecting a circle is called
 sector سیکٹر (D) chord وتر (C) secant خط قاطع (B) tangent مماس (A)
- 4- If number of elements in a set A is 3 and in set B is 2. Then number of binary relations in $A \times B$ is
 2² (D) 2³ (C) 2⁶ (B) 2⁸ (A)
- 5- 20° = _____
 3600' (D) 1200' (C) 630 (B) 360' (A)
- 6- The nature of roots of equation $ax^2 + bx + c = 0$ is determined by
 product of roots روٹس کا حاصل ضرب (B) sum of roots روٹس کا مجموعہ (A)
 discriminant فرق کنندہ (D) synthetic division ترکیبی تقسیم (C)
- 7- A line which has only one point in common with a circle is called
 cosine of a circle دائرے کا cosine (B) sine of a circle دائرے کا sine (A)
 secant of a circle دائرے کا secant (D) tangent of a circle دائرے کا tangent (C)
- 8- The number of terms in a standard quadratic equation $ax^2 + bx + c = 0$ is
 4 (D) 3 (C) 2 (B) 1 (A)
- 9- A fraction in which the degree of numerator is greater or equal to the degree of denominator is called
 an improper fraction غیر واجب کسر (B) an equation مساوات (A)
 an identity مماثلت (D) a proper fraction واجب کسر (C)
- 10- A frequency polygon is a many sided
 triangle مثلث (D) square مربع (C) rectangle مستطیل (B) closed figure بند شکل (A)
- 11- A complete circle is divided into
 360° (D) 270° (C) 180° (B) 90° (A)
- 12- If $y^2 \propto \frac{1}{x^3}$, then
 12- اگر $y^2 \propto \frac{1}{x^3}$ تو
 $y^2 = kx^3$ (D) $y^2 = x^2$ (C) $y^2 = \frac{1}{x^3}$ (B) $y^2 = \frac{k}{x^3}$ (A)
- 13- The measure which determines the middlemost observation in a data set is called
 information معلومات (D) mode عادیہ (C) median وسطانیہ (B) mean حسابی اوسط (A)
- 14- The different number of ways to describe a set are
 4 (D) 3 (C) 2 (B) 1 (A)
- 15- If α, β are the roots of equation $7x^2 - x + 4 = 0$
 then $\alpha\beta$ is
 $-\frac{4}{7}$ (D) $\frac{7}{4}$ (C) $\frac{4}{7}$ (B) $-\frac{1}{7}$ (A)

Mathematics (Science Group) Paper: II ریاضی (سائنس گروپ) II پرچہ 221 (یکٹوری سکول پاورٹ II، کواٹن دیم) Subjective امتحانی
Time: 2:10 Hours دقت: 2:10 دوسرا گروپ Group: II
Marks: 60 مارکس: 60

نوٹ: حصہ اول لازمی ہے۔ حصہ دوم میں سے کوئی سے تین (3) سوالات حل کیجئے۔ تاہم سوال نمبر نو (9) لازمی ہے۔

Section I حصہ اول

- 2- Write short answers to any SIX questions: (2 x 6 = 12)
- Define exponential equation.
 - Solve: $x^2 + 2x - 2 = 0$
 - Write in standard form: $(x + 7)(x - 3) = -7$
 - Find ω^2 if $\omega = \frac{-1 + \sqrt{-3}}{2}$
 - Write the quadratic equation having roots $-1, -7$
 - Evaluate: $(1 - 3\omega - 3\omega^2)^5$
 - Express $75^\circ, 225^\circ$ as a ratio in its simplest (lowest) form.
 - If $a \propto \frac{1}{b^2}$ and $a = 3$ when $b = 4$. Find a when $b = 8$

- ix- Find fourth proportion to $4x^4, 2x^3, 18x^5$
- 3- Write short answers to any SIX questions: (2 x 6 = 12)
- What is a proper fraction?
 - Resolve $\frac{x-5}{x^2+2x-3}$ into partial fractions.
 - Define intersection of two sets.
 - If $L = \{a, b, c\}$ and $M = \{d, e, f, g\}$, then find two binary relations in $L \times M$
 - If $X = \{1, 4, 7, 9\}$ and $Y = \{2, 4, 5, 9\}$, then find $X \cap Y$
 - If $X = \phi, Y = Z^+$, then find $X \cap Y$
 - Define class mark.
 - Find arithmetic mean by direct method for the following set of data: 200, 225, 350, 375, 270, 320, 290

- ix- Define geometric mean.
- 4- Write short answers to any SIX questions: (2 x 6 = 12)
- Define inverse variation.
 - Find a third proportional to 28 and 4
 - Express -150° into radians.
 - Find r , when $\ell = 4$ cm, $\theta = \frac{1}{4}$ radians.

(درج کیجئے)

(2)

- v- In a circle of radius 10 m, find the distance travelled by a point moving on this circle if the point makes 3.5 revolution. (3.5 revolution = 7π)
- vi- Convert $\frac{7\pi}{8}$ into degrees.
- vii- Define radian measure of an angle.
- viii- In ΔABC , calculate $m\overline{BC}$ when: $m\overline{AB} = 5$ cm, $m\overline{AC} = 4$ cm, $m\angle A = 60^\circ$
- ix- Divide an arc of any length into two equal parts.

نوٹ: حصہ دوم میں سے کوئی سے تین (3) سوالات حل کیجئے۔ تاہم سوال نمبر نو (9) لازمی ہے۔

Section II حصہ دوم (ہر سوال کے 8 نمبر اور ہر جزو کے 4 نمبر ہیں)

- 5- (a) Solve the equation: $\frac{x-a}{x+a} - \frac{x+a}{x-a} = \frac{7}{12}$
- (b) Find the value of h using synthetic division if '3' is the zero of polynomial: $2x^3 - 3hx^2 + 9$
- 6- (a) $m \propto \frac{1}{n^3}$ and $m = 2$ when $n = 4$ find m when $n = 6$ and n when $m = 432$
- (b) Resolve $\frac{6x^3 + 5x^2 - 7}{3x^2 - 2x - 1}$ into partial fractions.
- 7- (a) If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{1, 3, 5, 7, 9\}$ and $B = \{2, 3, 5, 7\}$, then verify $(A \cap B)' = A' \cup B'$
- (b) Find the standard deviation 'S' of 9, 3, 8, 8, 9, 8, 9, 18
- 8- (a) If $\tan \theta = \frac{4}{3}$ and $\sin \theta < 0$, then find the values of other trigonometric functions at θ
- (b) Draw two common tangents to two touching circles of radii 2.5 cm and 3.5 cm.
- 9- The measure of a central angle of a minor arc of a circle is double that of the angle subtended by the corresponding major arc.
- OR
- If two arcs of a circle (or of congruent circles) are congruent then the corresponding chords are equal.