

Roll No.

Sig. of Candidate. _____

Answer Sheet No. 23

Sig. of Invigilator. _____

MATHEMATICS SSC-II
SECTION – A (Marks 15)**Time allowed: 20 Minutes****NOTE:-** Section–A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

- (i) Open sentences are of _____ types.
A. Two B. Three C. Four D. Five
- (ii) If $P(x,y)$ is a point, then y is called its _____.
A. Point B. Abscissa C. Ordinate D. Line
- (iii) At least _____ equations is / are required for elimination of one variable.
A. One B. Two C. Three D. Four
- (iv) Eliminating t from $t = \frac{1}{4q^2}$ and $3p^2 = \frac{1}{t}$ we get _____.
A. $3p^2q^2 = 4$ B. $12p^2q^2 = 1$ C. $3p^2 = 4q^2$ D. $4p^2 = 3q^2$
- (v) Ratio is the relation between _____ quantities with the same units.
A. Two B. Three C. Four D. Five
- (vi) If $s \propto t$, then _____.
A. $st = k$ B. $s = t$ C. $s = kt$ D. $st = 1$
- (vii) How many types of measure of central tendency are there?
A. Two B. Three C. Four D. Five
- (viii) If \bar{X} is mean and S is standard deviation then $\bar{X} \pm 3S$ covers observations approximately _____.
A. 99 % B. 100 % C. 99.73 % D. 90 %
- (ix) In a right angled triangle $ABC; m\angle B = 90^\circ$ then _____.
A. $a^2 + b^2 = c^2$ B. $a^2 + c^2 = b^2$ C. $b^2 + c^2 = a^2$ D. $a^2 + b^2 + c^2 = 0$
- (x) Three non-collinear points determine a _____.
A. Line B. Plane C. Rectangle D. Square
- (xi) There is only one _____ of a circle.
A. Radius B. Diameter C. Radial segment D. Centre
- (xii) A tangent is a line touching a circle at _____.
A. Two points B. One point C. Three points D. Mid point
- (xiii) Trigonometry is branch of _____.
A. Physics B. Chemistry C. Biology D. Mathematics
- (xiv) $\sin(90^\circ - 45^\circ)$ is equal to _____.
A. $\sin 45^\circ$ B. $\sin 90^\circ$ C. $\cos 45^\circ$ D. $\cos 90^\circ$
- (xv) Solution set of $\sqrt{x} = -3$ is _____.
A. $\{-3\}$ B. $\{\}$ C. $\{9\}$ D. $\{3\}$

For Examiner's use only:

Total Marks:

15

Marks Obtained:



MATHEMATICS SSC-II

24

Time allowed: 2:40 Hours

Total Marks Sections B and C: 60

NOTE:- Answer any twelve parts from Section 'B' and any three questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

SECTION - B (Marks 36)

Q. 2 Attempt any TWELVE parts. All parts carry equal marks. (12 x 3 = 36)

- (i) Find the solution set of the following equations $2x + y = 1$; $x + y = 3$
- (ii) The sum of two different numbers is 36 and their difference is 6. Find the numbers.
- (iii) Find the solution set of $|5z - 3| + 6 = -3$ (when $z \in R$)
- (iv) Solve the equation by factorization $x^2 - x - 42 = 0$
- (v) Eliminate x from $lx^2 + mx + n = 0$ and $ax + b = 0$
- (vi) Eliminate t from the following equations $x = \frac{1+t^2}{2at}$; $y = \frac{1+t^2}{2bt}$
- (vii) Find the relation independent of x for the following equations $x^2 - 2x + \ell = 0$; $-x^2 + 3x + m = 0$.
- (viii) Find the value of x if $5 : 2x :: 3 : 2x - 4$
- (ix) If $p \propto \frac{1}{q^3}$ and $p = 2$ for $q = 5$. Find q if $p = 2$.
- (x) If $p = \frac{2ab}{a+b}$ then find the value of $\frac{p+a}{p-a} + \frac{p+b}{p-b}$ using componendo - dividendo theorem.
- (xi) Find the numbers if their sum is 60 and the ratio between them is 5:7?
- (xii) A set of data contains the values as 148, 145, 160, 157, 156, 160. Find Mean, Median and Mode.
- (xiii) Calculate the range and variance from the following marks out of 100;
46, 32, 18, 16, 14, 12, 60, 55, 52, 48, 40.
- (xiv) A set contains the following numbers 3.5, 4, 4.5, 9, 8, 3.1, 11, 10.5, 8.5. Find its range(R).
- (xv) Prove that $\frac{\sin \theta}{1 - \cos \theta} = \frac{1 + \cos \theta}{\sin \theta}$
- (xvi) Prove that $\tan \theta + \cot \theta = \sec \theta \cdot \operatorname{cosec} \theta$
- (xvii) Solve the triangle ABC when $a = \sqrt{3} \text{ cm}$, $c = 1 \text{ cm}$ and $m\angle B = 90^\circ$
- (xviii) The angle of elevation of the top of a flag post from a point on the ground level 40 m away from the flag post is 60° . Find the height of the post.

SECTION - C (Marks 24)

Note: Attempt any THREE questions. All questions carry equal marks. (3 x 8 = 24)

- Q.3 Prove that the sum of measures of any two sides of a triangle is greater than the measure of the third side.
- Q.4 Prove that a line parallel to one side of a triangle and intersecting the other two sides divides them proportionally.
- Q.5 Prove that two chords of a circle which are equidistant from the centre are congruent.
- Q.6 Draw a triangle ABC with sides 3.5 cm , 3.8 cm and 4 cm . Draw a circle passing through its vertices.

Roll No. Answer Sheet No. 25

Sig. of Candidate. _____

Sig. of Invigilator. _____

MATHEMATICS SSC-II

SECTION – A (Marks 15)

Time allowed: 20 Minutes

NOTE:- Section-A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

- (i) Algebraic sentences are of _____ type (s).
 A. One B. Two C. Three D. Four
- (ii) If $P(x,y)$ is a point, then x is called _____.
 A. Point B. Abscissa C. Ordinate D. Line
- (iii) If $px = q$ and $rx = s$ then the relation independent of x is _____.
 A. $ps = qr$ B. $q = r$ C. $p = r$ D. $pq = rs$
- (iv) Eliminating x from $x^2 + \frac{1}{x^2} = m^2$ and $x + \frac{1}{x} = n$ we get _____.
 A. $m^2 - n^2 = 2$ B. $m^2 + n^2 = 2$ C. $m^2 - n^2 = -2$ D. $m^2 + n^2 = -2$
- (v) Proportion is the relation of equality between _____ ratios.
 A. One B. Two C. Three D. Four
- (vi) If $5 : 8 = 5 : x$ then x is equal to _____.
 A. 5 B. 25 C. 8 D. 40
- (vii) How many main types of data are there?
 A. Two B. Three C. Four D. Five
- (viii) There are _____ types of dispersion.
 A. Two B. Three C. Four D. Five
- (ix) In a right angled triangle ABC if $m\angle B = 90^\circ$ then _____.
 A. $a^2 + b^2 = c^2$ B. $a^2 + c^2 = b^2$ C. $b^2 + c^2 = a^2$ D. $a^2 + b^2 + c^2 = 0$
- (x) Two point determine a / an _____.
 A. Angle B. Plane C. Line D. Triangle
- (xi) The fixed point of a circle is called its _____.
 A. Centre B. Radius C. Line D. Diameter
- (xii) Tangent is line touching a circle at _____.
 A. Three points B. Two points C. One point D. No point
- (xiii) $\sin \theta \operatorname{cosec} \theta$ is equal to _____.
 A. -1 B. 1 C. 0 D. 2
- (xiv) $\tan (90^\circ - 30^\circ)$ is equal to _____.
 A. $\tan 30^\circ$ B. $\tan 90^\circ$ C. $\cot 30^\circ$ D. $\cot 90^\circ$
- (xv) Solution set of $|x| = -2$ is _____.
 A. $\{2\}$ B. $\{-2\}$ C. $\{ \}$ D. $\{2, -2\}$

For Examiner's use only:

Total Marks:

15

Marks Obtained:



MATHEMATICS SSC-II

26

Time allowed: 2:40 Hours

Total Marks Sections B and C: 60

NOTE:- Answer any twelve parts from Section 'B' and any three questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

SECTION - B (Marks 36)

Q. 2 Attempt any TWELVE parts. All parts carry equal marks.

(12 x 3 = 36)

- (i) Find the solution set of the following equations by substitution method. $2x + y = 1$; $3x - y = 4$
- (ii) Solve the equation by factorization $x^2 - 8px + 12p^2 = 0$
- (iii) The sum of four consecutive even numbers is 140. Find the numbers.
- (iv) Find the solution set of $\frac{|y-3|}{3} = \frac{|y+2|}{2}$ (when $y \in R$)
- (v) Find a relation independent of x for the following equations: $x + y = a$; $x^2 + y^2 = b^2$
- (vi) Eliminate "t" from the following equations: $x = \frac{2at}{1+t^2}$; $y = \frac{b(1-t^2)}{1+t^2}$
- (vii) Find the relation independent of x for the following equations: $mx^2 + 3x + 2 = 0$; $nx^2 + 5x + 1 = 0$
- (viii) Find the value of x if $17 - x : 31 - x :: 25 - x : 47 - x$
- (ix) If $y \propto \frac{1}{x^2}$ and $y = 9$ for $x = 2$. Find y for $x = 4$.
- (x) If $m = \frac{4ab}{a+b}$, then find the value of $\frac{m+2a}{m-2a} - \frac{m+2b}{m-2b}$ using componendo - dividendo property.
- (xi) Find the numbers if ratio between them is 9:5 and their difference is 36?
- (xii) Five numbers are 1,4,0,7,9. Find its Mean, Median and Mode.
- (xiii) Following figures show the profit (in Rs.) of ten shop keepers: 70, 100, 150, 130, 140, 150, 90, 60,110,600. Find its range.
- (xiv) Find the variance and standard deviation from the given information: $\bar{x} = 19.5$, $\sum x = 195$, $\sum x^2 = 5555$
- (xv) Prove that $\frac{1 - \sin \theta}{\cos \theta} = \frac{\cos \theta}{1 - \sin \theta}$
- (xvi) Prove that $(\sec^2 \theta - 1) \cos^2 \theta = \sin^2 \theta$
- (xvii) Solve the triangle ABC when $a = 2cm$, $b = 2\sqrt{2}cm$ and $m\angle B = 90^\circ$
- (xviii) A light house tower is 150 m high from the sea level. The angle of depression from the top of the tower to a ship is 60° . Find the distance between the ship and the tower.

SECTION - C (Marks 24)

Note: Attempt any THREE questions. All questions carry equal marks.

(3 x 8 = 24)

- Q.3 Prove that if two sides of a triangle are unequal in length, the measure of the angle opposite to the longer side is greater than that of the angle opposite to the shorter side.
- Q.4. Prove that in a right angled triangle, the square of the length of hypotenuse is equal to the sum of the squares of the lengths of the other two sides.
- Q.5. Prove that if a diameter of a circle is perpendicular to a chord, it bisects the chord.
- Q.6. Construct a triangle with sides $m\overline{AB} = 4cm$, $m\overline{BC} = 3.7cm$, $m\overline{CA} = 3.5cm$. Draw a circle passing through three vertices of the triangle.