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Answer Sheet No. _____

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) If X-coordinate of a point P is positive and Y-coordinate of P is negative, in which quadrant point P will lie.
A. First quadrant B. Second quadrant C. Third quadrant D. Fourth quadrant
- (ii) How many minimum number of points is required to draw a straight line?
A. 01 B. 02 C. 03 D. 04
- (iii) What is the solution set of $\sqrt{x} = -3$?
A. $\{-3\}$ B. $\{ \}$ C. $\{9\}$ D. $\{3\}$
- (iv) Which ordered pair satisfies $x - y = 3$?
A. (0,3) B. (3,0) C. (2,1) D. (1,2)
- (v) 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. $m^2 + n^2 = -2$
- (vi) The length of a rectangle is 100cm and width of the rectangle is 80cm. Find the ratio of length to the width.
A. 5:4 B. 4:5 C. 10:10 D. 10:5
- (vii) If 4, a, 16 are in continued proportion, then find 'a'.
A. ± 4 B. ± 2 C. ± 8 D. ± 16
- (viii) If $y : y - 1 = 2x : x - 1$ then $y : 2x = y - 1 : x - 1$ which of the following theorem is used?
A. Invertendo theorem B. Alternendo theorem
C. Componendo theorem D. Dividendo theorem
- (ix) If $\frac{a}{b} = \frac{b}{c} = k$, then a =
A. ck^2 B. bk^2 C. c^2k D. b^2k
- (x) In a given data, the highest value is 170 and the lowest value is 123. Data is required to divide in 10 groups. What will be the size of class interval?
A. 29.3 B. 4.7 C. 17 D. 12.3
- (xi) What is the range of data 8.5, 10.5, 11, 3.1, 8, 9, 4.5, 4, 3.5 ?
A. 9 B. 11 C. 3.1 D. 7.9
- (xii) If measures of the sides of a triangle are 3cm, 4cm, and 5cm, respectively what type of a triangle it is?
A. Obtuse triangle B. Right angled triangle C. Equilateral triangle D. Acute triangle
- (xiii) The tangents at the end points of the diameter of a circle are _____.
A. Collinear B. Parallel C. Non-parallel D. Perpendicular
- (xiv) What is the meaning of the compound sentence $-3 < x < +3$?
A. $x > 3$ B. $x > -3$ C. $x < -3$ D. $-3 < x$ and $x < +3$
- (xv) What is the value of 'x' in $6 : 4 :: 3 : x$?
A. 12 B. 18 C. 2 D. 24

For Examiner's use only:

Total Marks:

15

Marks Obtained:

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MATHEMATICS SSC-II

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)

(12 x 3 = 36)

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

- (i) The sum of two numbers is 72. One number is 3 more than the two times of the other number. Find the numbers.
- (ii) Find the solution set of $x^2 - \frac{31}{10}x + \frac{3}{2} = 0$ using quadratic formula.
- (iii) Solve $\frac{1}{3}y^2 - 2y + 3 = 0$ by factorization.
- (iv) Find the solution set of $\frac{|2x+1|}{5} = \frac{|4x-3|}{2}$; when $x \in R$
- (v) Eliminate u from $v = u + at$ and $2as = v^2 - u^2$
- (vi) Eliminate 'x' form $\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{a}$ and $x - \frac{1}{x} = b$.
- (vii) If we add the same number to each of 5, 7, 17 and 21, then we get a proportion in them. Find that number.
- (viii) If $y \propto x$ and $y = 16$ for $x = 4$, then find y if $x = 6$.
- (ix) If $y \propto \frac{1}{\sqrt{x}}$ and $y = 64$ for $x = 16$. Find y for $x = 8$.
- (x) Find the fourth proportional of $a^2 + ab + b^2$, $a^3 - b^3$, $a + b$.
- (xi) If $p = \frac{2ab}{a+b}$, then, using componendo-dividendo theorem, find the value of $\frac{p+a}{p-a} + \frac{p+b}{p-b}$.
- (xii) The ratio among the sides of a quadrilateral is 3:6:5:8 and its perimeter is 462cm. Find the length of each side.
- (xiii) Find the mode of the frequency distribution given below:

Class Interval	5-9	10-14	15-19	20-24	25-29
Frequency (f)	1	8	18	11	2

- (xiv) Find the standard deviation from the given information: $\bar{x} = 19.5$, $\Sigma x = 195$, $\Sigma x^2 = 5555$
- (xv) If $\frac{a}{b} = \frac{c}{d}$ (where $a, b, c, d \neq 0$) then prove that: $(a-d)^2 - (b-c)^2 = (a+d)^2 - (b+c)^2$
- (xvi) Prove that $(1 + \sin\theta)(1 - \sin\theta) = \frac{1}{\sec^2\theta}$
- (xvii) Solve triangle ABC, when $m\angle B = 90^\circ$, $m\angle A = 60^\circ$, $a = 6\text{cm}$
- (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)

(3 x 8 = 24)

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

- Q.3** Prove that, from a point, outside a line, the perpendicular is the shortest distance from the point to the line.
- Q.4** In a triangle if the sum of the squares of the measures of two sides is equal to the square of the measure of the third side, the triangle is a right angled triangle. Prove.
- Q.5** Draw a triangle ABC where $\overline{AB} = 3.5\text{ cm}$, $\overline{BC} = 3.8\text{ cm}$ and $\overline{CA} = 4\text{ cm}$. Then draw a circle passing through the vertices of the triangle.
- Q.6** Prove that the measure of a central angle of a minor arc of a circle is double in measure of the inscribed angle of the corresponding major arc.