Version No.			

ROLL NUMBER						

Answer Sheet No._____

Sign. of Candidate_____

Sign. of Invigilator_____

MATHEMATICS SSC–I

(Science Group) (Curriculum 2006)

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 Fill the relevant bubble for each part. Each part carries (01) mark.

1. If $A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ then value of A^2 is:

   A) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ B) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

   C) $\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$ D) $\begin{bmatrix} 0 & 0 \\ 1 & 1 \end{bmatrix}$

2. Imaginary part of $-i(3i + 2)$ is:

   A) -3 B) 3

   C) -2 D) 2

3. For what value of x, $\sqrt[3]{3x - 5} = \sqrt[3]{x + 1}$?

   A) 3 B) 6

   C) 3^3 D) 6^3

4. If $4x = \log_2 64$ then value of x is:

   A) 32 B) 21

   C) 16 D) -16

5. What is the value of an expression $\log_1 27x^3$?

   A) 0 B) 1

   C) 3 D) 4

6. Which of the following is not a polynomial?

   A) $3x + 8$ B) $x^2 + 2x + \sqrt{2}$

   C) $x^2 + 2x + \sqrt{2x}$ D) $x^2 + 2x + \sqrt{2}x$

7. The number of zeroes of the polynomial $x^3 + x - 3 - 3x^2$ are:

   A) 0 B) 1

   C) 2 D) 3

8. What is the product of two polynomials, if their HCF is $(x - 1)$ and their LCM is $(x^2 - 2x + 1)$?

   A) $(x - 1)^3$ B) $(x - 1)^2$

   C) $x - 1$ D) $x^3 + 1$

9. What is the solution set of $|x + 5| = -2$?

A) $\{-7, -3\}$ B) $\{7, 3\}$

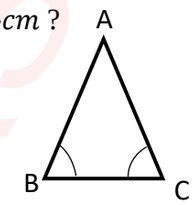
C) $\emptyset$ D) 7

10 The perpendicular distance of the point $P(3, 4)$ from $y - axis$ is:

A) 0 B) 3

C) 4 D) 7

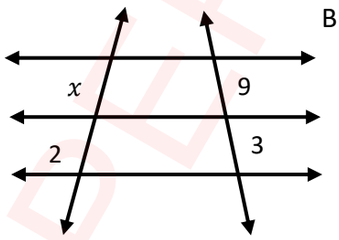
11. What is the length of $m\overline{AB}$ in ΔABC, if $m\angle B = m\angle C$, $m\overline{BC} = 3cm$ and $m\overline{AC} = 4cm$?



A) 3 B) 4

C) 5 D) 6

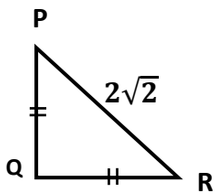
12. What is the value of x in the adjoining figure?



A) $\frac{2}{3}$ B) 3

C) 6 D) $\frac{27}{2}$

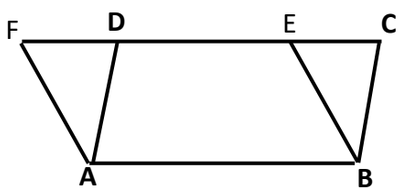
13. What is the length of $\overline{QR}$ in ΔPQR, if $\overline{PR} = 2\sqrt{2}$ and $\overline{PQ} = \overline{QR}$?



A) 2 B) $\sqrt{2}$

C) $\sqrt{8}$ D) 4

14. What is the length of $\overline{AB}$, if area of parallelogram $ABEF$ is $63cm^2$ and altitude of parallelogram $ABCD$ is $7cm$.



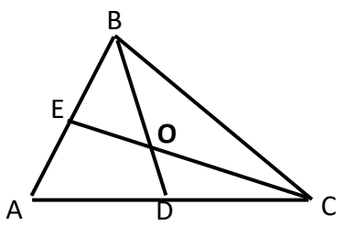
A) $3cm$ B) $9cm$

C) $18cm$ D) $27cm$

15. $\overline{BD}$, $\overline{CE}$ are two medians of the triangle ABC. If $\overline{EO} = 7cm$, then what is the length of $\overline{CE}$?

A) $(7 \times 1)cm$ B) $(7 \times 2)cm$

C) $(7 \times 3)cm$ D) $(7 \times 4)cm$



Federal Board SSC-I Examinations
Model Question Paper Mathematics
Science Group (Curriculum 2006)

Time allowed: 2.40 hours Total Marks: 60

Note: Sections 'B' and 'C' comprise pages 1-2 and questions therein are to be answered on the separately provided Answer Book. Write your answers neatly and legibly.

SECTION-B (Marks 36)

Q.2 **Attempt ALL parts. Each part carries (04) marks.**

(i) Apply Cramer's Rule to solve $\begin{bmatrix}1 & 2\\ 3 & 2\end{bmatrix}\begin{bmatrix}x\\ y\end{bmatrix} = \begin{bmatrix}3\\ 5\end{bmatrix}$.

OR

If $A = \begin{bmatrix}-1 & 5\\ 6 & 3\end{bmatrix}$ then show that $AA^{-1} = I$

(ii) Find values of x and y if the product $(x - iy)(3 + 5i)$ is a conjugate of $(-6 - 24i)$.

OR

If $\frac{1}{x} = \sqrt{7} + \sqrt{6}$, then find the values of $\left(x + \frac{1}{x}\right)$, $\left(x - \frac{1}{x}\right)$ and $\left(x^2 - \frac{1}{x^2}\right)$.

(iii) Find the value of n if $\log_4(64)^{n+1} = \log_5(625)^{n-1}$

OR

Show that $log_a\, b \times log_b\, x = log_a\, x$

(iv) Use factor theorem to factorize the cubic polynomial $x^3 + 5x^2 - 2x - 24$.

OR

Find a polynomial similar to $x^2 - 5x - 14$, such that their HCF is $(x - 7)$ and LCM is $(x^3 - 10x^2 + 11x + 70)$

(v) $\left|\frac{3x+9}{2x+1}\right| - 9 = 5$ where $x \in \mathcal{R}$

OR

Solve $\frac{2}{3} \leq \frac{1+x}{6} \leq \frac{3}{4}$ where $x \in \mathcal{R}$

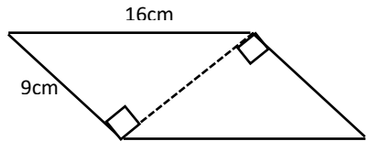
(vi) Solve the following system of linear equations graphically.

$x + 2y = -4$; $2x + 4y = 8$

OR

Check whether the points $P(3, 3)$, $Q(8, 3)$ and $R(3, 12)$ are collinear or not.

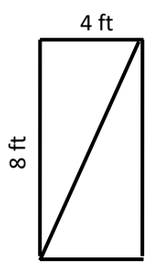
(vii) Find area of the parallelogram shown in the figure.



OR

Prove that any point inside an angle, equidistant from its arms, is on the bisector of it.

$(viii)$ Can a table 9 feet wide (legs folded) fit through a rectangular doorway 4 feet by 8 feet? Use Pythagoras theorem to decide.



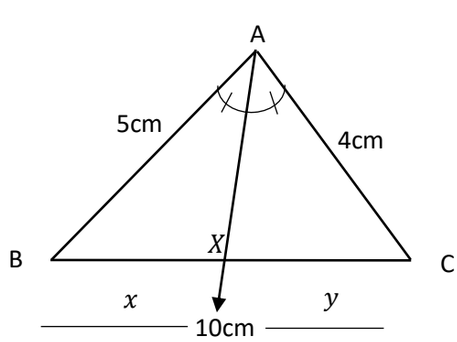
OR

Prove that in a scalene triangle, the angle opposite to the largest side is of measure greater than 60°.

(ix) In ΔABC (shown in the figure), $\overline{AX}$ bisects $\angle A$.

If $m\overline{AC} = 4cm$, $m\overline{AB} = 5cm$ and $m\overline{BC} = 8cm$

Find the values of x and y.



OR

Prove that if a line segment intersects two sides of a triangle in the same ratio, it is parallel to the third side.

SECTION-C (24Marks)

Note: Attempt ALL questions. Each question carries (08) marks.

Q3. If $A = \begin{bmatrix} 3 & 4 \\ 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$ then show that $(AB)^{-1} = B^{-1}A^{-1}$.

OR

Prove that $\frac{x}{x^2-x-2} - \frac{1}{x^2+5x-14} - \frac{2}{x^2+8x+7} = \frac{x+3}{x^2+5x-14}$

Q4. From a point, outside a line, the perpendicular is the shortest distance from the point to the line.

OR

A line parallel to one side of a triangle and intersecting the other two sides divides them proportionally.

Q5. Construct a square equal in area to a rectangle whose adjacent sides are 4cm and 2cm.

Calculate area of the square and compare it with the area of rectangle.

OR

Construct a triangle ABC with the given data $m\angle A = 45°$, $m\angle B = 75°$, $m\overline{AB} = 6cm$ and draw its altitude.