



MATHEMATICS SSC-I
(Science Group)
SECTION – A (Marks 15)

Time allowed: 20 Minutes

Candidate Sign. _____

Invigilator Sign. _____

Answer Sheet No. _____

Version No.				
1	9	0	8	1

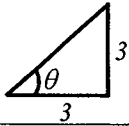
①	①	●	①	①
●	①	①	①	●
②	②	②	②	②
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④	④	④	④	④
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⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	●	⑧
⑨	●	⑨	⑨	⑨

ROLL NUMBER						

①	①	①	①	①	①	①
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⑧	⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨	⑨

Deleting/overwriting is not allowed.
Do not use lead pencil.

Fill the relevant bubble against each question according to curriculum:

Question	سوال	A	B	C	D	A	B	C	D
1.	$\left(\frac{1}{9}\right)^{-\frac{1}{2}}$ equals:	3	6	9	81	☐	☐	☐	☐
2.	Scientific notation of 71000 is:	7.1×10^2	0.71×10^2	7.1×10^3	7.1×10^4	☐	☐	☐	☐
3.	Range of $\{(1,3), (2,5)\}$ is:	$\{1,2\}$	$\{3,5\}$	$\{1,3\}$	$\{2,5\}$	☐	☐	☐	☐
4.	For two polynomials A and B, $HCF \times LCM =$	$A+B$	$A-B$	$(HCF)^2$	$A \times B$	☐	☐	☐	☐
5.	$-2x \leq 4$ gives:	$x \leq -2$	$x \geq -2$	$x \leq -1$	$x = -1$	☐	☐	☐	☐
6.	 $\theta = ?$	45°	60°	90°	120°	☐	☐	☐	☐
7.	A cyclist travels from P to Q on a bearing of 45° . This means the cyclist moves.	South-East	North-East	South-West	North-West	☐	☐	☐	☐
8.	If two triangles are equal, then their corresponding sides are:	Equal	Unequal	Unproportional	Perpendicular	☐	☐	☐	☐
9.	$1 + \tan^2 \theta =$	$\sin^2 \theta$	$\cos^2 \theta$	$\sec^2 \theta$	$\operatorname{cosec}^2 \theta$	☐	☐	☐	☐
10.	The perpendicular bisectors of the sides of a triangle meet at the:	Incentre	Centroid	Orthocentre	Circumcentre	☐	☐	☐	☐
11.	Each interior angle of a regular square-shaped garden is:	90°	60°	45°	30°	☐	☐	☐	☐
12.	The locus of points equidistant from two intersecting straight lines is formed by the:	Two parallel lines	Perpendicular bisectors	Circles	Angle bisectors	☐	☐	☐	☐
13.	The median of 17, 27, 37, 47, 57, 67, 77 is:	47	17	77	0	☐	☐	☐	☐
14.	If a fair die is rolled once, what is the probability of getting 2?	$\frac{1}{2}$	$\frac{1}{6}$	$\frac{1}{3}$	$\frac{1}{5}$	☐	☐	☐	☐
15.	Which is a possible Valid relative frequency value:	-0.5	1.2	0.75	2	☐	☐	☐	☐



Mathematics SSC–I (Science Group)

66

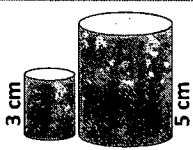
Time allowed: 2:40 Hours

Total Marks Sections B and C:60

SECTION – B (Marks 36)

Q. 2 Attempt the following parts.

(9 x 4 =36)

(i)	Simplify: $\sqrt{(216)^{\frac{2}{3}} \times \frac{(25)^{\frac{1}{2}}}{(0.04)^{\frac{-1}{2}}}}$	04	OR	If $A = \{a, b, c, d\}, B = \{a, c, e\}, U = \{a, b, c, d, e, f\}$, then show that using Venn diagram $(A \cup B)' = A' \cap B'$.	2+2												
(ii)	Two boats A and B are 5 km apart and the bearing of boat B from boat A is 250° . Draw the diagram showing relative positions of both boats, then find the bearing of boat A from boat B.	04	OR	Let $A = \{1, 4, 8\}, B = \{1, 0\}$, find Cartesian product $A \times B$. Find $R_1 = \{(x, y) x \in A, y \in B \wedge x \geq y\}$	3+1												
(iii)	The given data shows the distribution of weights (in kg) of 30 bags of rice. Calculate mean weight of the rice bags. <table border="1"> <thead> <tr> <th>C - I</th><th>05-09</th><th>10-14</th><th>15-19</th><th>20-24</th><th>25-29</th></tr> </thead> <tbody> <tr> <td>f</td><td>5</td><td>7</td><td>10</td><td>4</td><td>4</td></tr> </tbody> </table>	C - I	05-09	10-14	15-19	20-24	25-29	f	5	7	10	4	4	04	OR	Find equation of line passing through point of intersection of lines $2x + y + 2 = 0, x - 2y + 1 = 0$ and Parallel to $2x - 2y + 11 = 0$.	04
C - I	05-09	10-14	15-19	20-24	25-29												
f	5	7	10	4	4												
(iv)	Solve the inequality: $2x - 3 < x + 1$ and $3x - 3 \geq 2x + 8$	04	OR	Factorize: $(x^2 - 7x + 4)(x^2 - 7x + 5) - 2$	04												
(v)	Show that: $1 + \tan^2 \theta = \sec^2 \theta$	04	OR	Find the gradient of the line passing through $(-4, -3)$ and $(2, 9)$. Also write equation of this line.	04												
(vi)	In a certain polygon, the sum of the measures of all the interior angles is equal to twice that of the exterior angles. What is the name of that polygon? If one side is 1 m then find this perimeter.	2+1 +1	OR	A number is chosen at random from a set of whole numbers from 1 to 50. Calculate the probability: a. Chosen number is not a perfect square. b. Chosen number is perfect square.	2+2												
(vii)	A water fountain is to be placed at a point which is equidistant from two lamp posts located at $P(3, 7)$ and $Q(9, 1)$. Find possible positions of the fountain.	3+1	OR	Find the equation of straight-line having y-intercept = 4 and parallel to the line with slope $\frac{1}{2}$.	04												
(viii)	In the figure two geometrically similar cylinders are shown. Find: 	2+1 +1	OR	Starting with 500 users, a startup experiences continuous growth at a rate of 8% per year. To determine the number of years it takes for the company to reach 3000 users, use the formula $N(t) = N_0 \times e^{rt}$ where $N(t)$ is the number of users after time t . N_0 is the initial number of users, r is the growth rate and t is the time in years.	04												
(ix)	If $A = 4a^2b$ and $B = 6ab^2$ then verify that $A \times B = LCM \times HCF$	2+2	OR	The populations (in thousands) of nine towns are: 24, 18, 30, 22, 26, 26, 26, 32, 36. Find Mode Median Mean	1+1 +2												

SECTION – C (Marks 24)

Note: Attempt the following questions.

(3x8=24)

Q.3	To convert $x^4 + 4x^3 + 10x^2 + 10x + 5$ into a perfect square: a. What should be added to it? b. What should be subtracted from it?	08	OR	Find the interior angles of triangle XYZ whose vertices are: $X(-2, 0), Y(1, -4), Z(6, 6)$	08												
Q.4	Two men on opposite sides of a tree are in line with it. They observe that angles of elevation of top of tree are 30° and 60° . The height of tree is 15 m, find distance between the men.	08	OR	Convert the $3x + 4y - 12 = 0$ in given forms: a. Slope intercept b. Two intercepts c. Symmetric d. Normal	2x4												
Q.5	Draw a triangle with lengths, 2cm, 3cm, 4cm. a. Draw perpendicular bisectors. b. Are these bisectors concurrent? Verify.	3+3 +2	OR	The daily consumption of electricity units of 35 factory machines is recorded as in given table. Calculate mode of the data. <table border="1"> <thead> <tr> <th>C - I</th><th>20-24</th><th>25-29</th><th>30-34</th><th>35-39</th><th>40-44</th></tr> </thead> <tbody> <tr> <td>f</td><td>8</td><td>12</td><td>2</td><td>10</td><td>3</td></tr> </tbody> </table>	C - I	20-24	25-29	30-34	35-39	40-44	f	8	12	2	10	3	08
C - I	20-24	25-29	30-34	35-39	40-44												
f	8	12	2	10	3												