Roll No. | | | | | |

INDIAN SCHOOL SALALAH

FINAL EXAMINATION-FEBRUARY 2026 (AY-2025-26)

MATHEMATICS (041)

Class: XI **Date: 11-02-2026**

Time: 3 hours **Maximum Marks: 80**

General Instructions:

a) This Question paper contains - five sections A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.

b) Section A has 18 MCQ's and 02 Assertion-Reason based questions of 1 mark each.

c) Section B has 5 Very Short Answer (VSA)-type questions of 2 marks each.

d) Section C has 6 Short Answer (SA)-type questions of 3 marks each.

e) Section D has 4 Long Answer (LA)-type questions of 5 marks each.

f) Section E has 3 source based/case based/passage based/integrated units of assessment of 4 marks each with sub-parts.

NO	SECTION A	MARKS
1	Let X= {x: x is an integer and x^2<10} which of the following correctly list all the elements of set X? (a) {0,1,2,3} (b) {0,1,2,3,4} (c) $\{-3,-2,-1,1,2,3\}$ (d) $\{-3,-2,-1,0,1,2,3\}$	1
2	If there are 4 elements in set A, then proper subsets it can have is: (a) 15 (b) 16 (c) 17 (d) 18	1
3	If $A=\{1,2,3,4,5\}, B=\{3,4,5,6,7\}$ and C = A − B, then which of the following is true? (a) C = {1,2} (b) C = {1,2,6,7} (c) C = {3,4,5} (d) C = {6,7}	1
4	Let n(A) = m and n(B) = n then number of non-empty relations that can be defined from A to B is : (a) m^n (b) $n^m - 1$ (c) mn-1 (d) $2^{mn} - 1$	1

5	Which of the following relation is not a function ? (a) {(1,1) , (2,1), (3,1)} (b) {(1,1) , (1,2), (1,3)} (c) {(1,2) , (2,3), (3,4)} (d) {(1,5) , (2,4), (3,5)}	1
6	Range of $\frac{\lvert x-1\rvert}{x-1}$ is, (a) R (b) $[-1, 1]$ (c) $(-1,1)$ (d) $\{-1,1\}$	1
7	$\sin\frac{7\pi}{12}\cos\frac{\pi}{4} - \cos\frac{7\pi}{12}\sin\frac{\pi}{4} =$ (a) $2\sqrt{2}$ (b) $\frac{1}{\sqrt{2}}$ (c) $\sqrt{2}$ (d) $\frac{\sqrt{3}}{2}$	1
8	$\frac{\sin 7x-\sin 5x}{\cos 7x+\cos 5x} =$ (a) cot x (b) tanx (c) cot 2x (d) tan 2x	1
9	The mean deviation from mean for the data 3, 10, 10, 4, 7, 10, 5 is, (a) 2 (b) 2.57 (c) 3 (d) 3.57	1
10	$(1+i)^{-1}$= (a) $2-3i$ (b) $2-i$ (c) $\frac{1}{2}-\frac{1}{2}i$ (d) $-\frac{1}{2}+\frac{1}{2}i$	1
11	Solve the system of inequalities $-2 < 1 - 3x < 7$ (a) $-1 < x < 10$ (b) $-2 < x < 2$ (c) $-1 < x < 1$ (d) $-2 < x < 1$	1
12	How many words can be formed from the letters of the word 'LAUGHTER' so that the vowels are never together? (a) 3600 (b) 36000 (c) 40320 (d) 4320	1
13	$\left(\sqrt{5}+1\right)^4 + \left(\sqrt{5}-1\right)^4$ is , (a) an irrational number (b) a negative real number (c) a rational number (d) a negative integer	1

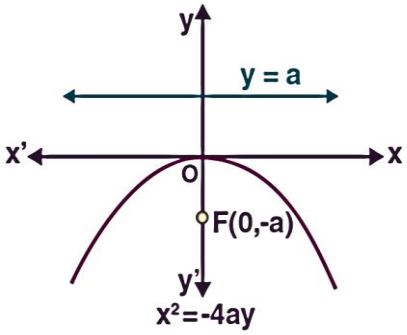
14	A bag contains 5 brown and 4 white socks. Ram pulls out two socks. What is the probability that both the socks are of the same colour? (a) $\frac{9}{20}$ (b) $\frac{4}{9}$ (c) $\frac{3}{20}$ (d) $\frac{2}{9}$	1
15	The equation of the line passing through the point (1, 2) and perpendicular to the line $x + y + 1 = 0$ is (a) y − x + 1 =0 (b) $y - x - 1 = 0$ (c) $y - x + 2 = 0$ (d) $y - x - 2 = 0$	1
16	If the distance between the points (a, 0, 1) and (0, 1, 2) is $\sqrt{27}$, then the value of a is (a) 5 (b) -5 (c) ± 5 (d) None of these	1
17	$\lim_{x\to\frac{\pi}{2}}\left(\frac{\cos x}{\pi-2x}\right)$ = (a) $\frac{1}{2}$ (b) 2 (c) $-\frac{1}{2}$ (d) 1	1
18	A fair coin with 1 marked on one face and 6 on the other and a fair die are both tossed. Find the probability that the sum of numbers that turn up is 3. (a) $\frac{1}{6}$ (b) $\frac{1}{12}$ (c) $\frac{2}{3}$ (d) $\frac{1}{4}$	1
	ASSERTION-REASON BASED QUESTIONS **In the following questions 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.** (a) Both (A) and (R) are true and (R) is the correct explanation of (A). (b) Both (A) and (R) are true but (R) is not the correct explanation of (A). (c) (A) is true but (R) is false. (d) (A) is false but (R) is true.	
19	**Assertion(A):** If the numbers $\frac{-2}{7}$, k ,$-\frac{7}{2}$ are in GP, then k =± 1 . **Reason (R):** If a_1, a_2, a_3 are in GP, then $\frac{a_2}{a_1} = \frac{a_3}{a_2}$	1

20	**Assertion(A) :** $\sin(x + y)\cos(x - y) - \cos(x + y)\sin(x - y) = \sin 2x$ **Reason(R) :** $\sin A \cos B - \cos A \sin B = \sin(A - B)$	1
	SECTION B	
21	Write in set builder form. (a) {1,4,9,16,25,36,49,64,81,100} (b) $\left\{\frac{1}{2}, \frac{2}{5}, \frac{3}{10}, \frac{4}{17}\right\}$ **OR** If X = {5, 6, 7, 8}, Y = {7, 8, 9, 10}, Z = {3, 4, 5, 6}. Find: (a) ((X ∩ Y) ∪ Z) (b) ((X ∪ Y) ∩ Z)	2 2
22	Prove that: sin 10° + sin 20° + sin 40° + sin 50° = sin 70° + sin 80°	2
23	Find the derivative of f(x) = sinx using first principle.	2
24	Let A = {1, 2, 3, …….14}, relation R from A to A is defined by R = {(x, y): 3x - y = 0, where x, y ∈A}. Write down relation R in roster form, its domain and range.	2
25	If $^{10}P_r = 5040$, find r. **OR** How many different words can be formed by using all the letters of the word ALLAHABAD? In how many of them, both L do not come together?	2 2
	SECTION C	
26	Redefine the function: $f(x) = \|x - 1\| - \|x + 6\|$. Write its domain also. **OR** If f(x) = $\frac{x-1}{x+1}$ then show that (a) $f\left(\frac{1}{x}\right) = -f(x)$ (b) $f\left(-\frac{1}{x}\right) = -\frac{1}{f(x)}$	3 3
27	Find the conjugate of $\frac{(3-2i)(2+3i)}{(1+2i)(2-i)}$.	3
28	Find the solution and represent on a number line. $-2 - \frac{x}{4} \leq \frac{1+x}{3}$, $3 - x < 4(x - 3)$	3
29	In the expansion of $(x + a)^n$, sums of odd and even terms are P and Q respectively, prove that : (a) $P^2 - Q^2 = (x^2 - a^2)^n$ (b) $4PQ = (x + a)^{2n} - (x - a)^{2n}$	3

	OR Using binomial theorem, expand $\left(\sqrt{x}+\sqrt{y}\right)^8$.	3
30	Find the equation of the straight line passing through the point of intersection of the lines 5x – 6y – 1 = 0 and 3x + 2y + 5 = 0 and perpendicular to the line 3x – 5y +11 = 0. **OR** A straight line passes through the point (α, β) and this point bisects the portion of the line intercepted between the axes. Show that the equation of the straight line is $\frac{x}{2\alpha} + \frac{x}{2\beta} = 1.$	3 3
31	The vertices of the triangle are A (5, 4, 6), B (2, −1, 4) and C (4, 3, 2). The median from angle A meets BC at D. Find the coordinates of D and the length AD.	3
	SECTION D	
32	Prove that: $\sin^4\frac{\pi}{8} + \sin^4\frac{3\pi}{8} + \sin^4\frac{5\pi}{8} + \sin^4\frac{7\pi}{8} = \frac{3}{2}$ **OR** Prove that: $\cos 2x \cos\frac{x}{2} - \cos 3x \cos\frac{9x}{2} = \sin 5x \sin\frac{5x}{2}$	5 5
33	Find four numbers in GP such that their product is 1 and sum of the middle two terms is $\frac{10}{3}$.	5
34	Find the derivative of (a) $\frac{x^5 - \cos x}{\sin x}$ (b) $(x + \sec x)(x - \tan x)$ **OR** Find $\lim_{x\to 4} \frac{x^2+x-20}{\sqrt{x^2-7}-\sqrt{25-x^2}}$	5 5
35	Find mean and variance for the following frequency distribution.	5

Classes	0-30	30-60	60-90	90-120	120-150	150-180	180-210
Frequencies	2	3	5	10	3	5	2

	SECTION E	
36	**Case Study.1:** A state cricket authority has to choose a team of 11 members, to do it so the authority asks 2 coaches of a government academy to select the team members	

	that have experience as well as the best performers in last 15 matches. They can make up a team of 11 cricketers amongst 15 possible candidates.  Based on this given informations answer the followings. i) If two of them being leg spinners, in how many ways can be the final eleven be selected from 15 cricket players if one and only one leg spinner must be included? ii) If there are 6 bowlers, 3 wicketkeepers, and 6 batsmen in all. In how many ways can be the final eleven be selected from 15 cricket players if 4 bowlers, 2 wicketkeepers and 5 batsmen are included. iii) (a) In how many ways can be the final eleven be selected from 15 cricket players if there is no restriction? **OR** (b) In how many ways can be the final eleven be selected from 15 cricket players if one particular player must be included.	1 1 2
37	C**ase Study.2:** Indian track and field athlete Neeraj Chopra, who competes in the Javelin throw, won a gold medal at Tokyo Olympics. He is the first track and field athlete to win a gold medal for India at the Olympics.   	

	i) Name the shape of path followed by a javelin. If equation of such a curve is given by $x^2 = -16y$, then find the coordinates of foci. ii) Find the equation of directrix and length of latus rectum of parabola $x^2 = -16y$. iii) (a) Find the equation of parabola with Vertex (0,0), passing through (5,2) and symmetric with respect to y-axis and also find equation of directrix. **OR** (b) Find the equation of the parabola with focus (2, 0) and directrix $x = -2$ and also length of latus rectum.	1 1 2
38	**Case Study.3:** In a hostel 60% of the students read Hindi newspapers, 40% read English newspapers and 20% read both Hindi and English newspapers. A student is selected at random, find the probability that,  i) She reads neither Hindi nor English newspapers. ii) She reads Hindi but not English newspaper.	 2 2

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